

PITCHED GABLE, HIP & DUTCH

CONSTRUCTION GUIDE

LYSAGHT
Living



Colorbond®

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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 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 and 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 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), or where a tropical cyclone is **unlikely** to occur as defined in Australian Standard AS4055 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®, TRIMDEK® roof cladding and FIRMLOK® beams.
- The design allows for the structure to be attached on 1 side or 2 sides 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 3000mm from ground level.
- The 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 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/timber wall.

THROUGH AND UNDER FASCIA RAFTER ATTACHMENT BRACKET

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

SIDE AND END RAILS (BEAMS)

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

CORNER CONNECTOR

Connects side and end rails beams.

POST CONNECTOR (BASE)

Is attached to a concrete slab with a screw anchor and fits inside the post. The post is attached to the connector.

POST

The design uses 90/75 aluminium or steel posts, for fitment to the rails (beams).

BEAM CONNECTOR

Is attached to the junction of the post and beam and aluminium prevents the two from coming apart.

CONCRETE SLAB

A post connector attaches to it. Must meet certain requirements prior to attaching. (See engineers detail)

CONCRETE FOOTING

Required when not attaching to a slab.

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.

CROWN CONNECTOR

Used at the top of a gable end and intermediate truss and connects the rafter and ridge purlin.

RIDGE/RAFTER/HIP RAFTER CONNECTOR (HIP END ONLY)

Replaces Crown connector at apex. Allows the hip rafters and truss rafters to connect at the apex.

RAFTER CONNECTOR

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

RAFTER

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

DUTCH HIP RAFTER CONNECTOR

Used to support hip rafter on a Dutch Gable End, if required.

HIP RAFTER/PURLIN CONNECTOR

Attaches to the hip rafter to support purlins.

BEAM TO BEAM TO HIP RAFTER

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

COLLAR TIE

A horizontal member connected to the rafters to form a truss.

PURLIN

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

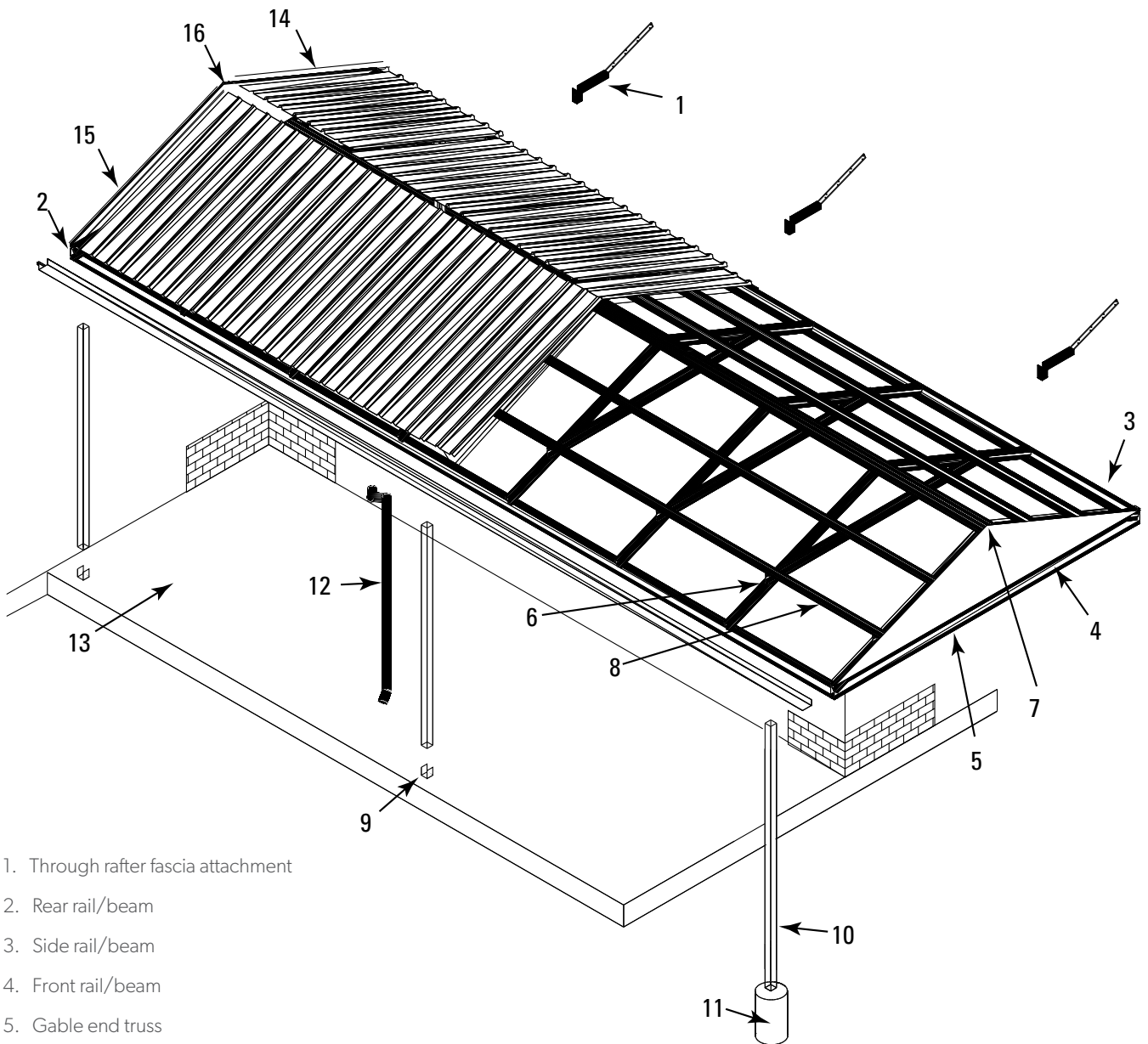
RIDGE CAPPING

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

BARGE CAPPING

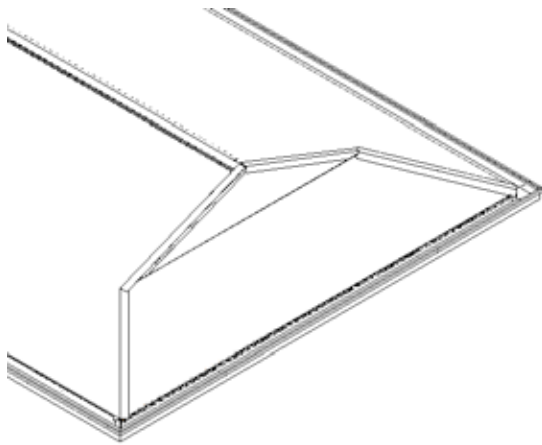
Fixes to the Gable End of the structure where the roof sheets start and finish.

4. COMPONENT ASSEMBLY DIAGRAM - GABLE END

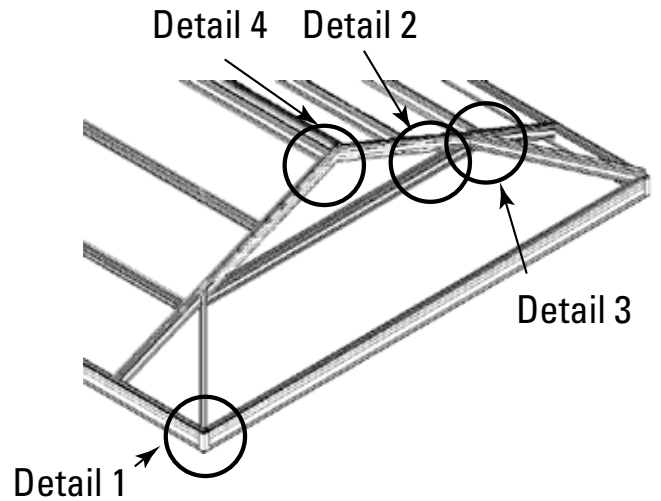


1. Through rafter fascia attachment
2. Rear rail/beam
3. Side rail/beam
4. Front rail/beam
5. Gable end truss
6. Intermediate truss
7. Ridge purlin
8. Mid purlin
9. Bottom internal connector for slab
10. Post
11. Concrete footing
12. Downpipe
13. Concrete slab
14. Roof sheeting
15. Barge capping
16.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

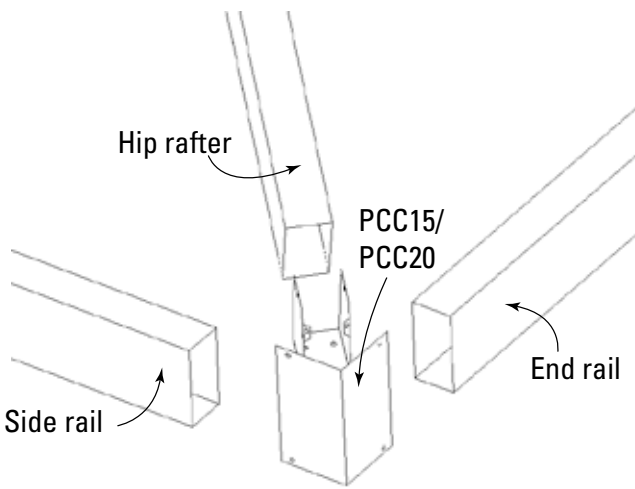
5. COMPONENT ASSEMBLY DIAGRAM - DUTCH GABLE END



