Premier TH64 Skillion Garage Assembly Guide

DISCLAIMER

Endurance Sheds and Structures have prepared and offers this document in good faith, but cannot accept fault or claim for any discrepancies, errors or omissions.
This document may be updated at any time without notice. This document contains information that is intended to act as a guide only. Some of this information has been provided by experienced and professional steel erectors and garage builders.
Refer to the introduction notes on page 1 of this document

Copyright: Endurance Sheds and Structures.

Issued January 2017

IMPORTANT NOTICE

Please read prior to commencing erection of your kit.

(1) Construction Health and Safety

Erection of metal buildings can be dangerous or hazardous. Erectors should contact the nearest OH&S, Work Cover or building safety authority and obtain a copy of all construction site and safety requirements before commencing any work.

DO have all electrical leads checked.
DO use only approved ladders and/or scaffolding.
DO wear protective clothing, eye-, foot- and head-wear.
DO read tool operating manuals before using power tools.
DO secure the construction area to prevent unauthorised access.
DO make sure you have adequate insurance to cover site accidents.
DO NOT leave materials or tools in a location where they might cause someone an injury or be subject to blowing in the wind.

Site safety is an important issue. Metal building erectors are responsible for their own, and fellow workers', on-site safety.

The above information is provided as a guide only and is neither final nor comprehensive.
It is the owner's responsibility to acquire and comply with all rules and/or regulations when assembling a structure of any type.

---

(2) Check that your supplier has provided the following:

(a) Slab or footing plan
(b) Bill of materials
(c) Steel marking diagram
(d) Cladding location drawing

Check all the material supplied with your kit against the bill of materials.

The above details must be read in conjunction with this manual and all errors or transport damage reported before commencing erection.

No responsibility will be accepted for delays in assembly due to shortages, errors, omissions or damage.

COLORBOND®, ZINCALUME®, TRIMDEK®, MULTICLAD® and CUSTOM ORB® are registered trademarks of BlueScope Steel Pty Ltd.

IMPORTANT RECORDS

Keep this booklet for future reference.

In the event of an accident or damage to your building, you might need to obtain replacement parts or have repair work carried out.

Complete the details below so you have a record of your building's history.

Model: Premier TH64 Skillion Garage Style:

Job No. Date:

Supplier: Phone No:

Address:

Erector: Date:

Notes:

Write the job number showing on the boxes or paperwork.
These numbers are important when ordering spare or replacement parts.

All rights reserved. Copyright 2017
Endurance Sheds and Structures

Congratulations on purchasing a Endurance Sheds and Structures kit building. The Endurance Sheds and Structures management, staff and distributors hope you get many years' service and use from the product.

INDEX

Introduction 1
Concreting Details 3
- **Typical Slab Arrangement and Cast-In Strap Details 3**
- **Typical Pad Footing and Cast-In Strap Details 5**
- **Interpretation of Pad Footing Drawings 6**
- **Interpretation of Pad Footing Drawings for Access Doors and Framed Openings 7**

10 Steps to Building a Reinforced Concrete Slab-on-Ground 8
Materials Identification 10
- **Rolled Sections 10**
- **Connection Cleats 11**
- **Flashings 17**
- **Fasteners 18**

Tensioning Requirement 19
Mechanical Masonry Anchor Installation 20
Steel Framework 21
- **General 21**
- **C150 Frames 22**
- **C200/C250 Frames 22**
- **Column Lateral Stiffeners 23**
- **End or Partition Wall Columns 24**
- **End or Partition Wall Battens 25**
- **Raking Angles 25**
- **End and Partition Wall Mullions 26**
- **Side Wall and Roof Framing – Fascia Connections 27**
- **Side Wall and Roof Framing – Topspan Battens 28**
- **Additional Purlin for 5° Roof Pitch, Non Eaves Overhang 29**

Roller Door Framing 30
- **Set Back End or Partition Walls 30**
- **Side Walls 31**
- **Other Mullion & Head Arrangements 32**

Roller Door Fitting 33
Fly Bracing 34
Rod "X" Bracing 35
Strap "X" Bracing 36
Wall and Roof Cladding 37
Skylights 40
Flashing and Finishing 41
Gutters 46
Downpipes 47
Premium Access Doors 48
Sentry Single Face Access Doors 50
Framed Openings 52
Windows 53
- **600mm and 790mm High Non-Cyclonic 53**
- **600mm, 790mm and 900mm High Cyclonic and 900mm high Non-Cyclonic 54**

Awnings 56
General 56
Component Identification 57
Framing 58
Finishing 62
Annexes 63
General 63
Cranked and Stepped Roof Types 64
Cladding 65
Cranked 5° Annexe Roof to 10° Skillion Roof 66
Cranked 5° Annexe Roof to 5° Skillion Roof 67
Cranked 10° Annexe Roof to 10° Skillion Roof 68
Additional Purlin for Annexe with 5° Roof Pitch, Non Eaves Overhang 69
Cleats to Columns 70
Cleats to Rafters 71
Stepped Roof 73
Cleat Orientations 74
Flashing to Main Garage 75
Annexe Corner and Barge Flashing 76
Horizontal Cladding 77
Introduction 77
General 77
Vertical Batten Fixing 77
Primary and Secondary Vertical Battens 78
Fixing of Cladding 79
Flashings 80
Premium and Larnec Access Doors 81
Windows 82
Window Framing and Fitting Procedure 83
Framed Openings 84
Awning Trimmer to Fascia Connection 86
Overhangs Supplement 87
Introduction 87
Overhang Connection Cleats 88
Overhang Flashings 89
Roof Bracing with Eaves Overhang 89
Side Wall Eaves Overhang 90
Introduction 90
Eaves Height 90
Side Eave Overhang Strut Fixing 90
Eave Overhang Fascia Fixing 90
Steel Framework – C150 Framed Main Buildings 91
Steel Framework – C200/250 Framed Main Buildings 92
Overhang Fascia Connections 93
End Overhangs 95
Introduction 95
End Overhang Strut Fixing 95
End Overhang Roof Batten Fixing 95
End Overhang Support Fascia Fixing 95
Side and End Overhang Frame Connections 96

Roof - Cranked Connection 100
Roof - Stepped Connection 101
Flashings – Barge Capping 102
Flashing - Side Eave Capping 103
Flashing - End Eave Capping 104
End Eave Raking Angles – No End Overhang 105
End Eave Raking Angles – End Overhang 106
Additional Purlin for 5° Roof Pitch, with Eaves Overhang 107
Roof Cladding Eave Overhangs 108
Building Assembly Checklist 109
Maintenance Notes 113

Introduction

The following construction notes have been prepared to existing designs and component details at the time of printing. Endurance Sheds and Structures reserve the right to alter components or specifications shown here without notice and will not accept liability for errors and omissions. Please contact your Endurance Sheds and Structures Dealer regarding any discrepancy between your building components and these notes.

There are many successful methods and sequences of constructing a Endurance Sheds and Structures Skillion Garage, depending on the type and size of building, the tools and equipment available, the number of personnel available and their experience and skill. Even among professional erectors of Endurance Sheds and Structures buildings there is a wide difference of opinion as to the “best” methods and sequences of construction.

Level, accurate concrete floor slabs or pad footings with a neat tradesman-like finish are essential for the completion of a quality building. Only people with experience in concreting should attempt forming up, pouring, locating cast in straps in and finishing concrete themselves. For this reason concrete is not included in these construction sheets other than three-dimensional data and concrete specification needed by a professional concreter. See items 2 and 3 below. For those attempting their own concrete work, 2 sheets from Smorgon ARC entitled “**10 Steps to Building a Reinforced Concrete Slab-on-Ground**” are included in this booklet on Page 8 and 9.

These construction sheets attempt to show how the various components fit together, with details of all-important connections without necessarily nominating a method or sequence to achieve the assembly. In some areas a suitable method may be suggested and in others “helpful hints” may be added. A typical erection procedure is to prepare slab or pier, assemble frames on slab or ground, stand frames and secure, fit fascia purlins and ridge purlins, fit roller door framing and any additional columns, etc. Next fit wall and roof purlins, check for squareness and fix wall cladding, fix roof sheeting then doors, windows, accessories, remaining trims and rainwater goods.

Construction sheets are of a general purpose nature and some of the details and connections shown may not apply to your building.

At least 6 drawings or documents (some comprising of more than 1 sheet) are provided with information that is specific for your building. (Sheets 1, 2 and 3 below are provided when the building is ordered). A copy of all 6 sheets together with this assembly guide should be read in conjunction with each other before commencing construction.

1) Architectural Drawing (Floor Plan and Elevation Drawing)
   Floor plan, elevations and sections showing main dimensions, doors, windows, materials, finishes, colours and any other accessories or options included. Submit with construction application.

2) Engineering Drawings
   Shows steel framework and concrete specifications, general construction and site notes and engineering certification. Submit with construction application.

3) R.C. Floor Slab or Pad Footing Plan
   Includes plans of slab or footings showing extent of concrete, reinforcing requirements, size of edge beams or pads, location of roller door ramps, and location of cast-in straps. Submit with construction application.

4) Structural Steelwork Marking Diagram
   Shows mark number and location of all major structural members.

5) Cladding Location Diagram
   Shows location and length of all roof and wall sheeting including major flashing and trims.

6) Bill Of Materials (BOM)
   The BOM Is a list of all the items supplied in your building kit. It shows the part code number, mark number where appropriate and a description of the part to help identification.

Introduction (continued)

BEFORE STARTING ANY FRAMING WORK:

1) CAREFULLY READ ALL OF THE CONSTRUCTION SHEETS AND DRAWINGS SUPPLIED.

2) CHECK TOOLS AND EQUIPMENT.
The minimum tools required for the successful erection of your ENDURANCE SHEDS AND STRUCTURES SKILLION GARAGE can generally be found in most handymen's tool kits. However read the following list carefully to ensure you have the listed tools and equipment available before starting.
If pouring your own slab, additional formwork and concreting tools are required.

POWER TOOLS
- DRILL with hammer capability.
- SCREW GUN or VARI-SPEED REVERSIBLE DRILL with 8mm (5/16") and 10mm (3/8") sockets and a Phillips #2 Bit.
- Cold cut Metal cutting disc, nibbler, shears or snips.
- AIR or ELECTRIC IMPACT WRENCH with 18mm and 24mm impact sockets is not absolutely necessary, but on large buildings with joint connections i.e. base, eaves, apex and knee braces, it will save many hours of hard work.

DRILL BITS
- A set of HSS bits up to 18mm diameter, plus 8mm, 10mm and 12mm diameter, masonry bits.
- Also a 43 mm diameter, metal hole saw for standard access doors (Not required for premium or Larnec access doors).

SPANNERS
- Two (2) adjustable spanners are a bare minimum, but a selection of 10mm, 13mm, 18mm and 24mm ring and socket spanners make things a lot easier.

OTHER TOOLS AND ITEMS (ladders, props and lifting equipment should be an approved type)
- Tin Snips
- Hack Saw
- Pop Rivet Gun
- Pliers
- Score and Snap Knife
- Screwdrivers
- Podger Bar
- 2 Step Ladders
- Spirit level
- String line
- Rope
- Timber or metal props
- Metric measuring tape
- Safety equipment and security barriers

All OH&S and building authority requirements such as protective clothing, first aid kit, etc.

MANPOWER
- Two (2) Persons.

3) CHECK FLOOR/ FOOTINGS for overall size, level and squareness (equal diagonal dimensions across corners) and location of cast in cleats and HD bolts. Any dimension that is more than 10mm out could cause problems in construction.

4) UNPACK, IDENTIFY AND LAY OUT ALL PARTS. Use the component identification sheets and the descriptions shown on the Bill of Materials to help identification. If site allows, lay out parts in their relative positions to save time finding components later. Check quantities against Bill of Materials. Contact your Endurance Sheds and Structures supplier for clarification or rectification in the event of errors.

NOTE: If building is not to be erected immediately, store all materials, parts and boxes on packers off the ground and under cover. All materials must be kept dry until assembled.

Concreting Details

Typical Slab Arrangement and Cast-In Strap Details

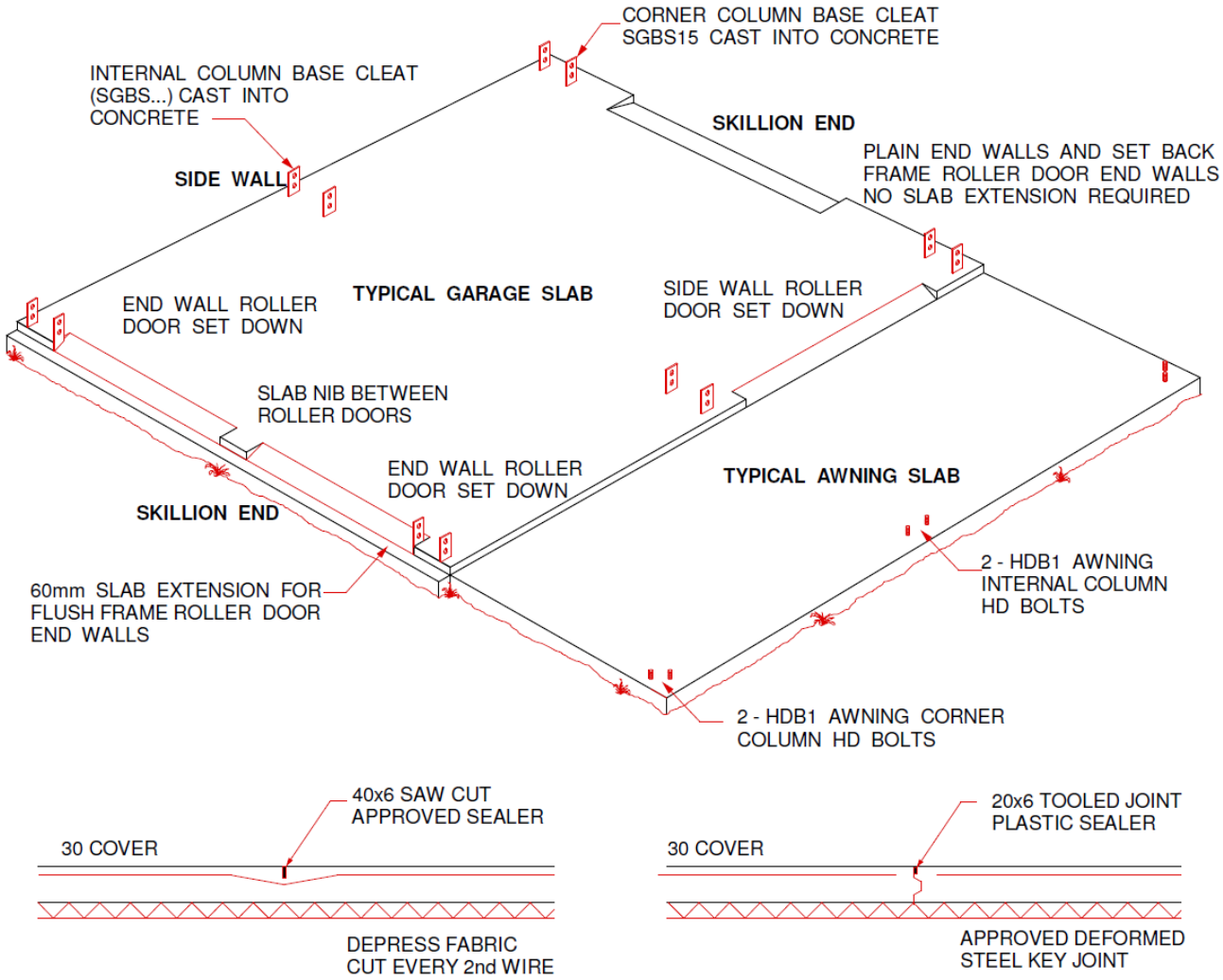
Reinforced Concrete Floor and Pad Footings

Before any excavations or site preparation, carefully read engineering schedule titled "…(job number)-ES". This drawing contains information as to concrete mix requirements, pad footing sizes, slab edge beam dimensions, and reinforcement requirements. This drawing's notes also contain important information regarding preliminary foundation and slab preparation.

Two alternative concrete plans are available in EDS:
1) A reinforced concrete slab plan - RC Slab Plan
2) An isolated pad footing plan - Pad Footing Plan

The RC Slab Plan will indicate the location and the relevant cast in strap, overall concrete slab sizes, set downs in slab edge for roller doors, cast in strap offsets, cast in strap surface penetration, and location of control joints.

The Pad Footing Plan will indicate the location and the relevant cast in strap, set downs on the pad footings for sheeting clearance, cast in strap offsets, cast in strap surface penetration, and pad footing size.



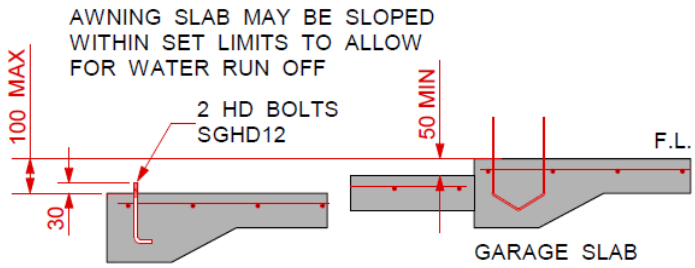
CONTROL JOINT DETAIL

CONSTRUCTION JOINT DETAIL

NOTE
Construction joints must be supplied where an unbroken run of concrete pour exceeds 20m in any direction.

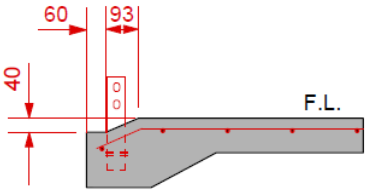
Typical Slab Arrangement and Cast-In Strap Details (continued)

The Section images on this page refer to the Footing Drawings mentioned on the previous page. Refer to the RC Slab Plan or Pad Footing Plan from EDS for the location of the following Section images, as applicable to your Endurance Sheds and Structures Skillion Garage.

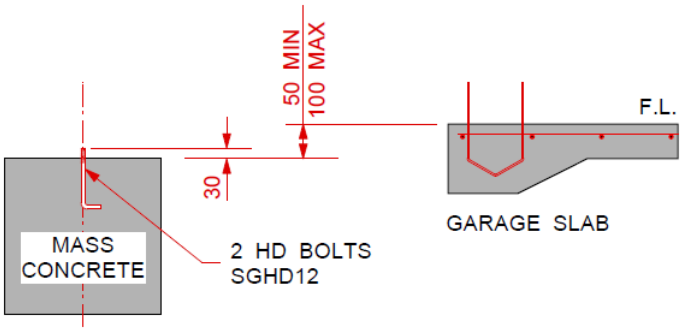


AWNING SLAB DETAILS AS FOR GARAGE SLAB

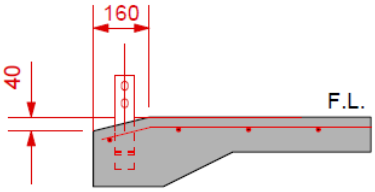
SECTION C - C
TYP AWNING/GARAGE SLAB DETAIL



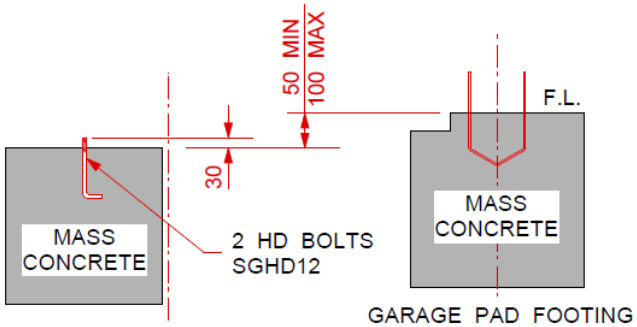
SECTION D - D
TYPICAL SECTION AT FLUSH FRAME END WALL ROLLER DOOR
TYPE A DOORS, OPENING WIDTH PLUS 50mm.
AA & B DOORS, OPENING WIDTH PLUS 100mm.



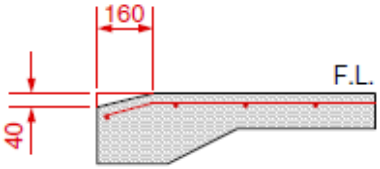
SECTION C - C
TYP AWNING PAD FOOTING/GARAGE SLAB DETAIL



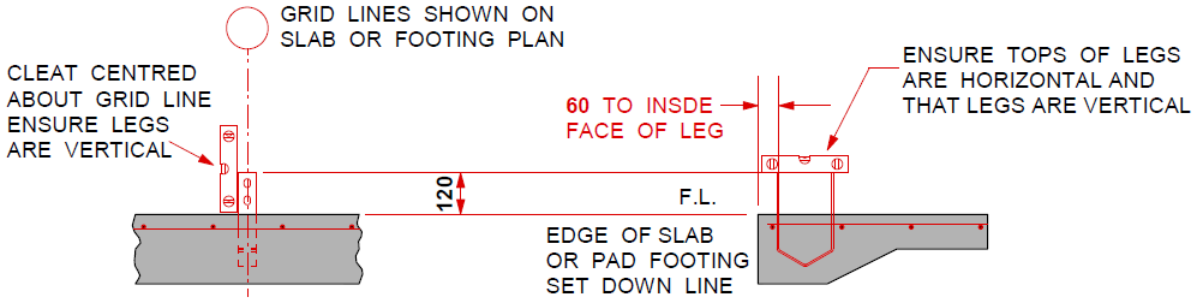
SECTION E - E
TYPICAL SECTION AT SET BACK FRAME END WALL ROLLER DOOR.
TYPE A DOORS, OPENING WIDTH PLUS 50mm.
AA & B DOORS, OPENING WIDTH PLUS 100mm.



