PAM NORTHERN CHAPTER

UniSon KAWA® Ultimate Cover

BlueScope

Seminar:

Designing Beyond Limits: Unveiling the Art of Metal Cladding Detailing Mastery

Speaker:

En. Zaidi Semail
General Manager,
United Seasons Sdn Bhd

Mr. Ng Cheah Haur
Technical Solution Manager,
NS BlueScope Malaysia Sdn Bhd

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Welcoming speech by

Dato' Ar. Loh Chiak Eong

PAM Northern Chapter

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BlueScope

En Zaidi Semail

General Manager, United Seasons Sdn Bhd

- More than 20 years of solid experience covering the manufacturing of steel products, product development and designing of roofing systems.
- Frequently provides technical consultation, project management and onsite support of large-scale projects such as KTM station, University Malaysia Pahang, Toyota Plants and Airports.
- Technical Committee (TC) with SIRIM Berhad in setting up Malaysia Standard (MS) for Testing Method of Corrugated Metal MS 2523.
- Speaker to local professional bodies including hosting CPD-accredited webinars and seminars.

Mr Ng Cheah Haur

Technical Solution Manager, NS BlueScope Malaysia Sdn Bhd

- Degree in Civil Engineering, University of Malaya in 2005
- Master of Science in Management of Technology, National University of Singapore in 2010
- More than 17 years of working experience in the building and construction industry
- Experiences in civil and structural engineering design, technical solution, testing, metal roofing built-up system requirement and design requirement
- A training provider and speaker for NS BlueScope including hosting various CPD-accredited webinars and seminars.

About Us

UniSon

KAWA®

Ultimate Cover

BlueScope

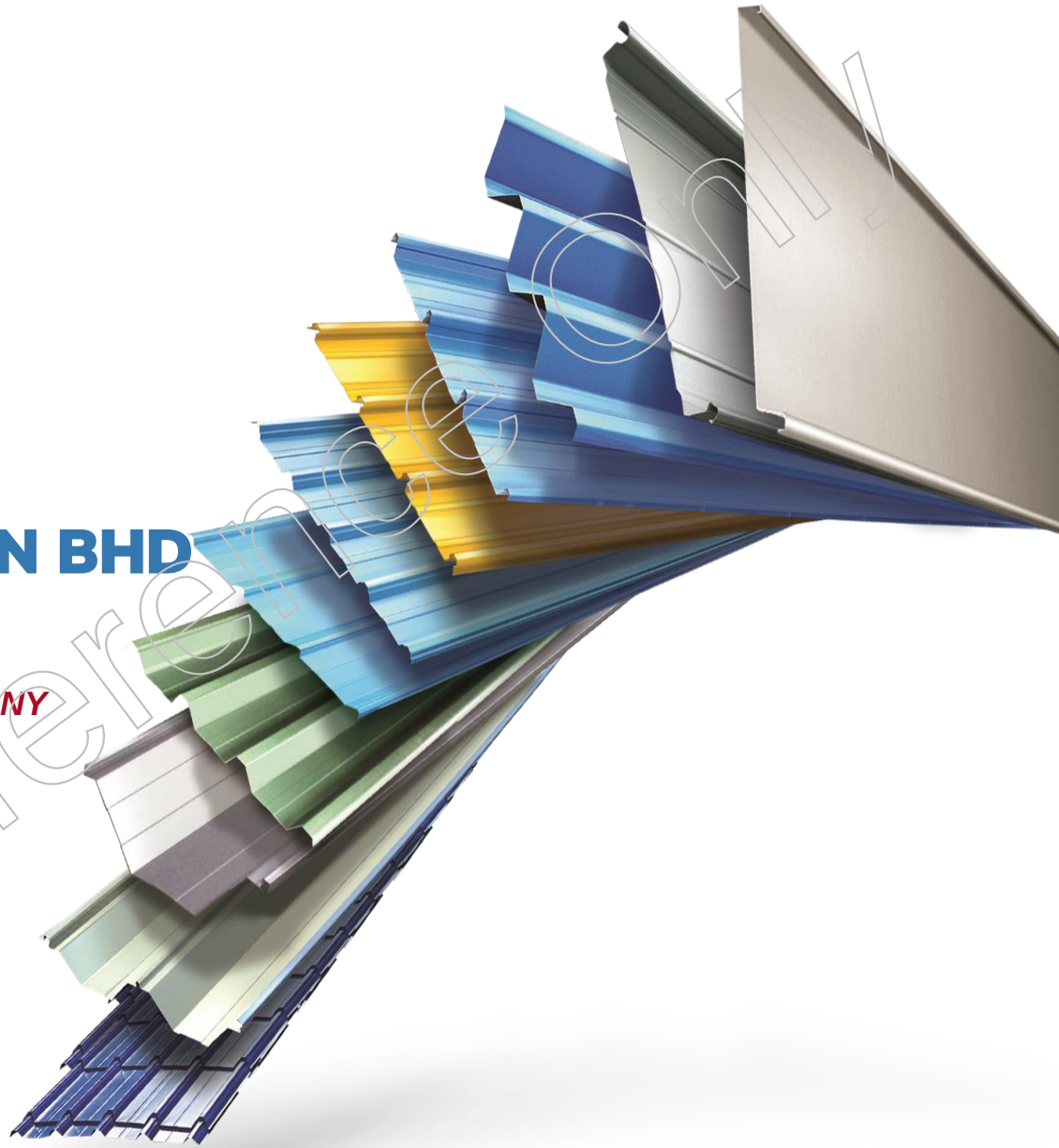
UniSon

KAWA

Ultimate Cover

UNITED SEASONS SDN BHD

NOT JUST ANOTHER ROOFING COMPANY



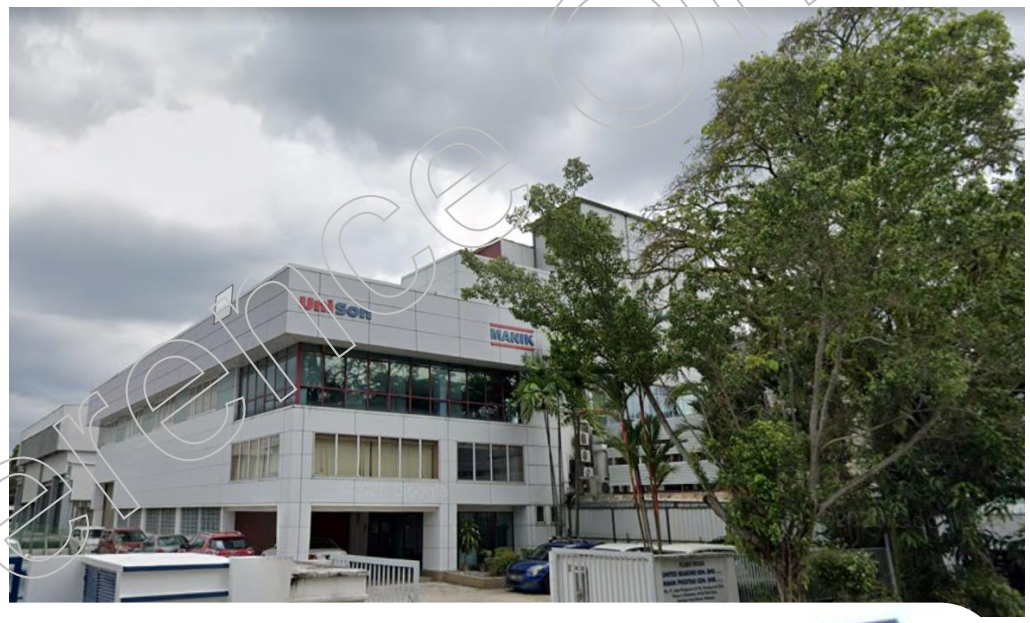
UniSon KAWA Ultimate Cover

PAM NORTHERN CHAPTER

UniSon KAWA Ultimate Cover

BlueScope

- Established in 1993
- Wholly Malaysian owned company
- Manufacturer of steel roof and wall cladding
- Supplies to both local and international project





- **Trusted and reliable manufacturer and contractor in the industry**
- **Act as One-Stop Roof System Solution to clients**
- **Using most updated design both in technology and aesthetics to meet market demand**
- **Experience in dealing with all kinds of roof design for over 30 years**

STRATEGIC PARTNERSHIP WITH NS BLUESCOPE MALAYSIA

We source from NS BlueScope Malaysia

Colorbond®

VERMOE®

Zincalume®

YOUR TRUSTED ROOFING SOLUTIONS PROVIDER

Consultation & Technical advice

Quality Assurance

Manufacturing Excellence

On site support

CERTIFICATION

NO. PENDAFTARAN : AR 1989
Registration No. :

SIRIM QAS INTERNATIONAL

SIJIL PENDAFTARAN SISTEM KUALITI
Quality System Registration Certificate

SIRIM QAS International Sdn. Bhd. dengan ini mengesahkan bahawa
SIRIM QAS International Sdn. Bhd. hereby certifies that

UNITED SEASONS SDN. BHD.
NO. 37, JALAN PENGACARA U1/48
TEMASYA INDUSTRIAL PARK
PHASE 2, GLENMARIE
40150 SHAH ALAM SELANGOR DARUL EHSAN
MALAYSIA

telah melaksanakan Sistem Kualiti yang menepati
has implemented a Quality System complying with

MS ISO 9001 : 2000 Quality Management Systems - Requirements

Skop Pendaftaran
Scope of Registration

MANUFACTURE, SALE AND PROJECT MANAGEMENT OF INSTALLATION WORKS FOR ROOFING AND WALL CLADDING.

Hj. Ab. Razak bin Salim
Pengarah Eksekutif
Executive Director
SIRIM QAS International Sdn. Bhd.

Dato' Dr. Mohd. Ariffin bin Hj. Alon
Pengerusi
Chairman
SIRIM QAS International Sdn. Bhd.

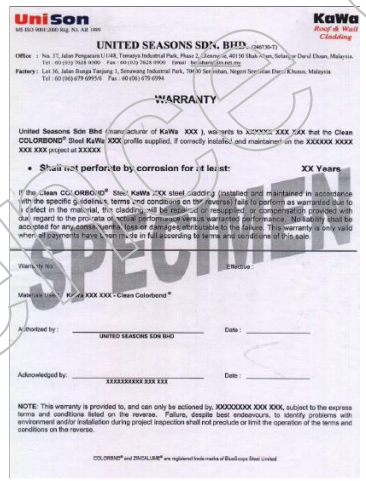
Tarikh Persijilan : 25 May 2000
Certification Date :

Sah Sehingga : 06 June 2008
Expiry Date :

No. Siri : 2214
Serial No. :

ISO9001 Certified: 2015 quality system by SIRIM

Scope of Certification : Manufacture, Sale & Project Management of Installation Works for Roofing & Wall Cladding



UniSon
KaWa
Roof & Wall Cladding

UNITED SEASONS SDN. BHD.

WARRANTY

United Seasons Sdn Bhd (manufacturer of KaWa XXX), warrants to XXXXXX XXX XXX that the Clean COLORBOND® Steel KaWa XXX profile supplied, if correctly installed and maintained on the XXXXXX XXXX XXX XXX project at XXXXX

- Shall not perforate by corrosion for at least: XX Years

If the Clean COLORBOND® Steel KaWa XXX steel cladding installed and maintained in accordance with the specific guidelines, terms and conditions on the reverse) fails to perform as warranted due to a defect in the material, this cladding will be replaced or reinstated, or compensation provided with due regard to the pro-rata of actual performance versus warranted performance. No liability shall be accepted for any consequential loss or damage contributable to the failure. This warranty is only valid when all payments have been made in full according to terms and conditions of the sale.

SPECIMEN

Warranty No. : Effective :

Materials Used : KaWa XXX XXX - Clean Colorbond ®

Authorized by : _____ Date : _____
UNITED SEASONS SDN BHD

Acknowledged by : _____ Date : _____
XXXXXXXXX XXX XXX

NOTE: This warranty is provided to, and can only be actioned by, XXXXXXX XXX XXX, subject to the express terms and conditions listed on the reverse. Failure, despite best endeavours, to identify problems with environment and/or installation during project inspection shall not preclude or limit the operation of the terms and conditions on the reverse.

COLORBOND® and ZINCALUME® are registered trade marks of BlueScope Steel Limited

Direct warranty from NS BlueScope

Colorbond®

VERMOE®

Zincalume®

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Designing Beyond Limits: Unveiling the Art of Metal Cladding Detailing Mastery

- Fundamental of Flashing & rainwater goods
- Compatibility of material
- Strategic considerations in design detailing
- Do’s and don’ts
- Case studies

FOCUS OF TODAY

- What is Flashing?
- Standard Steel Roof Flashing
- Standard Steel Wall Flashing
- Custom Flashing
- Rainwater Goods
- Compatibility of Material

What is Flashing?

WHAT IS FLASHING?

- Flashing is thin pieces of watertight material installed to **prevent the passage of water into a structure from a joint** or as part of the weather resistant barrier system and intended to decrease water penetration.

- Flashing may be **exposed or concealed**. Exposed flashing is usually of a sheet metal and concealed flashing may be metal or a flexible, adhesive backed, material particularly around wall penetrations such as window and door openings.

- Most flashing materials today are metal, plastic and rubber.




Standard Steel Roof Flashing

STANDARD ROOF FLASHING

- Roof flashing is the component to **seal the possible water passage at the entire perimeter of roof**.