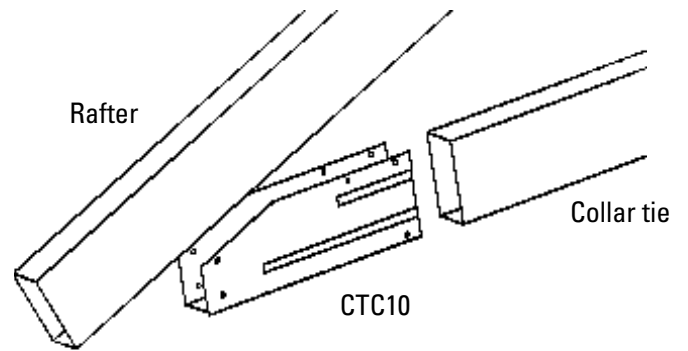
Dutch End



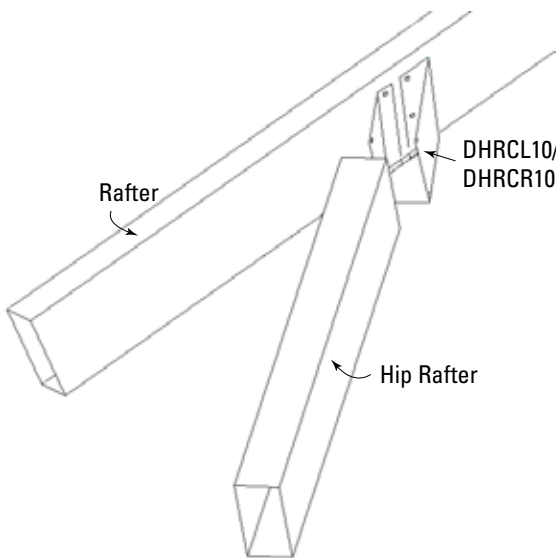
Beams in Dutch End



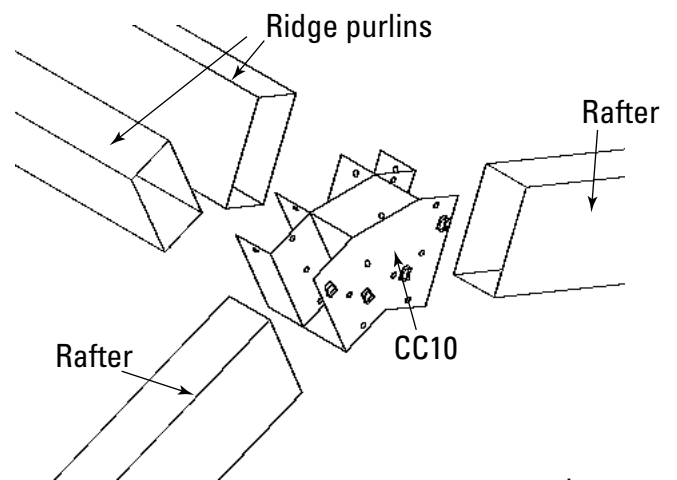
Detail 1



Detail 2

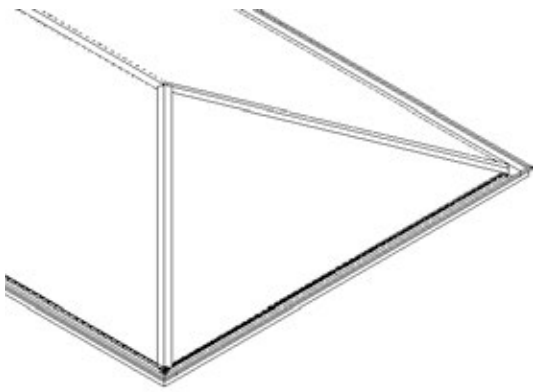


Detail 3

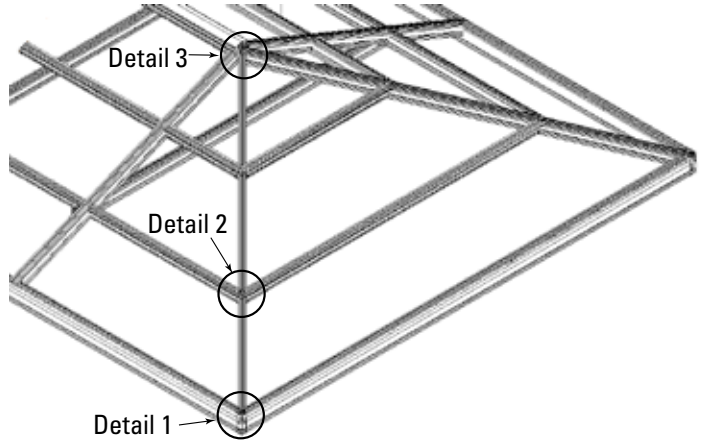


Detail 4

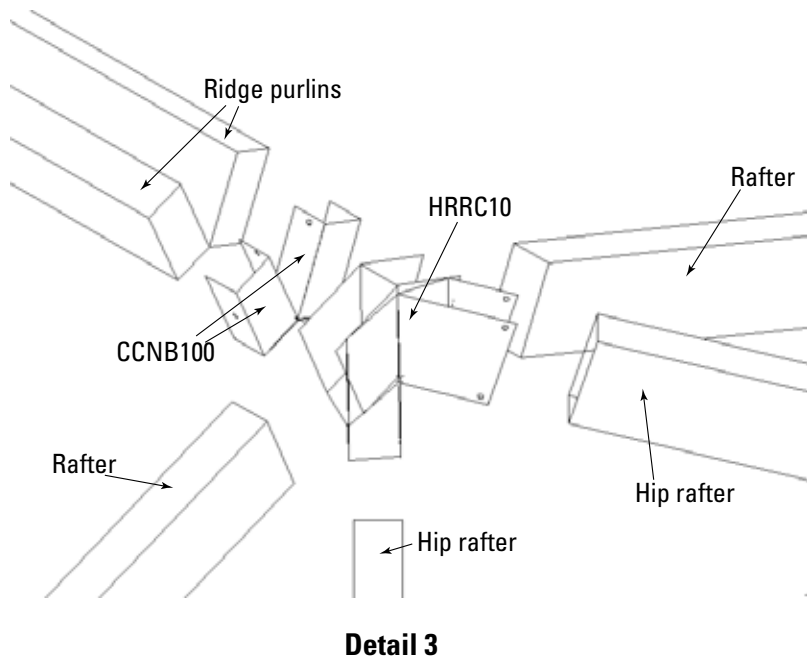
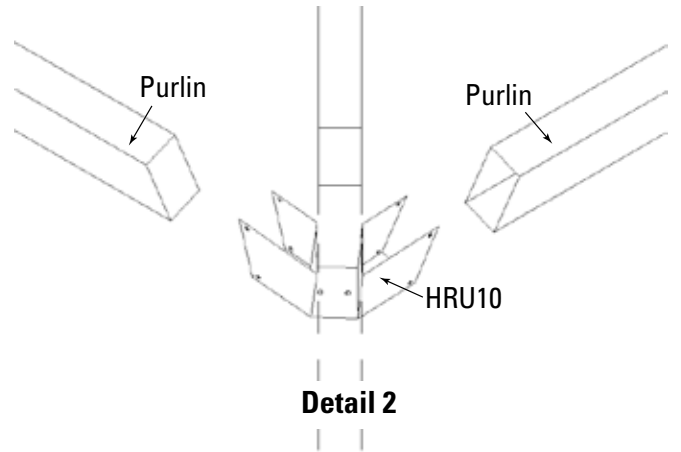
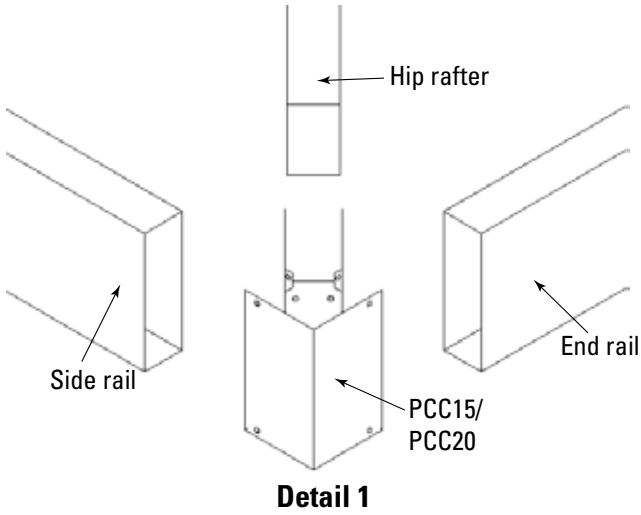
6. COMPONENT ASSEMBLY DIAGRAM - HIP END



Hip End



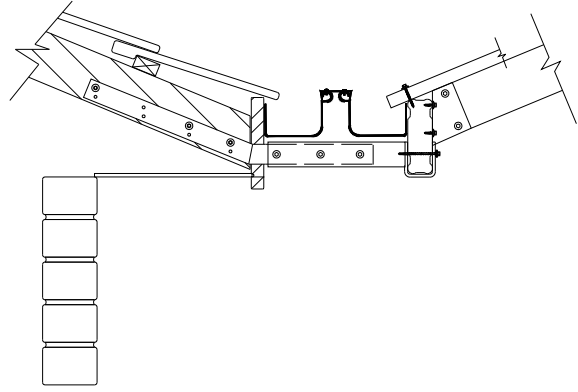
Beams in Hip End



7. TYPES OF ATTACHMENT BRACKETS

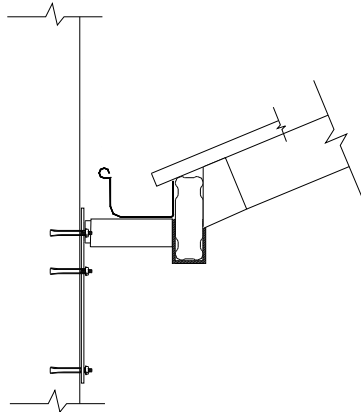
Gutter Offset (PTFQ1)

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



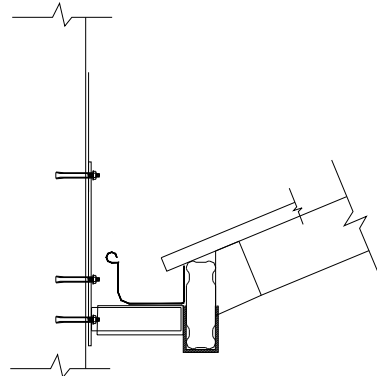
Offset Masonry Wall Bracket Down (POW1D1A)

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



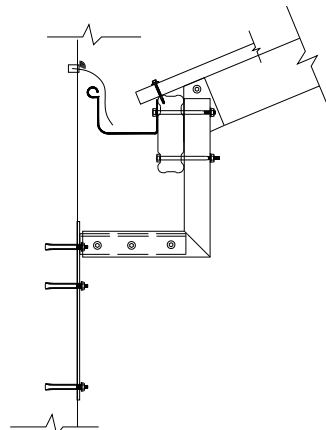
Offset Masonry Wall Bracket Up (POW1D12)

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



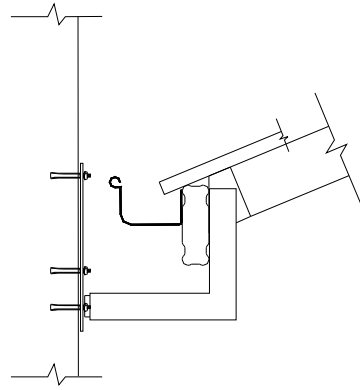
Offset And Elevated Masonry Wall Bracket Down (POW2D1A).

Same as above with option of elevating.



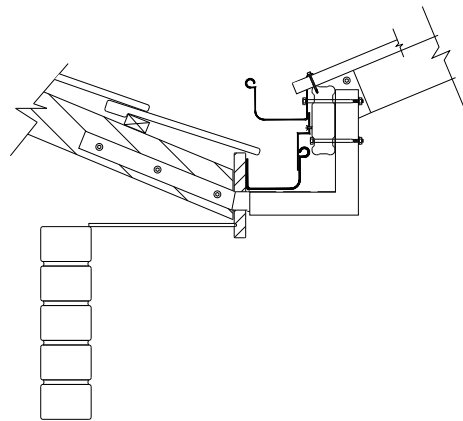
Offset And Elevated Masonry Wall Bracket Up (POW2D2A)

Same as above with option of elevating.



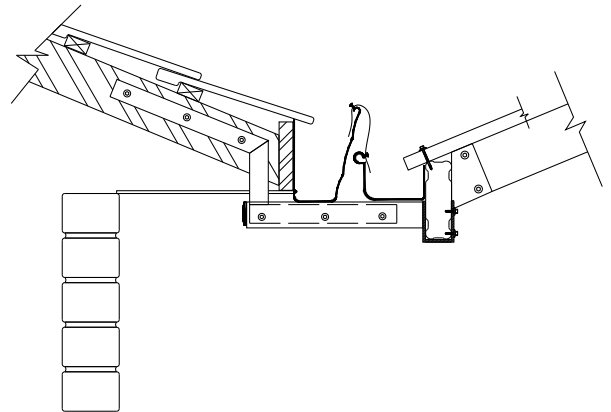
Gutter Elevated (PTFQ2)

Through fascia with elevated bracket.



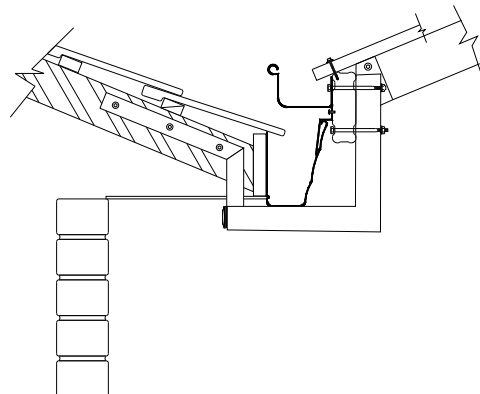
Gutter Offset With Existing Fascia Gutter (PUEF1)

Through eave attachment bracket, commonly used with Aceline fascia gutter.

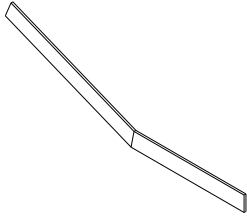


Gutter Elevated With Existing Fascia Gutter (PUEF2)

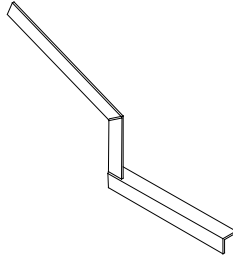
Same as above with option of elevating.