SECTION C - C
TYP AWNING/GARAGE PAD FOOTING DETAIL



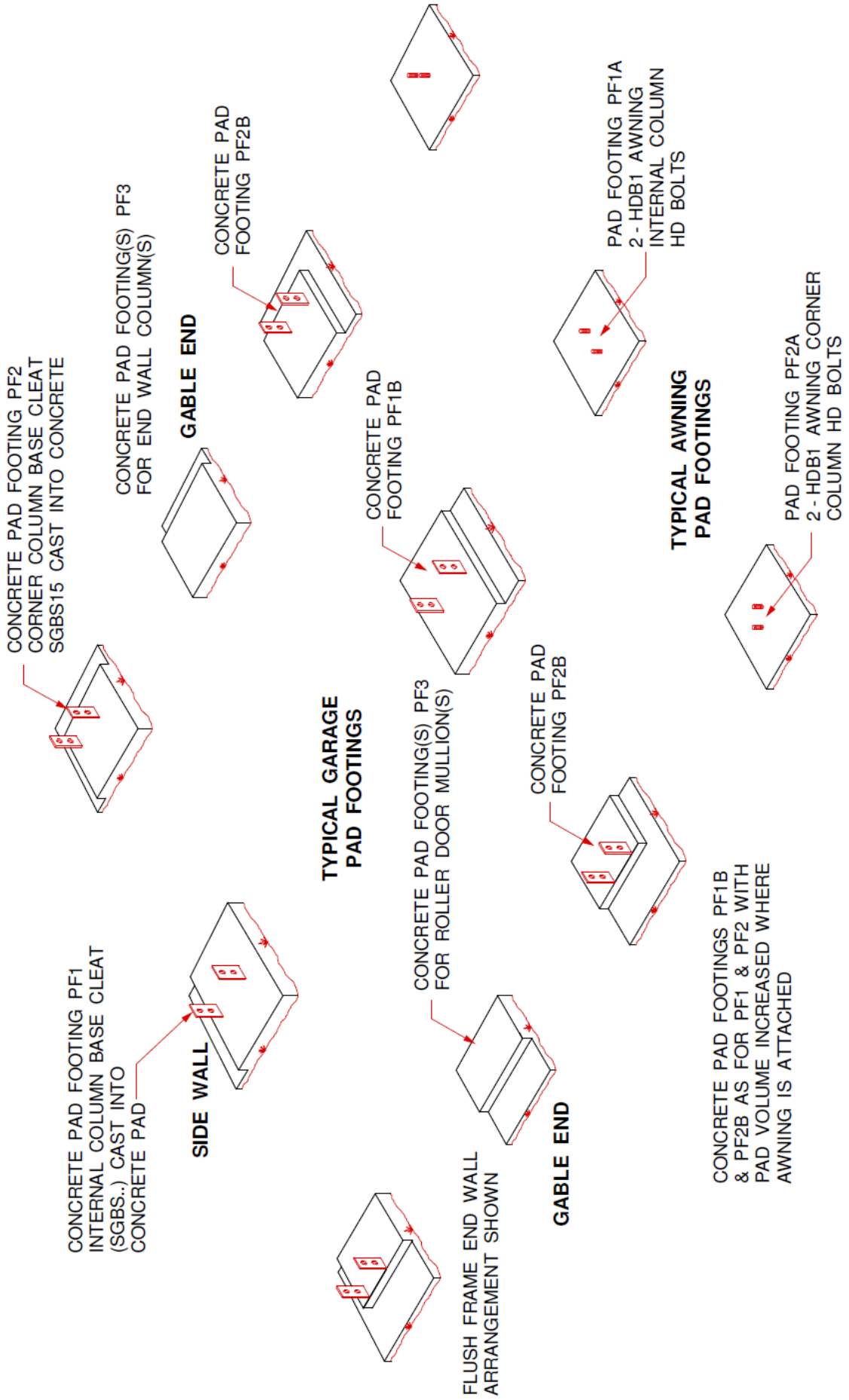
SECTION F - F
TYP SECTION AT SIDE WALL ROLLER DOOR
TYPE A DOORS, OPENING WIDTH PLUS 50mm.
AA & B DOORS, OPENING WIDTH PLUS 100mm.



"U" BASE CLEATS

ACCURATE PLACEMENT OF "U" BASE CLEATS IN CONCRETE IS ESSENTIAL FOR SUCCESSFUL TROUBLE FREE ERECTION AND ASSEMBLY OF GARAGE

Typical Pad Footing and Cast-In Strap Details



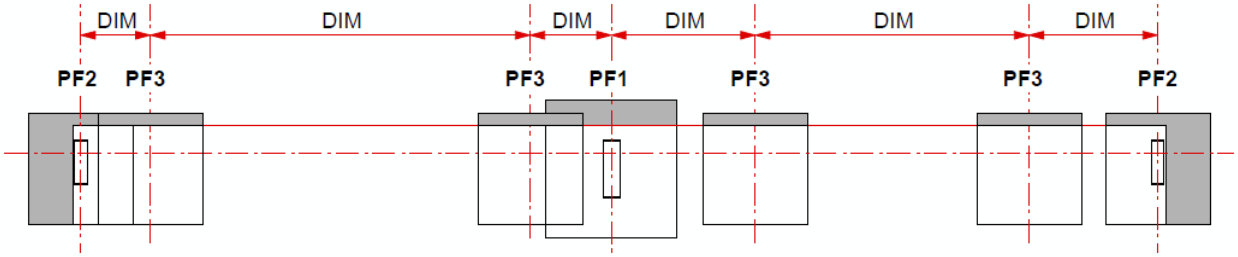
Interpretation of Pad Footing Drawings

Pad footing plan drawings show footings for all columns (main frame, corner, end wall, partition) and all roller door mullions (side wall, end wall, partition). They are self-explanatory for plain garages without roller doors but can become complicated when roller doors are added - particularly if located close to columns. This page helps interpretation of the drawings and the options available when pads overlap.
Pad footing plan drawings do not show footings for Access Doors and General Purpose Framed Openings as they are not considered critical to the structure and may be located anywhere on the building where space allows.
The following page shows the options available for access door and GP Opening pad footings.

Pad Footing Legend

PF1 = Pad Footing - Main Frame Column
PF2 = Pad Footing - Corner Column
PF3 = Pad Footing - End Wall or Partition Column or Roller Door Mullion
PF1A = Pad Footing - Internal Awning Column
PF2A = Pad Footing - End Awning Column
PF1B = Pad Footing - Main Frame Column adjacent Awning
PF2B = Pad Footing - Corner Column adjacent Awning
Minimum Pad Size - Length x Width x Depth is shown on the drawing.

All Pad Footings for columns in roof only areas are set down 50mm below enclosed garage pads.
Pad Footings for awnings should be set down 50 to 100mm below enclosed garage pads.
The shaded area shown on most pads indicates an area that to be set down 50mm to allow overlap of wall cladding so that if a floor is added later it would be weather proofed. If this area is not set down wall sheets need to be cut up around the pad footing.
Examples are shown for side walls - end walls similar.

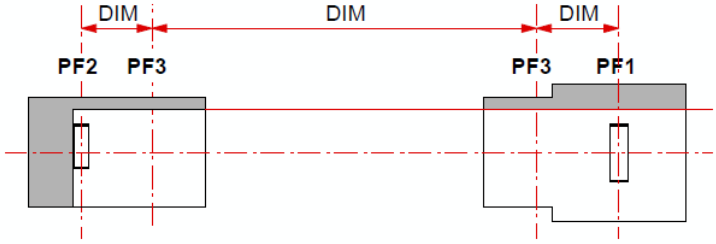


COLUMN PADS AND MULLION PADS OVERLAP **INDIVIDUAL PADS FOR RD MULLION**

Where Pad Footings overlap two alternatives are available.

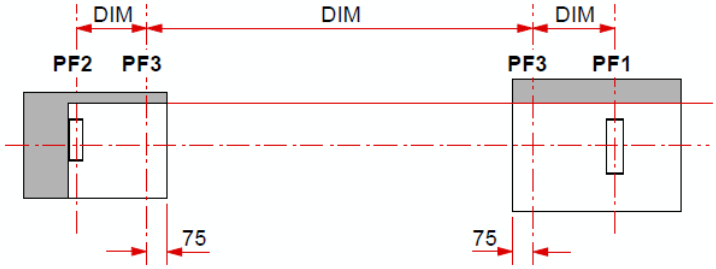
Option 1

Simply dig and form up footing to the overall perimeter and relative depths of the two or three footings involved.



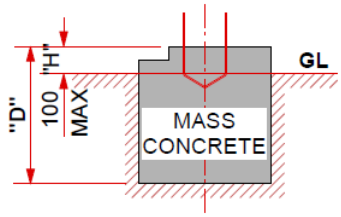
Option 2

Extend the larger pad 75 mm past the centre line of the smaller pad. No pad to be smaller than the largest pad involved.



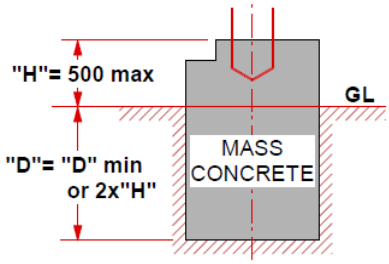
Standard Pad Footing Depth

The pad depth "D" shown on the drawing is designed to allow 100mm max height "H" above the ground level.



Modified Pad Footing Depth

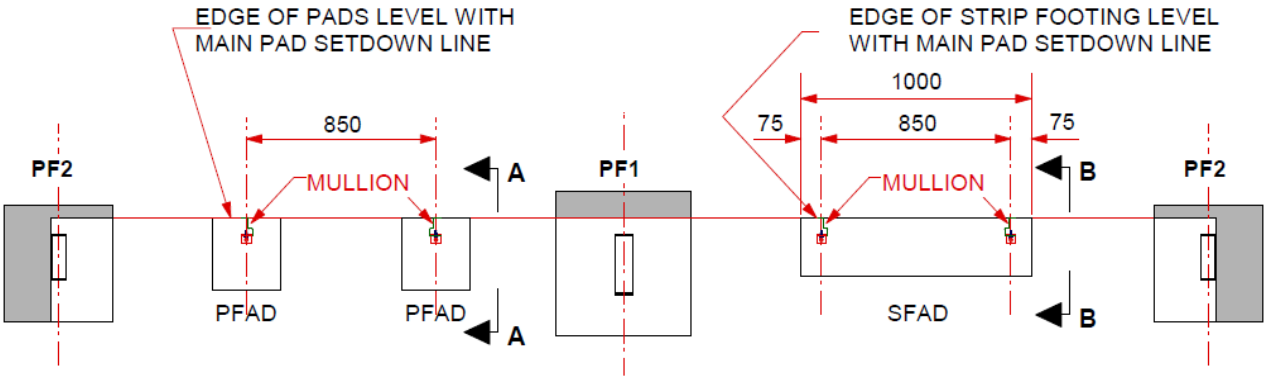
Height above GL "H" may be increased to 500mm provided the depth below GL = "D" or 2x "H" whichever is the greater. If "H" exceeds 500mm the advice of a consulting engineer should be sought.



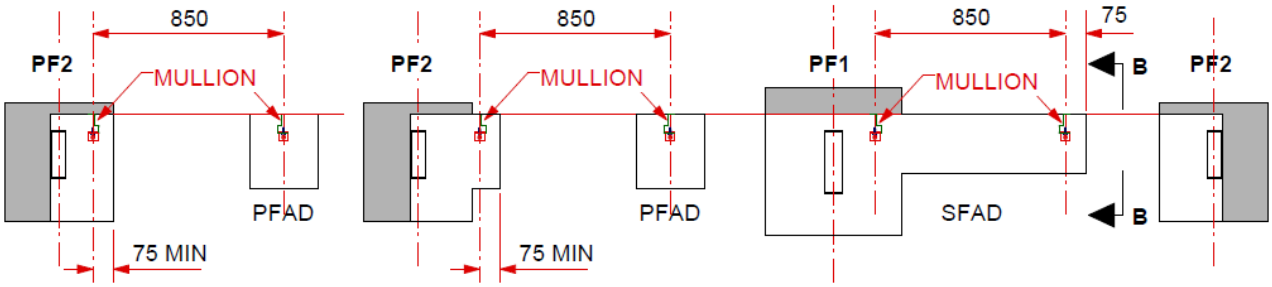
Interpretation of Pad Footing Drawings for Access Doors and Framed Openings

Pad Footings for Access Door and General Purpose Framed Opening Mullions

Similar to roller door mullion pads but smaller and with the addition of an alternative strip pad footing where it is preferable to have a concrete threshold at the door opening.



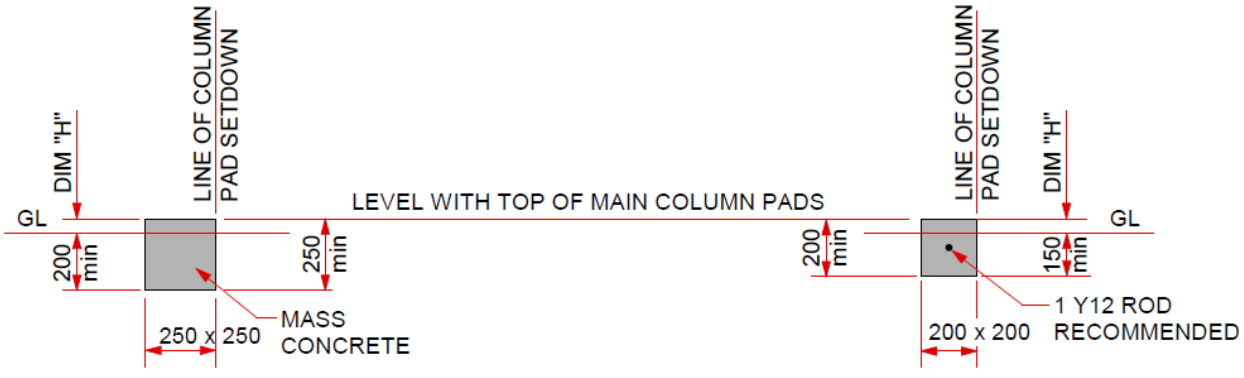
INDIVIDUAL PADS FOR EACH MULLION | **STRIP PAD FOOTING FOR BOTH MULLIONS**



FOR MULLIONS CLOSE TO COLUMNS THE COLUMN PAD MAY BE USED IF MULLION IS LOCATED 75mm OR MORE INSIDE THE EDGE

FOR MULLIONS LESS THAN 75 INSIDE OR OUTSIDE THE EDGE OF COLUMN PADS EXTEND THE PAD 75mm PAST THE MULLION

WHERE THE STRIP PAD FOOTING AND A COLUMN PAD OVERLAP CAST PADS INTEGRAL WITH EACH OTHER

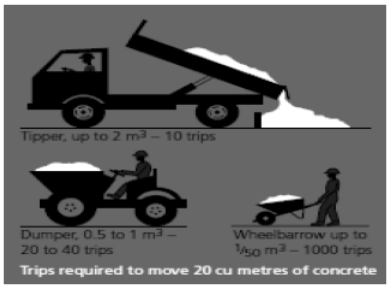


SECTION A - A | **SECTION B - B**

DIM "H" THE HEIGHT OF PAD ABOVE GROUND LEVEL MUST NOT BE GREATER THAN HALF THE DEPTH BELOW GROUND LEVEL

10 Steps to Building a Reinforced Concrete Slab-on-Ground

(All information and images courtesy of SRIA - Steel Reinforcement Institute of Australia)



1. PLAN how to place the concrete

Concrete must be placed quickly and simply. Direct from a mixer truck is easiest and best. To do this the truck has to back-up to two or three sides of the job. Site huts, excavated soil, stacks of materials and set out pegs must be located so as to give trucks enough room to move.

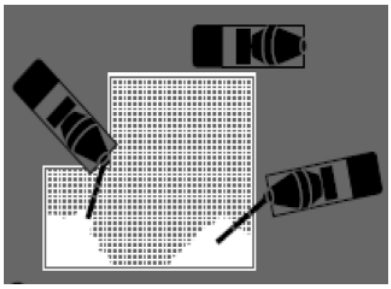
When site access is limited, consider using super plasticised concrete which flows easily. As this 'flowing' concrete can be pushed, using a shovel, three times as far as ordinary concrete, the mixer truck may need to back-up to only one side of the job. As super plasticised concrete will impose higher loads on the formwork and can move steel reinforcement as it 'flows' into place, it is necessary to have stronger formwork and well-tied steel reinforcement. Remember that all concrete, even super plasticised concrete, must be properly compacted as it is placed.

When a mixer truck cannot get close to the slab, means of transporting the concrete to its final position include pump, tipper, dumper and wheelbarrow.

On restricted or hilly sites a mobile crane with a hopper or bucket can be used. Concrete pumps are also a popular method of placing concrete especially on restricted sites: those with hydraulic booms are particularly suitable. The crane must be located on firm ground and parked between the road and the job so the crane boom and bucket can swing between the mixer truck and the job.

Most crane buckets hold over half a cubic meter while the crane boom can reach over 20 meters. Cranes don't need much site clearance and buckets deliver concrete into the middle of large slabs without anything having to be dragged or carried over the steel reinforcement and formwork.

Pumps can push concrete over 200 meters in a straight line but if the supply line rises or bends, the pumping distance is less. Extra workmen for placing and finishing the concrete may be needed because the pump must work continuously and supply the concrete quickly.



2. PREPARE the ground

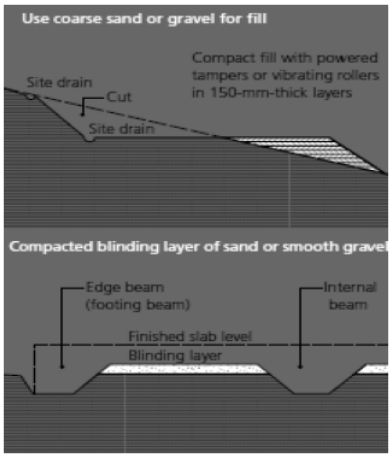
Scrape off the top soil with grass roots in it, then level and compact the sub-soil which has been uncovered.

Sloping sites will need to be cut and filled where the slab is to be placed. Most soil can be used for fill.

Clay fill is not recommended. If the site is clay, cut materials should be removed and granular filling (coarse sand or gravel) used to fill the low side of the site.

The Building Code of Australia sets requirements where fill is proposed. Check with your local authority if you plan to fill.

Dig out the shape of the beams for the slab (and any necessary surrounding drainage trenches) in the prepared ground.



3. FIX the edge formwork

Form the edge of the slab and any steps in the slab where the floor has a step-down.

The formwork must be well staked in place (usually at 1m max spacing) and thick enough so as not to bend under the load of fresh concrete paced against it. Formwork must be rigid.

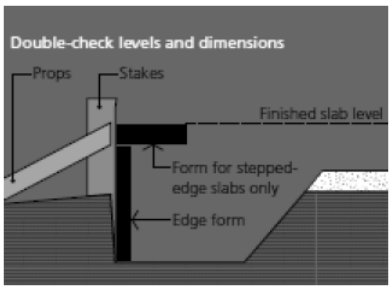
Double-check the level dimensions and shape of the formed area before any concrete is placed.

4. INSTALL service pipes

Drainage and water-supply pipes which are to be covered by the slab must be installed by a plumber at this stage.

Termite collars have to be fitted to all pipes passing though the slab, where the slab is used as the barrier against termite attack.

Concreters must take great care not to move these drainage pipes once they have been set in position.



5. LAY concrete underlay

The vapour barrier underlay membrane for a concrete slab must be a sheet of impermeable material, resistance to ultraviolet deterioration and impact during construction. It is safest to use a known brand which is stamped as being suitable for use as concrete underlay.

Place the underlay over the prepared ground and lap it up over the edge of the formwork. Use as wide an underlay as possible (it is sold in rolls up to four meters wide) so that few joints are needed.

Make sure the underlay folds down into the beam trenches and laps up over the top of the framework.

Free edges of underlay must be firmly secured before the concrete is placed.

At joints, the underlay should be lapped at least 200mm and held in place with small pieces of tape at about 1m centres. Continuous taping of joints is required by some local regulations. Where possible, the lapping should occur in the trenches.

Where drainage and service pipes rise thought the slab the underlay should be cut, turned up and taped around the pipe, a piece of underlay should then be placed over it and taped to the turned-up underlay.



6. FIX reinforcement in the beams

A slab-on-ground has thickened edges which are called edge beams. Sometimes slabs also have internal beams which act as stiffening beams or wall supports. All these beams need steel reinforcement fixed near the bottom - this is called bottom steel.

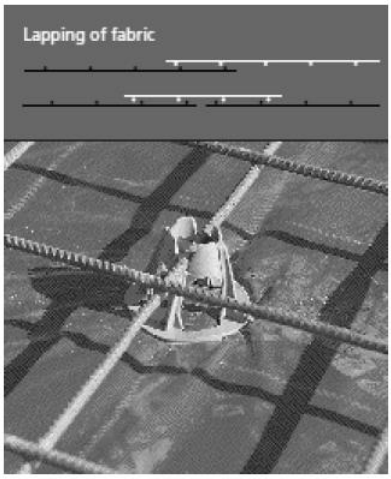
Trench mesh is the usual type of bottom-steel a single layer or a double layer (one directly on top of the other separated by a fitment or ligature) as required by the building plans. 40mm Min. concrete cover to the reinforcement is required (up to 75mm may be specified if soil has aggressive ground water). In some areas greater depth and heavier reinforcement is required.

Bottom-steel must be place on bar chairs or trench mesh spacers.

Trench mesh should have a half-a-meter minimum overlap. Full-width overlap at corners. (It is a sound precaution to wire the mesh together at these overlaps.) The steel reinforcement must be chaired in its proper position to act effectively.

10 Steps to Building a Reinforced Concrete Slab-on-Ground (continued)

(All information and images courtesy of SRIA - Steel Reinforcement Institute of Australia)



7. FIX reinforcement in the slabs

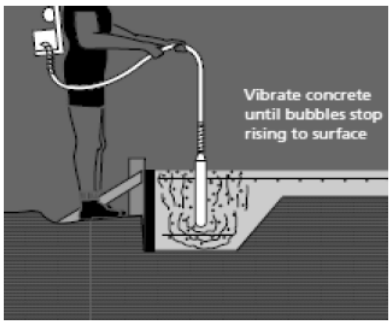
Top-steel is needed over the whole area of the slab-on-ground. The main reason for this top-steel is to control the cracking which inevitably occurs as the concrete dries out.

Fabric sheets (6 x 2.4m std size) are usually used as top-steel and are set on bar chairs with bases prior to curing the concrete so as to leave a minimum of 20mm concrete cover above the steel reinforcement.

Any floor-heating services or electrical wiring conduit to be embedded in the slab should be secured at this time. If hot water heating pipes are to be embedded in the slab, the slab thickness may need to be increased.

Slab fabric should be lapped by one full panel of fabric so that the two outmost traverse wires of one sheet overlap the two outmost transverse wires of the sheet being lapped.