- The standard range of roof flashing called:

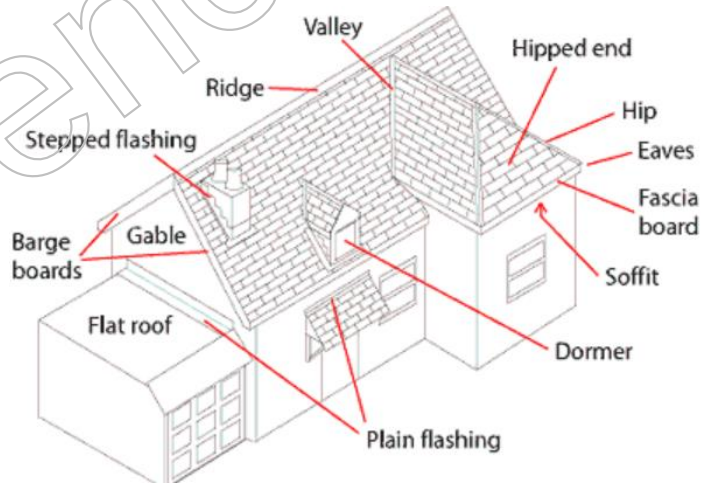
A. Ridge Capping

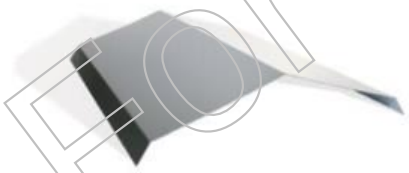
B. Barge Capping

C. Apron Flashing

D. Change of Pitch Flashing

E. Valley Flashing



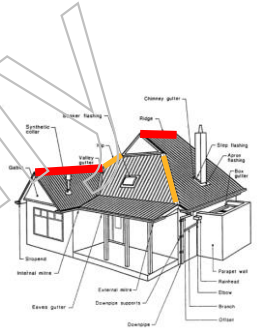


Ridge Capping

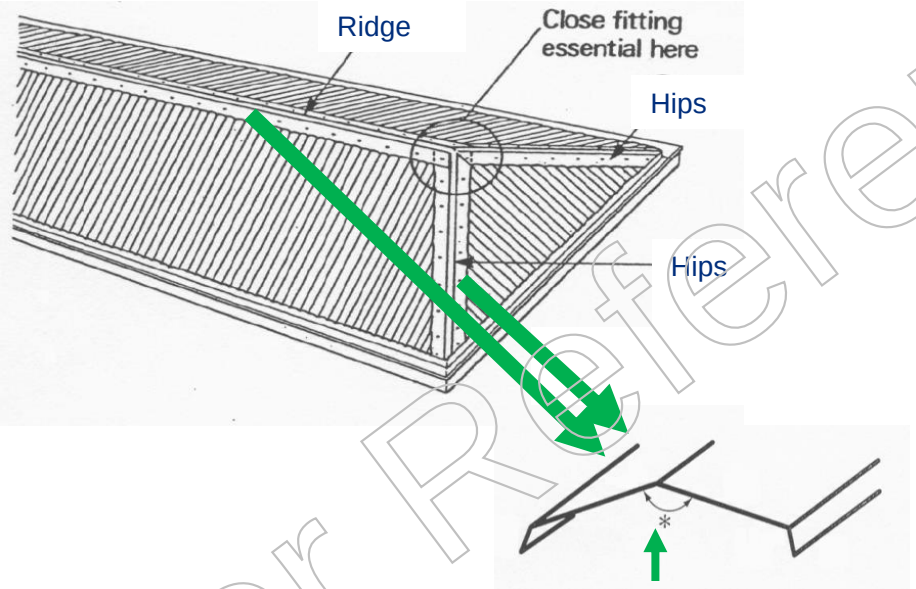
Barge Capping

Apron Flashing

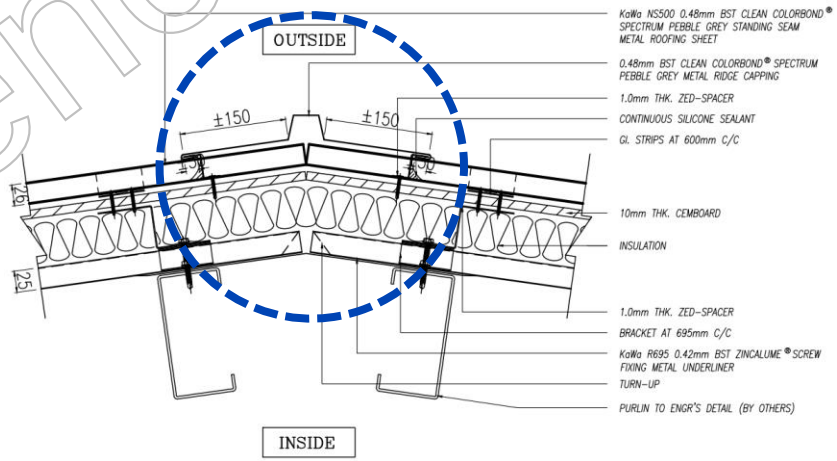
A. RIDGE CAPPING



- The ridge capping is a flashing **located at the roof ridge / roof peak.**
- The angle of the roof is specified, so ridge flashing is also used for the hips.

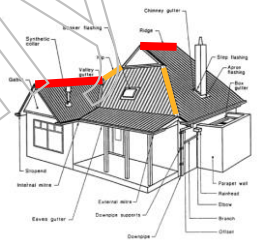


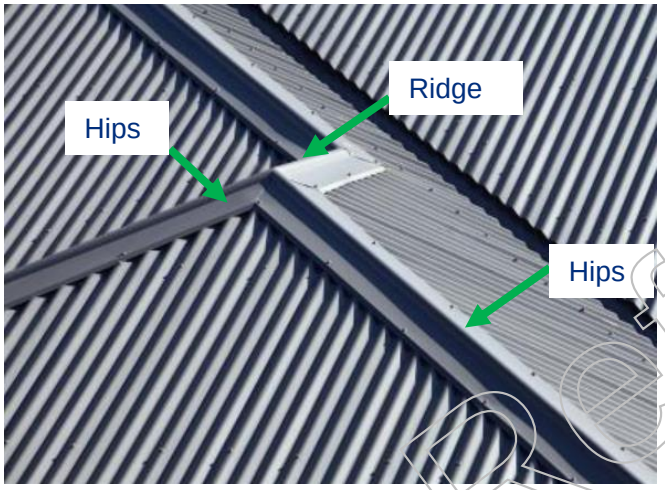
*The angle of ridge flashing must tally with the roof slope



Ridge Capping Standard Detail

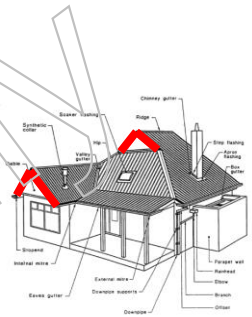
A. RIDGE CAPPING EXAMPLES

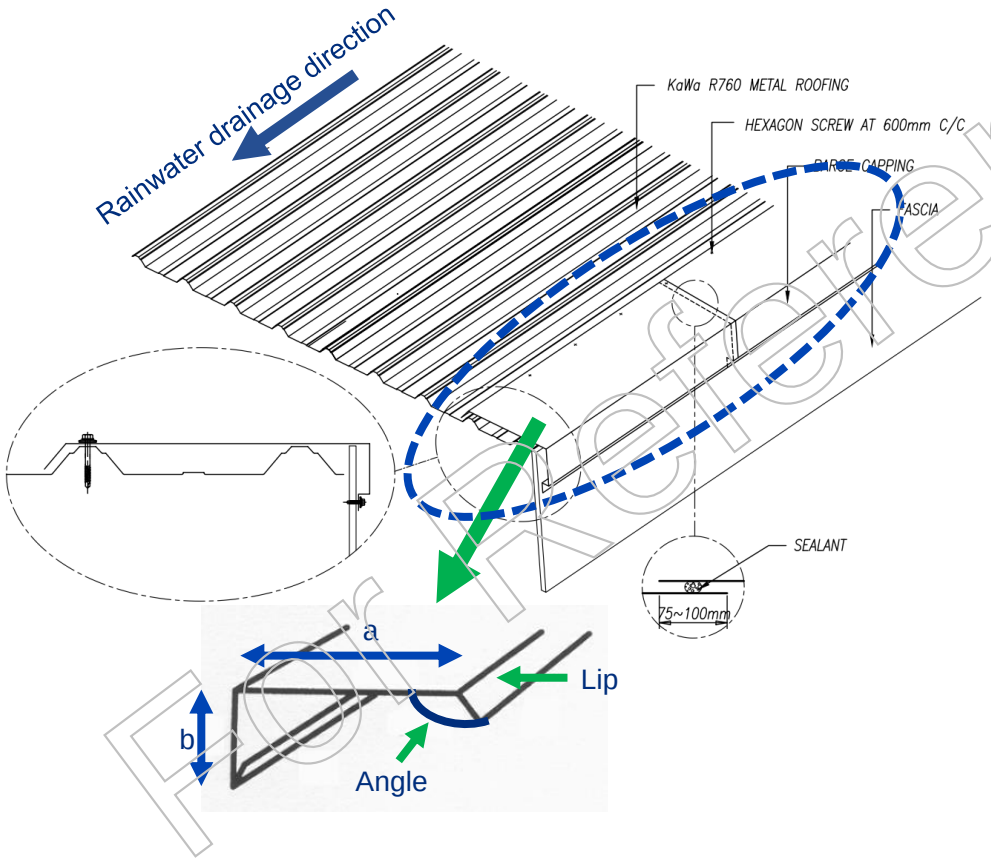


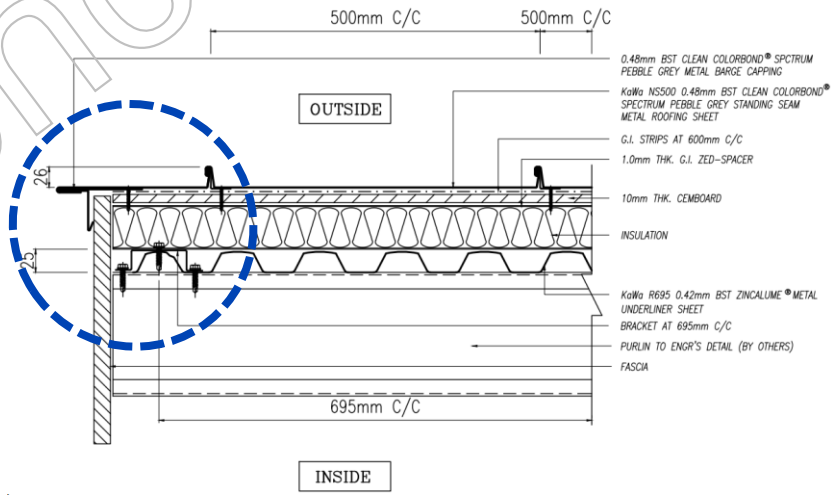


B. BARGE CAPPING

- The barge capping is the flashing **located at the barge / gable end of a roof.**

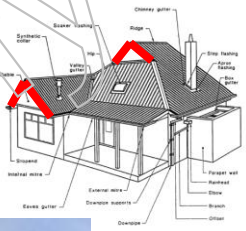


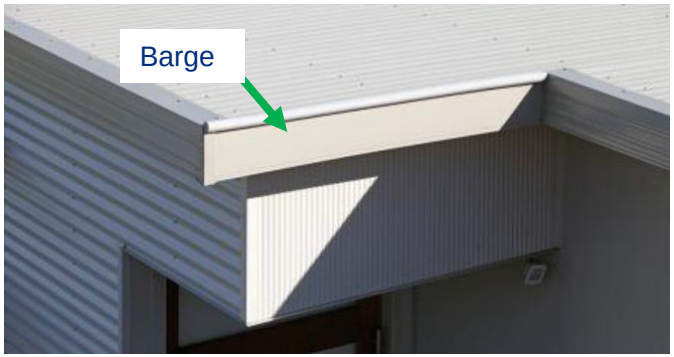




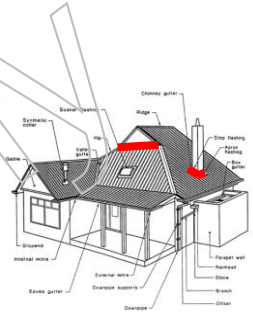
Barge Capping Standard Detail

B. BARGE CAPPING EXAMPLES

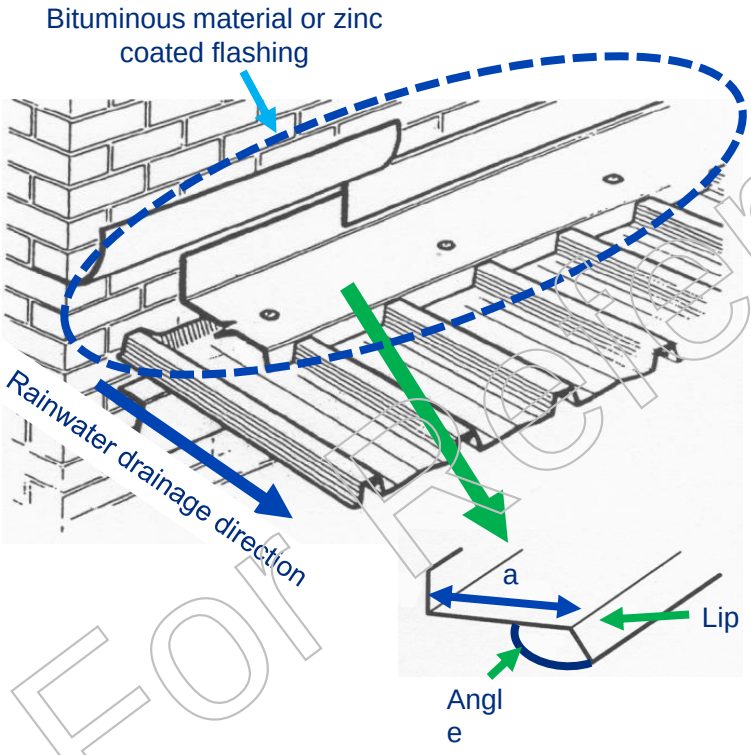


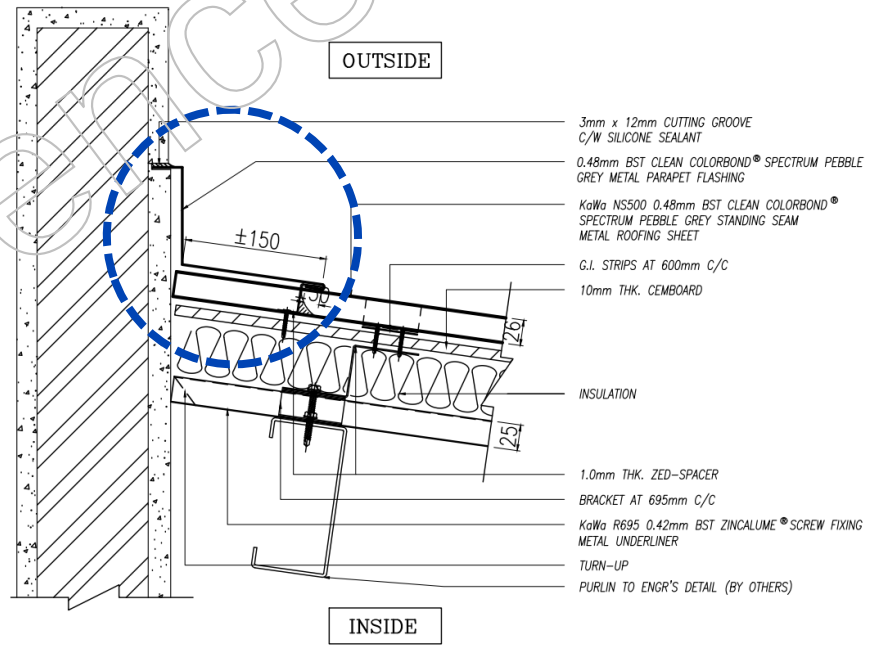


C. APRON FLASHING
(PERPENDICULAR TO WALL)



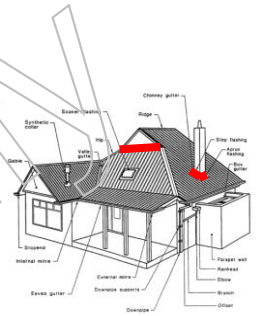
- The apron flashing is the flashing that **“skirts” around wall or roof penetration**.