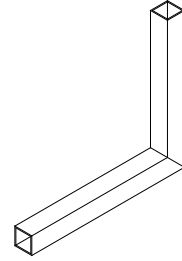
8. COMPONENTS



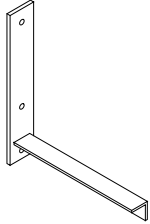
Rafter Bracket (UCE)



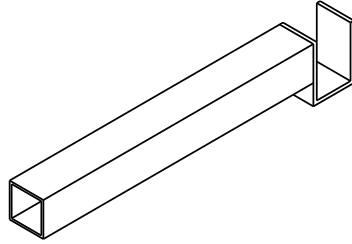
Under Eave Rafter Attachment Bracket (UCC)



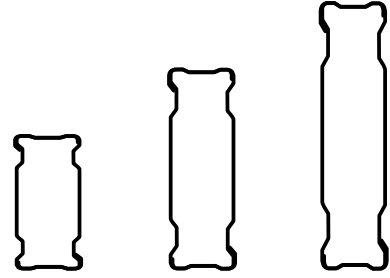
Offset and Elevated Bracket (UCB)



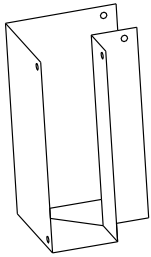
Offset Masonry Wall Bracket (UCL)



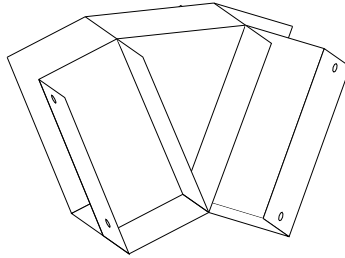
Beam/Rail Support (UCF/UCH)



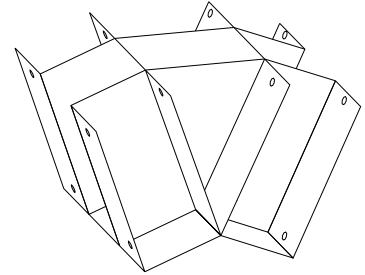
FIRMLOK® Beam (BS100/BS150/BS200)



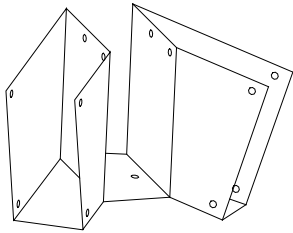
Beam/Rail Corner Connector (HCC15/HCC20)



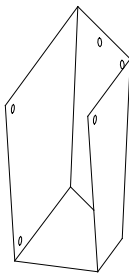
Gable End Crown Connector (CC10)



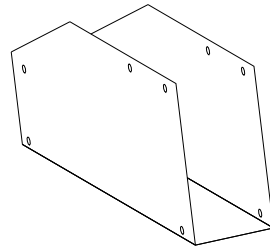
Intermediate Crown Connector (CCD10)



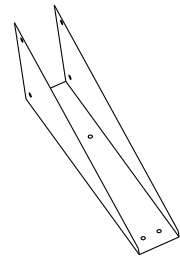
Purlin/Hip Rafter Connector (HRU10)



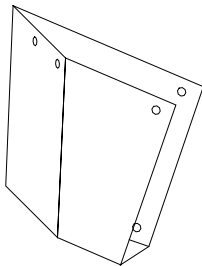
Purlin/Hip Rafter Connector (HRU10L, HRU10R)



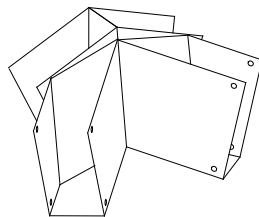
Collar Tie (CTC10)



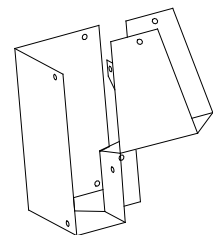
Rafter/Rail Connector (GRBC10)



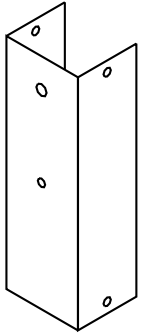
Dutch Gable Hip Rafter Connector (DHRC10L/DHRC10R)



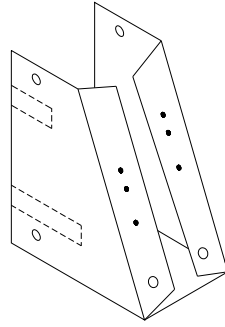
Crown/Hip Rafter Connector (HRC10)



Side and End Rail Hip Rafter Connector (PCC10/PCC15/PCC20)



**Purlin/Crown Connector
(CONB100C)**



**Rafter/Side Rail Connector
(RRC10)**

Aluminium/ Steel Post

(PS90N150

PS90N200

PS75N150

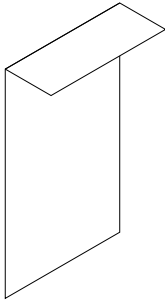
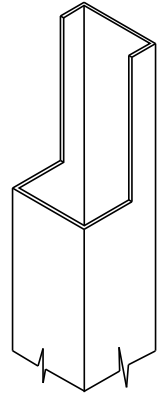
PS75N200

PA90M150

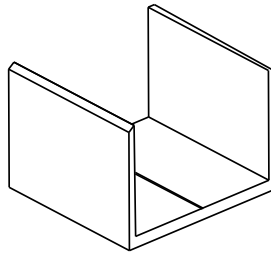
PA90M200

PA75M150

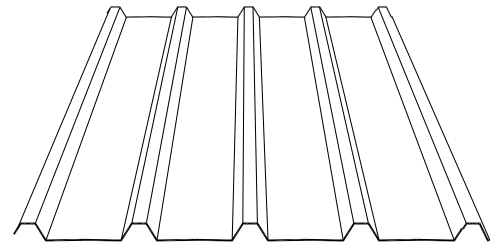
PA75M200)



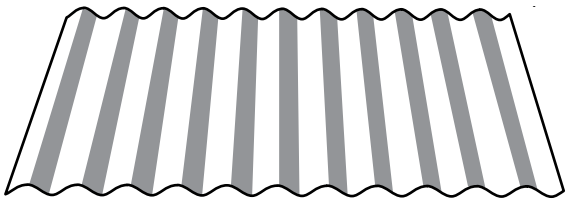
**Post Face Bracket (PBP90150/
PBP90200
PBP75150/ PBP75200)**



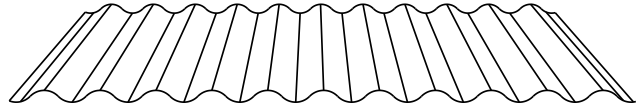
**Aluminium Bottom Connector
(CON75/CON90)**



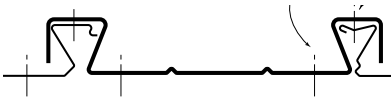
**TRIMDEK® (RS2) and Light Panel
(RPC2)**



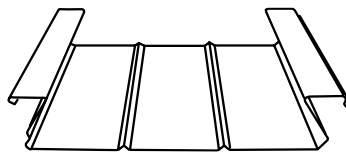
CUSTOM ORB® Roofing (RS6)



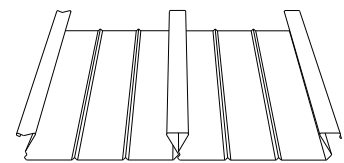
Polycarbonate Roofing (RPC6)



Fibreglass Light Panel (RFG5)



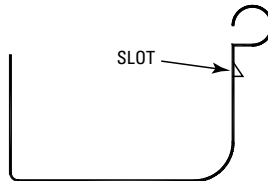
**FLATDEK® Roof Sheet
(RS5)**



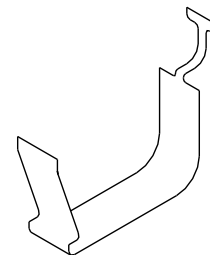
FLATDEK® II Qld Only (RS5Q)



Gutter (GQ NSW & Vic Only)

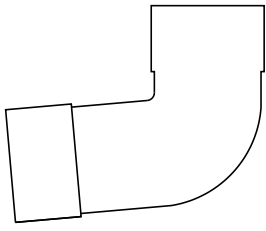


Gutter (GQSL Qld only)

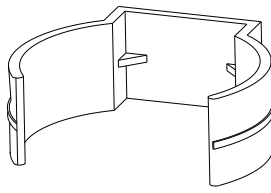


**Gutter Bracket
(QS15)**

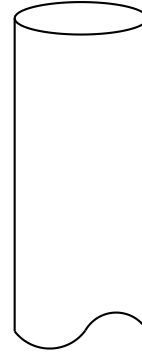
8. COMPONENTS (CONT.)



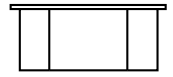
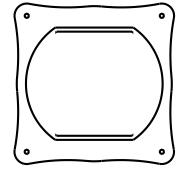
PVC Elbow (EL6590/EL8090)



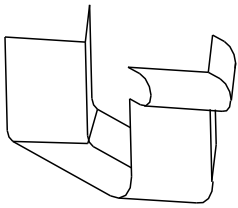
Downpipe Strap (DP65S/DP80S)



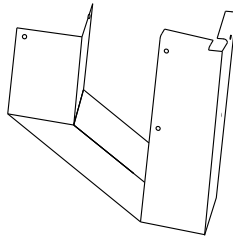
PVC Downpipe (DP65/DP80)



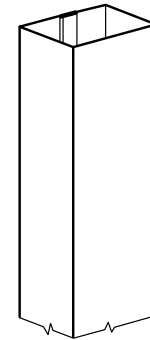
PVC Outlet (OL65/OL80)



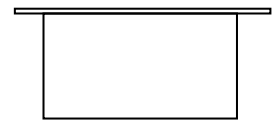
Precast Gutter Corner (QEC)



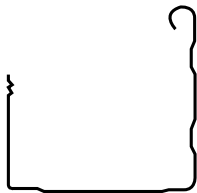
External Precast Gutter Corner (GSTCE)



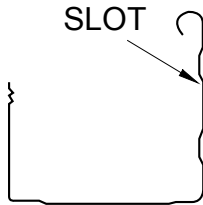
Steel Downpipe (DPS10075/ DPS10050)



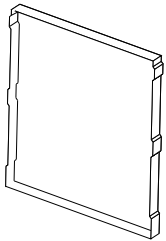
Metal Outlet (OL10075/OL10050)



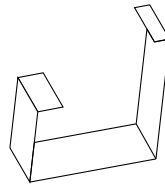
Trimline Gutter (GSTR)



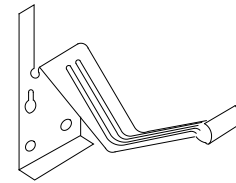
Trimline Slotted Gutter (GSTRSL)



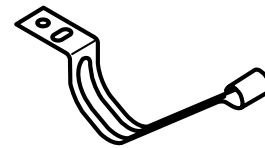
Trimline Gutter Stop End (TGSSE)



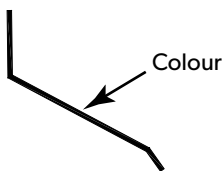
Trimline Gutter Join Cover Plate (TEGS)



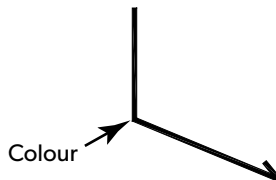
Trimline Gutter Bracket (GSTB)



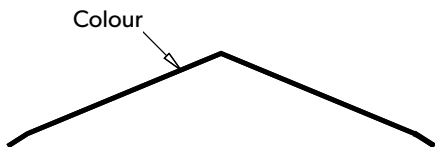
Internal Trimline Gutter Bracket



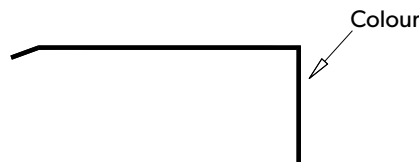
Top Dutch Flashing (RA752)



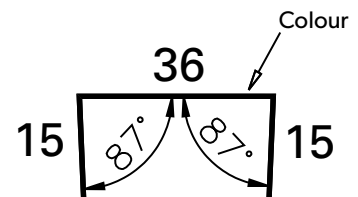
Bottom Dutch Flashing (RA751)



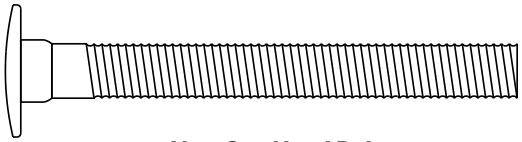
Ridge Capping (RC2/RC6)



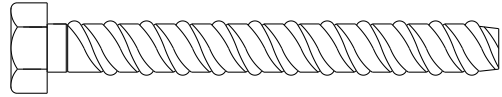
Barge Capping (GB/GB3)



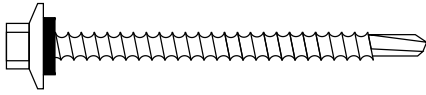
Gutter to Gutter Flashing (FLG5)



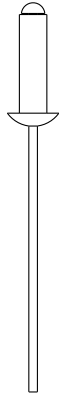
Nut, Cup Head Bolt and Washer (FBC60/FBC70/FBC90)



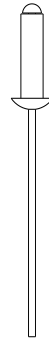
Screw Anchor (SA1008G)



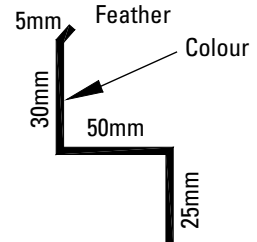
Metal Tek® Screw (FT65MR/FT75MR/FT45MR)



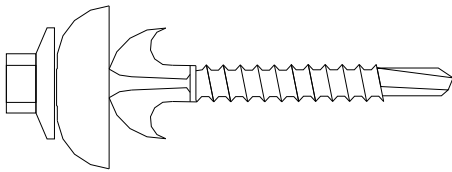
4.0mm Rivet (FR64)



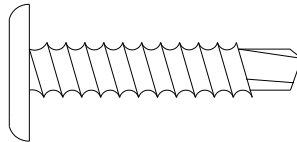
3.2mm Rivet (FR72)



Masonry Wall Flashing (FLG7)



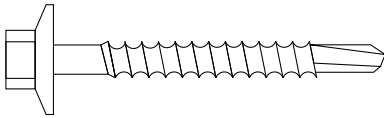
Wingedtek (FT50MP/FT65MP)



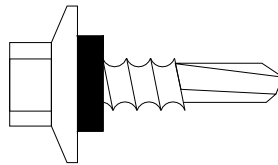
Metal Tek® (FWH22)



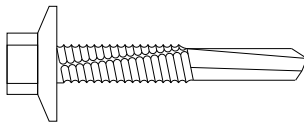
Silicone (SiLic)



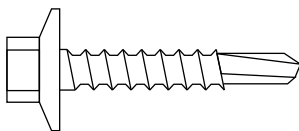
Metal Tek® (FT45M)



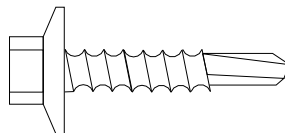
Metal Tek® (FT20MN)



Metal Tek® screw (FT32MS)



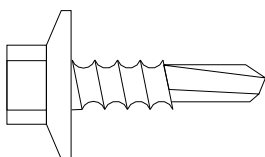
Metal Tek® Screw (FT30MS)



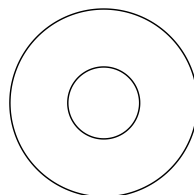
Metal Tek® (FT16M)



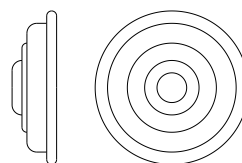
Roof Sign



Metal Tek® Screw with Washer (FT20M)



Metal Washer (Wash8)



Washer for Fibreglass (WG/FG)

9. GETTING STARTED

Please read the following instructions carefully before starting the project.