Holding down bolts for wind bracing and other ancillary fixtures are usually positioned at this stage.



8. PLACE and compact the concrete

Order concrete by strength-grade and slump. Never use less than N20 grade concrete (20 MPa strength, with 20mm nominal maximum aggregate size and 80mm slump). Never order concrete with a slump of more than 100mm. In fact 80mm slump is better. It may be slightly harder to work into place, but it can be finished sooner and will shrink less.

The slump of concrete is a rough measure of the amount of water in the mix. If water is added the mix will become sloppy and easier to work into place but the concrete will be weaker, crack more and have a poor surface finish. For this reason no water should be added to concrete during the placement and finishing operations.

Place each load of concrete next to the previous load. Start at one end and work along the slab making sure that each new load is well mixed into the load before.

Do not let concrete free-fall more than one meter from the chute, pipe or bucket when it is being placed.

Level the surface of the concrete with a screeding board. It is important to move the screeding board with a sawing and chopping motion as this helps to compact the concrete.

A mechanical vibrator should be used to compact the concrete. Poke the vibrator into the concrete every half meter over the length of the beam and hold it in place until the concrete settles and bubbles stop rising to the surface.

Hold the vibrator straight up and be careful not to move the steel reinforcement, or damage the underlay or formwork.



9. FINISH the slab surface

When the concrete compaction and screeding is done, the slab should be roughly floated with a trowel to give a smooth surface. After floating, the slab should be left to set hard enough so that a man standing on his heels will not sink more than 5mm into the concrete.

Free water (bleed water) will rise to the surface of the slab after it is levelled. Wait until the surface of the water dries before doing the final float or trowel finishing. On a cold day the bleed water may have to be dragged off by pulling a rope or hose over the surface.

Never spread dry cement or sand over the slab to absorb the bleed water as this will make the finished surface weak and dusty.

A mechanical helicopter is the best tool to get a good finish on the slab. Make one pass with the helicopter over the whole slab starting where the concrete was first placed. Then go back and make a second pass over the whole slab working up and down the length of the slab instead of across it.

Do not try to finish the slab by moving the helicopter around in one area for too long.

Wood or steel hand-floats and trowels do a good job too - if there is no helicopter - but however it is done, the whole surface should be worked over twice.

Save finishing time by finishing the slab only to the standard needed for the type of floor finish to be used. If tiles are to be laid in mortar then slabs need only to be screeded. A wood float finish is good enough for carpet, while steel or sponge towelling is needed for floors which are to have tiles glued to them.

10. CURE the concrete slab

Concrete must be protected against loss of moisture as soon as the surface is sufficiently hard to resist spoilage. This process is known as curing.

***If concrete is not cured it will dry out too fast, lose strength and the surface may crack and turn dusty*.**

Curing involves holding water in the concrete - allowing the concrete to gain its full strength.

One way is to cover the slab with sheets of plastic or building paper and hold the sheets down with planks. Leave the sheets in place at least 3 days it may be necessary to gently spray some more water under the sheets after the first day.

This method also has the advantage of protecting the slab from possible rain damage.

Another way is to spray onto the slab a special chemical called a 'curing compound' which stops water drying out of the concrete too fast.

Use a good quality curing compound, as there are some which are much better than others.

Curing compounds should be sprayed over the slab with a double coat straight after the surface finishing.

If at a later date it is the intention to add floor coverings to the slab then take care in the selection of the curing compound as some will not accept adhesives.

CONCLUSION

As can be seen, planning, preparation, steel reinforcement, placing, finishing and curing all play an integral part in the construction of a reinforced concrete slab-on-ground. Failure to follow any of these steps may lead to the following problems occurring:

- Non-level floors;
- Plastic cracking (cracks occur prior to final set of concrete);
- Post-hardening cracking (drying shrinkage, foundation movement);
- Dusting of concrete surface.

Note: In some circumstances controlled cracking of concrete is acceptable; all concrete has a natural tendency to shrink with cracking being one of the results of such shrinkage.

Materials Identification

Rolled Sections

ALL RAFTERS
END and PARTITION C150.
CLEARSPAN C150, C200 or C250.
4 WEB & FLANGE HOLES EACH END.

ALL FRAME COLUMNS
END and PARTITION all C150.
CLEARSPAN FRAME C150, C200 or C250.

ALL END WALL RD MULLIONS & COLUMNS
C150, C200 or C250.
NO HOLES.

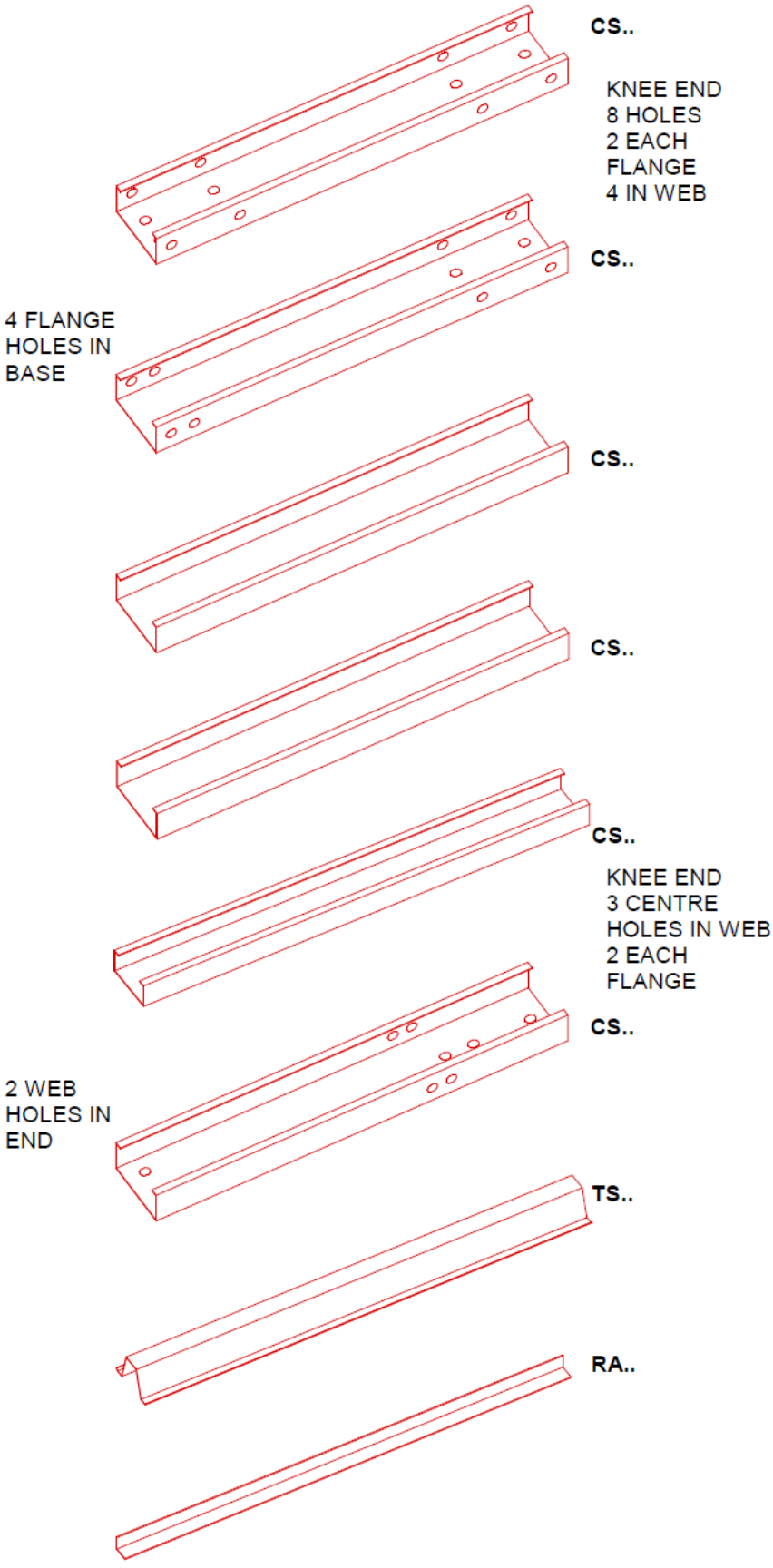
ALL SIDE WALL RD MULLIONS
C150, C200 or C250.

FASCIA SECTION
INNER and OUTER all C100.

EAVES OVERHANG STRUT
C15024.

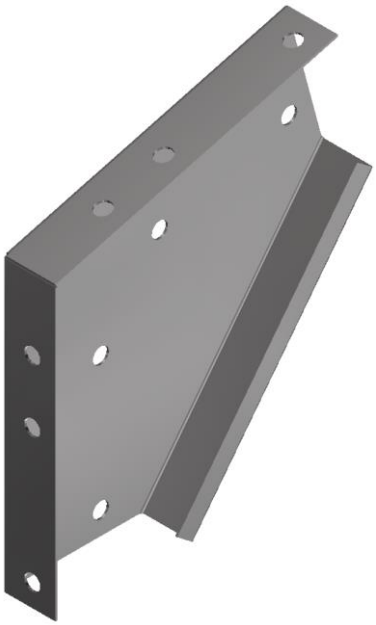
TOPSPAN BATTEN
61-64mm DEEP LAPABLE BATTEN.
USED FOR PURLINS, GIRTS & ROLLER DOOR HEADS.

RAKING ANGLE
30x30 ANGLE - NO HOLES

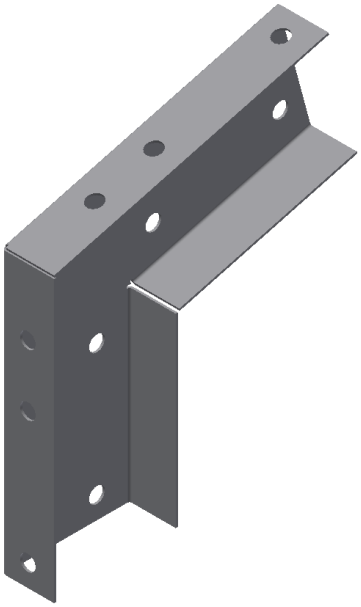


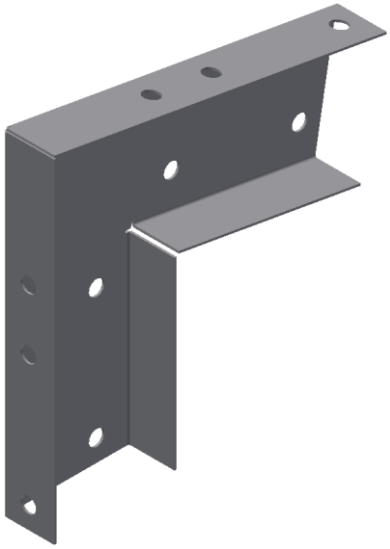
Connection Cleats

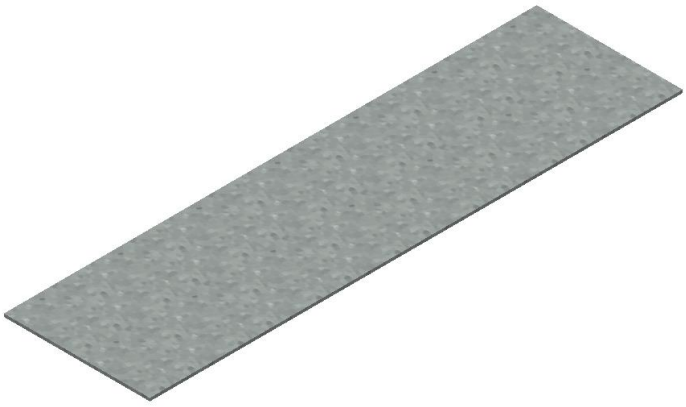
Knee Cleats

LOWER KNEE CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE AND HOLE PLACEMENT MAY DIFFER	KN15_05_24	C150 Column To C150 Rafter 5° Pitch
	KN15_10_24	C150 Column To C150 Rafter 10° Pitch
	KN20_05_24	C150 Column To C150 Rafter 5° Pitch
	KN20_10_24	C150 Column To C150 Rafter 10° Pitch
	KN25_05_24	C150 Column To C150 Rafter 5° Pitch
	KN25_10_24	C150 Column To C150 Rafter 10° Pitch

LOWER KNEE CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE AND HOLE PLACEMENT MAY DIFFER	KN15_85_24	C150 Column To C150 Rafter 5° Pitch
	KN15_80_24	C150 Column To C150 Rafter 10° Pitch
	KN20_85_24	C150 Column To C150 Rafter 5° Pitch
	KN20_80_24	C150 Column To C150 Rafter 10° Pitch
	KN25_85_24	C150 Column To C150 Rafter 5° Pitch
	KN25_80_24	C150 Column To C150 Rafter 10° Pitch

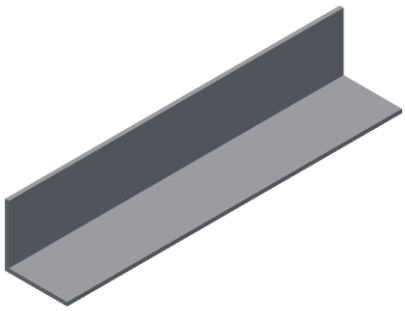
KNEE CLEAT at RD	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE AND HOLE PLACEMENT MAY DIFFER	SGK15D_05	C150 Column To C150 Rafter 5° Pitch
	SGK15D_10	C150 Column To C150 Rafter 10° Pitch

KNEE CLEAT at RD	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE AND HOLE PLACEMENT MAY DIFFER	SGK15D_85	C150 Column To C150 Rafter 5° Pitch
	SGK15D_80	C150 Column To C150 Rafter 10° Pitch

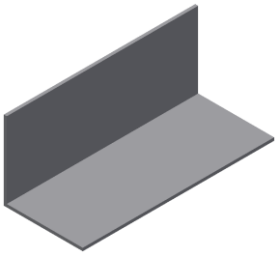
FLY BRACE	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	SGFB15	Suit C150 Column or Rafter
	SGFB20	Suit C200 Column or Rafter
	SGFB25	Suit C250 Column or Rafter

CAST IN BASE STRAP	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	SGBS10	Suit C100 Column
	SGBS15	Suit C150 Column
	SGBS20	Suit C200 Column
	SGBS25	Suit C250 Column

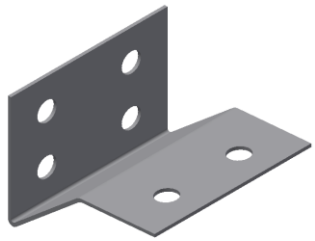
BOLT DOWN BASE STRAP	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	SGRB10	Suit C100 Column
	SGRB15	Suit C150 Column
	SGRB20	Suit C200 Column
	SGRB25	Suit C250 Column

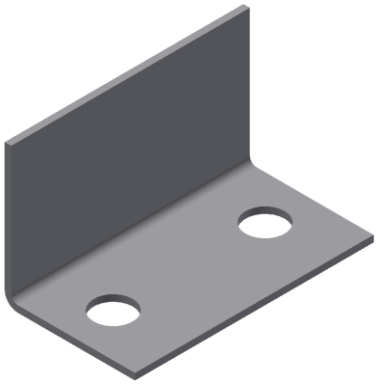
COLUMN CAP	MARK	DESCRIPTION
	JEC35	End Wall Column Cap

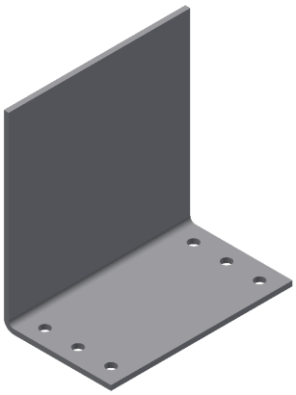
MULLION TO RAFTER	MARK	DESCRIPTION
	BCMR	Roller Door to Rafter Cleat

MISCELLANEOUS CLEAT	MARK	DESCRIPTION
	NH10/5	Roller Door Head to Mullion Cleat and Flush Batten to Frame Cleat

INNER FASCIA CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE AND HOLE PLACEMENT MAY DIFFER (L,R) DENOTES LEFT OR RIGHT	FICL	Eaves Overhang Inner Fascia Cleat suit 5° and 10° pitches
	FICL15(L,R)	Eaves Overhang Inner Fascia Cleat suit 15° pitch
	FICL20(L,R)	Eaves Overhang Inner Fascia Cleat suit 20° pitch

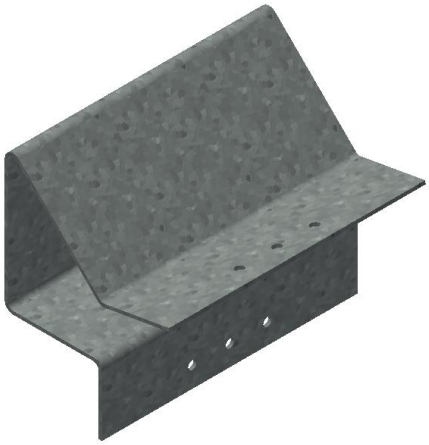
OUTER FASCIA CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	LFOC_05	Eaves Overhang Outer Fascia Cleat suit 5° pitch
	LFOC_10	Eaves Overhang Outer Fascia Cleat suit 10° pitch
	LFOC_15	Eaves Overhang Outer Fascia Cleat suit 15° pitch
	LFOC_20	Eaves Overhang Outer Fascia Cleat suit 20° pitch

E/W or RD MULLION BASE CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	MBC150	C150 Mullion Base Cleat
	MBC200	C200 Mullion Base Cleat
	MBC250	C250 Mullion Base Cleat

E/W or RD MULLION BASE CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	MFC150	C150 Mullion Fascia Cleat
	MFC200	C200 Mullion Fascia Cleat
	MFC250	C250 Mullion Fascia Cleat

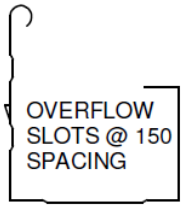
RD MULLION FASCIA CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	NCC10S	C150/C200/C250 RD Mullion Fascia Cleat
	NCC10L	C200 Mullion Base Cleat

FASCIA CLAMP CLEAT	MARK	DESCRIPTION
	NCP10	C100 Fascia Plate

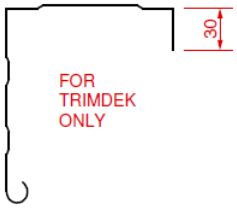
FASCIA CLEAT	MARK	DESCRIPTION
 ALL CLEATS SIMILAR SIZE MAY DIFFER	LFC_05	Lower Fascia Cleat suit 5° pitch
	LFC_10	Lower Fascia Cleat suit 10° pitch
	UFC_05	Upper Fascia Cleat suit 5° pitch
	UFC_10	Upper Fascia Cleat suit 10° pitch

Flashings

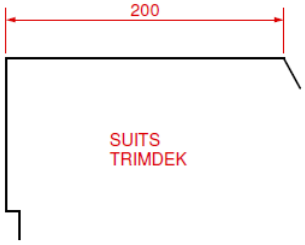
Basic Garage Flashings



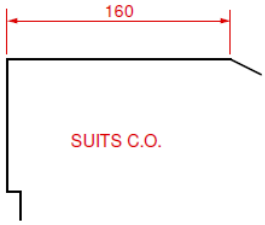
SHEERLINE, GUTTER



SHEERLINE, CAPPING



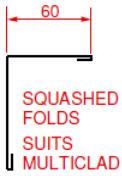
BARGE, SQUARE



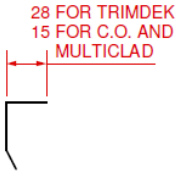
BARGE, SQUARE



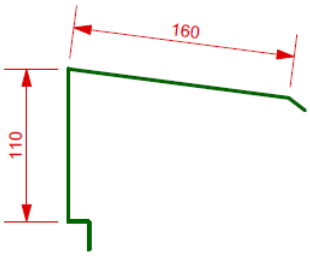
FLASHING, STANDARD, CORNER



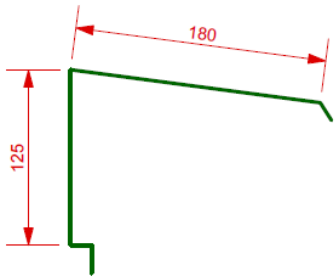
FLASHING, SMALL, CORNER



PARTITION CAP

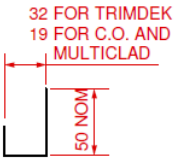


UPPER SIDE WALL FASCIA CAPPING, SKILLION, SUIT CUSTOM ORB®

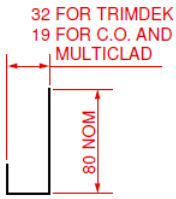


UPPER SIDE WALL FASCIA CAPPING, SKILLION, SUIT TRIMDEK®

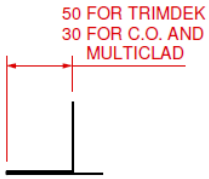
Door Flashings



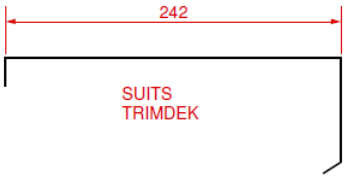
FLASHING, RD HEAD, FLUSH



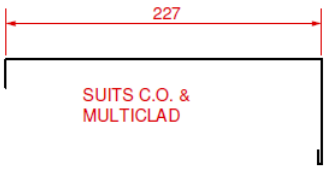
FLASHING, RD HEAD, SET BACK



FLASHING, AD HEAD



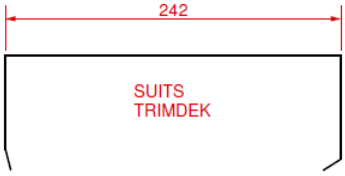
FLASHING, RD CORNER MULLION, FLUSH



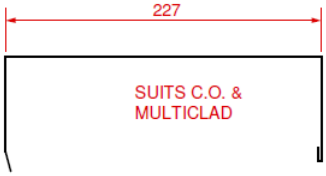
FLASHING, RD CORNER MULLION, FLUSH



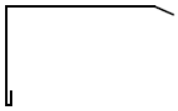
FLASHING, RD MULLION, GP FLUSH



FLASHING, RD CORNER MULLION, SET BACK

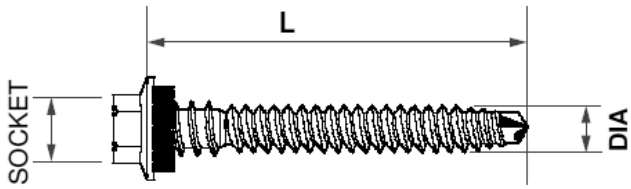


FLASHING, RD CORNER MULLION, SET BACK



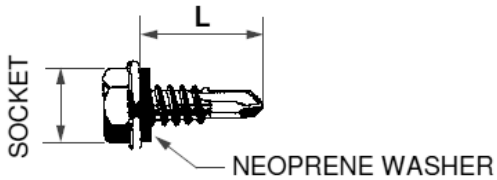
FLASHING, RD MULLION, GP SET BACK

Fasteners



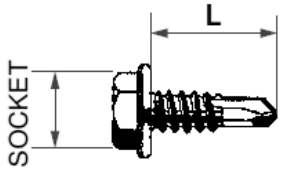
ROOF CLADDING
GENERAL PURPOSE CREST FASTENER