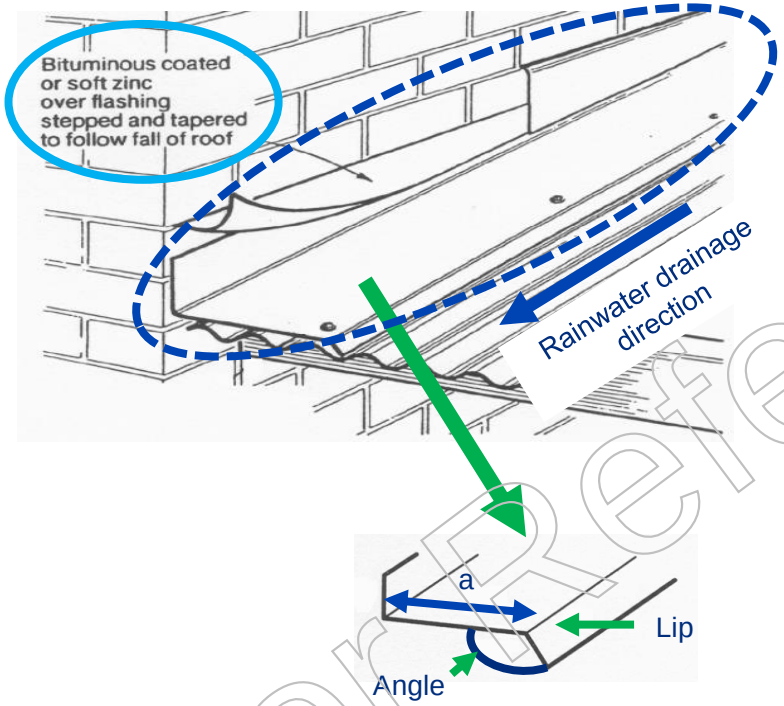


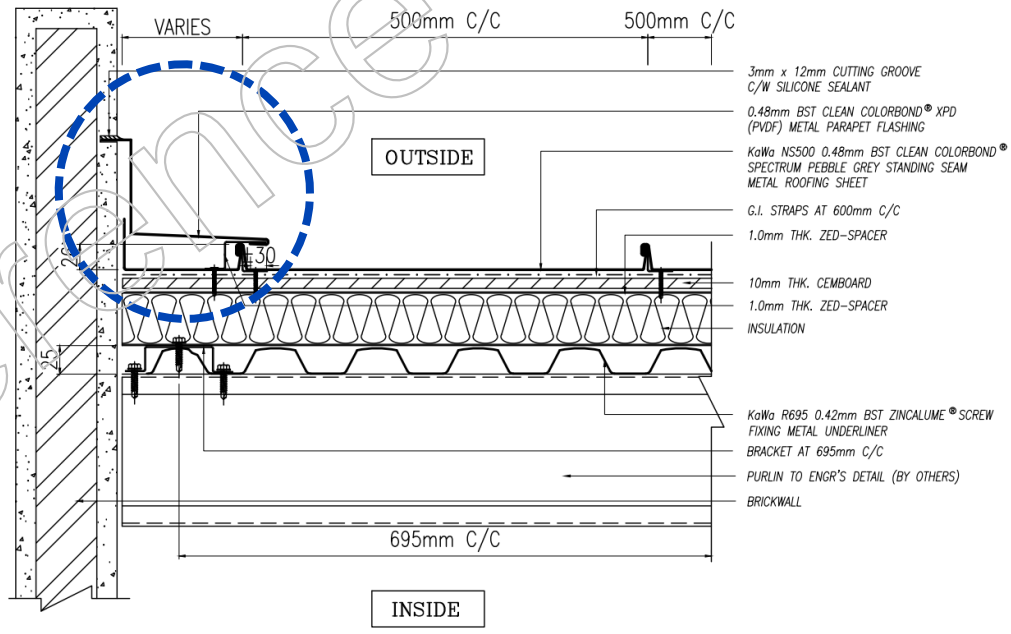


Barge Capping Standard Detail

C. APRON FLASHING
(PARALLEL TO WALL)

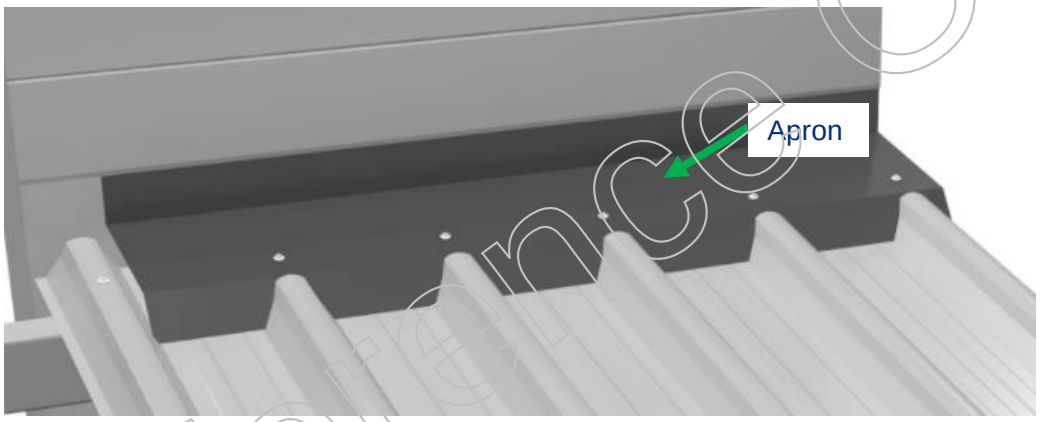


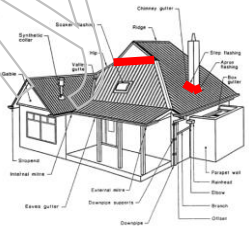


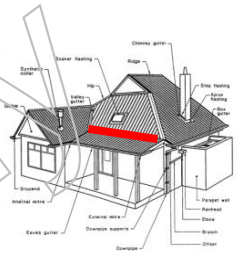


Barge Capping Standard Detail

C. APRON FLASHING EXAMPLES

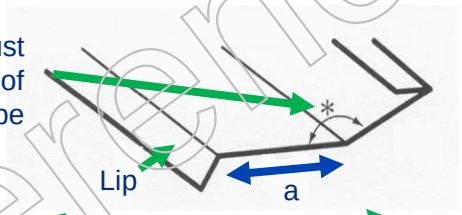


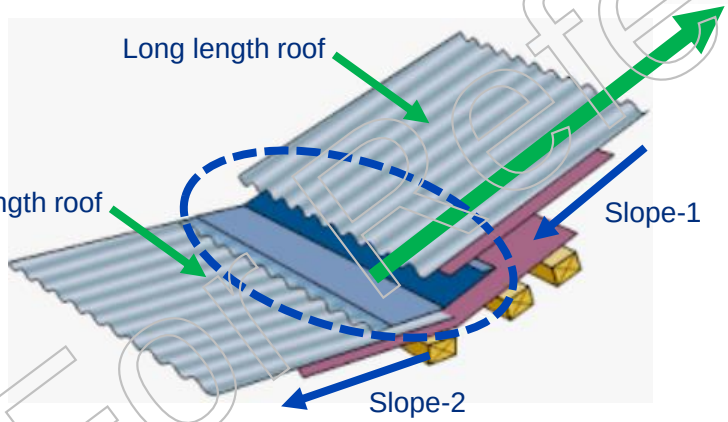




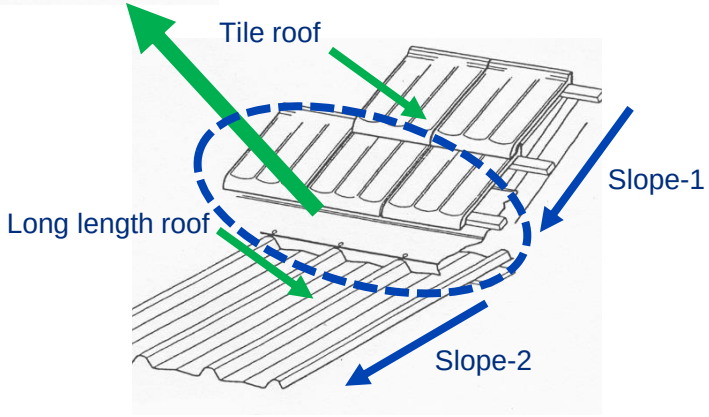
D. CHANGE OF PITCH FLASHING

- Change of pitch flashing **located at the junction in between two different slopes**.
- This flashing is suitable to use with tile roof and long length roof.



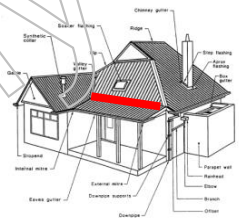


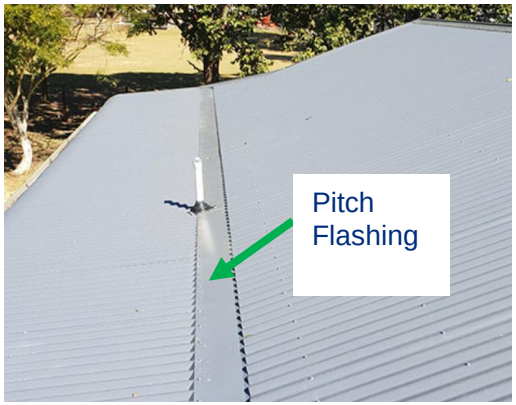
Long length roof on both sides

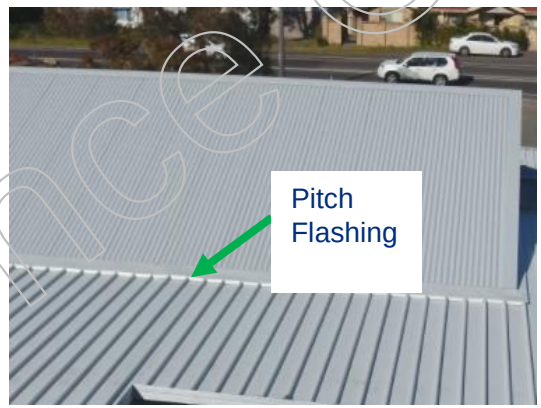


Mixing of tile roof and long length roof

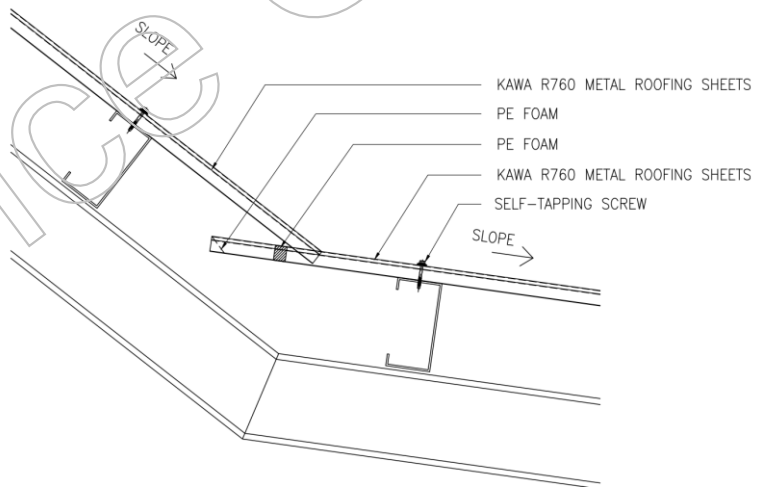
D. CHANGE OF PITCH FLASHING EXAMPLES

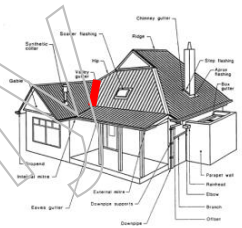






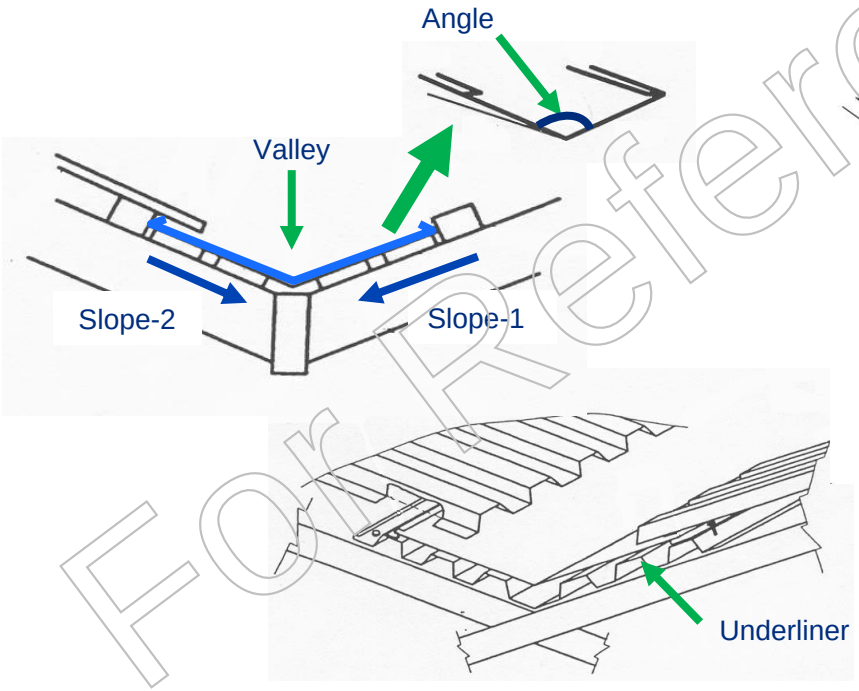
D. CHANGE OF PITCH WITHOUT FLASHING EXAMPLE

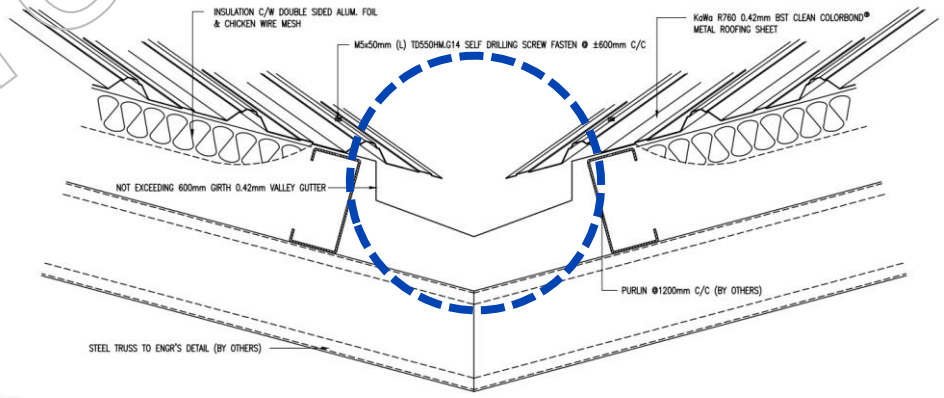




E. VALLEY FLASHING

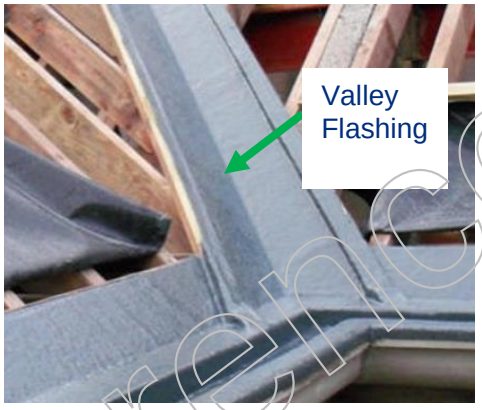
- Valley flashing **located at the junction of two roof that slope against each other**.
- This flashing **carry water loads and often used during maintenance as a walkway**. Hence, in some cases it need to be supported by additional support or stiffer components.