Suggested Tools

- 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

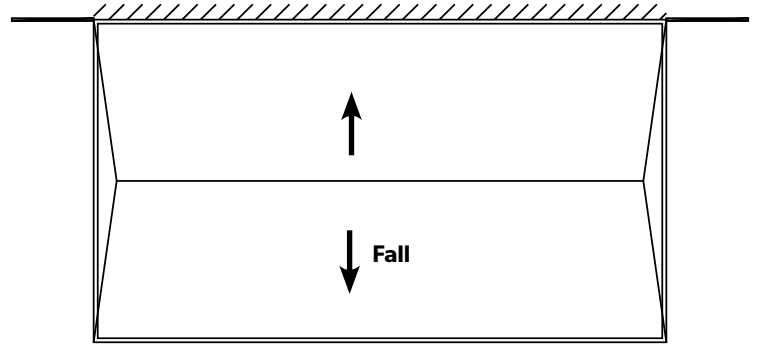
Site Preparation

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

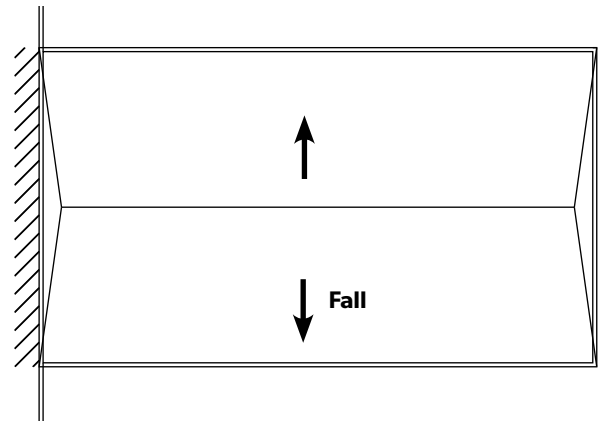
Clear work area of obstacles and debris.

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

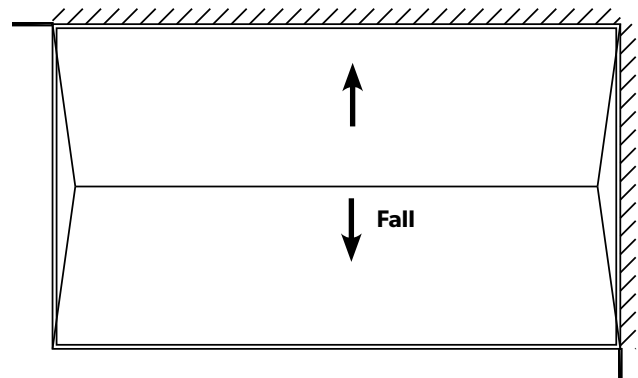
If there is a discrepancy between what you have received and the Bill of Materials, please contact the store where purchased immediately and prior to commencement of work.



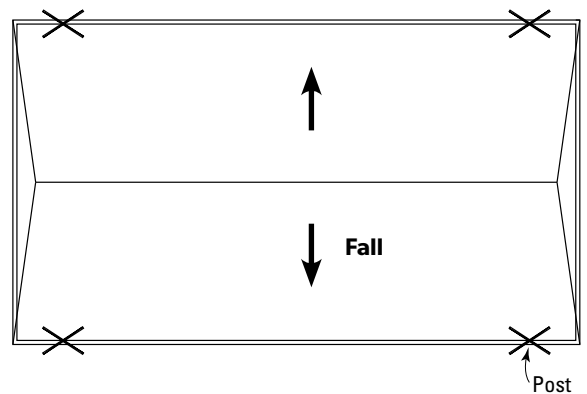
Structure 1: Attached at long side



Structure 2: Attached at short side



Structure 3: Attached at two sides



Structure 4: Freestanding

10. ATTACHMENT BRACKETS

Under Eave/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 either through the fascia or through the eave, 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/truss at the back of the fascia.

Position the bracket on the side face of the rafter/truss 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.

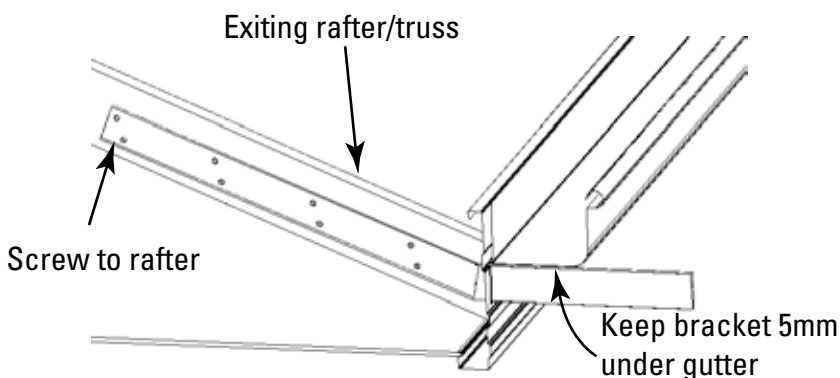
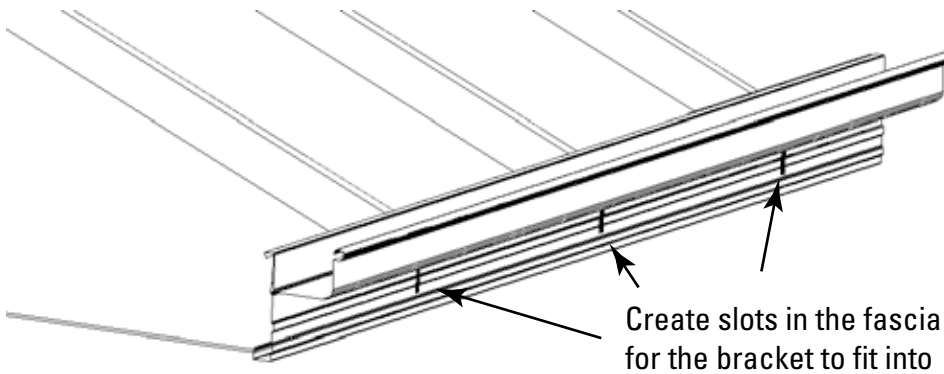
The bracket is designed for a 22.5 degrees pitch, and it is paramount that the horizontal blade of the bracket is level as it supports your perimeter beams.

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 centres and where possible attach to the middle of the rafter/truss to prevent splitting of the member.

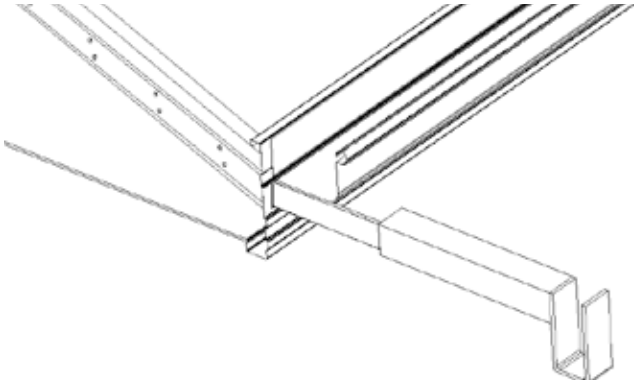
If using the offset bracket, they are designed to have both the new and existing gutters line up at the top. To achieve this, fix the bracket within 5mm on the underside of the house gutter.

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



10. ATTACHMENT BRACKETS (CONTINUED)

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



If using an under eave bracket, the 2nd stage fits exactly the same way.

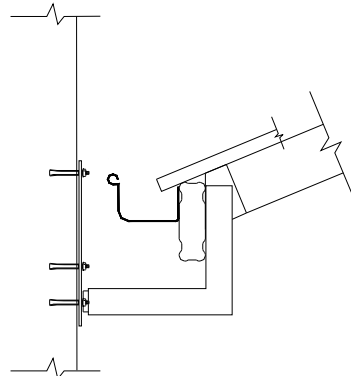
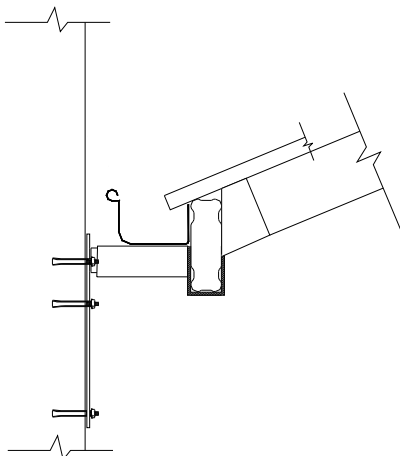
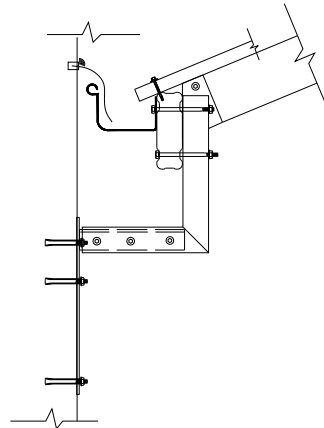
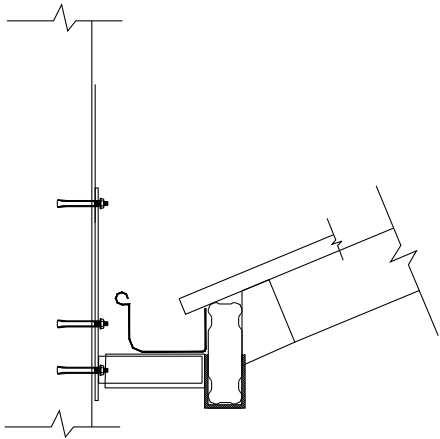
Wall Attachment Bracket

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.

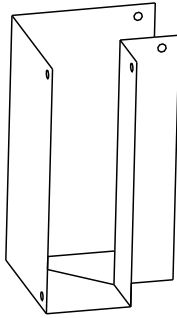
Refer to the drawings for correct fixing methods.



11. SIDE AND END RAILS - FREESTANDING OR ATTACHED

You Will Need:

- Beams-Rails
- Corner Connectors
- Gutter Brackets
- Fixings



Reading the bill of materials, select the correct length beam-rail for the section you are to work on. E.g. Side-end beam/rail.

Place beam on supports, cut to required length less 5mm and remove the plastic from the ends. Fit one (1) corner connector to each end using Teks® and rivets as per drawing. Make sure beam is housed all the way home into connector before fixing off.

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

Prior to lifting beam into position, fit gutter brackets at 1200 centers to beam with fall to outlet (downpipe) 1mm per metre and remove remaining plastic with a Stanley knife cutting along the expose edge of the beam.

Lift beam/rail carefully onto the rafter attachment brackets. For freestanding, place onto stands at the correct height.

For next beam length, deduct width of beam already fitted to corner connector + 5mm for ease of fitting. Fit gutter brackets where required and lift into position on stands. Fit into corner connectors by sliding into the corner connector. If tight, gently tap other end until home.

Prepare and fit opposite end in same manner. Fix off as drawing.

Select side beam/rail and place on supports. Cut to length the same as the other side, fit gutter brackets to beam with fall to outlet. (Downpipe) and lift into corner brackets with the help of stands.

You may need some assistance to align the front beam/rail with side beams/rails corner connectors.

Once home, fix off with a few Teks®.

Keep in mind that you will need to square the structure, so do not complete the fixings on the front edge beam/rail at this stage.