Part No.	DIA	GAUGE-TPIxL	SOCKET
TEK23	5.5	#12-14x35	5/16"
TEK24	5.5	#12-14x45	5/16”
TEK28	6.3	#14-10x50	3/8”
TEK29	6.3	#14-10x65	3/8”
TEK41	5.5	#12-14x50	5/16”
TEK42	5.5	#12-14x50	5/16”



WALL CLADDING PAN FASTENER

Part No.	DIA	GAUGE-TPIxL	SOCKET
TEK1	4.8	#10-16x16	5/16"
TEK16	6.3	#14-10x25	5/16"
TEK4	5.5	#12-14x35	5/16"



FRAMING FASTENER

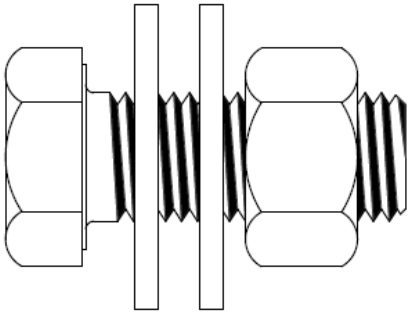
Part No.	DIA	Gauge-TPIxL	Socket
TEK5	5.5	#12-14x20	5/16"
TEK7	6.3	#14-10x25	3/8"
TEK7A	6.3	#14-20x45	3/8"
TEK20	6.3	#14-20x22	3/8"



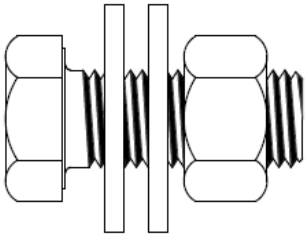
TEK2
#10-16x22 WAFER HEAD
PHILLIPS N°2 DRIVE BIT



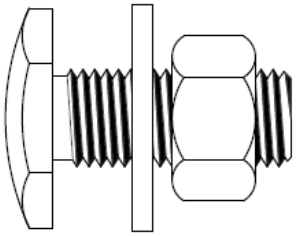
TEK15
#8-18x12 BUTTON HEAD
PHILLIPS N°2 DRIVE BIT



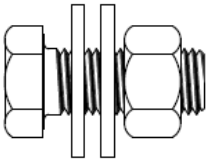
HT6 - M16x40 HEX BOLT 8.8S, ALWAYS USE WITH 2 **W16** (Ø16 WASHER)



HT2 - M12x55 HEX BOLT
HT5 - M12x30 HEX BOLT 8.8.S
ALWAYS USE WITH **2 W12** (Ø12 WASHER)



HEX2 - M12x30 HEX DOME HEAD BOLT COMPLETE WITH WASHER



HEX10 - M8x25 HEX BOLT ALWAYS USE WITH 2 **W8** (Ø8 WASHER)



DYNABOLT MASONRY ANCHOR

Part No.	DIA and Drill DIA	Nominal Length	Drill Depth
D8042	8	42	45
D10040	10	40	45
D12055	12	55	64
D16060	16	65	70

Tensioning Requirement
Grade 8.8 Hi-Tensile Bolt

Important Notes

All major connections (base, lower knee, upper knee, etc.) in the Skillion range rely on friction between adjoining surfaces to attain a rigid connection.

To achieve the necessary friction in the connection Grade 8.8 high tensile bolts and nuts are used, and must be tensioned as noted below.

Either HT5 (M12 x 30) or HT6 (M16 x 40) bolts are used in these connections, and may be identified by 8.8 stamped on the bolt head.

Numerous methods are used to tension high tensile bolts however, the simplest and most widely accepted method is to tighten the nut **"snug"** tight (the full effort of a person using a standard podger spanner).

The nut and bolt are then marked as in Fig. A and extra rotation is applied to the nut to align the marks as in Fig. B.

As a rule of thumb "snug" tight plus one half turn of the nut is ample tension for the connection bolts.

Most erectors now use electric or pneumatic impact wrenches to apply tension to connection fasteners. Some brands have accessories for torque settings; however, if we set some bolts using the above method, they can be used as a guide and check for the torque setting on the impact wrench.

Engineers' requirements for shank tensions:
For M12 HT bolts, Grade 8.8, shank tension is 50kN.
For M16 HT bolts, Grade 8.8, shank tension is 90kN.

Hi tensile Grade 8.8 bolts cannot be re-used once tensioned.
New hi-tensile grade 8.8 bolts, washers and nuts must replace previously used fasteners.

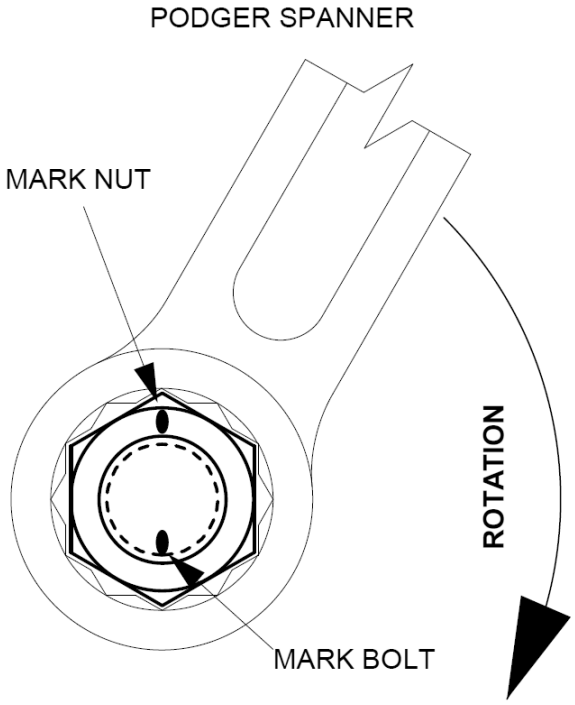


Fig. A

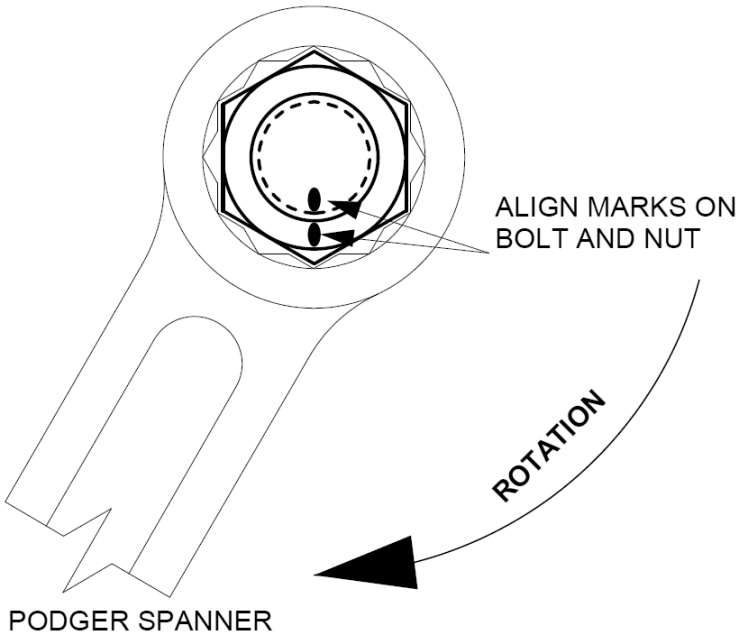


Fig. B

IMPORTANT NOTE
Incorrect bolt tensions are the most common cause of building failure.

Mechanical Masonry Anchor Installation

(Images courtesy of Ramset™)

Background

AS 1684 permits the use of proprietary masonry anchors for fixing bottom plates to concrete slabs. These fixings may be required for the purpose of resisting uplift forces at the ends of bracing walls and/or the tie-down of walls due to wind up lift.

Preparation

When drilling the hole into masonry you should always refer back to the manufacturers 'Technical Manual' for precise details of how the work should be completed and what sized tools are required. For example by using the correct size tungsten/carbide tipped masonry drill bits you will ensure that the anchors will give optimum performance and avoid failure.

You should always drill the hole equal to or greater than the required embedment of the mechanical masonry anchor.

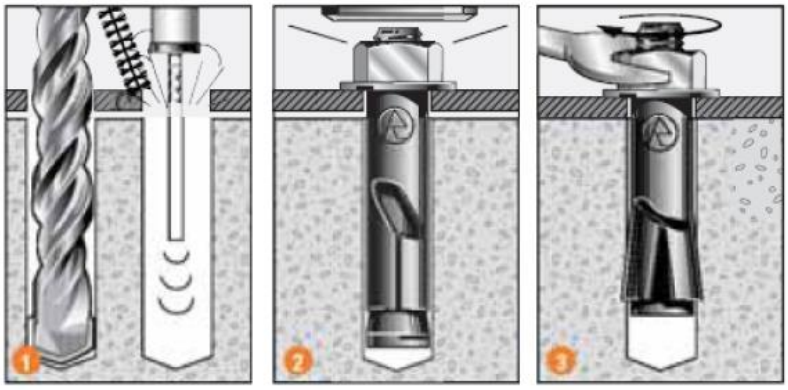
Many applications calls for drilling into base materials, a masonry drill will not remove all the clippings and dust (commonly called swarf) from the hole and unless you have completely cleaned out the hole, the mechanical masonry anchor could come to rest on this swarf and prevent the anchor from pulling down neatly onto the material to be fastened.

In most cases where product complaints have occurred one of the other installation steps have been ignored or performed incorrectly (usually the setting under rotary hammer action)

Product and Installation details

Please refer to the mechanical masonry anchor manufacturer's "Technical Manual" for complete product and installation details.

Installation



1. Use fixture as a template, drill a hole to the correct diameter and depth. Clean hole thoroughly with brush.
2. Remove debris by way of a vacuum or hand pump, compressed air, etc. Insert anchor tightly against fixture and tighten with spanner.
3. Continue tightening, allowing the sleeve to twist and pull down the fixture firmly onto the base material.

Steel Framework

NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section on Page 77.

General

Steel framework consists of a series of frames constructed from zinc coated "C" section columns and rafters bolted together with gusset plates and high tensile bolts. Columns are bolted to base cleats cast into the concrete floor slab for strength again with high tensile bolts. These frames may be plain clear span or have additional "C" section members added to form end walls, internal partition walls, etc.

Any additional columns, door mullions etc. are fixed to the floor slab with "Dynabolt" masonry anchors. A C100 profile fascia and connection cleat is Tek screwed to the knee gusset cleat to allow fixing of both wall and roof cladding at the eaves. Topspan battens are Tek screwed to "C" sections for fixing of cladding at side, end and partition walls and roof. Bracing is provided by cladding diaphragm action and additional "X" bracing is only supplied for cyclonic areas.

Assemble frame on ground or slab with all bolts finger tight. Slotted holes in columns and rafters allow minor dimensional adjustment.

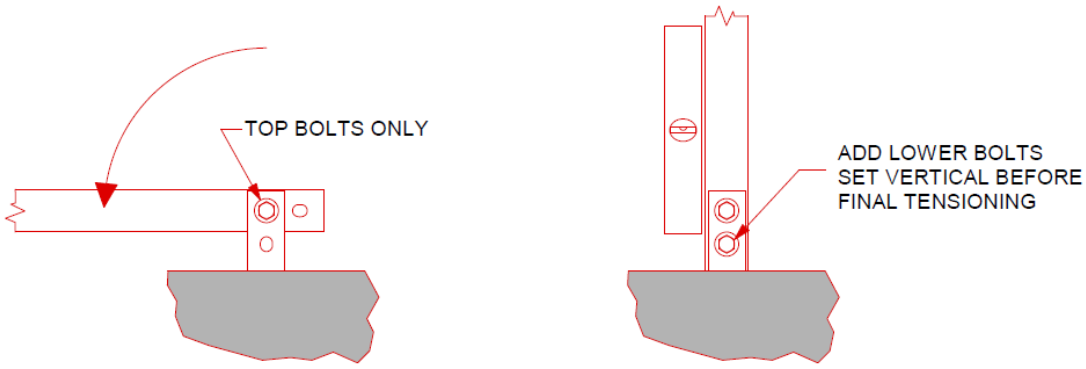
Check base of column to knee cleat dimensions, adjust as necessary and tighten column to knee cleat bolts ***FLANGE BOLTS FIRST, WEB BOLTS LAST***.

Check width at top and bottom of columns and squareness by measuring diagonals, adjust as necessary and tighten remaining bolts - ***FLANGE BOLTS FIRST, WEB BOLTS LAST***.

It is important that all high tension frame bolts are properly tensioned, particularly the M16 bolts at base cleats. That is nipped up "snug tight" then tightened another half turn. Refer to Page 19 for details.

ERECTORS TIP
Assemble adjust and tighten bolts on one frame then assemble remaining frames on top using the frame as a template. This saves setup time and ensures all frames are the same.

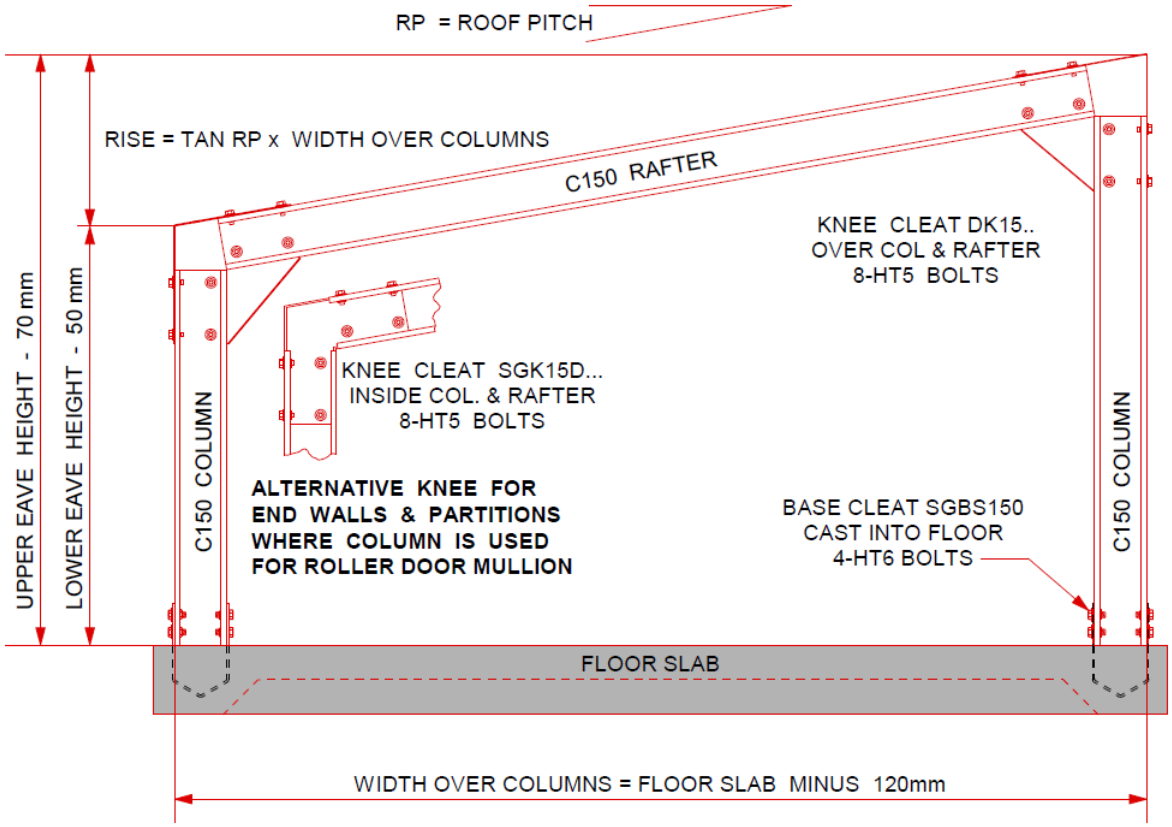
An easy way to stand horizontal frames is to loosely bolt both columns in their base cleats with 2 bolts through the top holes. Frames can then be raised by rotating up using the base bolts as a pivot points either by evenly lifting both columns up together (2 people) or pulling up with ropes attached near the knees and apex. The remaining bolts can then be added to the base and columns set vertical before final tensioning.



IMPORTANT: Structural Steelwork Marking Diagrams and Bill of Materials

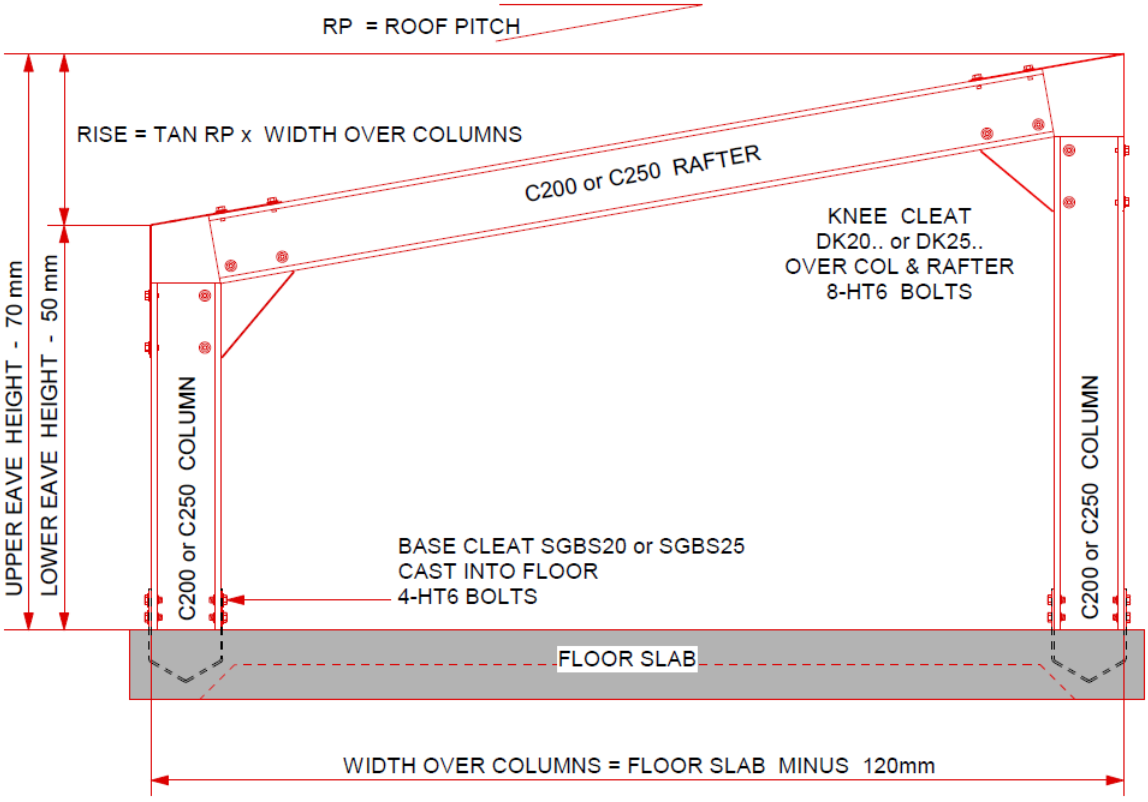
The computer generated Structural Steelwork Marking Diagram drawing and Bill of Materials supplied specifically for your garage should be kept handy for reference during the erection of framework. These diagrams show the location of major members including Topspan battens but not connection cleats and gusset plates etc.
All members shown are labelled with a Mark Number. To identify a member, look up the Mark Number on the Bill of Materials to obtain a written description. For typical drawings of main members, cleats, fasteners and flashings, refer to the "**Materials Identification**" section on Page 10.