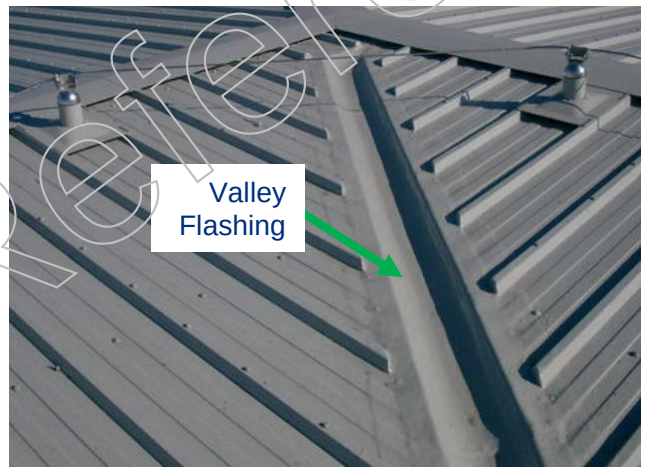


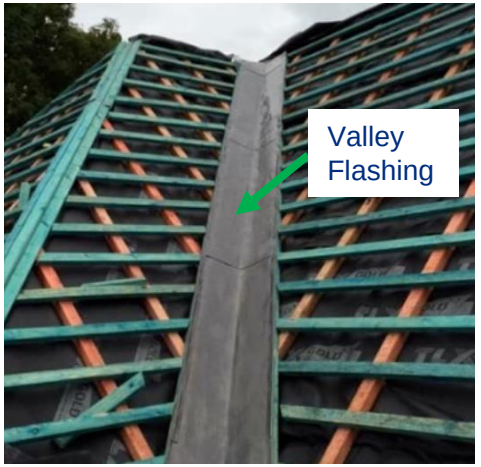


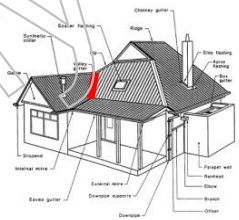
Valley Flashing Standard Detail

E. VALLEY FLASHING EXAMPLES

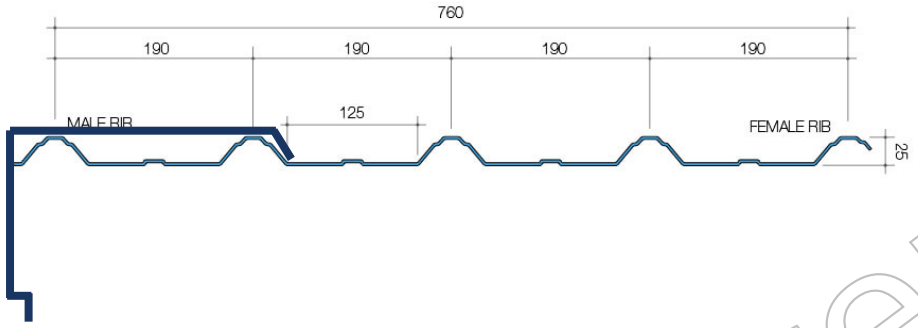


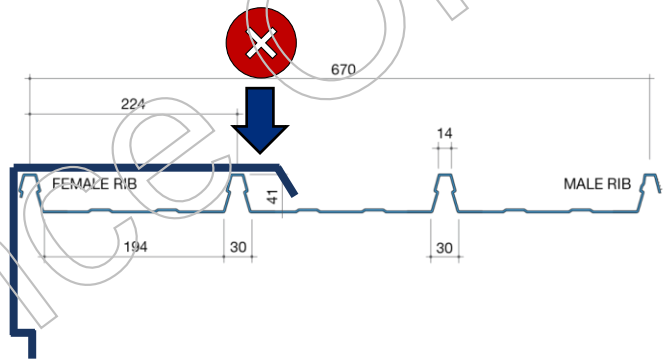


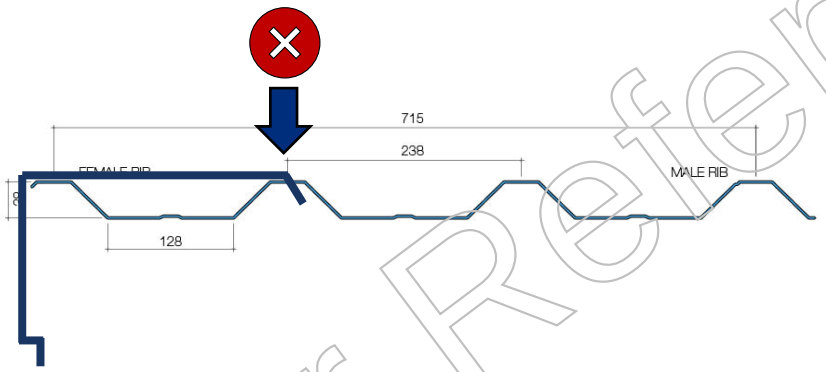


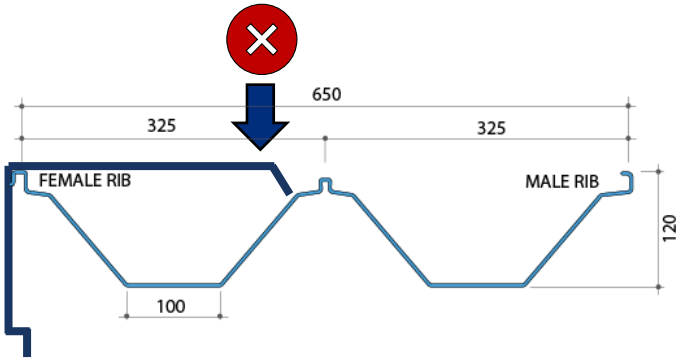


KEY CONSIDERATIONS IN USING ROOF FLASHING









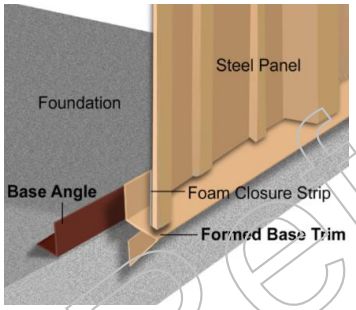
All flashing should be customised according to the profile

Standard Steel Wall Flashing

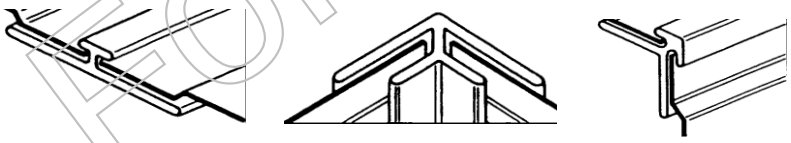
WALL FLASHING

- Wall flashing can be called as **Trims or Moldings**.

- The term of Trims are generally used when there are **"smaller" or "trimmer" than the normal roof flashing**. Since **wall flashing at eye level**, so the small dimension proportions are **very important for aesthetic purpose**.



- For those very small dimension trims or molds, non-steel flashings can be made by Aluminium or plastic extrusions or molding.



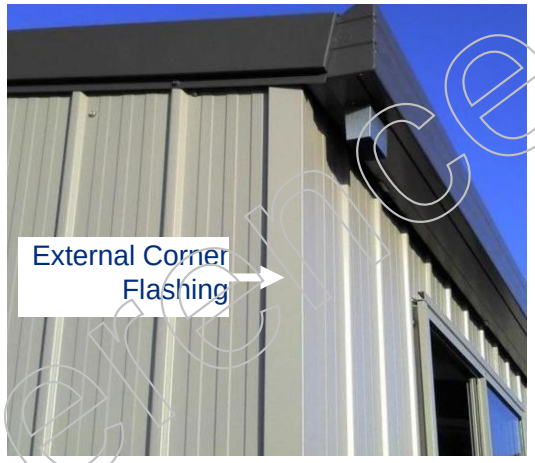
STANDARD WALL FLASHING

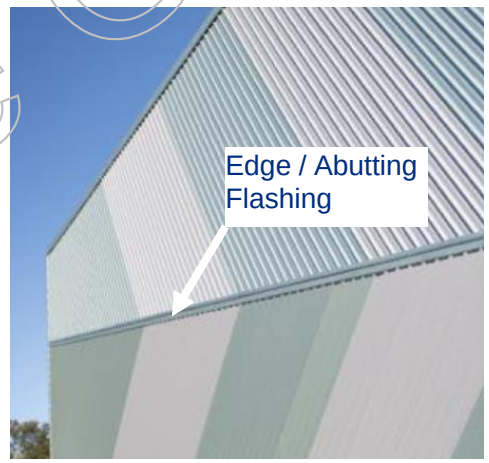
- There are few standard steel trims / molds that is frequently used in wall detailing. For example:

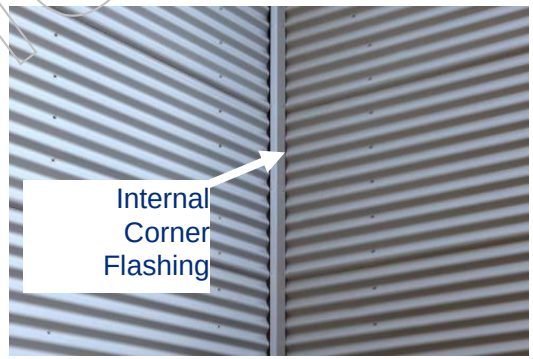
A. External Corner Flashing

B. Internal Corner Flashing

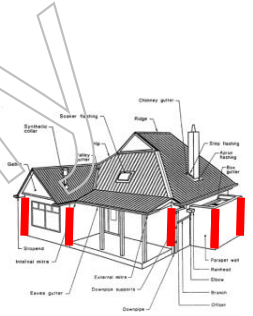
C. Edge / Abutting Flashing



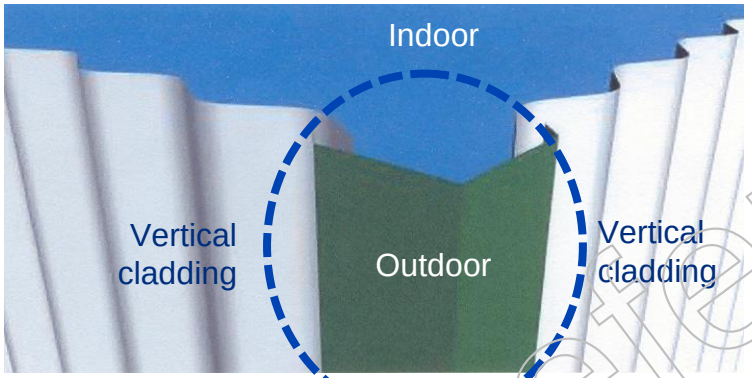




A. STANDARD EXTERNAL CORNER FLASHING

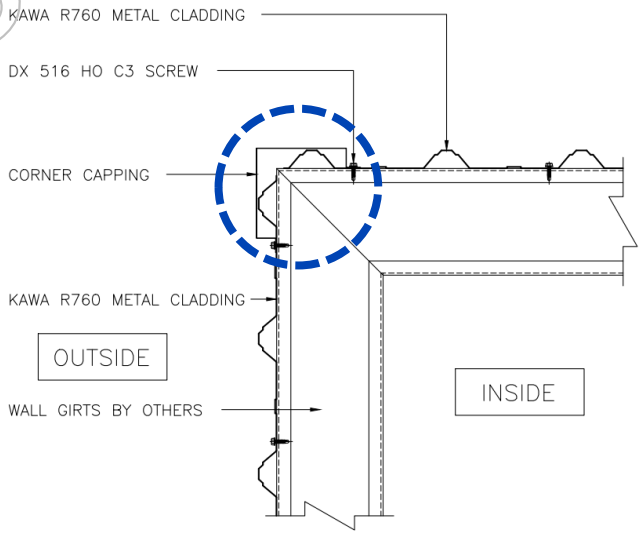


- External corner flashing is **located at the intersection of two sides of wall cladding (Facing outdoor).**



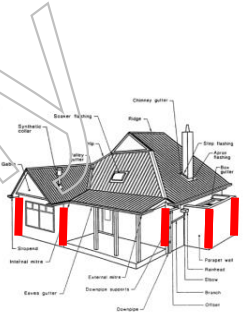
Vertical cladding

Horizontal cladding



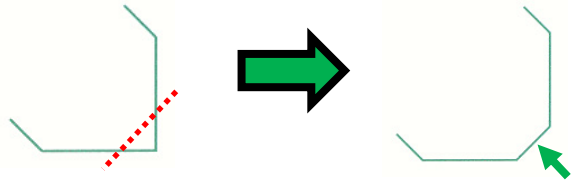
External Corner Standard Detail

A. SPECIAL EXTERNAL CORNER FLASHING

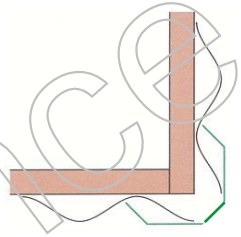


- The feasibility of the following detailing **depends on the availability of press brake tooling**.

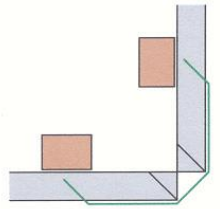
Type 1



Example

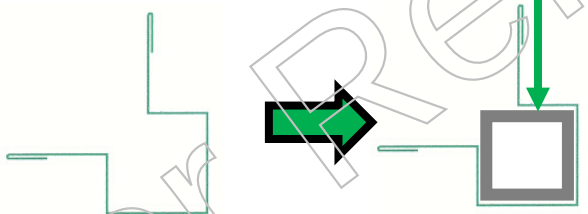


Vertical cladding

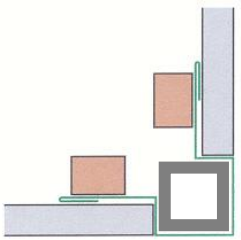


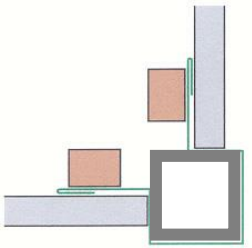
Horizontal cladding

Type 2



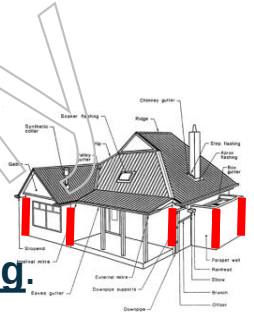
Example





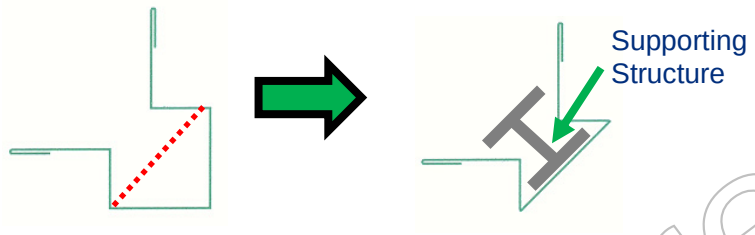
Horizontal cladding

A. SPECIAL EXTERNAL CORNER FLASHING

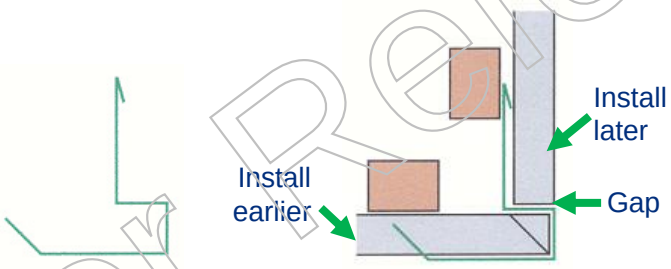


- The feasibility of the following **detailing depends on the availability of press brake tooling**.