Square the Project

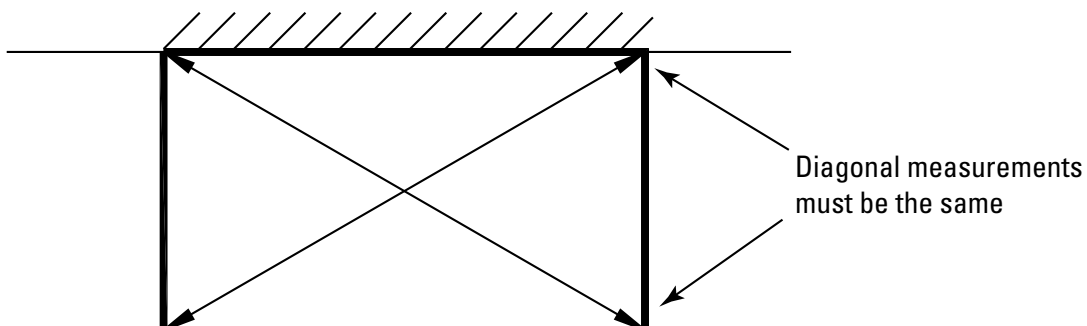
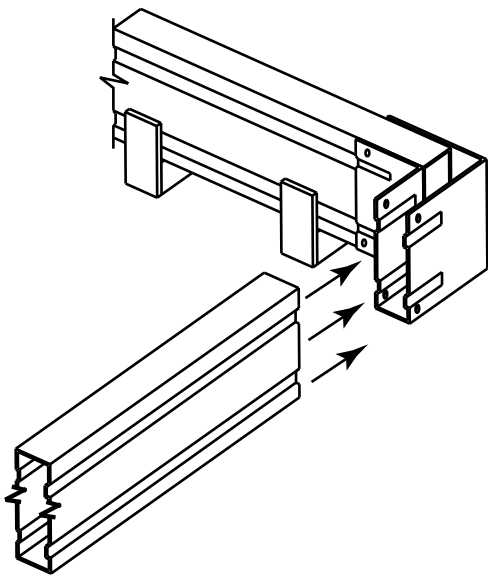
With all the beams/rails in position with a few Teks® supporting the corners, you can now square the frame.

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

When square, brace squared corner by temporarily attaching a straight edge across the corner on the under side of the beam/rail.

Complete fixings where required.

Diagonal measurements must be the same.



12. FITTING OF POSTS

You Will Need:

- Post
- Base Connector
- Screw Anchor
- Post Bracket Plate
- Fixings
- Slab

Determine post position on beam/rails and mark. Plumb down and mark post position on concrete.

Measure from under side of beam/rail to concrete and mark this measurement on the post and cut to length.

Reposition post on beam/rail, plumb and mark around base.

Drill a 10mm hole in base connector and place the connector on the slab. Mark the slab where the screw anchors are to go and drill a hole using an 8mm masonry bit.

Maintain minimum edge distances as per Engineer's Detail and fix off.

With the check out of the post facing outwards, place the bottom of the post over the base connector and bring the post over at top towards the beam/rail. You will have to lift the structure a little to enable the post to slip under the beam/rail.

Once plumb, clamp in position and fit to base. For top fixings read paragraph about 'Fixing off posts' (below).

Footings

Determine post position on beam/rails and mark. Plumb down and mark position on ground.

From certified drawing, check depth and width of footing 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 certified drawing.

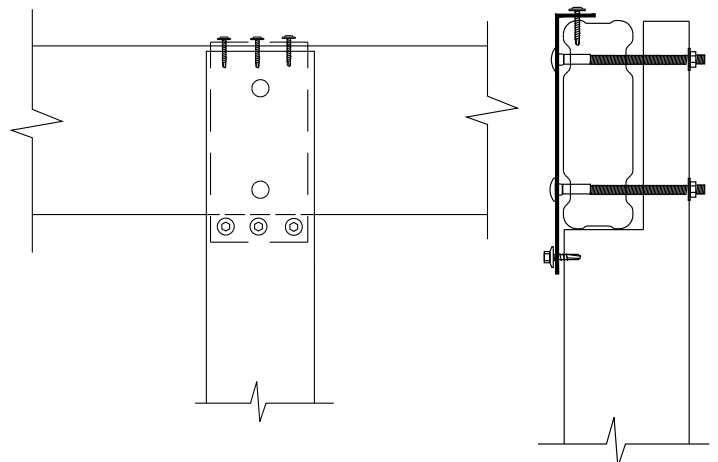
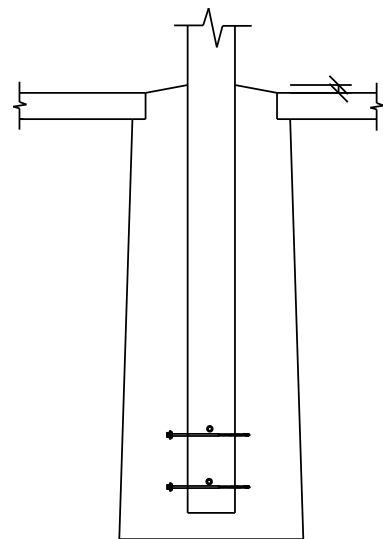
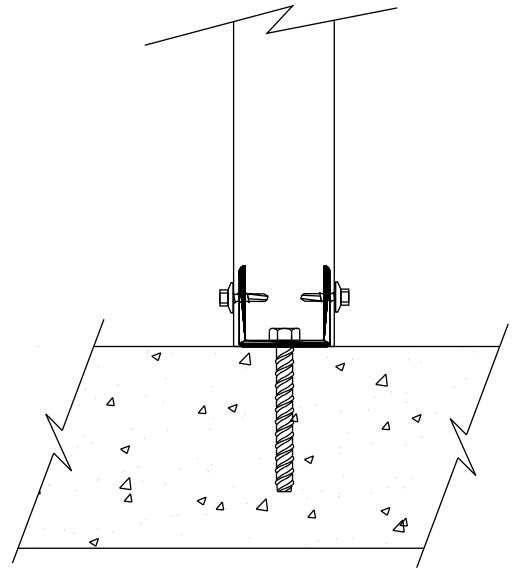
Place post in hole, lift to underside of beam and clamp in plumb position.

Fixing off the Posts

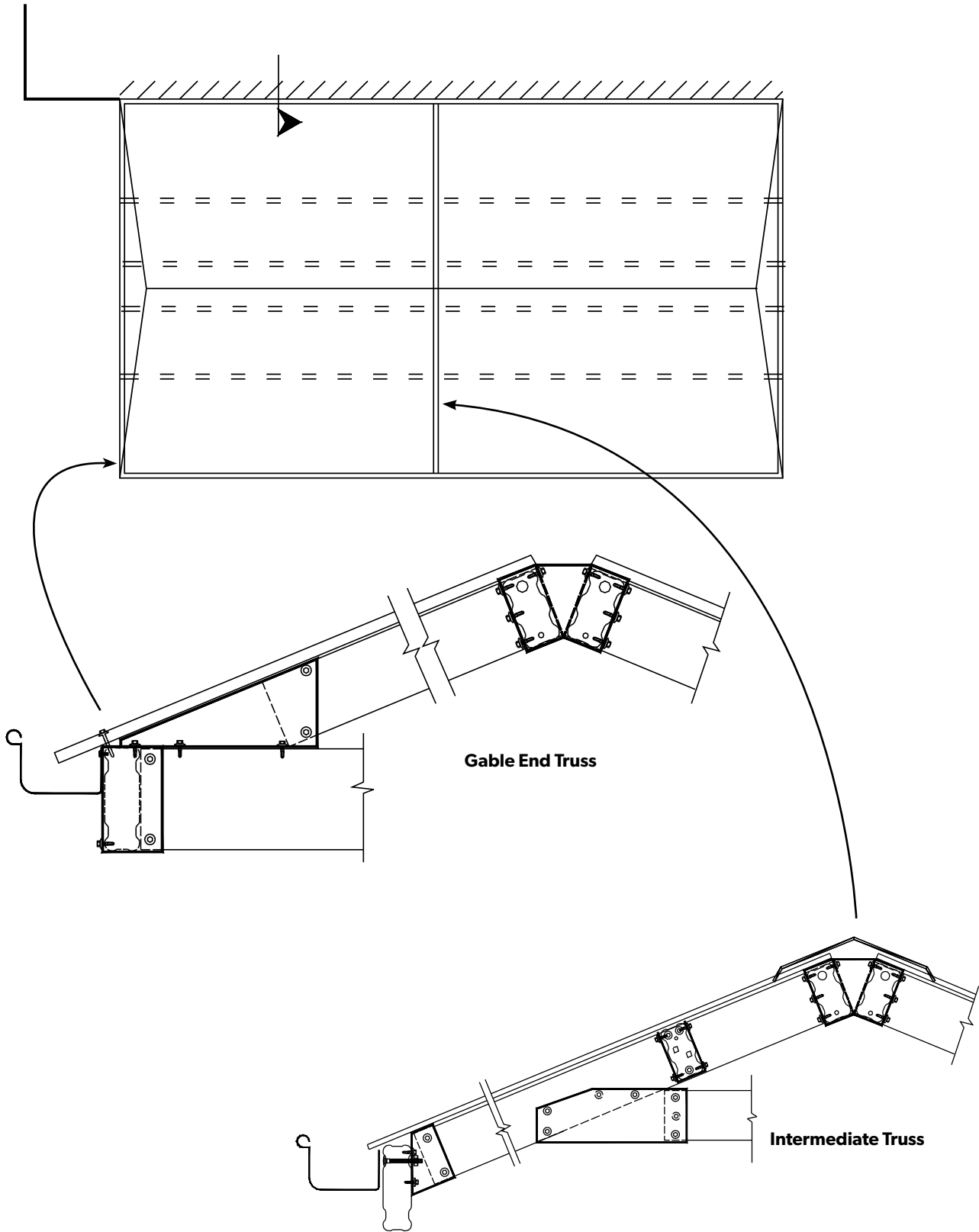
With posts in position and clamped, fit the Post Bracket Plate over the face of the post and fix off using wafer head screws through the top of the post and bracket and fix off into the post at the bottom of the bracket.

Using the predrilled holes in the post as a guide, drill two 9mm holes through the beam/rail and the post bracket plate.

Mix concrete as per manufacturers instructions and pour into holes while checking for plumb.



13. ROOF STRUCTURE - GABLE END



14. GABLE END TRUSSES (NOT HIP OR DUTCH GABLE)

You Will Need:

- Rafters
- Rafter Connectors
- Crown Connector
- Purlin Connectors
- Fixings

Note: Rails are the side and end beams.

Note: For Gable End truss, 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. (triangular) to both end rails as per the drawing. Cut a rafter to the required length as shown on the plan.

On the ground, and with the flat side of the connector facing in towards the job, feed a rafter into the Crown connector until the top edge of the rafter is just touching the leading edge of the connector and make sure the connector is square to the rafter on both sides. Clamp and fix off square.

Note: Some Crown connectors will require the purlin connectors to be clipped on and fixed off as per drawings.

With both rafters attached, drill a 9mm hole through the completed crown connector and rafter.

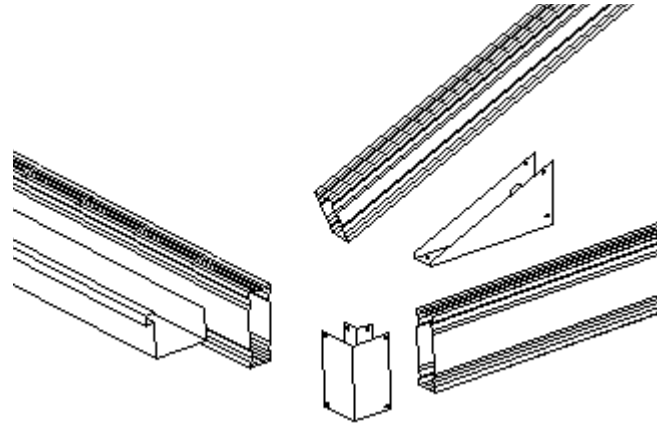
Fix off as per drawings.

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

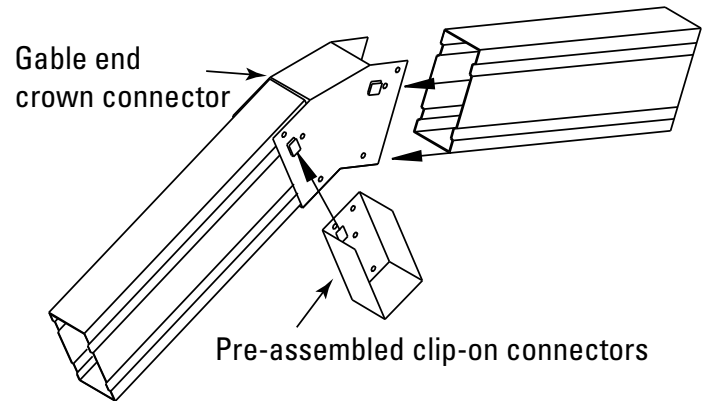
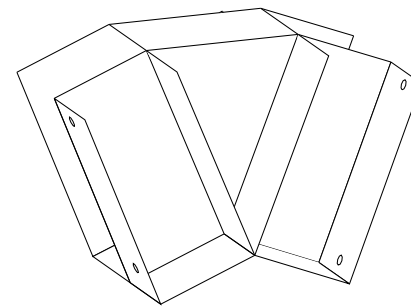
Note: Trusses, once in the side rail connector can sit unaided, but be sure to apply a brace as soon as practical.