C150 Frames



ALL C150 FRAMES INCLUDING END FRAMES

C200/C250 Frames

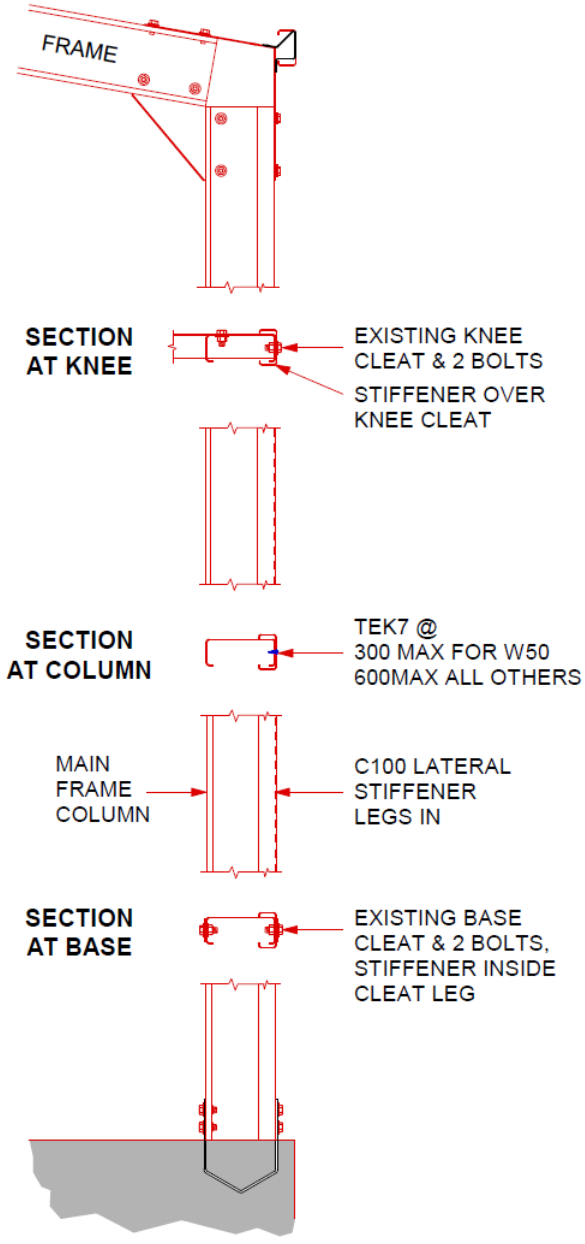


ALL C200 or C250 FRAMES

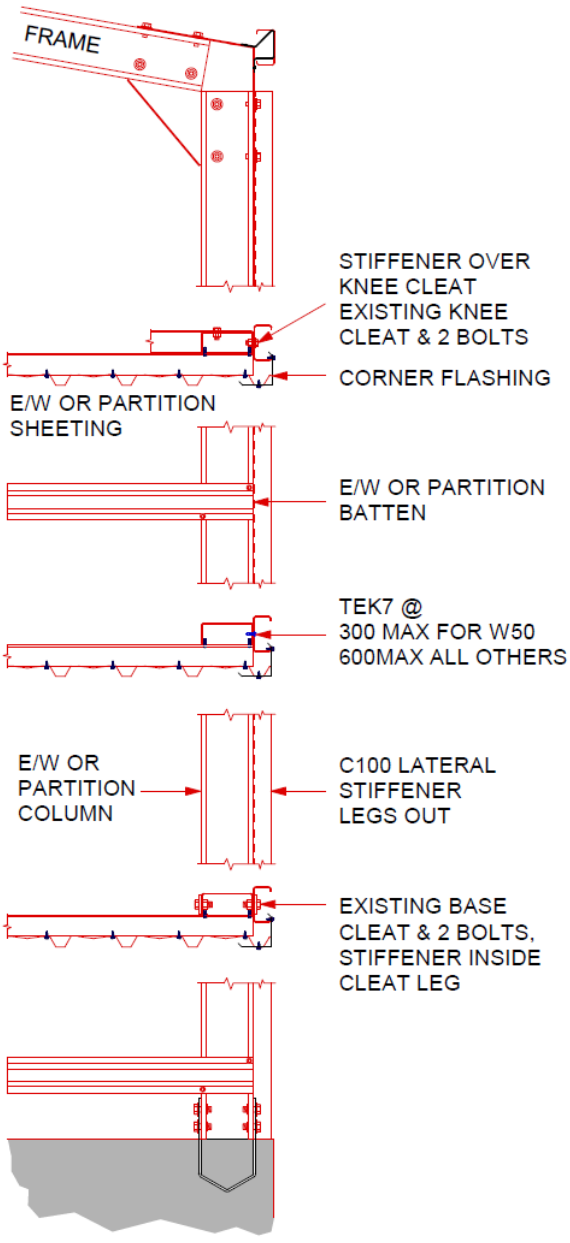
Column Lateral Stiffeners

Column lateral stiffeners are used to give additional lateral stability to free standing columns. They are required on all columns located at a side wall (clearspan, end wall corner and partition corner) that do not have side wall battens attached to them except columns at an open end. See Structural Steelwork Marking Diagram for stiffener locations if required.

All column lateral stiffeners are from C100 sections the same length as the column to which it is attached.
They are bolted to the outer flange of the column at base and knee cleats with existing bolts and fixed in between with Tek7 at 300 mm maximum centres for W50 or heavier conditions and 600mm maximum centres for all other conditions less than W50. Stiffeners on clearspan frame columns are located with their legs "facing in". Stiffeners on end or partition frame columns are located with their legs "facing out".

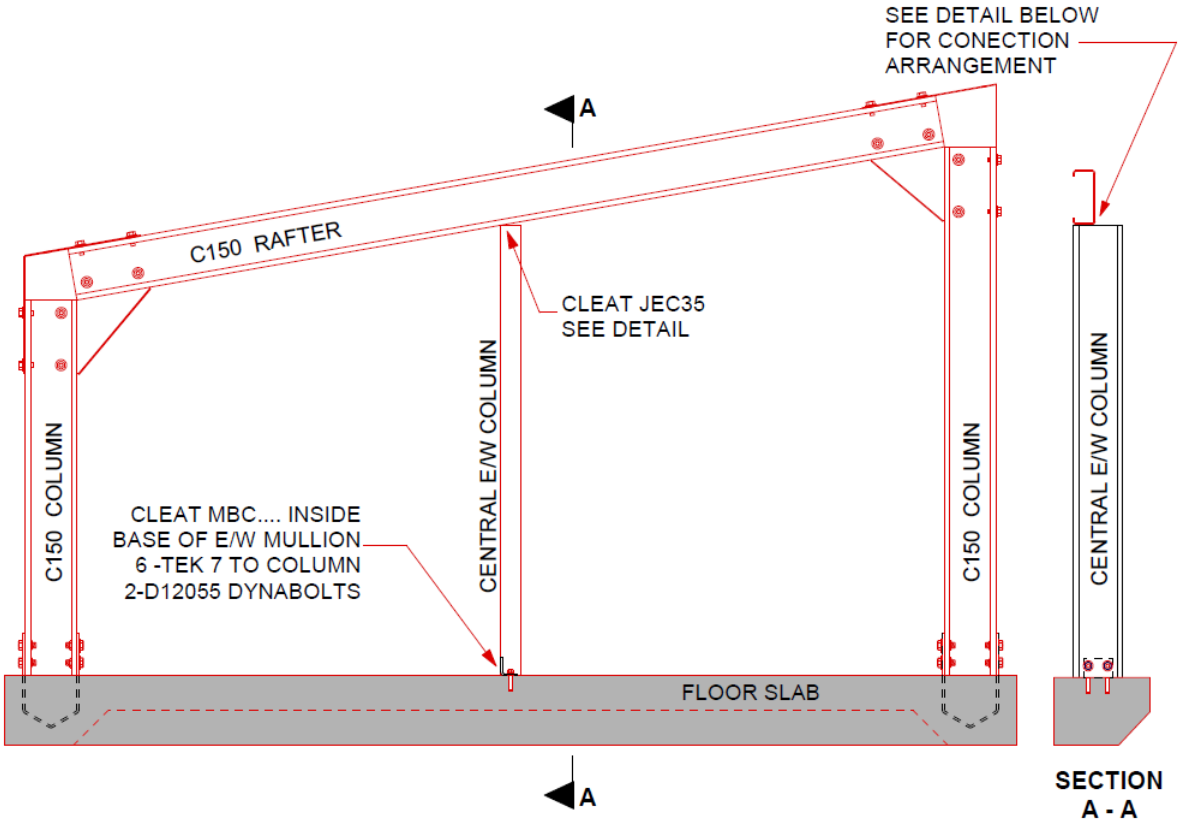


STIFFENER AT CLEARSPAN FRAME COLUMN



STIFFENER AT END WALL OR PARTITION FRAME COLUMN

End or Partition Wall Columns



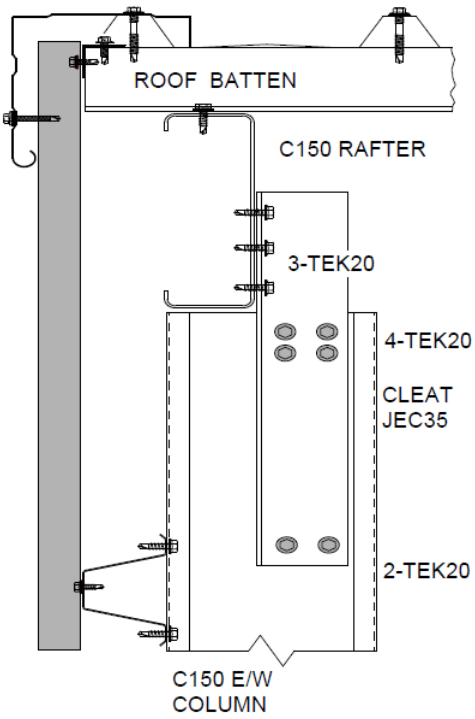
TYPICAL END WALL OR PARTITION COLUMN CONNECTIONS

All garages up to **3880**mm span have **no end wall column.**

All garages over **3880**mm span up to **7490**mm span have **1 central end wall column except** all cyclonic garages over **6920**mm span have **2 end wall columns.**

All garages over **7490**mm span have **2 end wall columns** located at approximately 1/3 span.

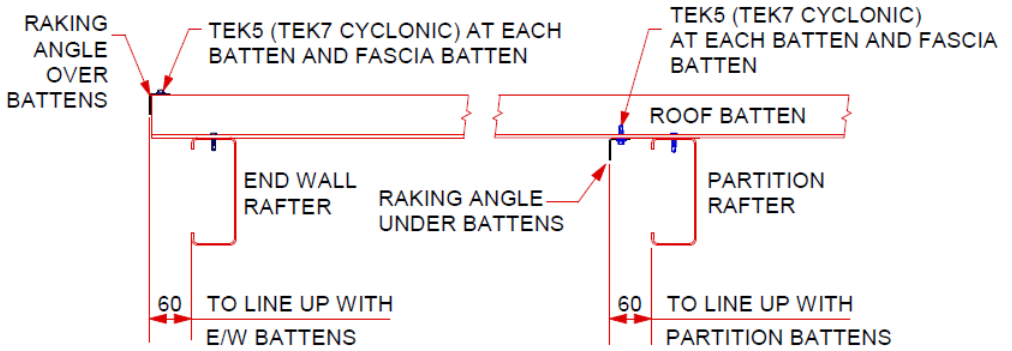
End wall or partition columns may be fitted to frames either "on ground" or after frames have been raised and bolted to cast in base cleats. A hammer drill and a 12mm diameter masonry bit is required to drill two 55mm deep Dynabolt holes in concrete for each end wall column base cleat.



ERECTORS TIP
If assembling "on ground" 90mm packers are required under columns and rafters to allow outer flange of E/W column and lips of columns and rafters to be set flush. Run a string line across bottom of columns to check that E/W base column is level with the outer columns before tightening bolts.

If you plan to fit battens before raising frame ensure base cleat is fitted to outside of E/W column to allow access for drilling Dynabolt holes in floor.

End or Partition Wall Battens

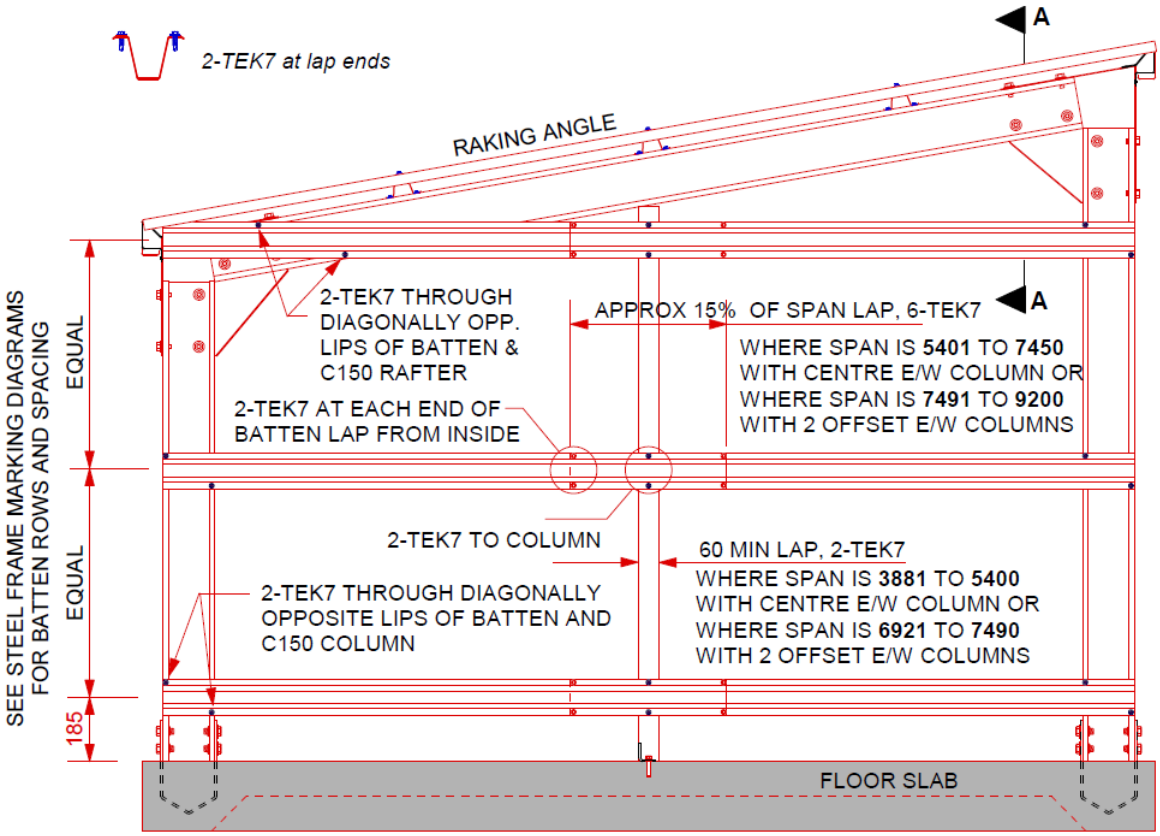


SECTION A - A AT END WALL **SECTION A - A AT PARTITION**

IMPORTANT NOTE.

When fixing battens to framing members 1.2mm thick or less, use 4-TEK7's. Otherwise, use 2-TEK7's.

Raking Angles



ALL GARAGES UP TO 3880 SPAN HAVE FULL LENGTH BATTENS WITH 2-TEK7 AT EACH END

TYPICAL END WALL OR PARTITION BATTEN CONNECTIONS

End wall or partition battens may be fitted to frames either "on ground" or after frames have been raised and bolted to cast in base cleats.

End wall or partition raking angles can only be fitted after frames have been raised and roof battens and fascia battens have been fitted.

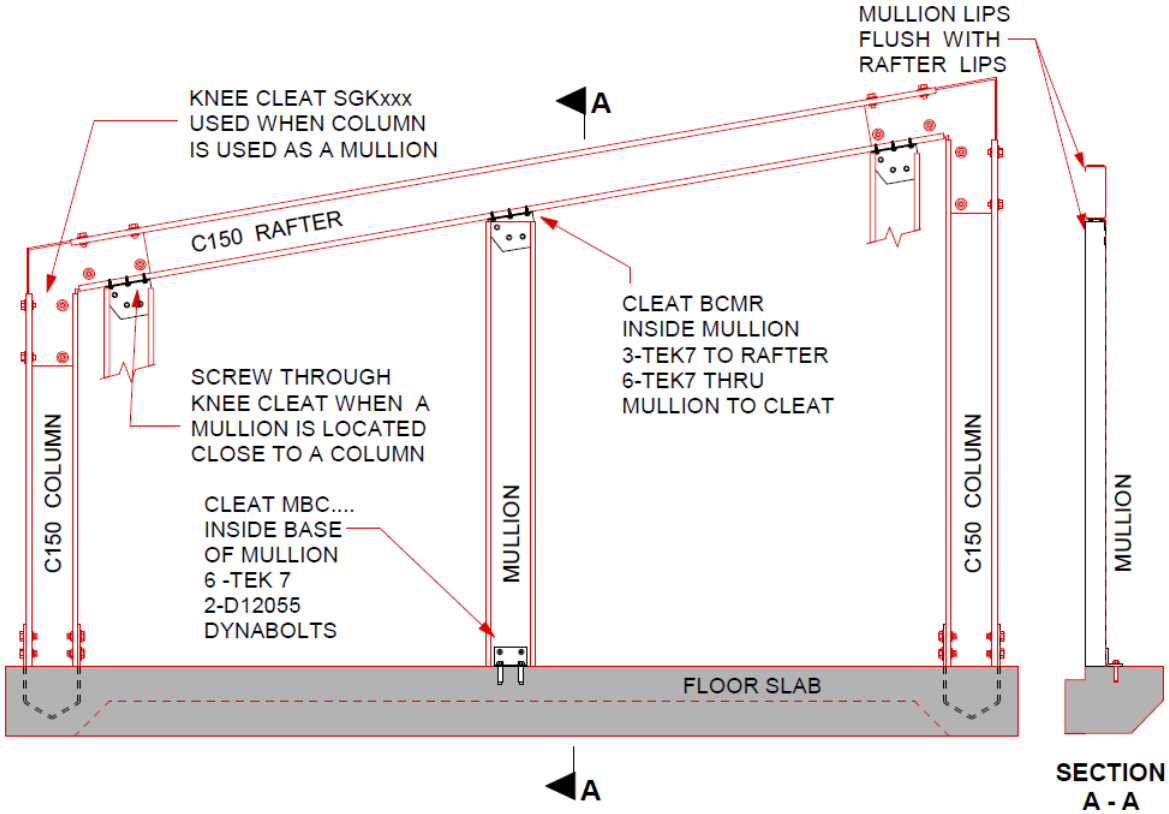
ERECTORS TIP

Assemble battens on slab or other suitable flat area so that overall length is the same as the dimension over outside of frame columns and Tek together at ends of laps so that batten runs can be fitted as one unit. For batten runs with 2 laps locate centre batten so that laps are equal. Ensure end wall column(s) is(are) parallel to frame columns before fixing battens.

End and Partition Wall Mullions

Roller doors in end walls and partitions are of the "Set Back Frame" type.

"Set Back Frame" is where Topspan battens are located on face of frame and fixed to lips of columns and mullions and door heads are from boxed Topspan batten sections. Raking angles are required.



TYPICAL END WALL OR PARTITION ROLLER DOOR MULLION CONNECTIONS

All end wall or partition roller door mullions are from C150 sections located with legs "facing out" so that the 150mm wide flat section is available on the inside for fixing roller door guides and brackets.

Where a roller door is located close to a corner the frame column is used as the outer mullion.

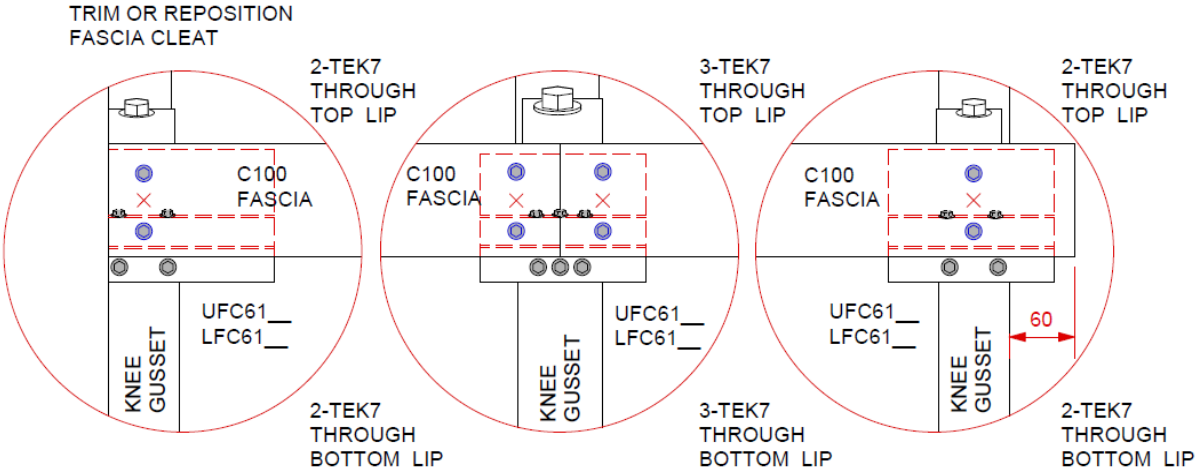
In some cases to allow fitting of mullions close to frame columns (to accommodate wide roller doors) 2 holes 13mm diameter must be drilled in the knee cleat SGK15D using the holes in rafters as a template.

Mullions may be fitted to frames either "on ground" or after frames have been raised and bolted to cast in base cleats. A hammer drill and a 12mm diameter masonry bit is required to drill 2 holes 55mm deep for Dynabolts in concrete for each mullion base cleat.

ERECTORS TIP
If assembling "on ground" run a string line across bottom of columns to check that mullion bases are level with the outer columns before tightening bolts.

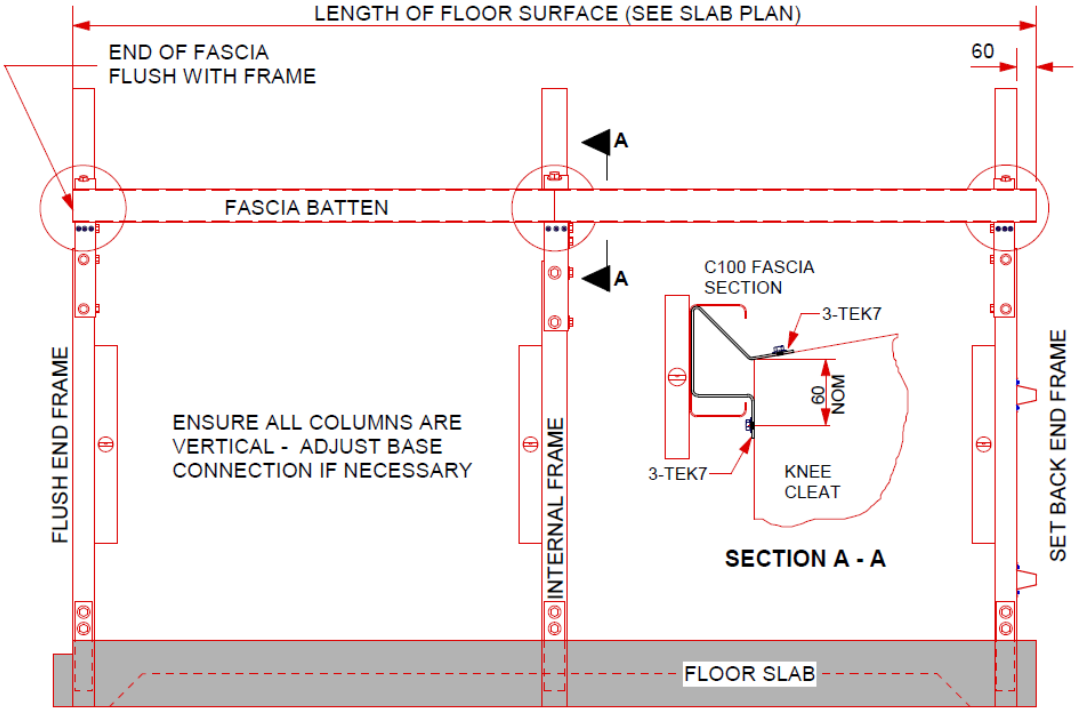
Side Wall and Roof Framing – Fascia Connections

Fascias in the Skillion consist of C100 rolled sections that are unpunched. Fascia support cleats (UFC61/05, UFC61/10, LFC61/05 and LFC61/10) are Tek screwed to knee gusset cleats at all end and internal frames to provide fixing surfaces for fascia's and both wall and roof cladding at the eave.
Fascia sections run for the full length of garage and are self-locating for height. The fascias are simply hung over the LFC or UFC cleats. Fascia channels do not over lap and are simply butted together. On side wall corners, the fascia channels will extend 60mm further past the outer column flange on a setback frame or otherwise are flush on an open end frame.
For C10010 and C10012 fascias, 2-TEK7's through fascia web into fascia cleat each end.
For C10015 and C10019 fascias, 3-TEK7's through fascia web into fascia cleat each end.