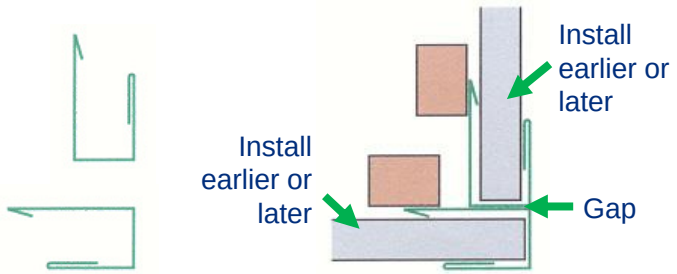
Type 3



Type 4

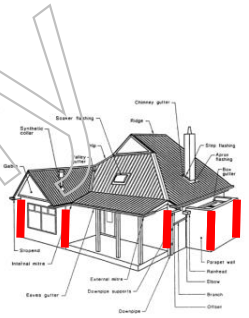


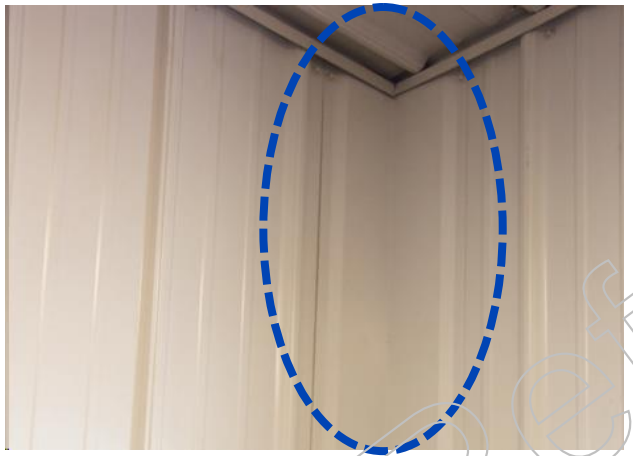
Type 5

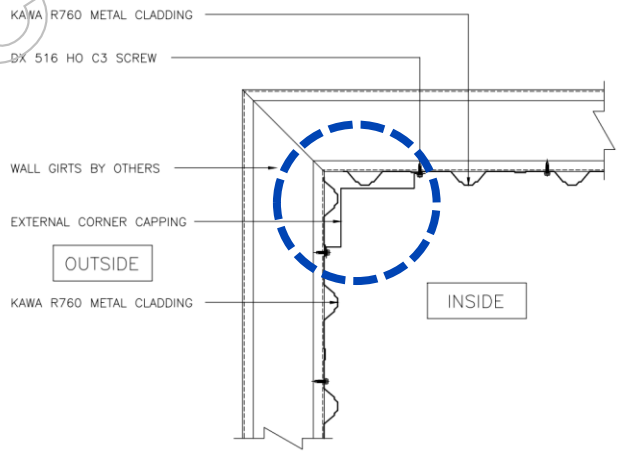


B. STANDARD INTERNAL CORNER FLASHING

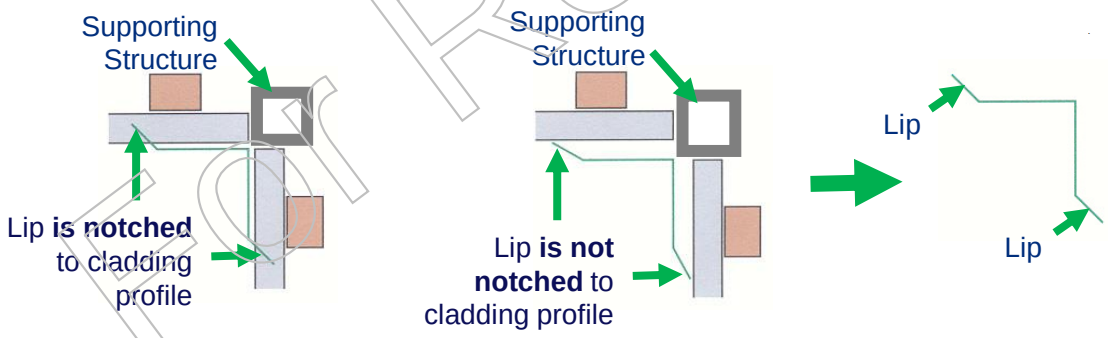
- External corner flashing is **located at the intersection of two sides of wall cladding (Facing indoor).**







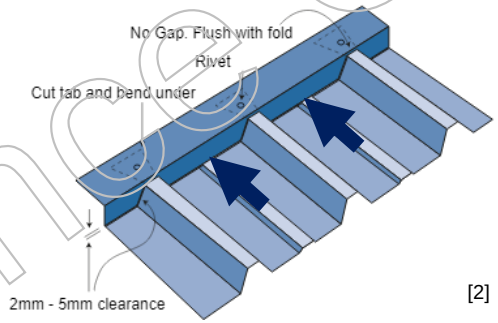
Internal Corner Standard Detail



WHAT IS NOTCHING?

- Notching is the action to cut the flashing according to the steel wall or roof profile, so that it can fit into the profile.

Notching Work

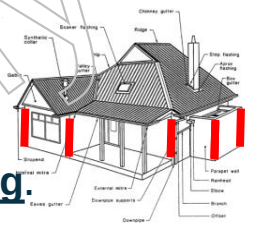


Flashing with notching

Flashing without notching

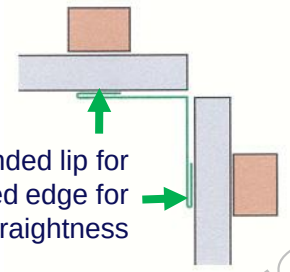
Source [1]: https://www.youtube.com/watch?app=desktop&v=F-RUDwUql_s
Source [2]: https://www.metalroofing.org.nz/files/notched-flashing
Source [3]: https://www.youtube.com/watch?v=T0LvP9O42KU

B. SPECIAL INTERNAL CORNER FLASHING

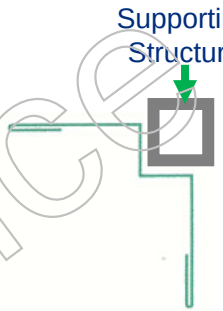


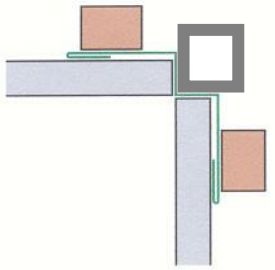
- The feasibility of the following **detailing depends on the availability of press brake tooling**.

Type 1

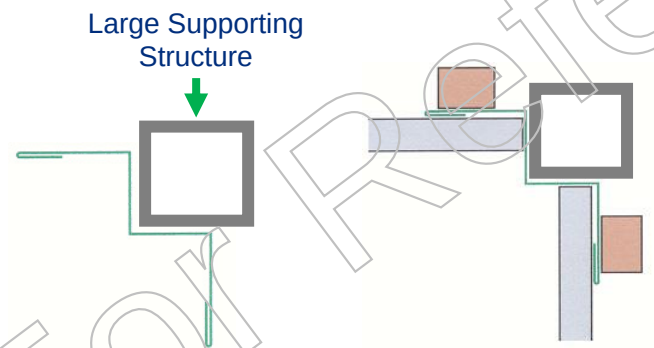


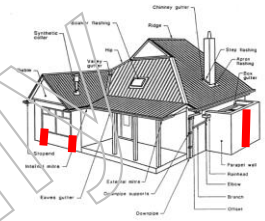
Type 2





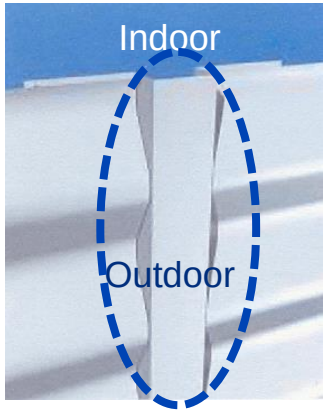
Type 3

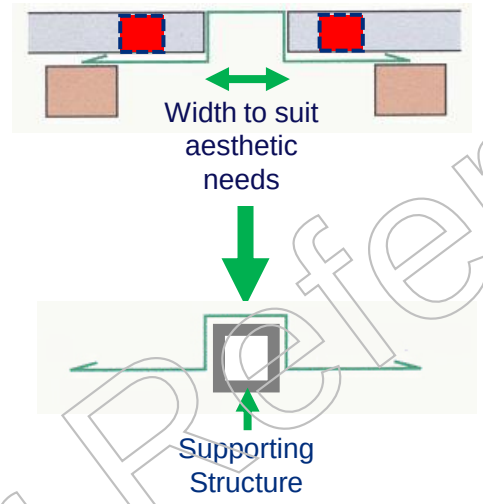


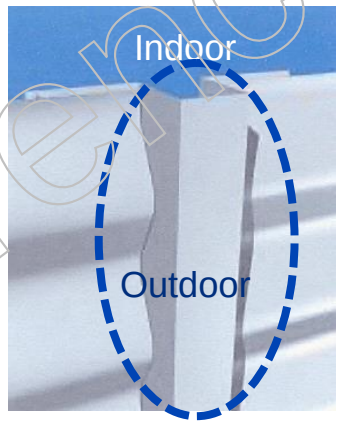


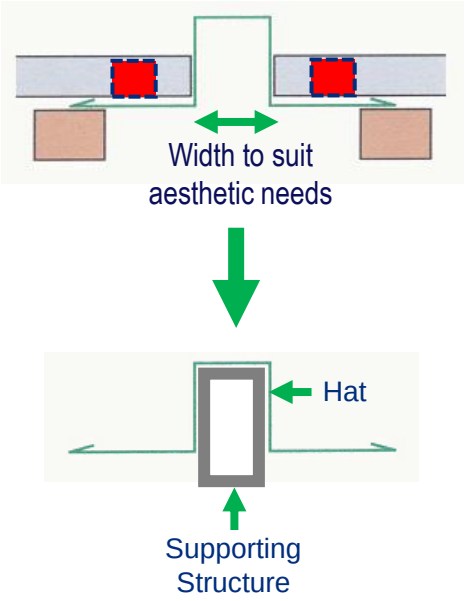
C. STANDARD EDGE / ABUTTING FLASHING

- Edge / Abutting Flashing is **located at the intersection of two wall cladding on the same plane or the intersection of two different type of cladding.**



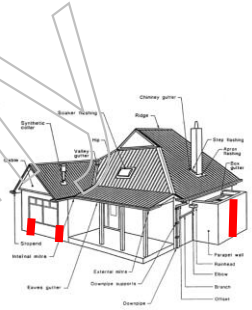






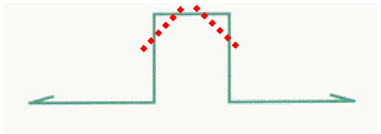
Foam Filler / special treatment is needed if the wall is installed horizontally

C. SPECIAL EDGE / ABUTTING FLASHING

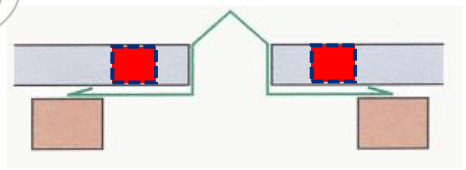


- The feasibility of the following detailing **depends on the availability of press brake tooling**.

Type 1

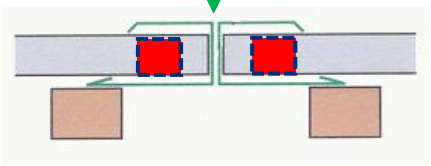


Example



Type 2

Example

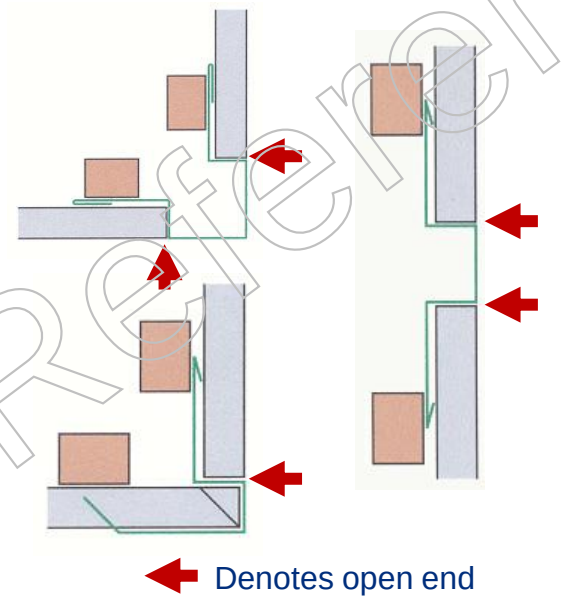


Foam Filler / special treatment is needed if the wall is installed horizontally

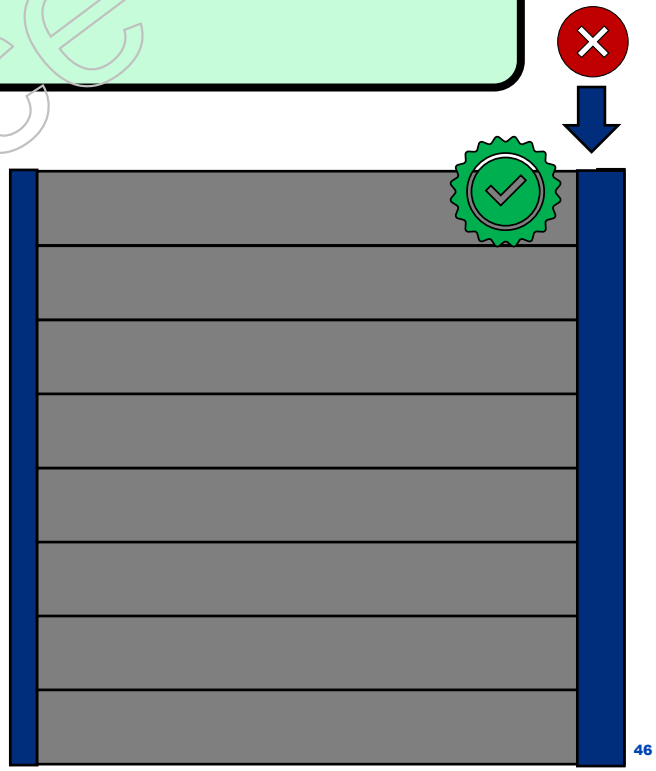
KEY CONSIDERATIONS IN USING WALL FLASHING

1. All flashing should be customised according to the profile

2. Do not make open end at both side if product is orientated horizontally



Denotes open end



Custom Flashing

CUSTOM FLASHING

- **Non-standard or non-typical flashings** that is defined custom flashing.

- Custom flashing is needed when:
  a. Some **variations in the shape, dimension or thickness** to the standard flashing.
  b. Taper is required.
  c. Curved flashing is required.

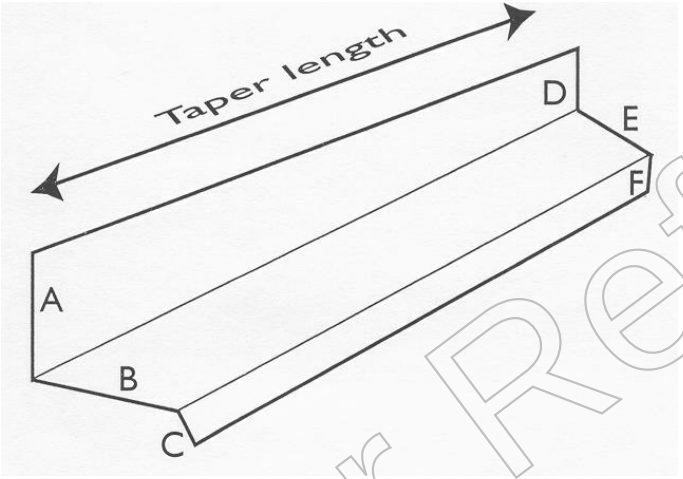
- **Box gutter** and most of the wall flashing is considered as custom flashing.

- Custom flashing can be made in wide range of dimension, shape and number of folding. The limitation is only come from the function capability of the folding machine (tooling) and the skill of operator.

- In addition, material thickness, material width and finishes are part of the limitation.