The software calculates the length of beams in the trusses 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.



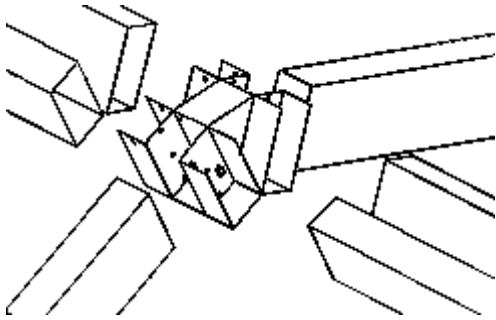
Exploded View of Gable Truss at End



WIND CLASS	= N1-W28N
PLAN AREA	= 63.0 SQ.M
PERIMETER	= 32.0 M
ATTACHED	= 16.0 M
MODEL	= 1
SOIL TYPE	= SAND

Figure 15

15. INTERMEDIATE TRUSSES



You Will Need:

Rafters

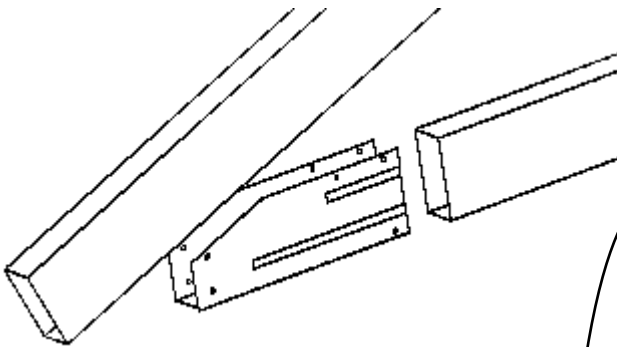
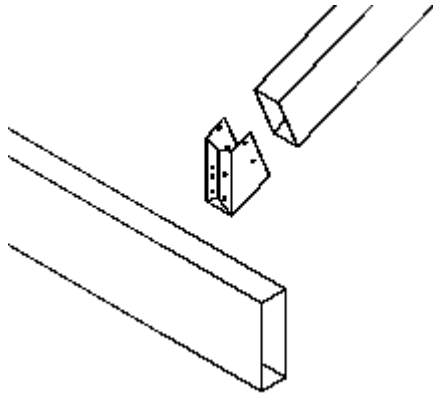
Intermediate Crown Connector

Purlin Connectors

Collar Tie

Rail-Rafter Connector

Fixings



WIND CLASS = N1-W28N
 PLAN AREA = 63.0 SQ.M
 PERIMETER = 32.0 M
 ATTACHED = 16.0 M
 MODEL = 1
 SOIL TYPE = SAND

Note: Prepare trusses on the ground.

From the BOM, select 2 intermediate rafters, 2 rafter rail connectors and 1 Crown connector.

Feed the rafters into the connector until the top edge of the rafter is just touching the leading edge of the connector. Make sure rafters are square to the crown connector and fix off as per drawing.

To position the intermediate truss/es, measure along the side rail between the 2 Gable End trusses for the required distance (halfway for 1 intermediate truss, one third (1/3) distance for 2 intermediate trusses.)

Cut the intermediate rafter to length (found on the plan drawing) and house as previously described into the intermediate Crown connector.

With rafters fixed to crown connector, check internal measurement of beam/rail is equal to truss as diagram.

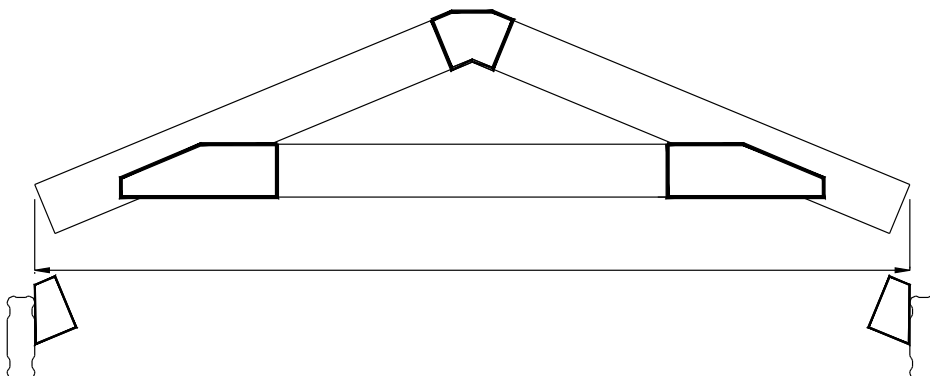
Position collar tie to truss as per plan drawing detail and adjust the position of tie until it is equal length on both sides of the rafter, maintaining your original overall measurement. Fix off connector to collar tie.

Fix off to rafter.

Temporarily fit ridge purlins from end truss to intermediate truss for bracing while completing trusses.

The software calculates the beams in trusses 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.



16. PURLIN CONNECTORS

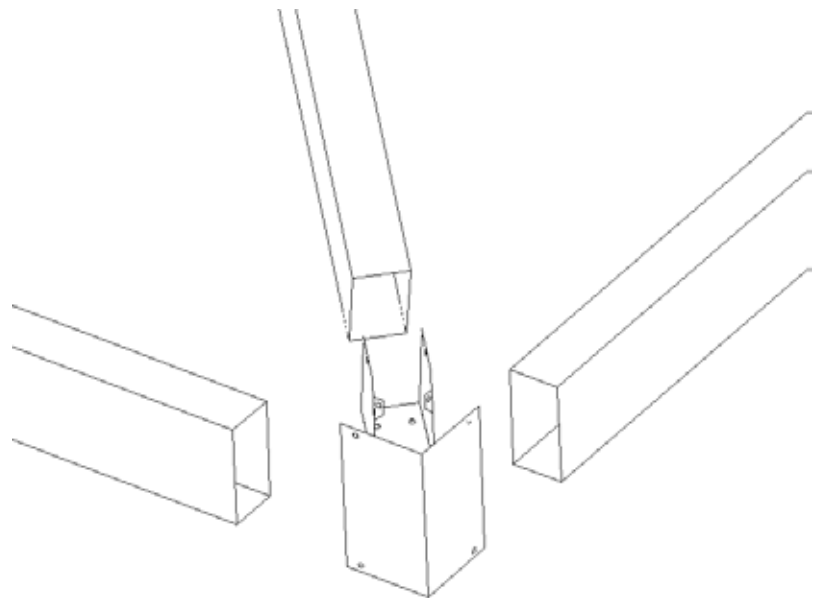
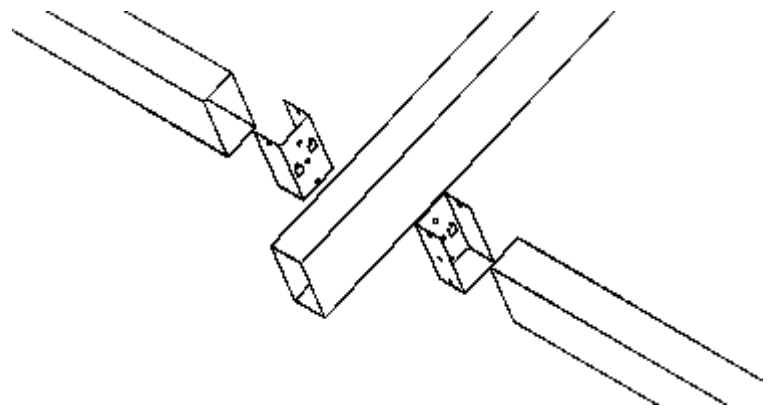
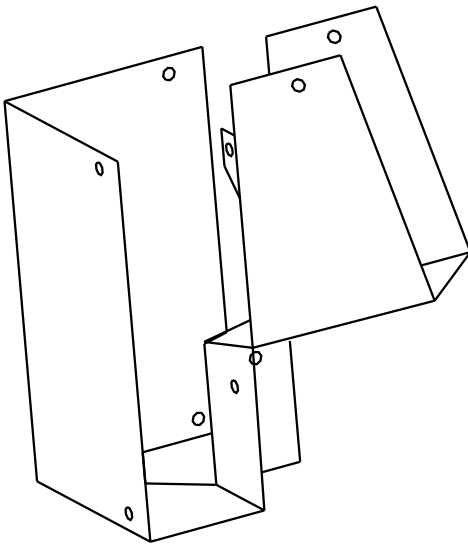
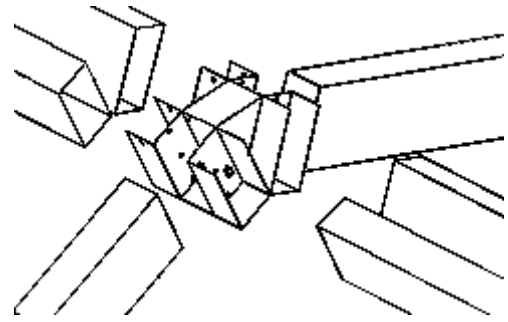
Purlins are what the roof sheets fix to and are attached at 90 degrees to the rafters. They are spaced to the spanning capabilities of the roof sheet being attached. (See roof fixing drawing).

At this point, the ridge purlins should be in position to help support the structure. If not, plumb gable end and intermediate trusses and measure the distance between the Crown connectors.

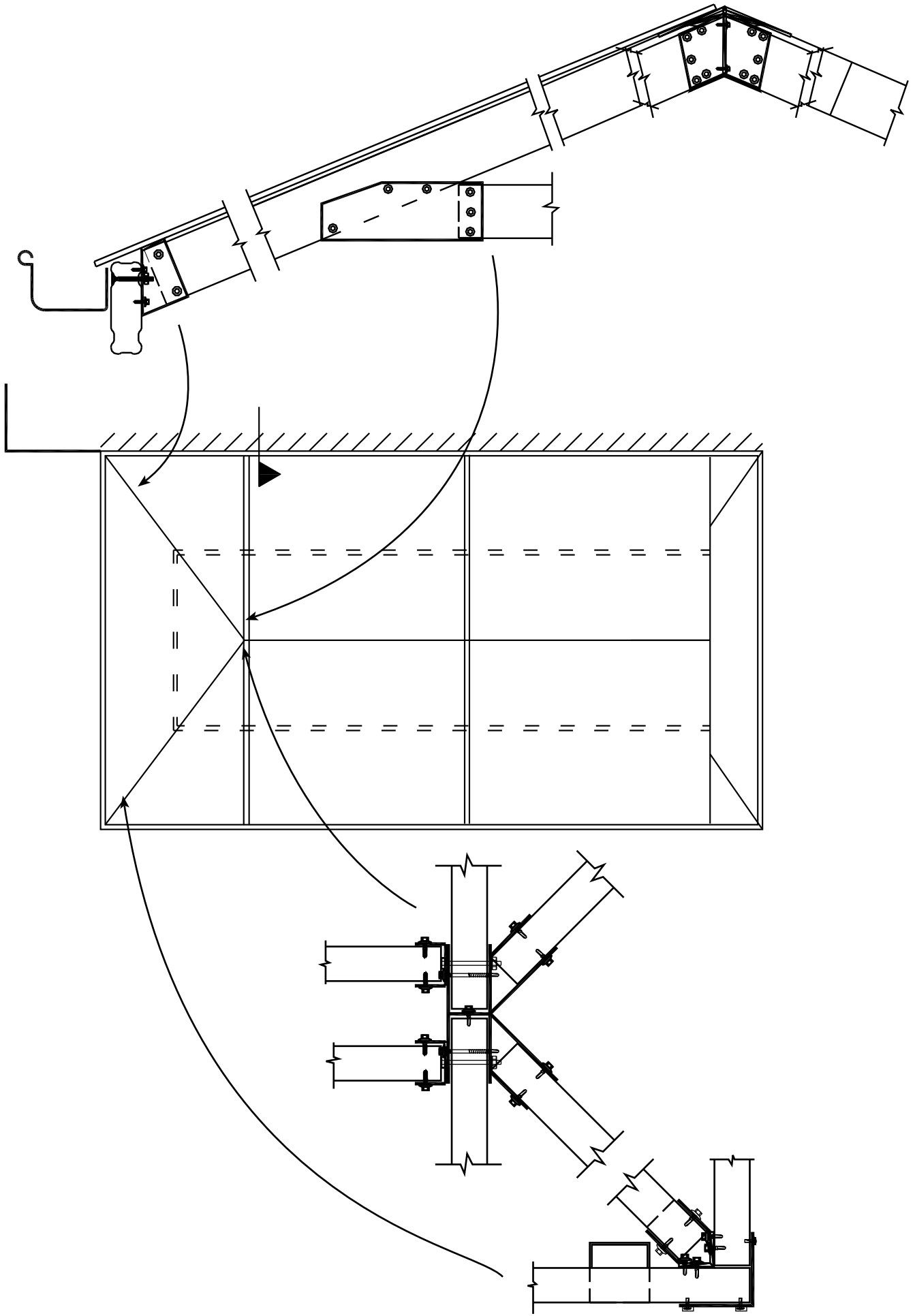
Cut and fix ridge purlins to this measurement and fix into the Crown connector.