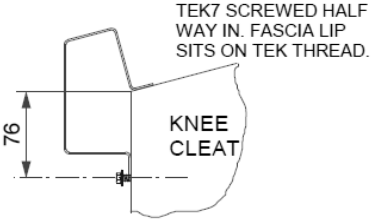
SIDE WALL CORNER, FLUSH END FRAME | **INTERNAL FRAME, BUTTED TOGETHER** | **SIDE WALL CORNER, SET BACK FRAME**

CONNECTION TO KNEE CLEATS



TYPICAL SIDE WALL FASCIA ARRANGEMENT

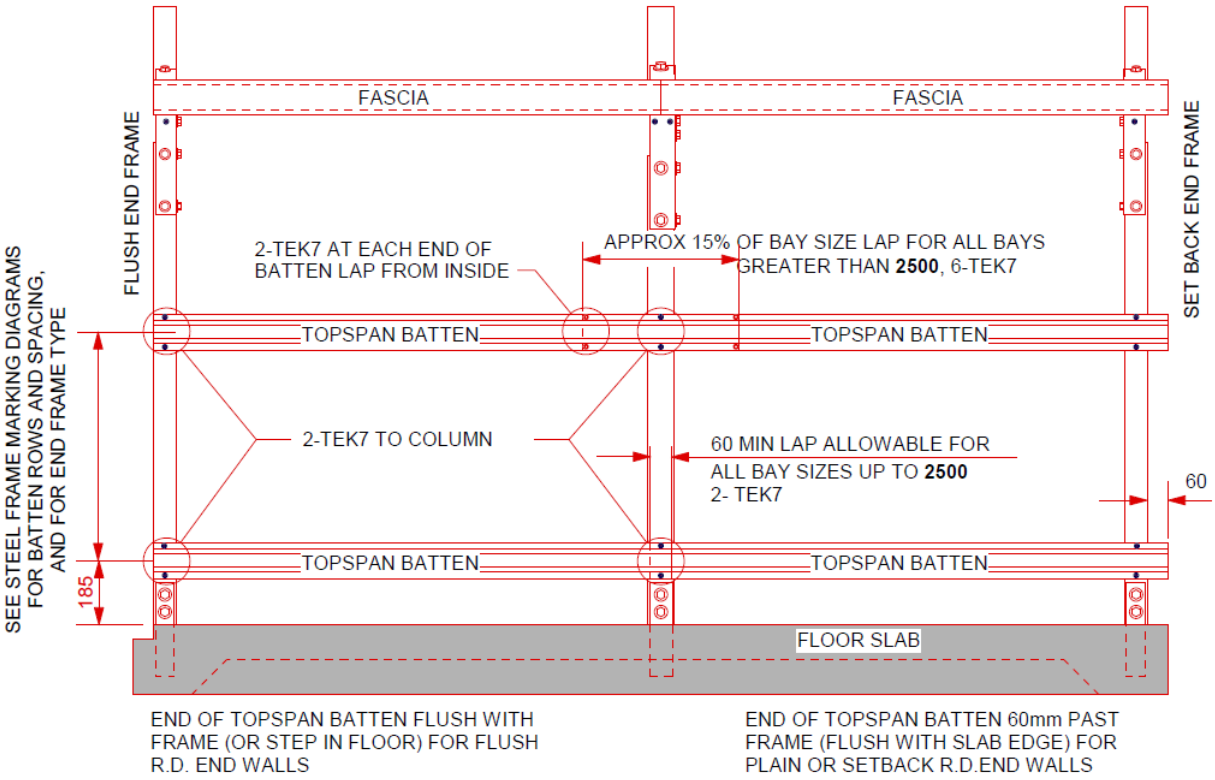
ERECTORS TIP
Use a TEK7 screwed half way in at each knee gusset cleat as shown at right to assist in location of fascia battens while Teking. Remove after fixing fascia's and re-use in another location.



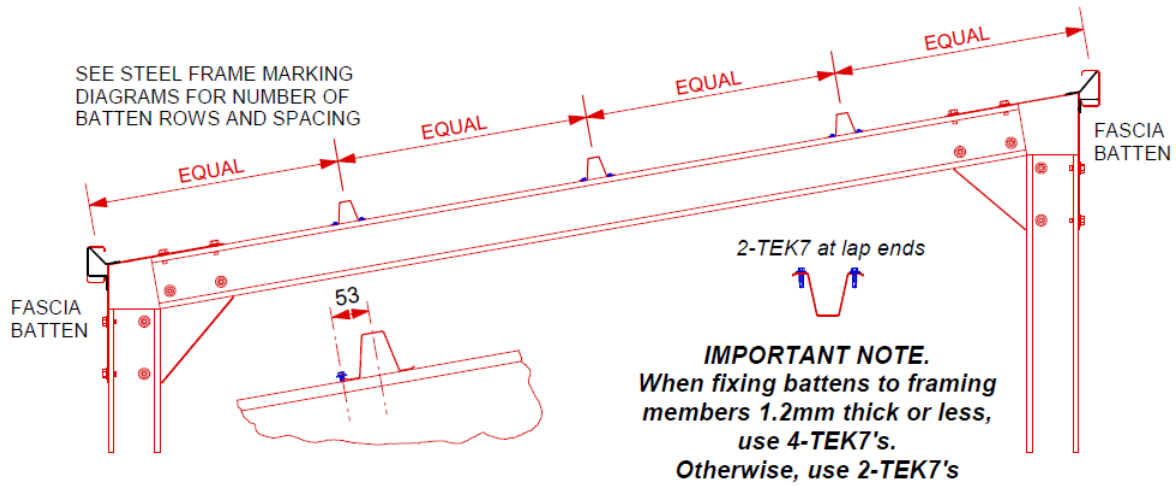
Side Wall and Roof Framing – Topspan Battens

NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section on Page 77.

Topspan battens are Teked to end and internal frame columns and rafters to provide fixing surfaces for wall and roof cladding. They are lapped at internal frames and run for the full length of garage as shown below. Fix wall battens prior to fixing roof battens.



TYPICAL SIDE WALL TOPSPAN BATTEN CONNECTIONS (ROOF BATTEN CONNECTIONS IDENTICAL)



TYPICAL ROOF TOPSPAN BATTEN LOCATION

ERECTORS TIP

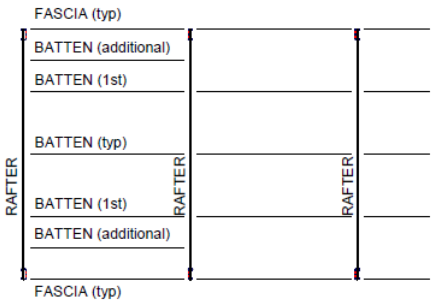
For garages up to 3 bays long, assemble battens on slab or other suitable flat area so that overall length is the same as the length of slab surface and Tek together at ends of laps so that batten runs can be fitted as one unit. For batten runs with 2 laps, locate centre batten so that laps are equal. Again check that columns are vertical before Teking as it is difficult to adjust frames after wall battens are fixed. Use a TEK7 screwed half way in 53mm below each batten centre line location to locate battens while Teking. Remove after fixing battens and re-use in another location.

Additional Purlin for 5° Roof Pitch, Non Eaves Overhang

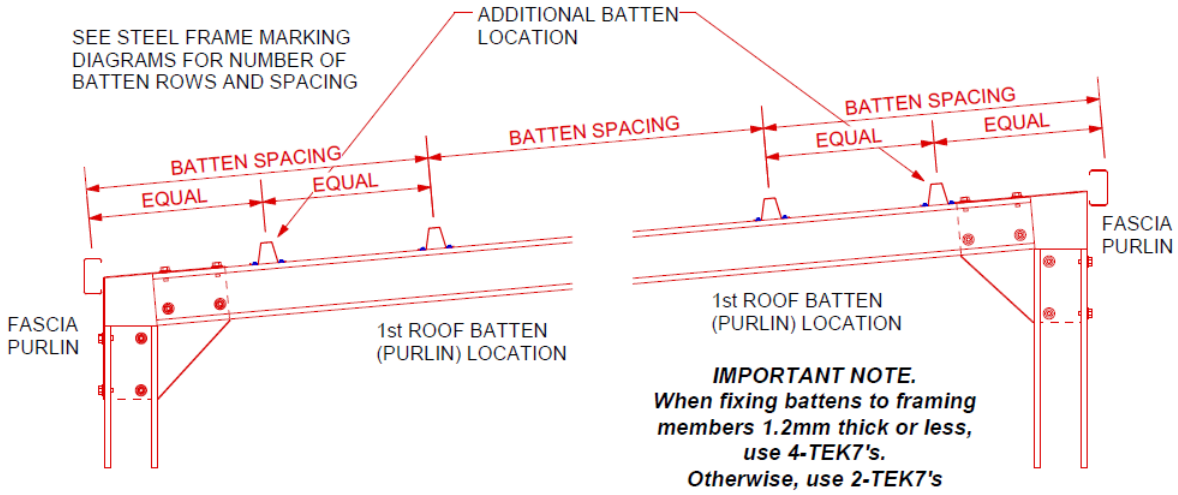
General

When the roof pitch of the Skillion Garage is 5°, an additional roof corner batten (purlin) is required to suit engineering requirements.

For the 5° roof pitch Skillion with a **Non Eaves Overhang Condition**, the additional roof batten (purlin) is located half way between the fascia and first roof batten (purlin) at all roof corner bay locations between successive rafters. Battens are tek screwed to the Rafter flanges with the same tek count per end as specified for all other roof purlins in that Engineering range.



STEELWORK ROOF PLAN - NON EAVES OVERHANG

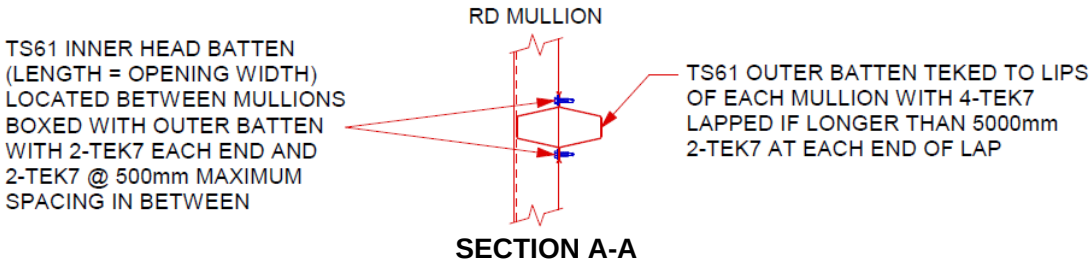


TYPICAL ROOF TOPSPAN BATTEN LOCATION

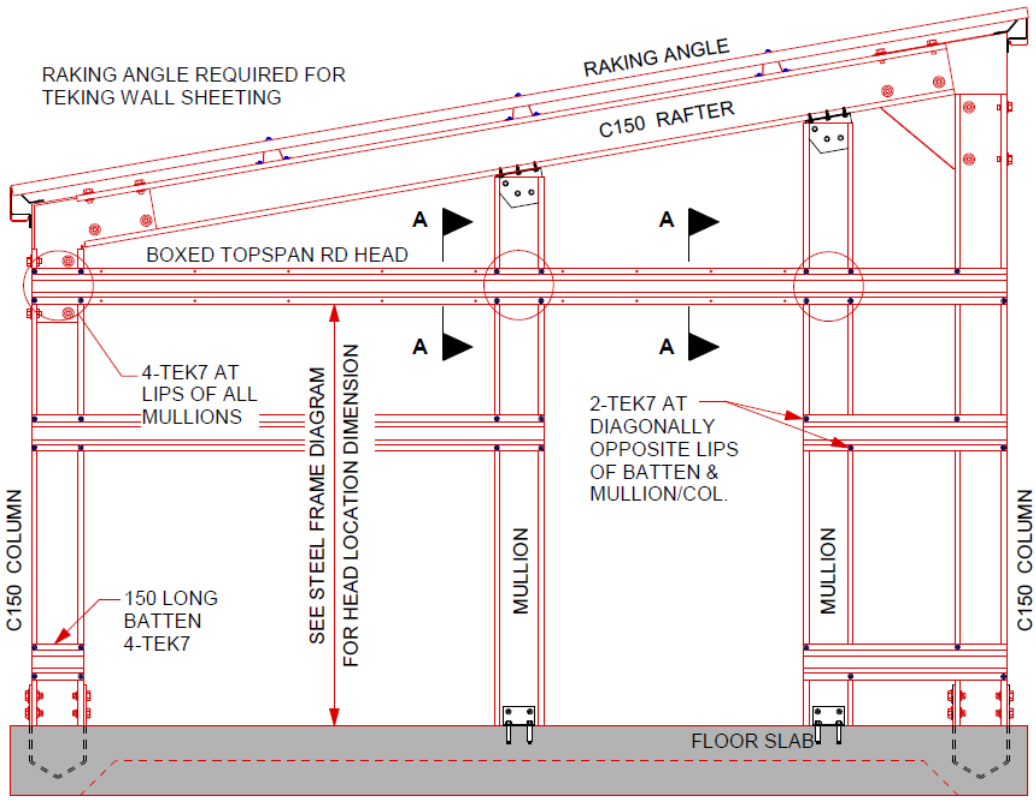
For buildings **with an Eaves Overhang Condition**, refer to the Eaves Overhang section of this guide.

Roller Door Framing

Set Back End or Partition Walls



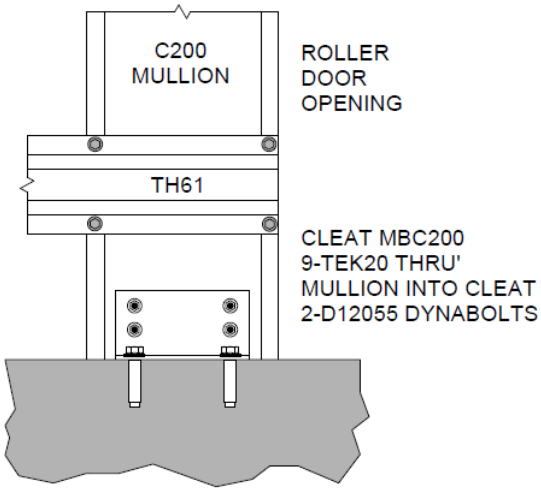
SECTION A-A



TYPICAL SET BACK FRAME END WALL OR PARTITION ROLLER DOOR HEAD AND BATTEN ARRANGEMENT AND CONNECTIONS

See steel frame marking diagram for location of all members, battens and head battens. Each batten has a minimum of 2-TEK7 at each end fixing flanges to lips of columns and mullions. Outer head battens are fixed to lips of each mullion with 4-TEK7. Raking angles are required at roof line as for plain end wall.

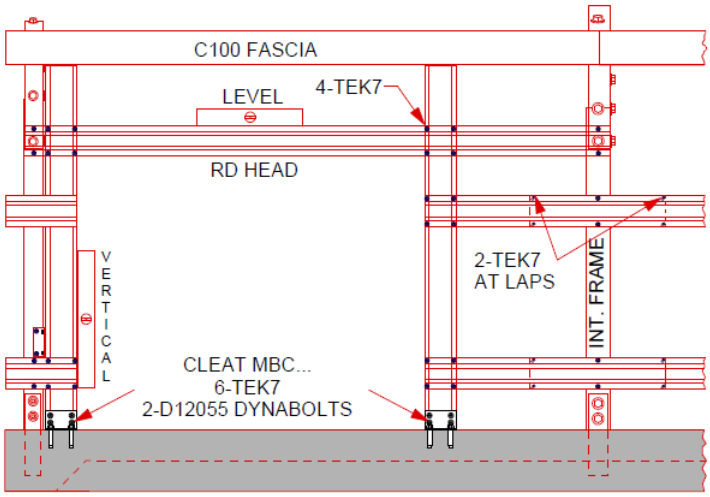
Inner head batten is the same length as the door opening. Outer head batten may run the full width of frame and replace the top batten row or may be additional to the top batten row and extend over mullions only.

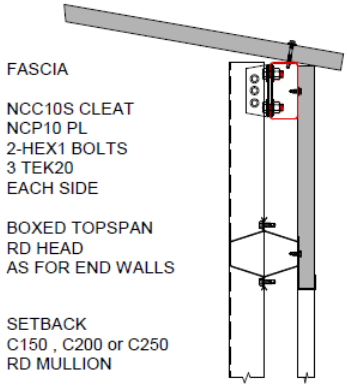


Side Walls

As garage bays are relatively small in comparison to the roller doors normally used, the design of Skillion garages allows for only 1 roller door per bay.
Framing for side wall roller doors consists simply of C150, C200 or C250 vertical mullions with toes facing out fixed to the concrete with "L" cleat MCB... series base cleat inside mullion, 6-Tek20 and 2-D12055. Dynabolts each at base and connected to the fascia batten with angle cleat NCC10S, clamp plate NCP10 teked to flanges of the mullion, 4-HEX1 bolts to the fascia and 3-Tek20 through NCC10S cleat to the leg of mullion flanges each side. All side wall framing is the "Set-back" type, and all side wall battens are fixed to the mullion lips. Door head framing is a boxed door head ex 2-TS64battens.

For Type "A" roller doors, C150 door mullions, MCB150 base cleat & NCC10S & NCP10 mullion to fascia cleat.
For Type "AA" roller doors without wind-locks, C150 door mullions, MBC150 base cleat & NCC10S & NCP10 mullion to fascia cleat.
For Type "AA" roller doors with wind-locks, C250 door mullions, MBC250 base cleat & NCC10S & NCP10 mullion to fascia cleat.
For Type "B" roller doors without wind-locks, C200 door mullions, MBC200 base cleat & NCC10S & NCP10 mullion to fascia cleat.
For Type "B" roller doors with wind-locks, C250 door mullions, MBC250 base cleat & NCC10S & NCP10 mullion to fascia cleat.



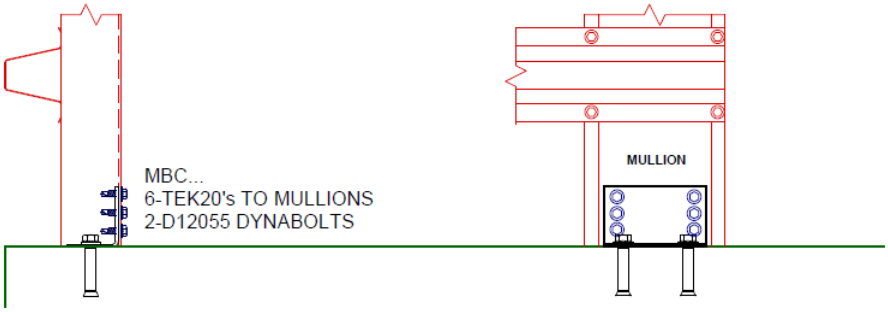


10° ROOF PITCH SHOWN,
OTHER SLOPES SIMILAR

TYPICAL SIDE WALL ROLLER DOOR FRAMING
C150, C200 OR C250 MULLIONS - ALTERNATIVE LOCATION VIEW



DOOR MULLION TO TAPERED FASCIA CONNECTION DETAILS

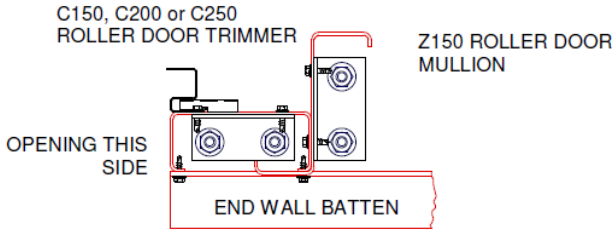


DOOR MULLION BASE TO CONCRETE CONNECTION DETAILS

Other Mullion & Head Arrangements

In some instances where a roller door is located in an end wall, a single member "Cee" section roller door mullion is not structurally adequate. In these circumstances, the "Cee" door mullion is replaced with a "zed" door mullion that is in the same orientation as a normal end wall mullion. A C150 roller door trimmer is also supplied so that the roller door mounting hardware can be fixed to its web.

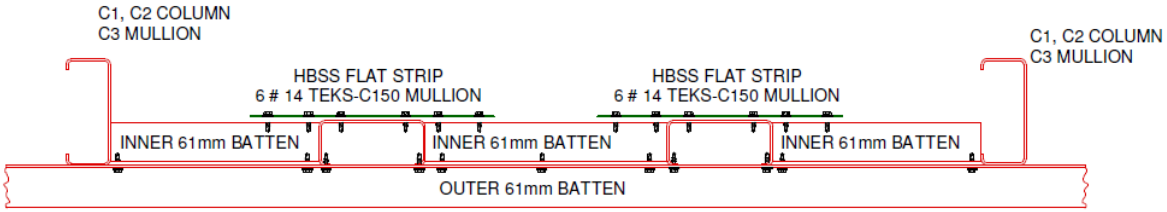
Both members have independent fixing cleats at the base. For fixing the Z150 roller door mullion to the rafter, use JEC35 angle cleat and 9-Tek20 screws-as per normal end wall mullion cleat.
Fasten the zed roller door mullion and the "Cee" roller door trimmer with 1-TEK7 through mullion web to trimmer flange at 500mm centres max.