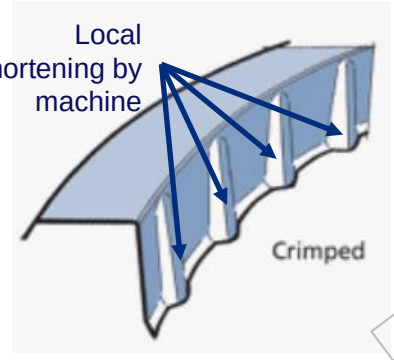
A. TAPERED FLASHING

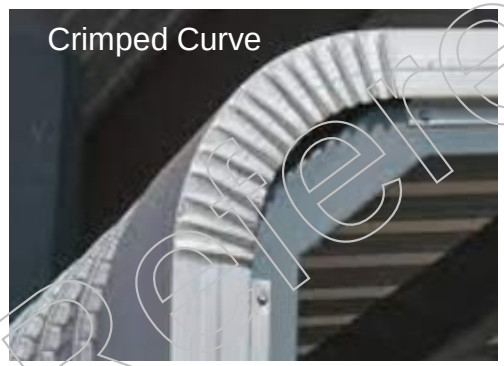
- Tapered flashing **is used on arc roof or unique shape roof.**
- Tapered flashing require the dimension and bend angles at both ends because the **shape dimension is varied from one end to the other end.**

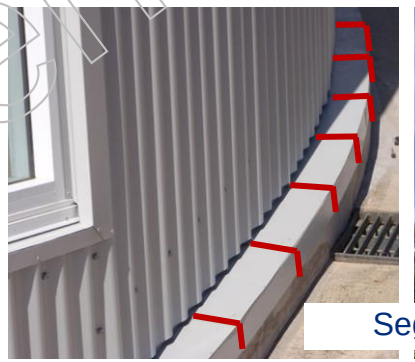


B. CURVED FLASHING

- Curved flashing is needed where **curved roof (pre-curved or spring curved)** is installed.
- Curved Colorbond and Zincalume flashings can be done by either **crimped curve or segmentize**.







C. TRAY FLASHING

- Tray flashing is used to **seal the joint of medium size opening on roof**.
- The main objective is to **divert the rainwater away from the opening** and channel it to the adjacent pan or valley of the roof.




D. RUBBER FLASHING

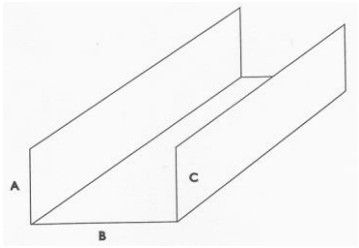
- Rubber flashing are usually **used for round pipe penetrations where flexibility is required**.
- The common rubber flashings used is made by EPDM (Ethylene Propylene Diene Monomer).
- It is available in different colours, styles, sizes and applications.

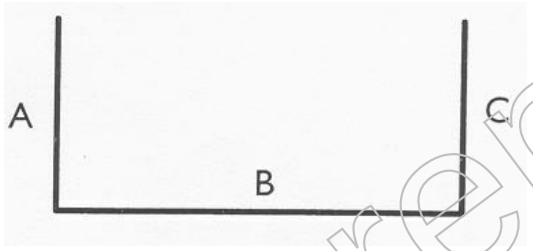
Slot in Type

Zipped Type

D. BOX GUTTER

- The generic component to drain rainwater from the roof.
- The box gutter is simply the large rectangular shape component to channel the rainwater to the discharging points.





Gutter dimension and rainwater downpipe size to be determined through the design calculation based on international design standard.

Box gutter is usually big because of the big catchment area on industrial building roof

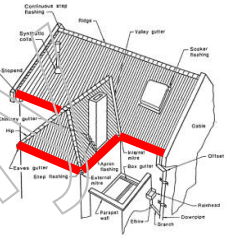
Box gutter is usually small because of the small catchment area on residential building roof

Rainwater Goods

WHAT IS RAINWATER GOODS?

- Rainwater goods refers to products **collect and dispose rainwater from roofs and protection against entry of rainwater into a building**.

- Rainwater goods include gutters (valley, eave, barge, box), downpipe and other accessories.



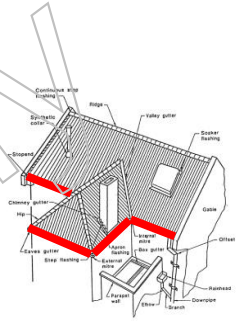
EAVE GUTTER

- Gutters are installed to catch the rainwater from the roof and to direct the water to discharge points (downpipes).
- Gutters **around the outside edges (perimeter) of a building** are called eaves gutters.
- Gutters within the roof space have a variety of names, The names are usually a description of the gutter shape such as valley, Vee or “V” gutters and box gutter.

Eave Gutter With Fascia

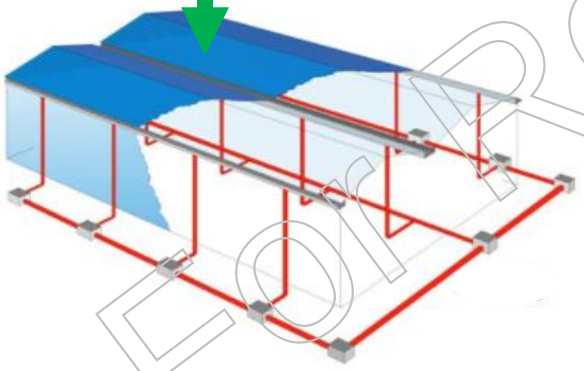
Eave Gutter Without Fascia

EAVE GUTTER SYSTEM DESIGN



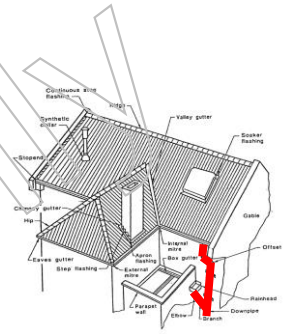
- Eave gutter is **designed according to the roof area and discharge point distance and quantity**.
- The philosophy of gutter design:
  a. Bigger the roof area (catchment area), bigger gutter size is needed
  b. Lesser discharge point / downpipe, bigger gutter size is needed
  c. Smaller the downpipe size, bigger gutter size is needed

Catchment Area



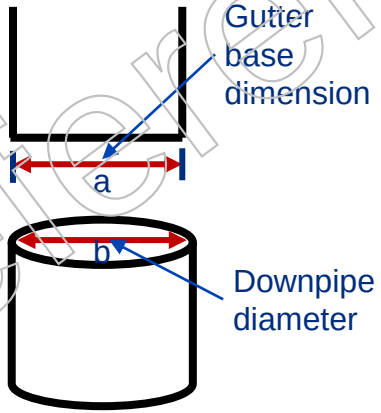
Discharge point / downpipe

DOWNPIPE DESIGN



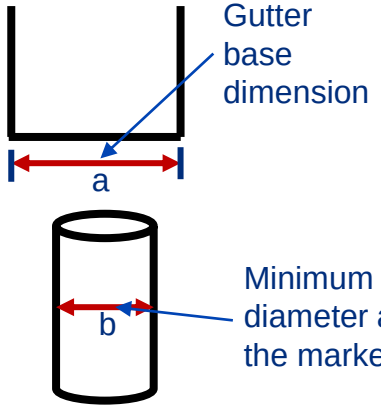
- Selection of downpipe shape and size is based on:
  - a. **Aesthetic consideration**.
  - b. **Gutter size**.
  - c. **Gutter capacity**.

Square downpipe always looks better than rectangular



If a = b or a < b

Scenario A



If a = b + buffer

Scenario B

Compatibility of Material

USE OF INCOMPATIBLE MATERIAL

[1]

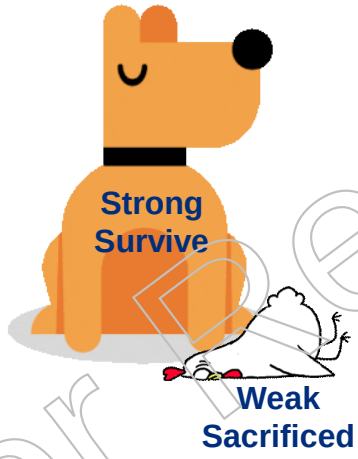
[1]

Source [1]: https://www.modernroofco.com/denver-co-residential-roof-materials/metal-roofing/
Source[2]: https://www.istockphoto.com/search/2/image-film?phrase=evil+boss

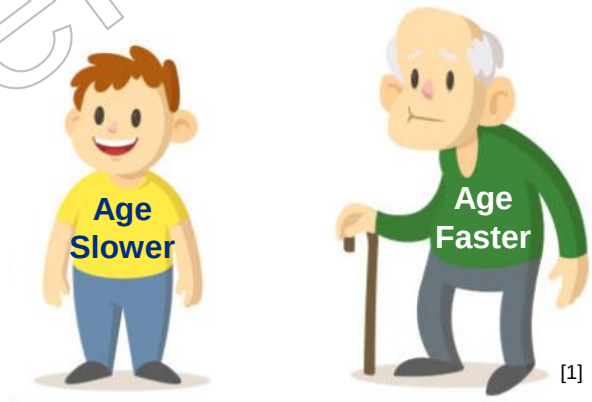
IMPACT OF INCOMPATIBILITY

- TWO unpleasant scenarios will be happened if incompatible materials are putting together.

Lifetime



Outlook



[1]

Source [1]: https://www.istockphoto.com/vector/words-young-and-old-flashcard-with-cartoon-characters-opposite-adjectives-gm1218707349-356205628

CANNIBALISATION IN BETWEEN METALS

- Least active metal will cannibalise the more active metal if it is contact to each other.

TABLE C3

ACCEPTABILITY OF DIRECT CONTACT BETWEEN METALS OR ALLOYS

Cladding material	Accessory or fastener material													
	Aluminium and aluminium alloys		Copper and copper alloys		Stainless steel (300 series)		Zinc-coated steel and zinc		Aluminium/zinc and aluminium/zinc magnesium alloy-coated steel		Lead		Zinc–tin (20–30 %) mechanically plated steel	
	Atmospheric classification													
	SI and VS	Mild	SI and VS	Mild	SI and VS	Mild	SI and VS	Mild	SI and VS	Mild	SI and VS	Mild	SI and VS	Mild
Aluminium and aluminium alloys	Yes	Yes	No	No	No*	Yes	Yes†	Yes†	Yes	Yes	No	No	Yes	Yes
Copper and copper alloys	No	No	Yes	Yes	No	Yes	No	No	No	No	No	Yes	No	No
Stainless steel (300 series)	No	No	No	No	Yes	Yes	No	No	No	No	No	Yes	No	No
Zinc-coated steel and zinc	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Aluminium/zinc and aluminium/zinc magnesium alloy-coated steel	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes

SI, VS, Mild = severe industrial, very severe and mild classifications (refer to Table C2 for comparable climatic zone classifications)

Extracted from AS1562:1:2018, Table C3

Source [1]: https://www.imoa.info/molybdenum-uses/molybdenum-grade-stainless-steels/architecture/avoid-galvanic-corrosion.php

BAD EXAMPLES

- Using wrong material for flashing on pre-painted metallic coated steel


[1]


[1]


[2]

Source [1]: https://info.vantagepointroofing.com.au/blog/galvanic-corrosion-leaks-mould-watermarks
Source [2]: https://garlanduk.com/blog/what-is-cut-edge-corrosion-and-what-can-you-do-about-it/

BAD EXAMPLES

- Using wrong material for flashing / gutter on pre-painted metallic coated steel


[1]


[1]


[2]

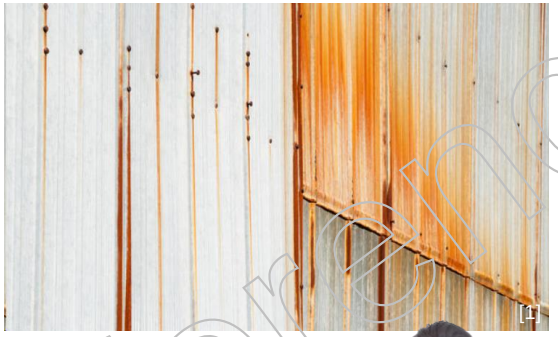

[3]

Source [1]: https://commercialroofusa.com/repair-metal-leaky-roof/
Source [2]: https://www.shutterstock.com/search/steel-roof-old
Source [3]: https://www.stronggguard.com.au/news/how-to-repair-rusted-gutters/

BAD EXAMPLES

- Using wrong material for screw on pre-painted metallic coated steel for flashing installation


[1]


[1]

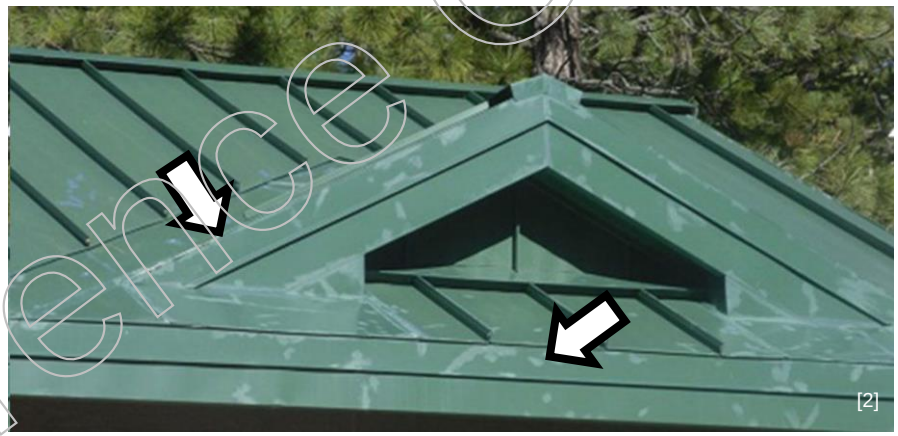

[2]

Source [1]: https://www.alamy.com/stock-photo/sheet-metal-screws.html?sortBy=relevant
Source [2]: https://www.azom.com/article.aspx?ArticleID=11833

COLOUR FADING

- Colour will be fade in different speed if different painting technology is used on flashing and metal roof


[1]


[2]


[3]

Source [1]: https://www.westernstatesmetalroofing.com/blog/when-to-use-corrugated-metal-roofing
Source [2]: https://www.ascbp.com/chalk-fade-blog/
Source [3]: https://bmroofing.com/metal-roof-fading/

CONCLUSION

- Categories of flashing and detailing concept:

Roof Flashing, Wall Flashing & Custom Flashing

Same Flashing Detail Cannot be Used on Different Product

- Rainwater goods design concept:

Catchment Area, Aesthetic, Gutter Size, Gutter Capacity

- Risk of using incompatible material for flashing:

Weak Material (more active) Will be Deteriorated Faster

Uneven Colour Fading Due to Aging Differently

Colour Chalking May be Happened on Inferior Painting Technology

THE BEST MATERIAL DESERVE WITH THE BEST JOINT

THE BEST MATERIAL DESERVE WITH THE BEST JOINT


PAM
NORTHERN
CHAPTER
UniSon
KAWA
Ultimate Cover
BlueScope
Q&A
For Reference Only

PAM NORTHERN CHAPTER

UniSon KAWA® Ultimate Cover

BlueScope

Seminar:

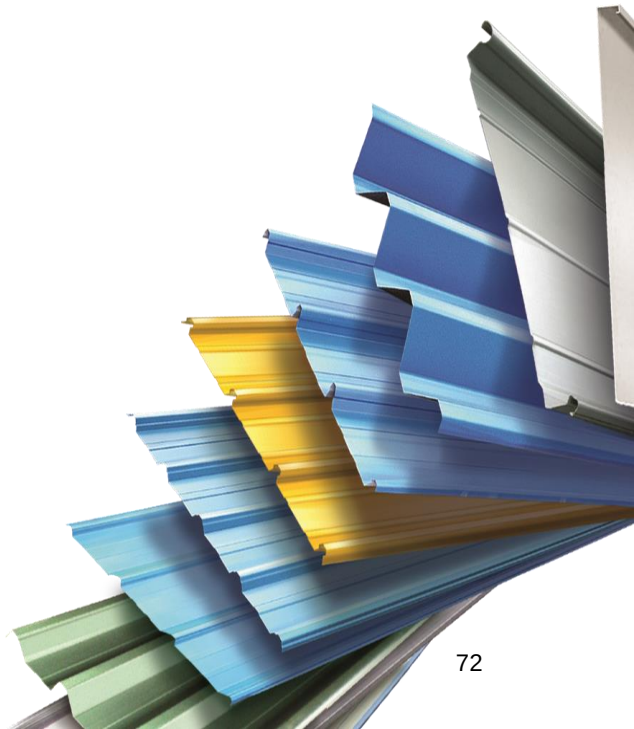
Designing Beyond Limits: Unveiling the Art of Metal Cladding Detailing Mastery

Speaker:

En. Zaidi Semail
General Manager,
United Seasons Sdn Bhd

CONTENT

1. BQ Specification
2. Flashing, Capping
3. Fundamental of Rainwater Goods
4. Accessories
5. Do’s & Don’ts
6. Project Reference
7. Summary
8. Q&A



BQ SPECIFICATION

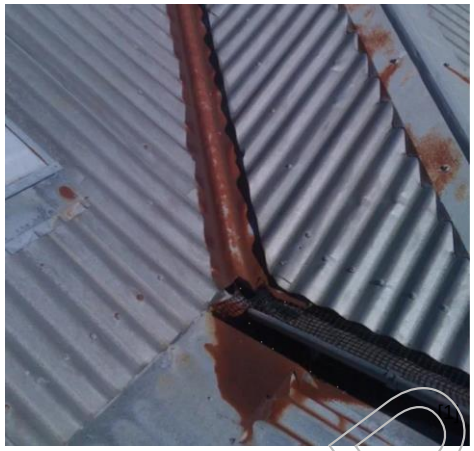
BQ SPECIFICATION

DESCRIPTION
BILIK GENSET & MSB (Penjara Wanita Katang) **ELEMENT NO. 4 ROOF STRUCTURE AND ROOF COVERING (Cont'd)**
ROOF Covering
Supply and fix Spandeck Optima or other approved equivalent consist of 0.42mm BMT in AZ 150 G550 in zincalume locked seam 0.55 BMT meta deck roof covering sheets in AZ150 G300 clean colorbond XRW-OFF WHITE at 5 degree pitch, a layer of 1.5mm thick bituminous felt, a layer of 50mm thick glasswool insulation (den. 32kg/m3), a layer of self supporting "Enviro-Turf double sided non-fire retardent aluminium foil, 0.55mm BMT thick in clean colorbond steel flashing with silicon sealant and all other associated members not measured but required and fixing onto roof trusses (measured separately) with screws, bolts and nuts with colour matching, all as described and all accordance to manufacturers specification and S.O.'s approval. (warranty 10 years)
Fascia Board
230mm x 7.5mm thick woodgrain fascia cement board as specified, fixed to roof trusses (measured separately) and including all necessary painting
Flashings; galvanised iron sheet as specified
No. 18 gauge flashings; 150mm lapped joints; fixing with matching clips and wedges
400mm Girth; 3 times bent; both ends dressed over valley tiles
300mm Girth; 2 times bent; one end dressed over roof tiles and the other end fixed to brickwall

- Contradict Information on BQ
- Roof Sheet & Flashing are **incompatible**

CONSEQUENCES

- Using wrong material for flashing on pre-painted metallic coated steel

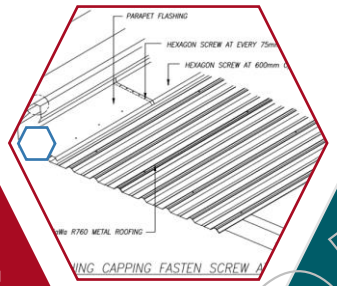


Source [1]: https://info.vantagepointroofing.com.au/blog/galvanic-corrosion-leaks-mould-watermarks
Source [2]: https://commercialroofusa.com/repair-metal-leaky-roof/
Source[3]: https://www.shutterstock.com/search/steel-roof-old

WHAT IS HAPPENING TODAY?

FLASHING & CAPPING

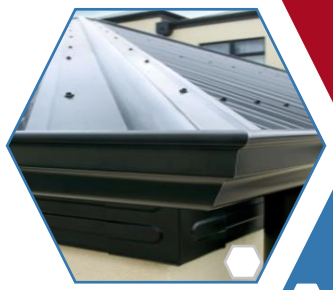
TYPE OF FLASHING & CAPPING



FLASHING DESIGN

PARAPET FLASHING

RIDGE CAPPING

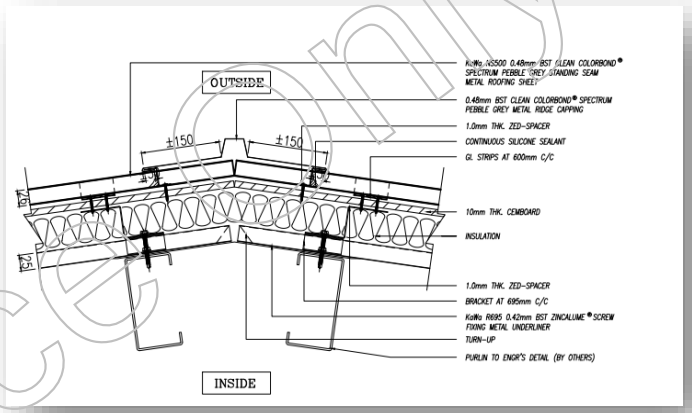


CURVE FLASHING

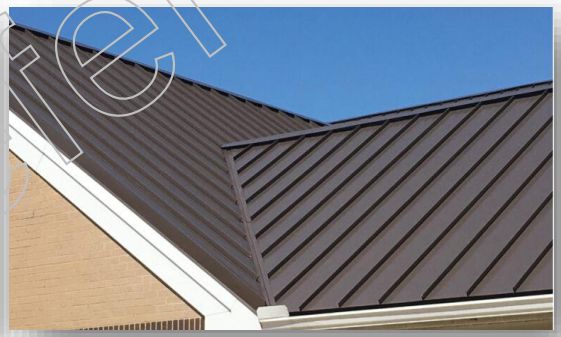
EAVE CAPPING

RIDGE CAPPING

- Commonly available on a double pitch roof
- Size/ Girth of flashing to be selected carefully
- Proper securement with self-tapping screw with washer

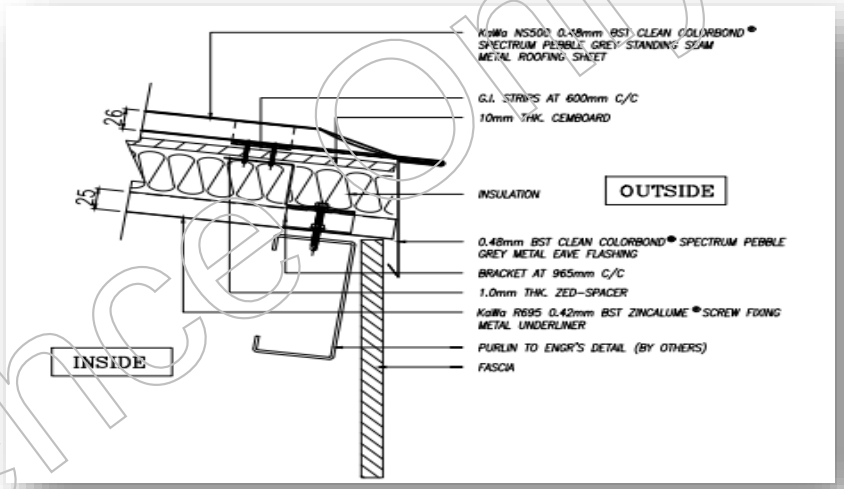


KAWA NS500 0.48mm BST in **COLORBOND® Steel**



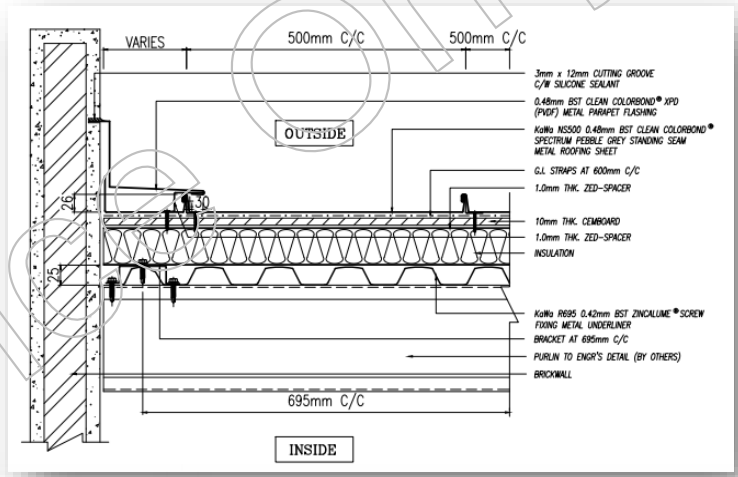
EAVE CAPPING

- Creates flush finishing to Eave of roof
- Sometimes also act as a fascia design to eave finishes.
- Preventing water sips in if overflow of water from the gutter

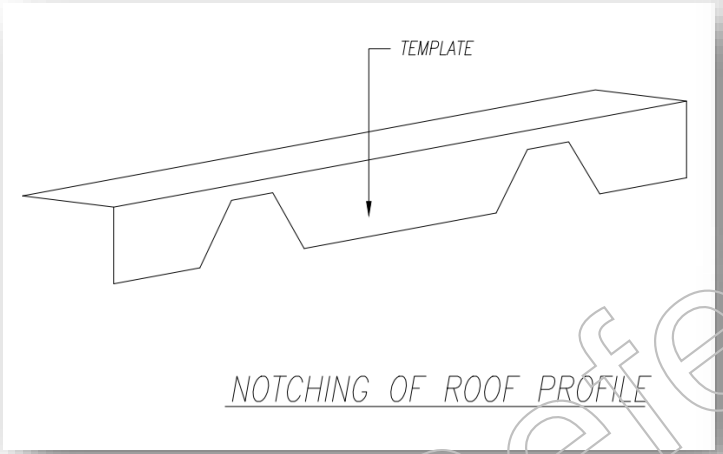


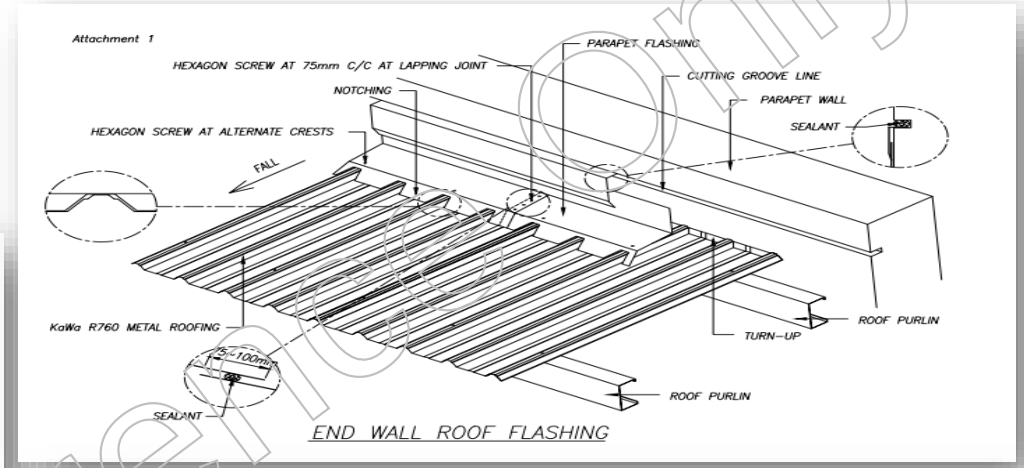
PARAPET FLASHING

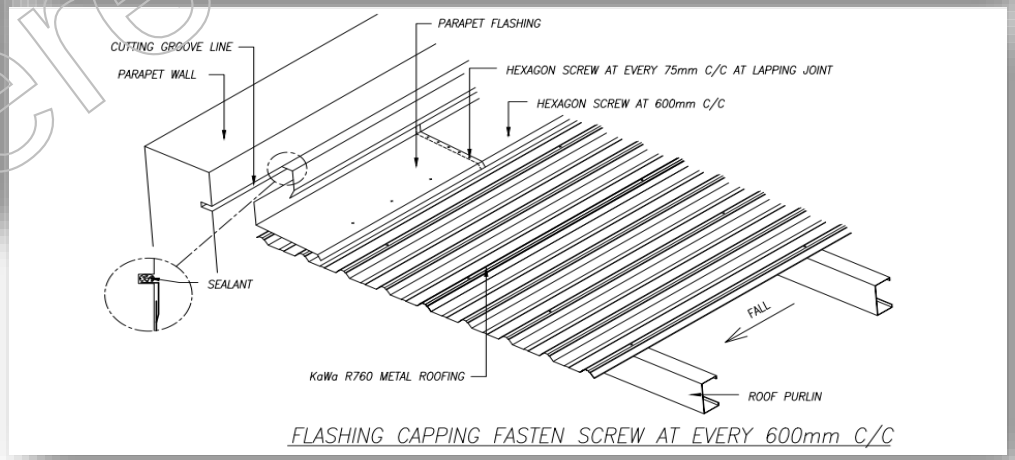
- Generally interface with the wall either concrete/ metal cladding.
- For interfacing with concrete a cutting groove with a layer of silicone recommended.
- At least a single pan gap is required for a better water tightness.