Measuring halfway up the rafter or to the required span of the roof sheet, attach the purlin bracket flush with the top of the truss.

Repeat for other end.



17. HIP END



17. HIP END (CONTINUED)

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 below.

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 trusses 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 truss would be 3000mm.

Working from the dimensions on the plan drawing, cut rafters to length and house into the hip end Crown connector.

Fit collar ties to rafters, cut and fit collar tie beam. Fix off as per drawing.

Fix side rail/rafter connectors to side rails and lift completed truss into side rail connector.

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

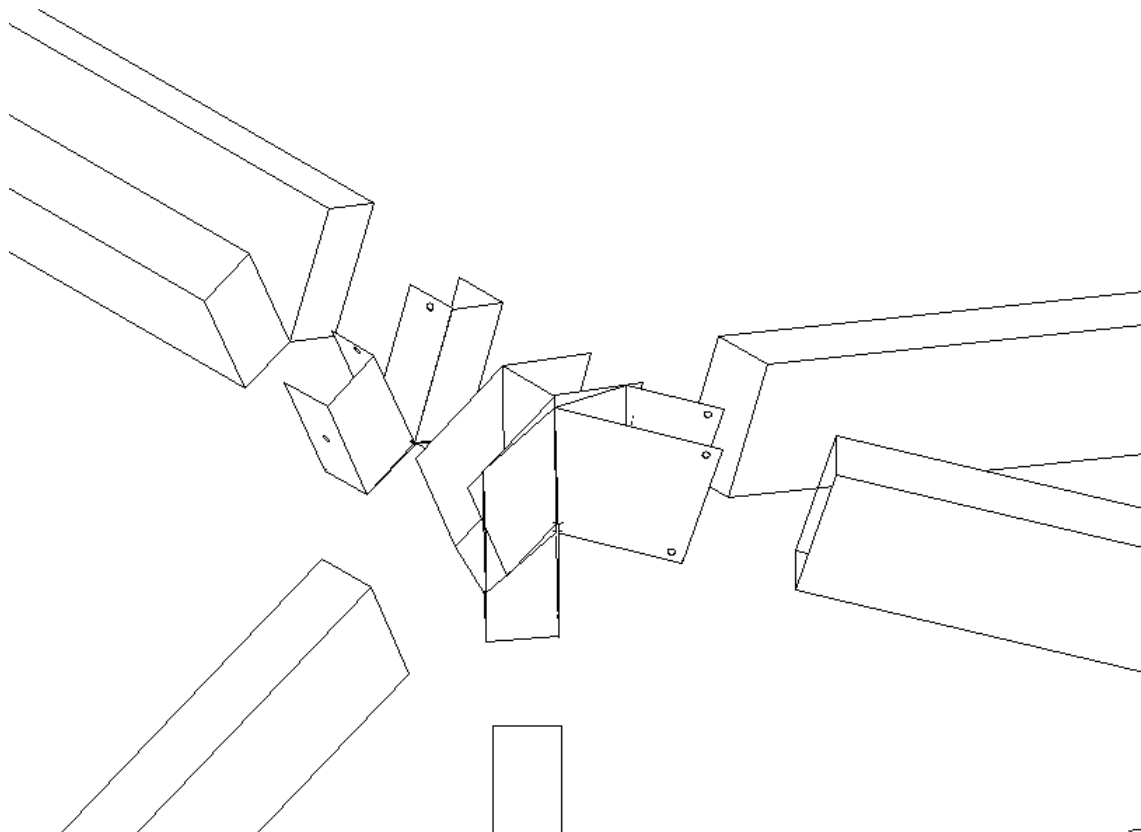
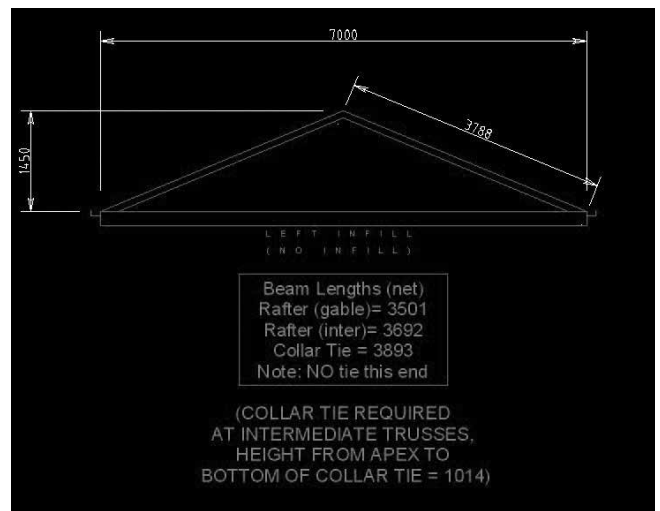
Fix off as per drawing and repeat for both sides.

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

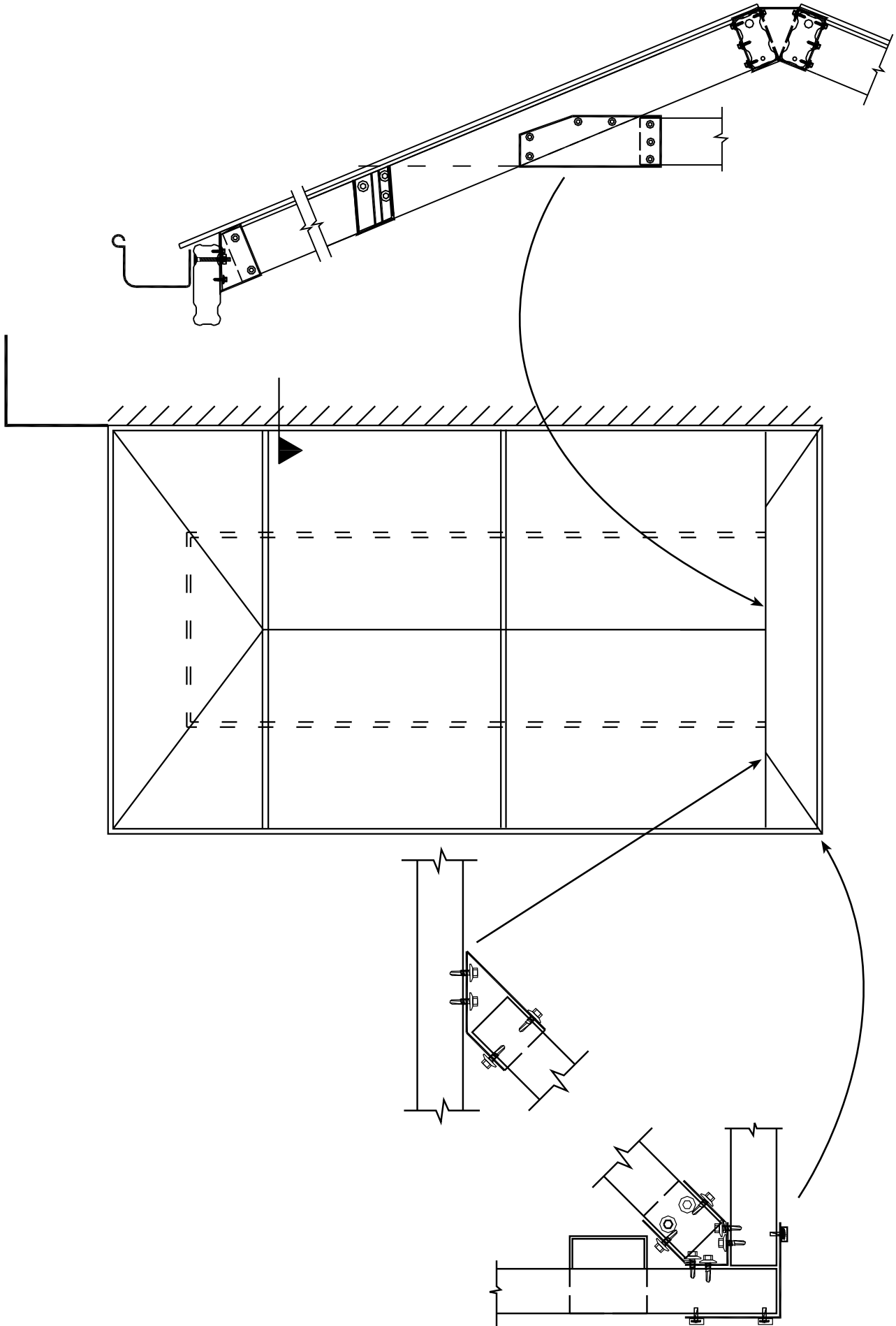
Note: Usually, a purlin will only be required on the hip end where there are purlins in the main roof structure. (TRIMDEK®/CUSTOM ORB®)

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

Fit intermediate rafters and purlins as previously described.



18. DUTCH GABLE END



18. DUTCH GABLE END (CONTINUED)

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

For the purposes of this description, it is assumed the attachment brackets are in place or the structure is freestanding 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 trusses 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 truss would be 1200mm from the end rail.

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

Note on the plan, intermediate trusses have the collar tie set down .7 from the apex.

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

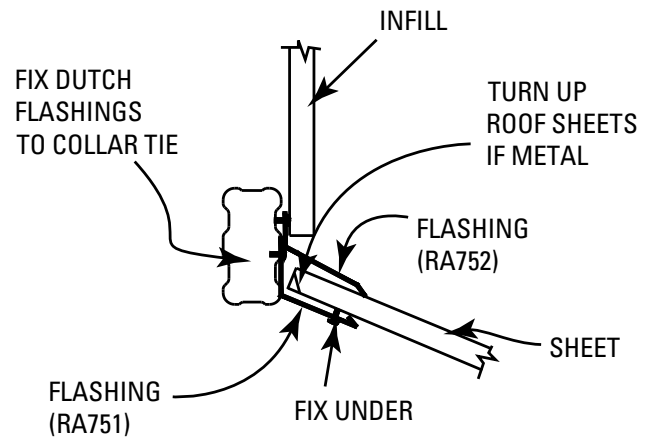
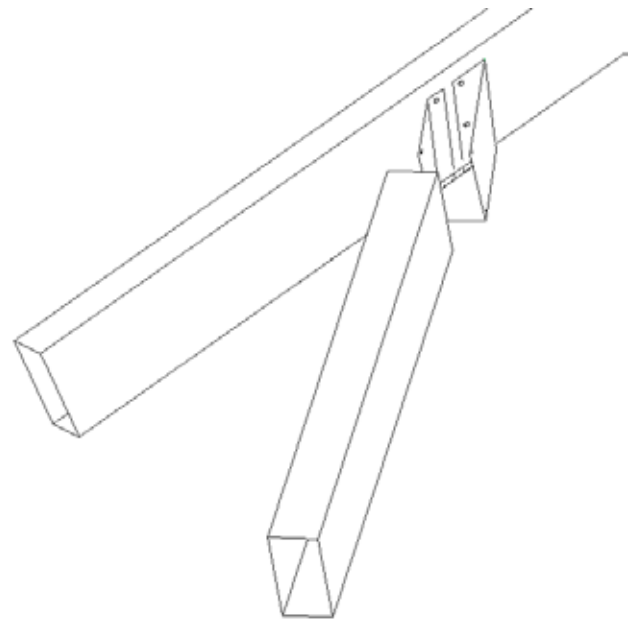
Fix the top of the bracket level with the bottom of the collar tie on the Dutch Gable End truss. Apply both sides.

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.



19. 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.