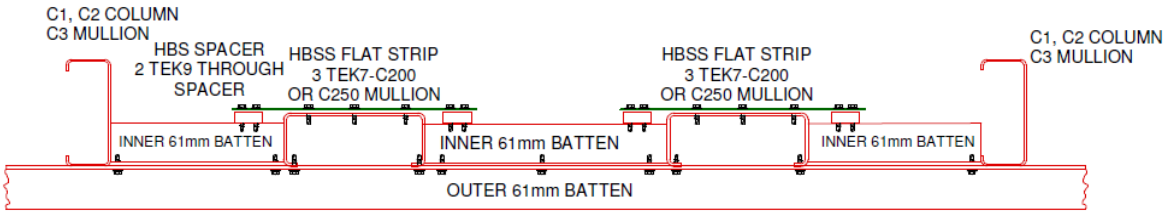
ALTERNATE ROLLER DOOR MULLION ARRANGEMENT

Roller Door Heads

In some instances, the outer batten that forms the roller door head may require internal boxing to the adjacent structural column. The minimum length batten is 200mm, and this will reduce the allowable maximum door opening width. The Header Beam Stabiliser Section (HBSS) is used in this instance. However, if the roller door mullion is located immediately adjacent to the structural column, the inner boxing batten for this mullion is not required.



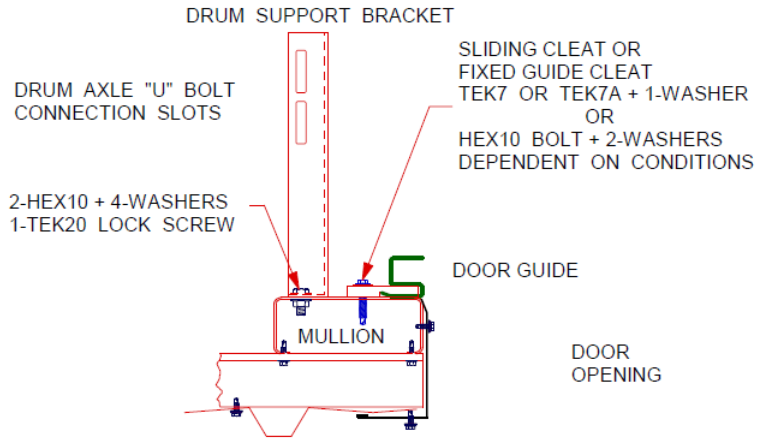
ARRANGEMENT FOR C150 ROLLER DOOR MULLIONS



ARRANGEMENT FOR C200 OR C250 ROLLER DOOR MULLIONS

Roller Door Fitting

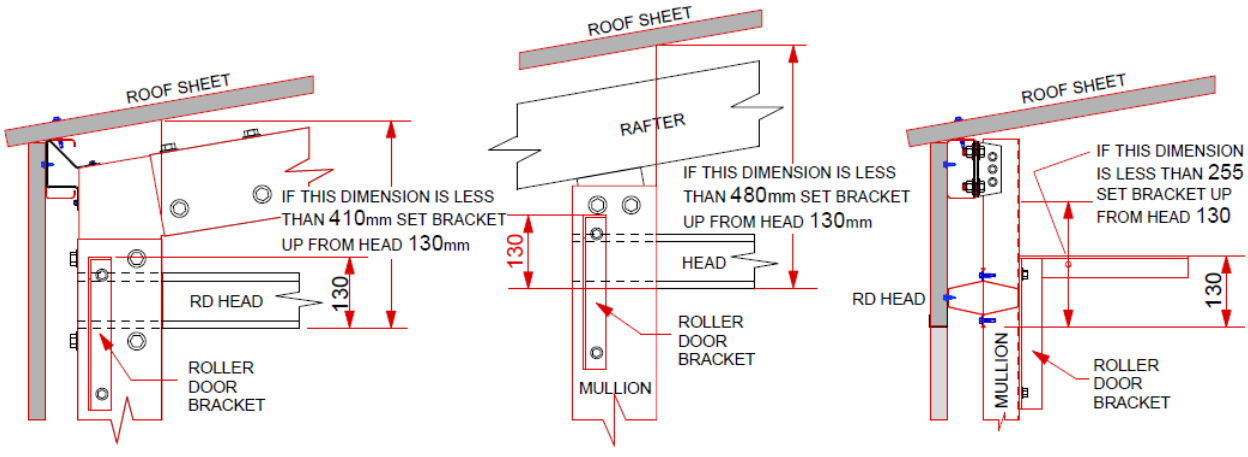
The Roller Door Manufacturer provides some fasteners and detailed fitting instructions with each door (usually found in a plastic bag located inside the door drum).
The fasteners are for timber and brick construction and are generally not suitable for steel framing.
These notes attempt to cover any differences and the fasteners that should be used when fitting a door to steel framed Skillion Garage.
Drum support brackets and curtain guides are fixed to the flat wide flat surface on the inside of roller door mullions as shown below. Where 2 doors share a common mullion the door axles must be cut off to suit.



TYPICAL C150 MULLION

Fasteners

DRUM SUPPORT BRACKET - all door manufacturers
Mark mullion to suit 2 slotted holes in drum bracket and drill 2 holes 10mm diameter. Bolt bracket to mullion with 2-HEX10 bolts and 2-W8 washers. A TEK20 is supplied for locking each bracket in position after vertical adjustment is complete.
CURTAIN GUIDE - All cyclonic rated garages
Mark mullion to suit curtain guide cleats and drill 10mm dia. holes for HEX10 bolts and 2-W8 washers. Although some guides only require 3 fasteners, 4 bolts and 8 washers are supplied per guide. A TEK7 is supplied for locking each mullion in position after adjustment.
CURTAIN GUIDE - All normal rated garages
Guide cleats are Teked directly to mullion with a W8 washer fitted under the head.
TEK7A is supplied for STEELINE doors; TEK7 is supplied for all other doors.
Although some guides only require 3 fasteners, 4 Teks and 4 washers are supplied per guide.
HEIGHT LOCATION OF DRUM SUPPORT BRACKETS
The manufacturer's stated dimension from the head opening up to the top of the drum support bracket may need to be reduced to 130mm in some restricted head room cases. Measure from the head opening up to the underside of roof or fascia at the door mullions. If the dimension is less than that indicated below, locate bracket up 130mm above head opening. If greater locate bracket as specified by the manufacturer.



CORNER MULLION **END WALL MULLION** **SIDE WALL MULLION**

Fly Bracing

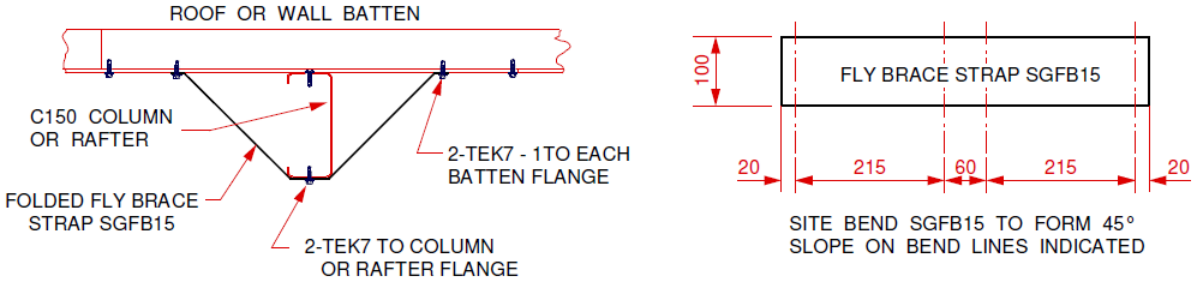
General

Fly Braces are used to restrain main frame columns and rafters and end wall columns from rotating under bending loads. They are located on internal frames; not on corner columns or end rafters. They consist of a thin 100mm wide strap Tek screwed to the inner flange of the column or rafter and the inner flanges of a Topspan crossing over it. They are supplied as a flat strap and need to be bent as shown below before fitting.

See the engineering schedule for your garage for nominal locations of Fly Braces.

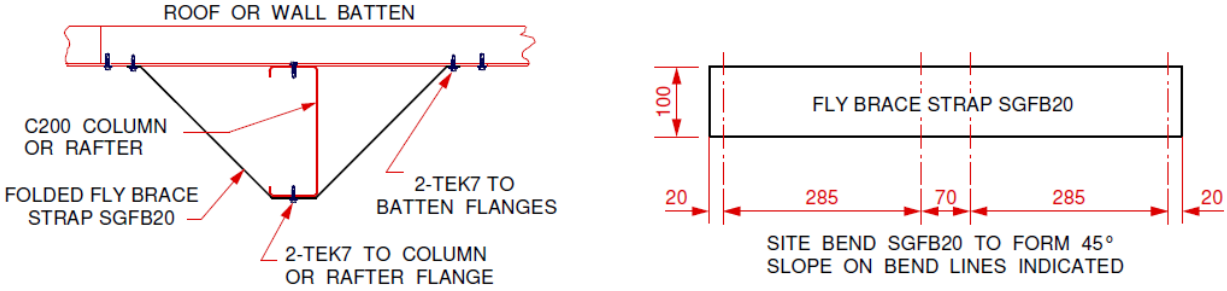
FLY BRACE CONNECTION FOR C150 COLUMNS AND RAFTERS

VARIATION - TEK5 IS SUPPLIED IN LIEU OF TEK7 FOR ALL NON CYCLONIC SKILLION GARAGES



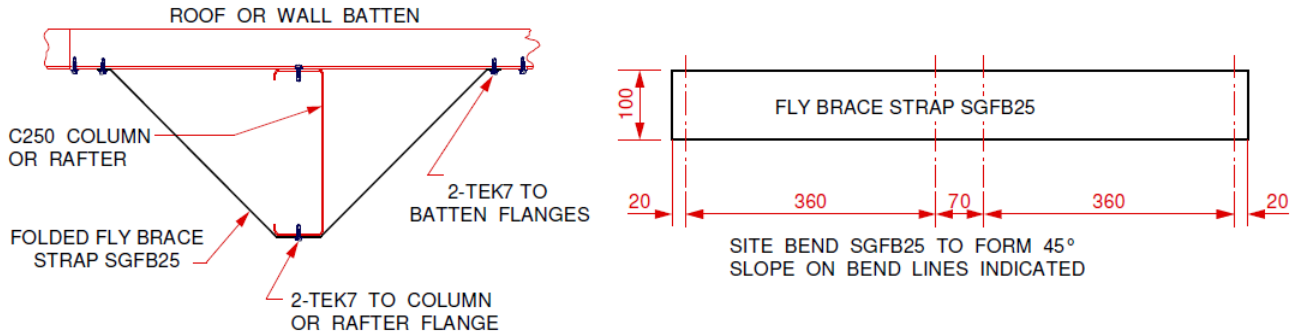
FLY BRACE CONNECTION TO SUIT C200 COLUMNS AND RAFTERS

VARIATION - TEK5 IS SUPPLIED IN LIEU OF TEK7 FOR ALL NON CYCLONIC SKILLION GARAGES



FLY BRACE CONNECTION TO SUIT C250 COLUMNS AND RAFTERS

VARIATION - TEK5 IS SUPPLIED IN LIEU OF TEK7 FOR ALL NON CYCLONIC SKILLION GARAGES



Rod "X" Bracing

General

Rod "X" bracing is supplied with some cyclonic garages. Each set of rod "X" bracing consists of 4-BR27 (M12x2700mm long threaded rod), 4-SGBR1 (angle connection cleat), 4-HT5, 8-NUT2, 16-W12, and 2-FERR/12 (M12 ferrule).
Note that for some bracing sets, up to 4-HT5 and up to 8-W12 are shared with the existing roof or side wall main frame (Knee and Base Cleats), as per the below images. Rod "X" bracing is not required in end walls and partitions.

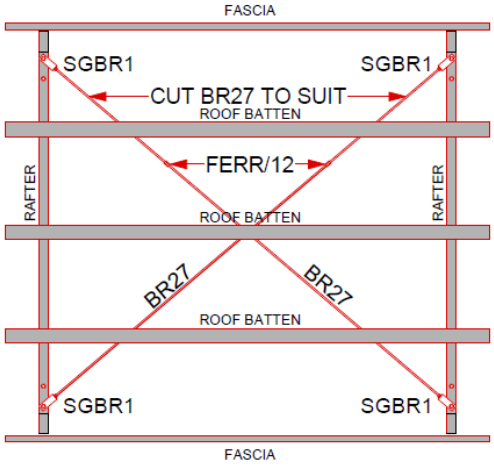
When rod "X" bracing is required, the following details apply:

Side Wall Bracing

For side wall bracing, 2 rod bracing sets will be required. Ideally, 1 bracing set should be located in each side wall. Location is not important and any bay free of doors, windows etc. may be braced. If rod "X" bracing cannot be fitted to a side wall because of doors etc., 2 sets must be fitted to the other wall. Side wall bracing extends from the base cleats to the bottom/side of the knee cleats within the side wall bay, crossing diagonally to form an "X" within the bay.

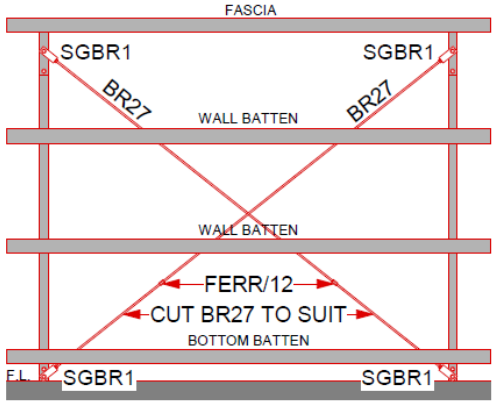
Roof Rod "X" Bracing

The quantity of roof rod "X" bracing sets can be calculated as: the total number of sets provided minus 2 (for the side wall bracing). This should be calculated from the BOM. The FERR/12 quantity can be used, divided by 2 to obtain the number of bracing sets. Alternatively, the SGBR1 quantity or the BR27 quantity, each divided by 4 will obtain the number of bracing sets. e.g. The BOM may list 6 FERR/12 - This is 3 "X" bracing sets: 2 sets are for the side wall bracing as per above and 1 set is for the roof.
Roof rod "X" bracing is required across one entire roof bay, located between a lower fascia to the end wall column location to same bay upper fascia. The number of times to "X" across the roof bay depends on the number of roof bracing sets, as calculated above. Location in roof should be in bays where end wall columns exist or end bays in roof only buildings. Rod bracing sets need to be in the same roof bay.



TYPICAL ROOF PLAN

Where prepunched holes are not available for connection of cleats SGBR1 drill Ø13 holes for bolt HT5 so that cleat is generally located as shown but as close as reasonable to the adjacent batten or fascia.

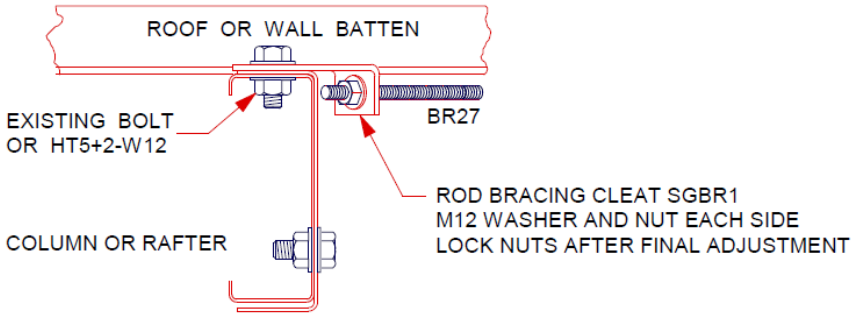


TYPICAL SIDE WALL (viewed from outside)

Fitting

Bracing is best fitted before wall and roof cladding is commenced.

1. Select suitable wall and roof bays for location of rod "X" bracing and determine whether cleats can be fixed with existing frame bolts. Where no suitable bolts are available drill Ø13mm holes in outer flange of frame to suit cleat locations as indicated above.
2. Connect all BR27 rods together in pairs with ferrule FERR/12.
3. Bolt the long leg of cleats SGBR1 to outer flange of frames with the short leg facing inwards.
4. Ensure columns are plumb and frame is reasonably square. Measure distance between short legs of cleats, add approximately 75mm and cut rods to suit.
5. Run a nut and washer onto each end of rods, fit rods into cleats, add another nut and washer to each end of rods. Use these nuts to tension rods and for final squareness adjustment and lock (see detail below).



TYPICAL SECTION AT CLEAT CONNECTION

Strap "X" Bracing

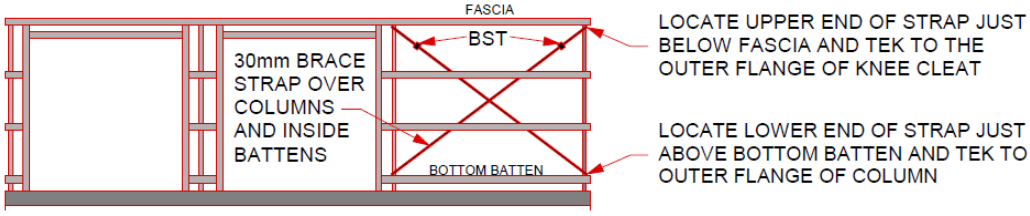
General

Strap "X" bracing is supplied with some garages. If required, strap "X" bracing is listed on the Engineering Schedule. The Skillion Garage strap bracing kit consists of a coil of 30mm wide galvanised strap, 2 strap tensioners (BST) and x-TEK7s for fixing (refer to "Fixing" section below for quantity of TEK7). Strap "X" bracing is not required in end walls and partitions.

When strap "X" bracing is required, the following details apply:

Side Wall Strap "X" Bracing

For side wall bracing, 2 strap bracing sets will be required. Ideally, 1 bracing set should be located in each side wall. Location is not important and any bay free of doors, windows etc. may be braced. If strap "X" bracing cannot be fitted to a side wall because of doors etc., 2 sets must be fitted to the other wall. Side wall bracing extends from the bottom batten to the fascia within the side wall bay, crossing diagonally to form an "X" within the bay.

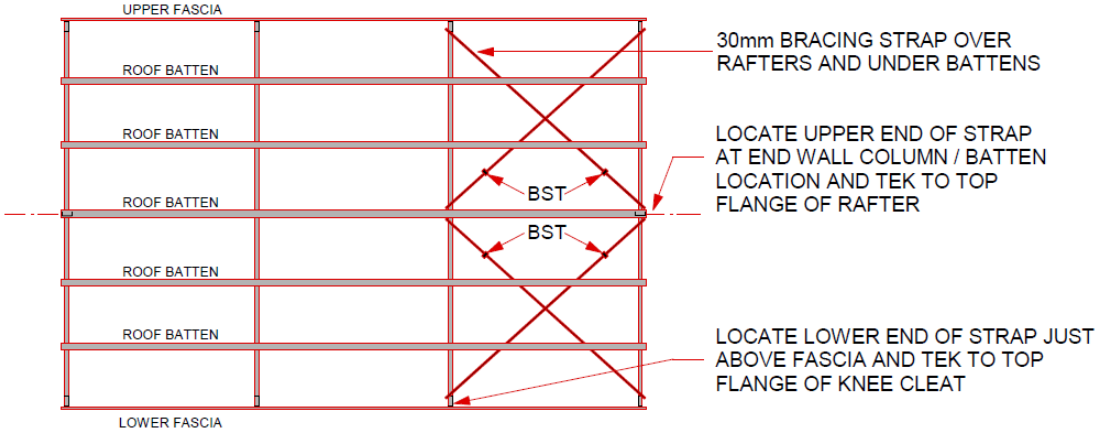


TYPICAL SIDE WALL (viewed from outside)

Roof Strap "X" Bracing

The quantity of roof strap "X" bracing sets can be calculated as: the total number of sets provided minus 2 (for the side wall bracing). This should be calculated from the BOM. The strap tensioner (BST) quantity can be used, divided by 2 to obtain the number of bracing sets. e.g. The BOM may list 6 BST - This is 3 "X" bracing sets: 2 sets are for the side wall bracing as per above and 1 set is for the roof.

Roof strap "X" bracing is required across one entire roof bay, located between a lower fascia to the end wall column location to same bay upper fascia. The number of times to "X" across the roof bay depends on the number of roof bracing sets, as calculated above. Location in roof should be in bays where end wall columns exist or end bays in roof only buildings. Rod bracing sets need to be in the same roof bay.

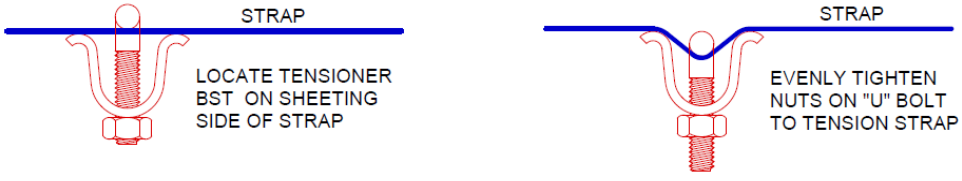


TYPICAL ROOF PLAN

Fitting

Strap bracing must be fitted before wall and roof cladding is commenced.

1. Select suitable wall and roof bays for location of "X" bracing.
2. Measure length required, cut length off coil to suit and tek one end with 1-TEK7 to outer flange of frame.
3. Thread strap tensioner BST onto strap, pass strap under or inside battens and locate other end as shown above, lightly tension by hand and tek to frame outer flange with 1-TEK7. Tensioner BST may be fitted to strap after teking but has to be disassembled placed over strap then reassembled.
4. Measure and fit all remaining bracing straps as noted in items 2 and 3 and adjust tensioners BST until all slack is taken out of straps and garage frame is square.
5. Add the specified quantity of TEK7 to each end of each strap. **5-TEK7 for CYCLONIC**
   4-TEK7 for all other conditions
6. TEK7 through strap into 1 inner flange of each batten that the strap passes over. Also at strap intersection point if it occurs between battens.



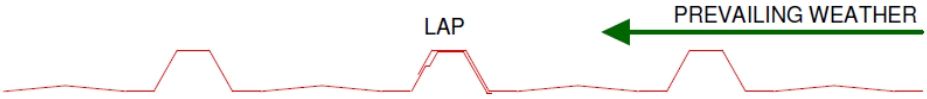
ARRANGEMENT OF STRAP TENSIONER BST

Wall and Roof Cladding

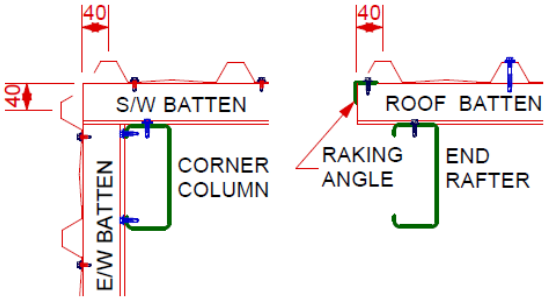
NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section on Page 77.