FLASHING DESIGN



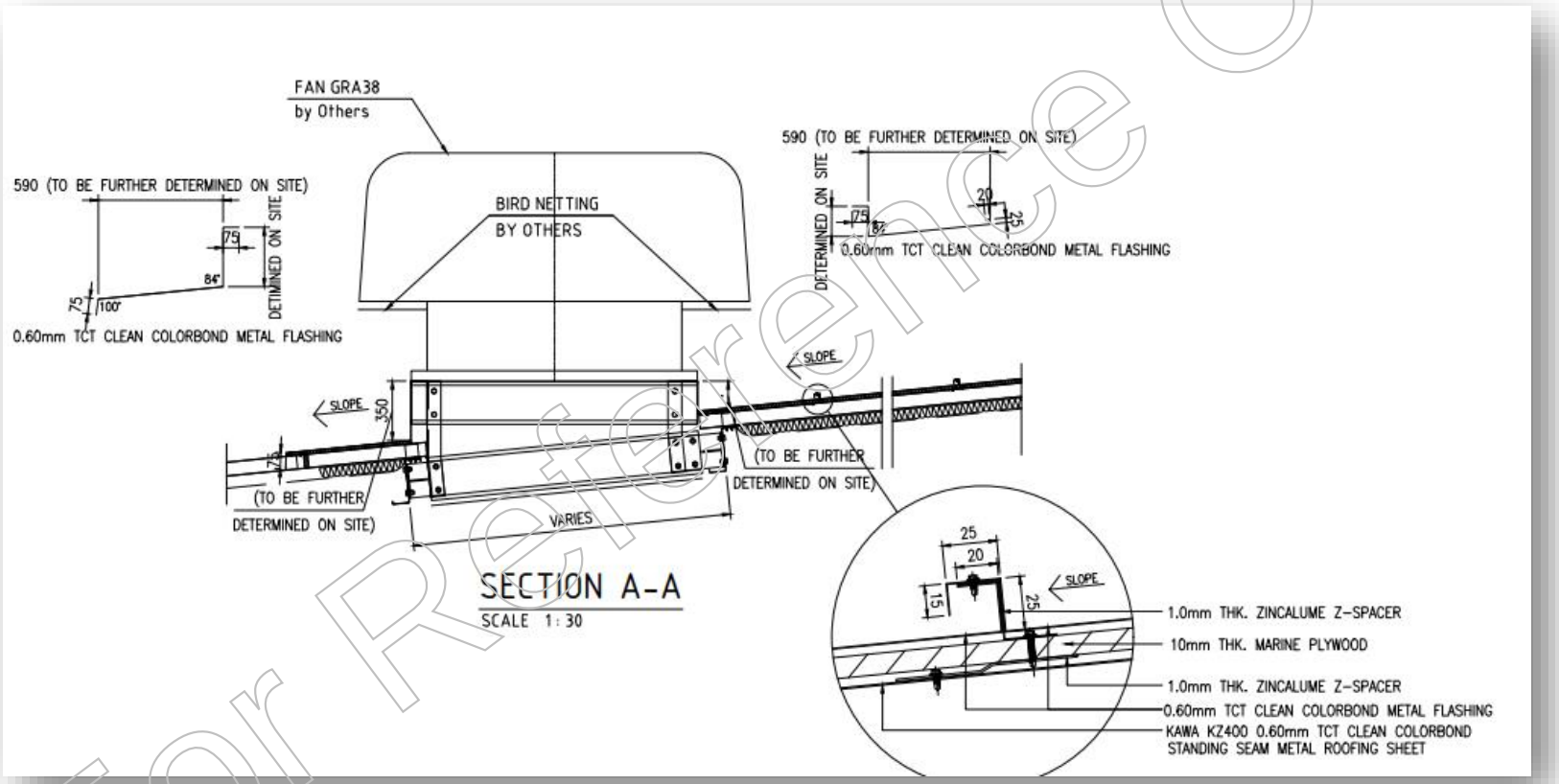




NOTCHING EXAMPLE

Lembaga Getah Malaysia

VENTILATOR TRAY FLASHING



CURVE FLASHING

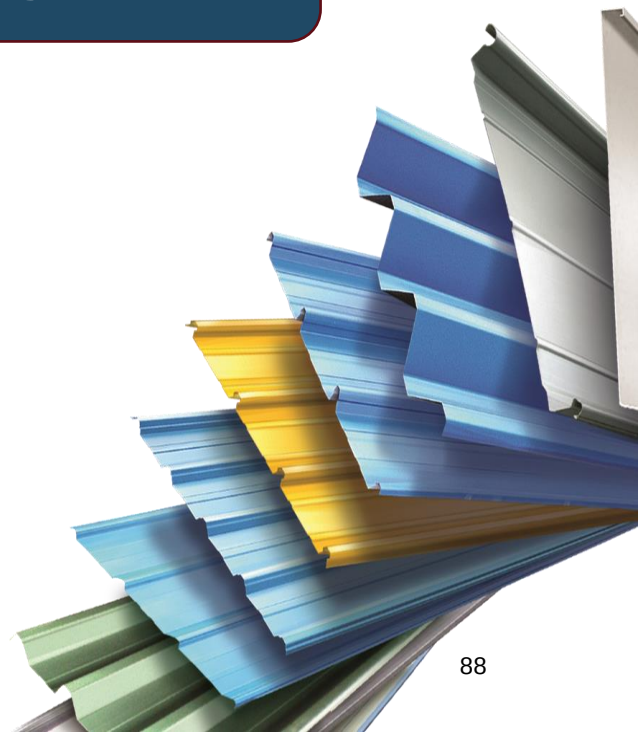
- To create an ideal capping follow the roof curvature.
- To take away from the segmented flashing/ capping normally done.

COST OPTIMISATION by:
Optimising Flashing & Capping Size

- Girth size selection : 900mm, 600mm,450mm, 300mm, 225mm, and 150mm
- Girth refer's as NOT EXCEEDING(n.e)
- Bending type and shape
- Length of Flashing capping

Which one holds greater importance?

GUTTER or **DOWNPIPE SIZE**



DOWNPIPE CAPACITY (CSIRO)

The cross-section of a downpipe from an eaves gutter should be 65 mm^2 for each square-metre of roof area draining into the downpipe.

The cross-section of a downpipe from an internal box gutter should be 95 mm^2 for each square metre of roof area draining into the downpipe.

However, the minimum cross-section of any downpipe should be at least half that of the gutter from which it drains.

It is good practice to provide drainage sumps at downpipe connections to gutters or at least have funnels at the head of each downpipe, particularly for internal box gutters.

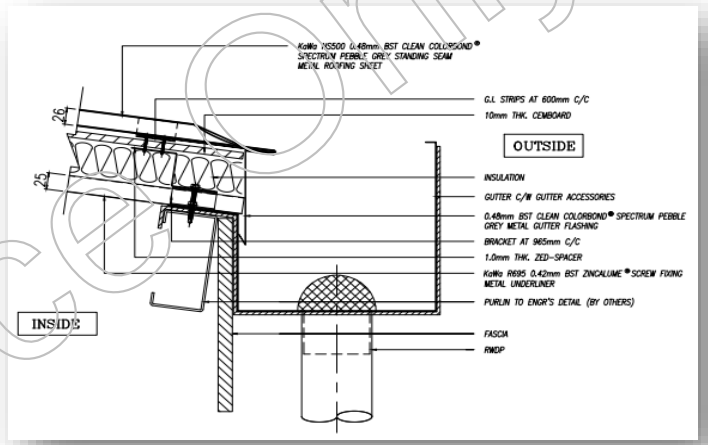
Where possible downpipes should be spaced at no more than 18 m centres.

RAINWATER GOODS

GUTTER VS PIPE (EXCEL)

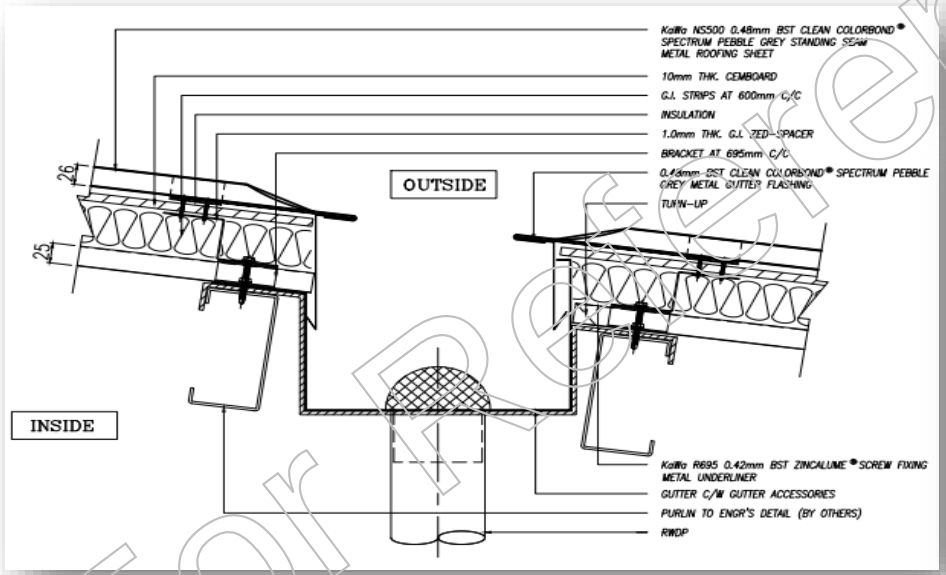
EAVE GUTTER

- Commonly seen on a typical roof design for steel, Aluminium, Stainless Steel or PVC.
- Normal bracketing or conceal Bracket.

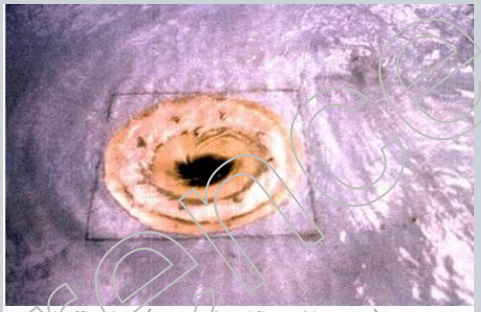
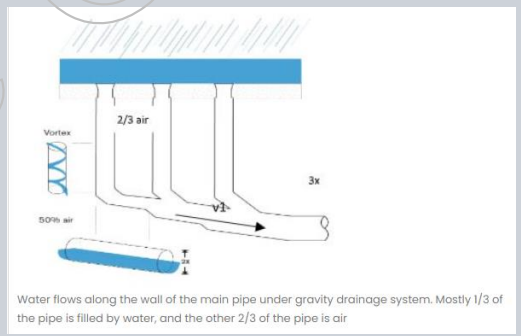
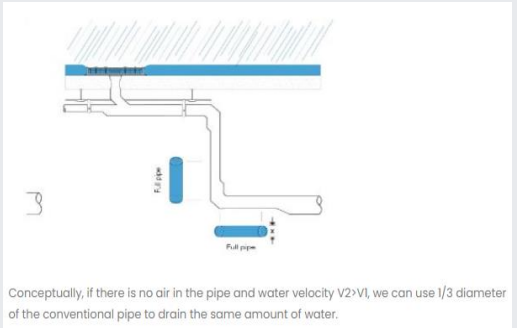


CONCEALED GUTTER

- Hidden Gutter for aesthetic purpose
- Flush finishes from roof design

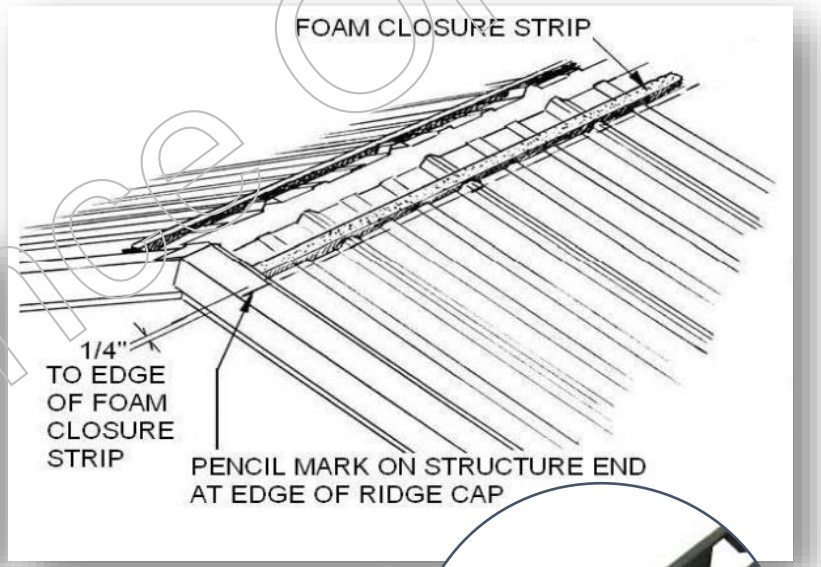


COST OPTIMISATION

	Features		
Conventional	• Simple calculation with UPVC piping • Easier connection with Socket and Glue • Easy maintenance if any changes	 No air baffle plate (conventional flow with vortex)	 Water flows along the wall of the main pipe under gravity drainage system. Mostly 1/3 of the pipe is filled by water, and the other 2/3 of the pipe is air
Siphonic	• Less Outlet with smaller size piping • Less Sum on ground to main drain • Gutter could be smaller in size. • Large catchment area with calculated	 With air baffle plate(siphonic flow, no vortex)	 Conceptually, if there is no air in the pipe and water velocity V2>V1, we can use 1/3 diameter of the conventional pipe to drain the same amount of water.

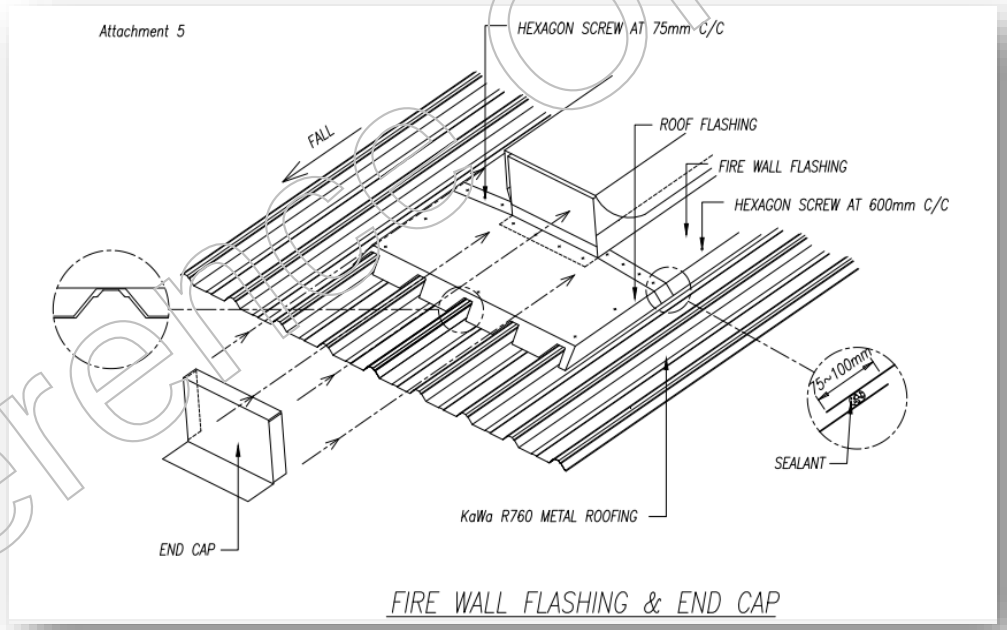
ACCESSORIES

FOAM FILLER



- Foam type material installed for preventing water back flow or splashes.
- Preventing animal (birds) to enter from ridge etc

END / EAVE CLOSER



- For deep corrugation profile, act as barrier
- Aesthetic appeal for end finishes

DO's & DON'Ts

DO's & DON'Ts

- Choosing **suitable material** for a successful installation
- To provide **durability & aesthetic** value

- Cut & shape it **accurately** to fit the designated areas
- Ensure precision, as ill-fitting flashing will not protect against water damage

- Ensure all flashing **seamlessly** integrates with the roofing material
- Forming a **watertight seal**

- Seal the edges with a high-quality **metal roof sealant** to prevent water infiltration.
- Ensure water does not seep under the edges of the flashing

PROJECT REFERENCE

Toray Plastic, Penang

KAWA R670 in COLORBOND® Steel

KDU University, Penang

KAWA NS Standing Seam in COLORBOND® Steel

FFM Grain Silo, Selangor

KAWA NS Standing Seam in COLORBOND® Steel

TESCO Distribution Centre, Selangor

KAWA R670 & R760 in COLORBOND® Steel

Shimadzu Manufacturing Asia, Seremban

KAWA R650 in COLORBOND® Steel

Nissan Glenmarie, Selangor

KAWA R670 in ZINCALUME® Steel

Proton City Sport Complex, Perak

KAWA R670 in COLORBOND® Steel

Proton City ETM Building, Perak

KAWA R500 Lockseam in COLORBOND® Spectrum Steel

Panasonic Energy Malaysia, Kedah

KAWA R650 in COLORBOND® Steel

Misc Integrated Logistics, Selangor

KAWA R650 in COLORBOND® Steel

UITM Student Centre, Selangor

KAWA KZ Standing Seam in COLORBOND® Steel

UINVERSITI TUN HUSSEIN ONN (UTHM), Johor

KAWA KZ Standing Seam in COLORBOND® Steel

Duta Suria, Kuala Lumpur

KAWA KZ Standing Seam in COLORBOND® Spectrum Steel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