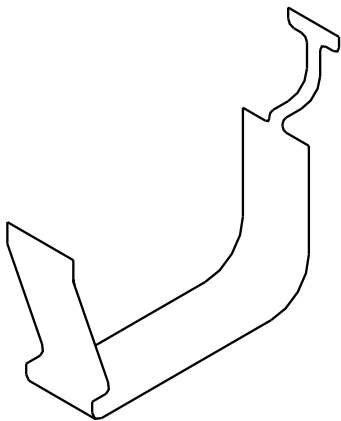
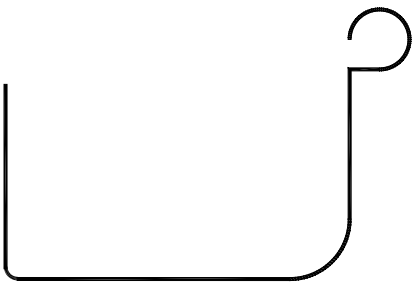
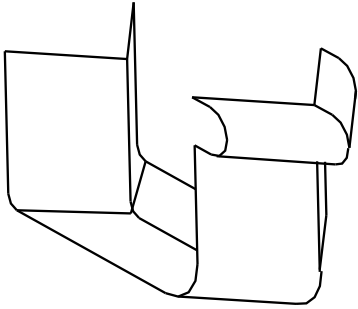
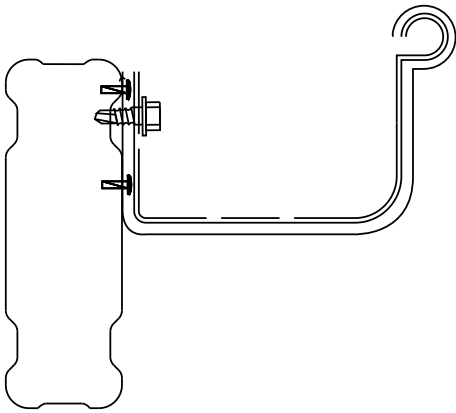
Place downpipe outlet on bottom side of gutter in required position and mark internally around base.

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 gutter.



20. FITTING FLATDEK® ROOF SHEETS

You Will Need:

- Aluminium Angle
- Roof Sheet
- Light Panel
- Fixings Roof Sheet
- Fixings Light Panel
- Flashings

Note: Please read the relative drawings for fixing of roof sheets.

Ready for Roof

Place and fix off remainder of purlins and find 20x12mm angle to be fixed along the top inside edge of front and rear beams/rails. This is used to hide the screws.

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.

Laying Pattern for FLATDEK®

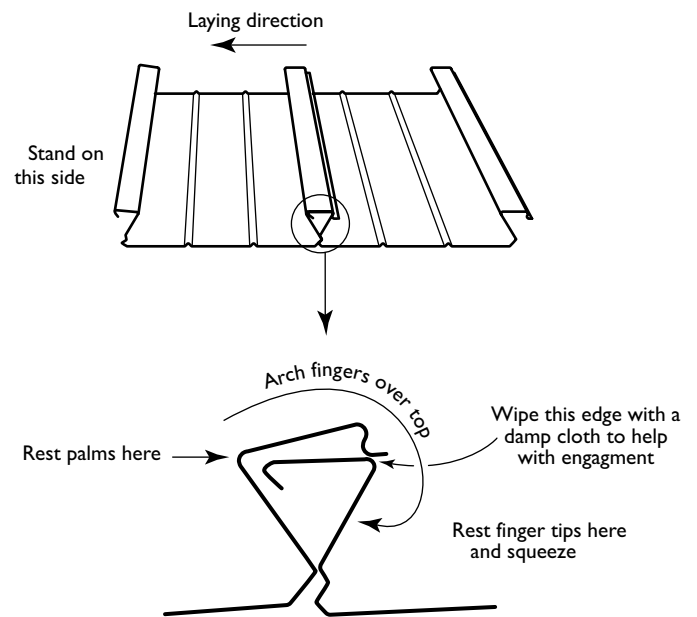
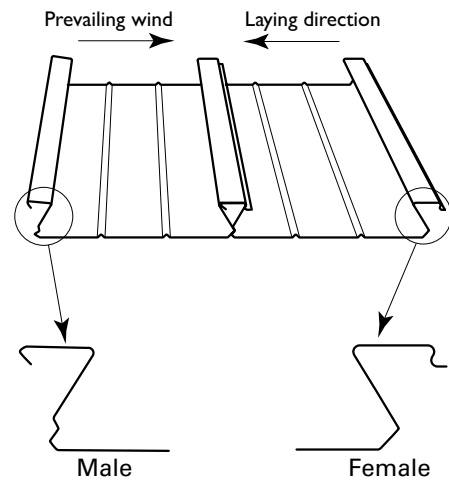
When using FLATDEK®, fit supplied channel to end of sheets as per dwg to top edge and Gable Ends.

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.



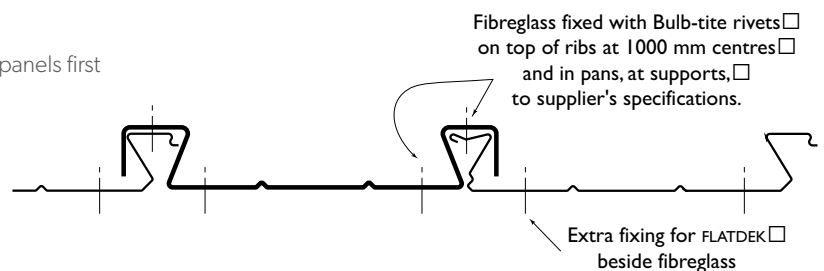
21. FITTING FLATDEK® LIGHT PANELS

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.



22. FITTING TRIMDEK® 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.

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

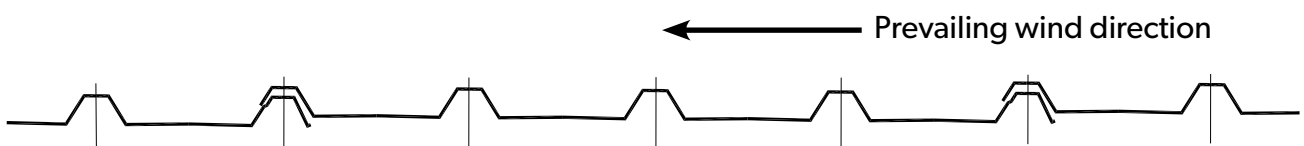
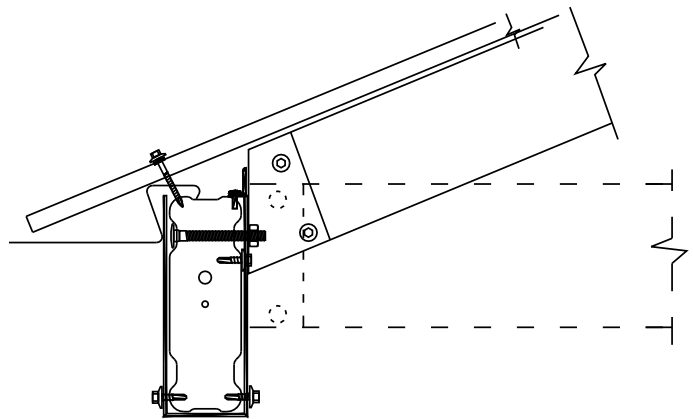
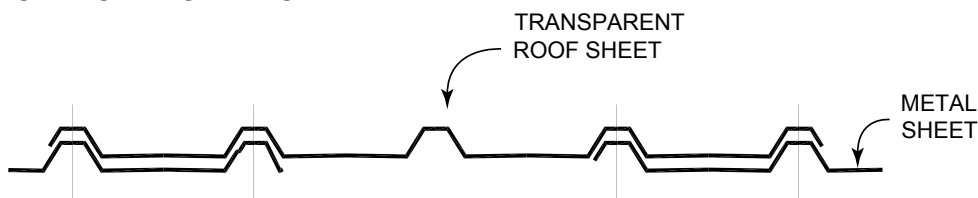


Figure 14

23. FITTING OF TRIMDEK® 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.



24. FITTING CUSTOM ORB® 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 corrugation of the sheet into the gutter return lip.

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

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.

25. FITTING OF FLASHINGS

You Will Need:

- 4 Barge Capping
- 1 Ridge Capping
- Fixings

25A. 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 Crown connector at 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.

25B. 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.

26. PREPARE DOWNPIPE

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.

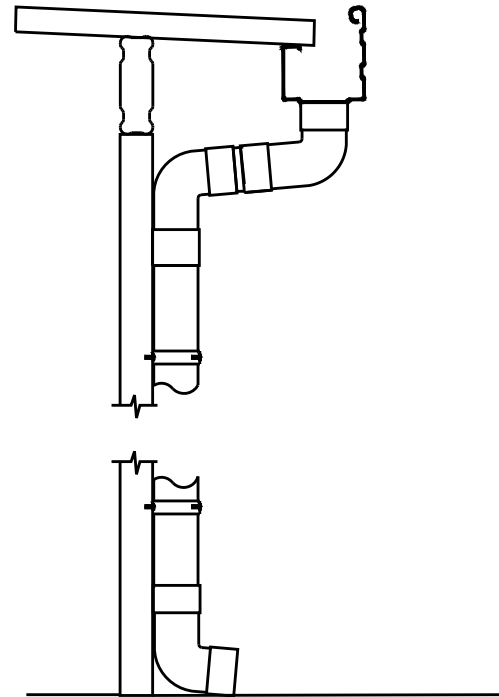
Drill a pilot hole in bottom of gutter and then remove with snips. This can be done when preparing front gutter.

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. (Example shown for overhang only.)

Fix off as per CcBuilder drawings.



27. CLEAN UP INSTRUCTIONS

On completion remove all foreign objects from all the surfaces. Fit 'No Foot Traffic' safety sign. 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 The LYSAGHT LIVING® Maintenance & Structural Performance Warranty brochure is available at www.lysaghtliving.com.au.

Congratulations

Your new structure is now ready to use.

28. WARRANTY & MAINTENANCE

This Is Your Lysaght Product Warranty

Lysaght warrants that your selected structure, will as a minimum, subject to the conditions set out below, performs as follows:

Lysaght warrants that the design of your selected structure will meet relevant Australian Standards and building codes at the time of purchase.

Lysaght warrants that BlueScope Steel products used in your selected structure will be reasonably fit for the purpose they have been designed for.

Terms and Conditions of the Warranty

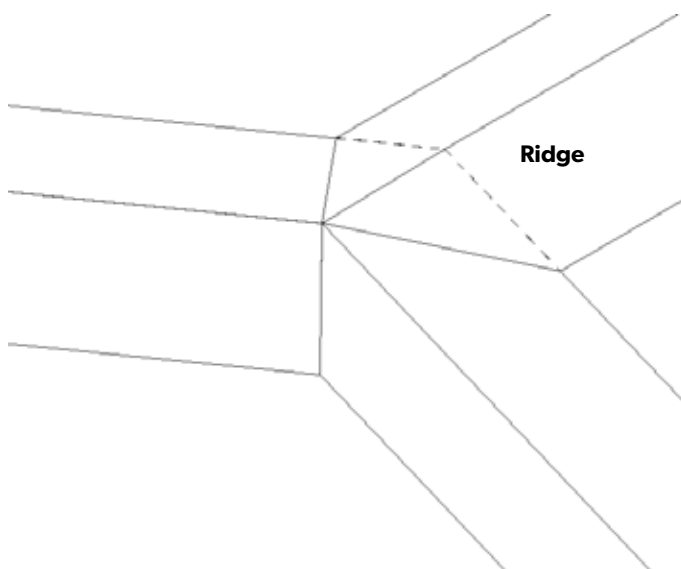
Lysaght is bound by statutory warranties implied at law. However (except as otherwise excluded at law) any additional warranty is made subject to the following conditions:

- The warranty period commences on the date Lysaght accepts your order on the Terms and Conditions of Sale.
- Installation approvals are the responsibility of the customer.
- The warranty does not apply where failure of the design, product or installation is a result of matters beyond our control, for example (without limitation).
- Where structures have not been maintained as advised.
- Where we have not been advised of structural limitations.
- Where structures are constructed over any water, within 1km of breaking surf, or near chemical agents.
- Storms, tempests & Acts of God.
- If you make a valid claim under the warranty, we will repair or replace (at our discretion) the affected item or items with those equivalent products available in the market at the time of your claim.

So to ensure the integrity and longevity of your structure, it will require periodic maintenance.

The following occurrences will void the BlueScope Lysaght Home Improvements Product Warranty where;

- The structure has not been constructed in accordance with the most up-to-date construction guide and/or has not been maintained in accordance with the most up-to-date installation guide.
- Debris, dust, leaves, and fungal matter is left sitting on the structure.
- There is damage due to flying or falling debris.
- The structure has come into contact with chemical agents, fumes or liquids. This can include pesticides and fertilisers and includes a pool environment where structure is not regularly hosed down with fresh water.
- The structure is built within 1Km of a marine or industrial environment.
- There is runoff from incompatible sources. E.g. (Lead, copper and treated products).
- Drainage has been blocked, not allowing the free flow of water.
- There is contact with wet or treated timber.
- Appropriate maintenance has not taken place. (See the maintenance brochure, available from www.lysaghtliving.com.au)
- Placing of a material on or around any part of the structure without prior approval from Lysaght Home Improvements. (Placement of concrete/pavers around base of posts, flashings over our structure).
- The structure has been affected by storm, tempests or act of God.
- Walking or standing on the roof.



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