General

1) Check frame for squareness before and during fixing of wall cladding - no adjustment can be made later.
2) Avoid fixing wall and roof sheeting in windy conditions.
3) Always fix wall sheets before fixing roof sheets.
4) Lay sheets towards the prevailing bad weather conditions so that the overlapping edge is facing away from the direction of worst wind and rain.

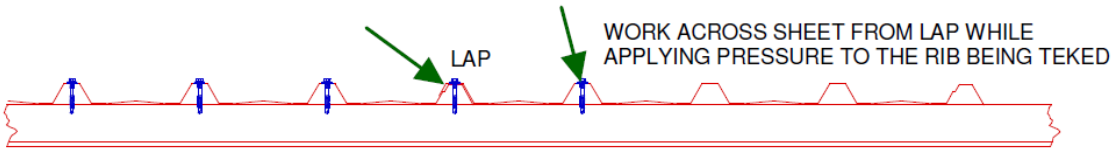


5) Always start fixing sheets with centre of rib 40mm from the end of steel framework for both wall and roof sheeting with the aim of finishing with the centre of a rib 40mm from the opposite end.



END WALL

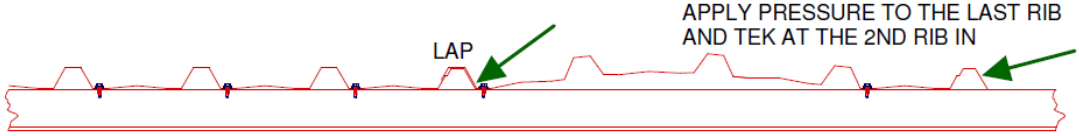
6) As there is a manufacturing tolerance on the width of all sheeting, a little play in the lapped joints and flexibility in the rib areas checks should be made at least every 4th sheet to ensure that sheets are square and not creeping too far away from the correct pitch.
   To check for squareness simply measure from the edge (at ends) of the last sheet fixed to the closest frame. Wall sheeting may also be checked for vertical with a spirit level.
   To check for correct sheet pitch, measure from the 1st rib (40mm in from end) to the last rib of the last sheet.
   The dimension should be the number of sheets multiplied by 760. e.g. If 6 sheets have been fixed the dimension should be close to 6x760 = 4560mm. If this dimension varies by more than 10mm adjustments should be made when fixing the next few sheets.
   Sheets can be **"spread"** by taking up any slack in the rib joint and applying pressure to the ribs while Teking from the lap across towards the sheet edge.



SPREADING TECHNIQUE (ROOF SHOWN)

   Sheets can be **"shrunk"** by taking up any slack in the rib joint and Tek screwing at the lap and then the 2nd rib from edge while applying a slight pressure to the edge of sheet so that centre tends to bow out. The sheet can then be fixed with the remaining Teks.

CAUTION: DO NOT TRY TO MAKE TOO MUCH ADJUSTMENT IN ONE SHEET. SPREAD ADJUSTMENT OVER 3 OR 4 SHEETS.



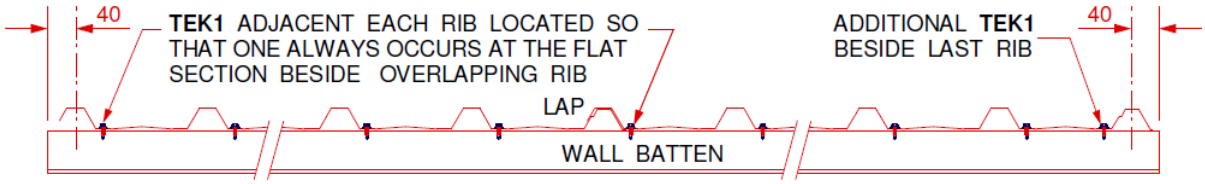
SHRINKING TECHNIQUE (WALL SHOWN)

7) Pans of all roof sheets should be turned **UP** at the ridge to ensure wind driven rainwater blown up under the ridge capping does not drain into the garage. Refer to the "**Turn-Up**" details on Page 39.
8) Always **clean all claddings after fixing** is complete by sweeping or brushing all surfaces to remove drill swarth and particles from power cutting tools, as these particles can rust and cause unsightly staining particularly on lighter shades of COLORBOND®. This is especially important for roof cladding.

Wall and Roof Cladding (continued)

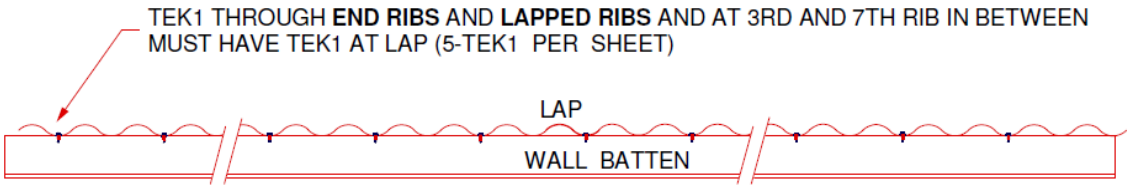
Wall Cladding

Wall cladding is either of TRIMDEK® (High Profile), MULTICLAD® (Low Profile) or CUSTOM ORB® (Corrugated) profiles. Sheets should be located so that lower end overlaps the floor surface by 40mm minimum. Top end of side wall sheets will then be set down approximately 10mm from corner of fascia. Top of end wall sheets must be taper cut at roof pitch° so that top is level with the top of roof battens or raking angle. Remember when sheeting around roller door openings that the head flashing is fitted before the head sheets.



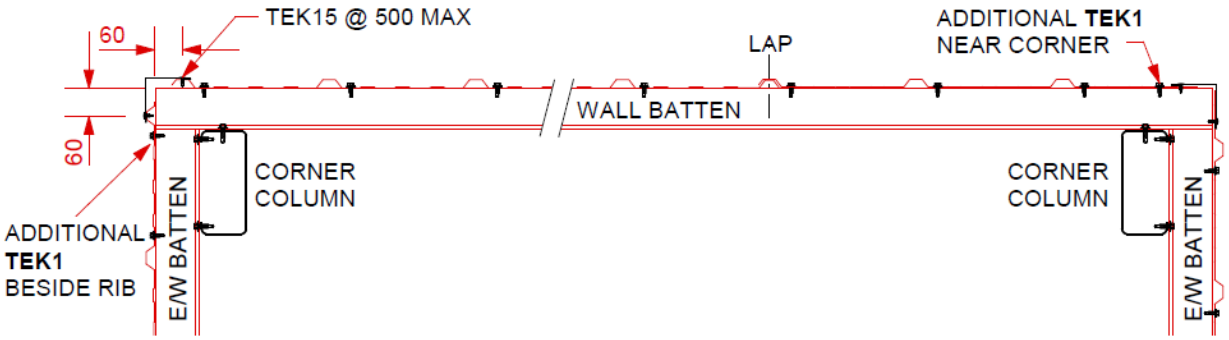
FOR CYCLONIC CONDITIONS SUBSTITUTE **TEK16** FOR TEK1

TYPICAL TRIMDEK® (HIGH PROFILE) WALL SHEET FIXING PATTERN



FOR CYCLONIC CONDITIONS SUBSTITUTE **TEK16** FOR TEK1

CUSTOM ORB® (CORRUGATED) WALL SHEET FIXING PATTERN



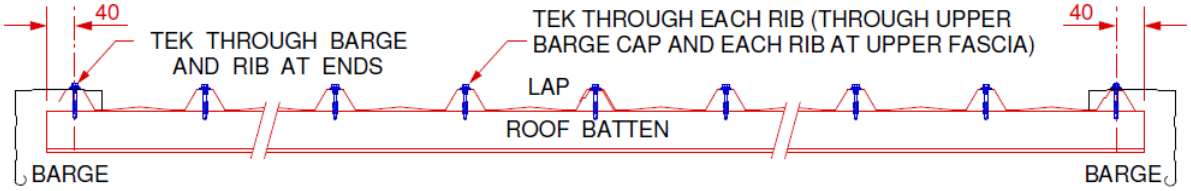
FOR CYCLONIC CONDITIONS SUBSTITUTE **TEK16** FOR TEK1

MULTICLAD® (LOW PROFILE) WALL SHEET FIXING PATTERN

Roof Cladding

Standard roof cladding is TRIMDEK® (High Profile). CUSTOM ORB® (Corrugated) sheets are available as an option but some additional trimming of flashings is required. All roof fasteners are 50mm min Roof Screws.

Sheets should be located so that lower end overhangs the wall sheet rib by approximately 50 to 60mm for travel into the gutter.

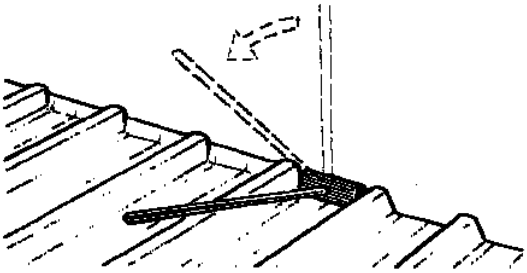


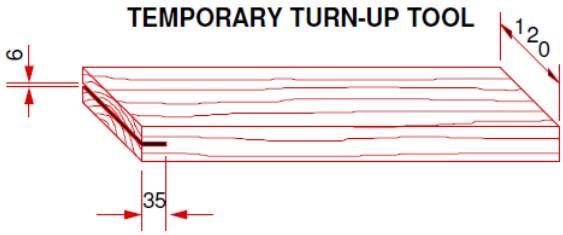
TRIMDEK® (HIGH PROFILE) ROOF SHEET FIXING PATTERN

Wall and Roof Cladding (continued)

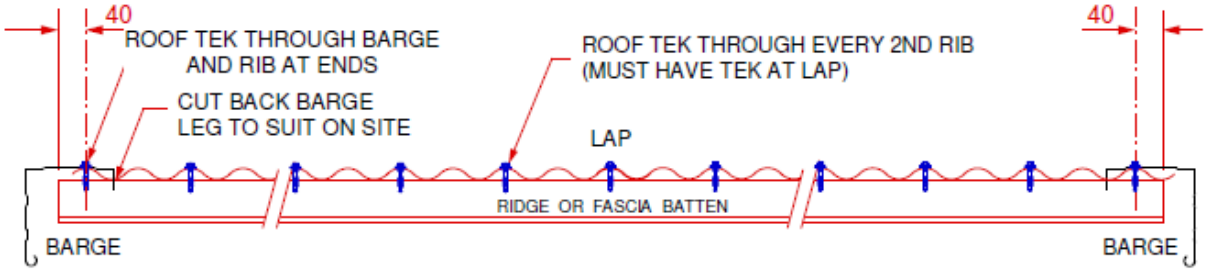
TRIMDEK® (High Profile) Pan Turn-Up

Ridge pans can be turned up after placement on the roof provided that the clearance between sheets is 50mm or more and a TRIMDEK® turn-up tool is used. If a turn-up tool is not available, a temporary tool can be made by cutting a slot approximately 35-40mm deep x 6mm wide in the end of a piece of 120mm wide timber. Pans should be turned up approximately 80° prior to fixing to prevent wind driven rainwater entering the building under the ridge capping.

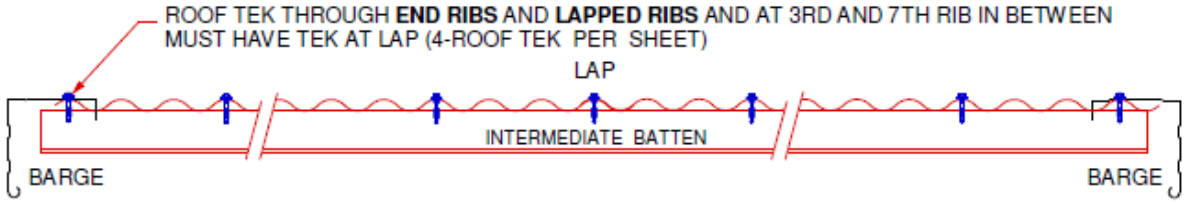




Optional CUSTOM ORB® (Corrugated) Roof Cladding for Normal Conditions

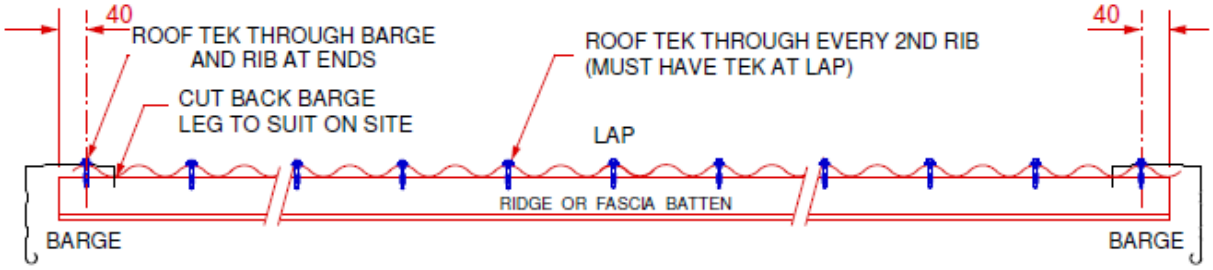


CUSTOM ORB® (CORRUGATED) ROOF SHEET FIXING PATTERN AT FASCIA AND RIDGE



CUSTOM ORB® (CORRUGATED) ROOF SHEET FIXING PATTERN AT INTERMEDIATE BATTENS

Optional CUSTOM ORB® (Corrugated) Roof Cladding for Cyclonic Conditions

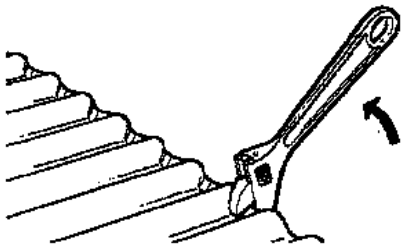


CUSTOM ORB (CORRUGATED) ROOF SHEET FIXING PATTERN AT FASCIA AND ALL BATTENS

CUSTOM ORB® (Corrugated) Roof Cladding Turn-Up

With a shifting spanner closed down to 2mm, grip valley 20mm in from sheet end and turn up as far as possible without splitting sheet.

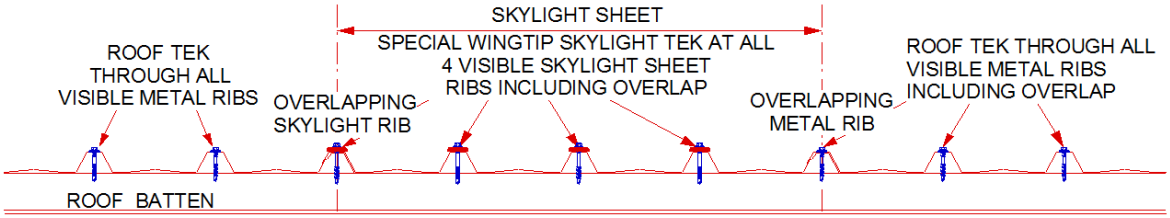
All cladding must be cleaned after fixing to remove drill swarth and particles that can cause staining, especially on roofs.



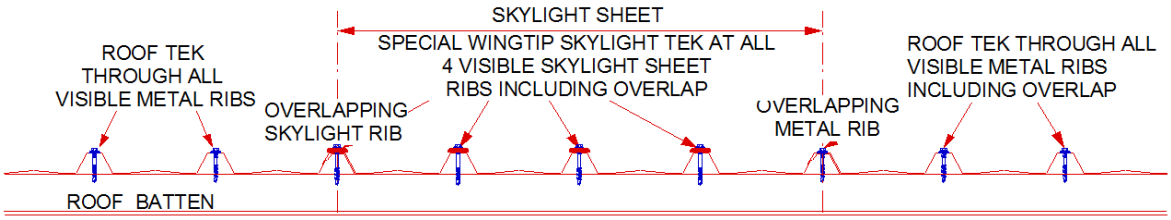
Skylights

General

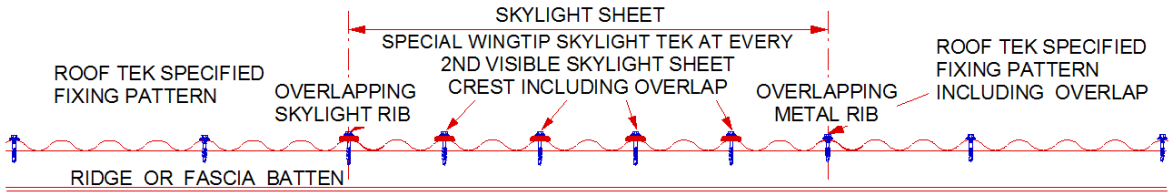
1. Skylight sheets are available in both fibreglass and polycarbonate materials. Although the properties of these two materials vary significantly the method of fitting and fasteners used are identical.
2. Skylight sheets run from under the ridge capping down to the eaves. If the sheets supplied are longer than the adjacent metal roof sheets cut back to the same length. Either can be cut with any fine tooth wood or cold cut metal cutting disc. Polycarbonate can also be cut with heavy duty scissors or sharp tin snips.
3. Skylight sheets must not be located at either end of the roof next to the barge flashing.
4. Skylight sheets cannot be located beside each other. They must be separated by at least 1 metal sheet.
5. As the pans cannot be turned up as with metal cladding, a profiled foam rubber sealing is supplied to seal the ridge against wind driven rainwater. This strip should be located between the skylight sheet and the ridge capping in line with the ridge battens so that it is teked and clamped in position when fastening ridge capping.
6. Fastening patterns are the same as for the adjacent roof sheets (see the previous pages for details).
7. For both cyclonic and non-cyclonic conditions a wingtip Tek fastener and a 30mm diameter neoprene washer assembly is supplied in lieu of the standard roof Tek. (**RED** for fibreglass and **GREY** for polycarb)
8. Skylight sheeting in certain locations will need to be predrilled with a 10mm hole to allow for thermal expansion. These locations will be: - a) under the upper eave capping where normal roof teks are used. b) At skylight underlaps where normal roof teks are used.
9. Steel roof sheets under skylight overlaps wall also need to be predrilled to 10mm to allow the fixing of wingtip roof screws.
10. Fixing is similar for skylights on awnings except sheets slip under garage roof sheets instead of upper eave capping. The skylights will need to be 10mm predrilled at these locations for thermal expansion.
11. Do ensure that the skylight manufacturer's installation recommendations are followed, including in relation to safety.



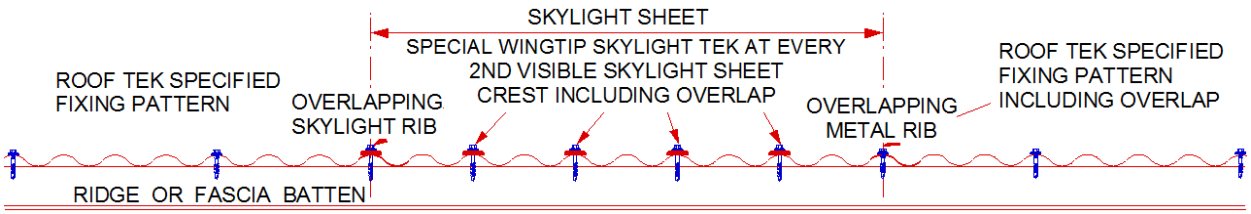
TRIMDEK® PROFILE SKYLIGHT SHEET FIXING FOR NORMAL NON CYCLONIC CONDITIONS



TRIMDEK® PROFILE SKYLIGHT SHEET FIXING FOR CYCLONIC CONDITIONS



CUSTOM ORB® PROFILE SKYLIGHT SHEET FIXING FOR NORMAL NON CYCLONIC CONDITIONS



CUSTOM ORB® PROFILE SKYLIGHT SHEET FIXING FOR CYCLONIC CONDITIONS

Flashing and Finishing

NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section on Page 77.

General

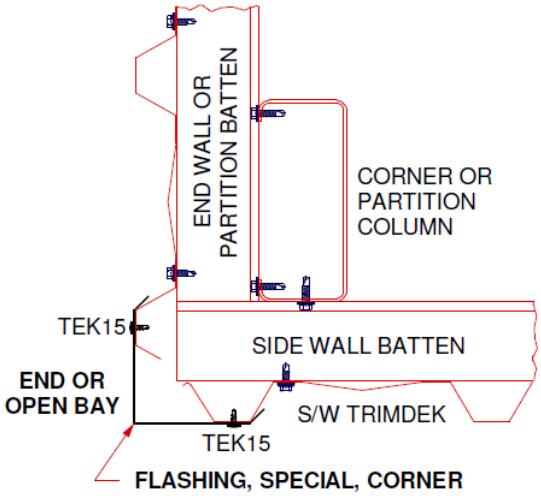
Skillion Garage flashings can be split up into 5 main groups: roller door, corner, cap, barge and upper eave. Other flashings and finishing are associated with accessories and are dealt with in other sections.

Flashing Sequence

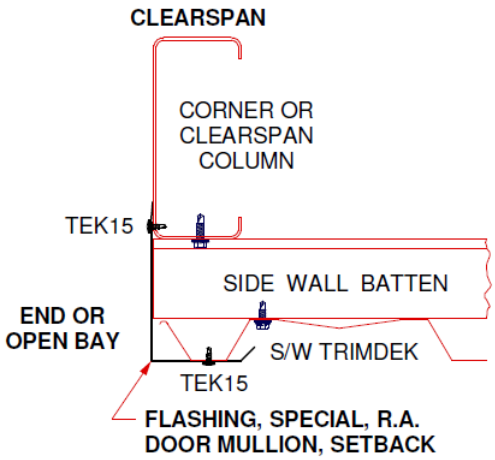
Roller door head flashing should be fitted either prior to or during fixing of sheets around opening as they use common Teks. Other vertical roller door flashings may be fitted at any time.
Corner flashings should be fitted after wall sheets but before barge or partition cap as they overlap corners.
Barge is fitted over end wall sheets and corner flashings and ridge capping is fitted last over the barge.

Fasteners

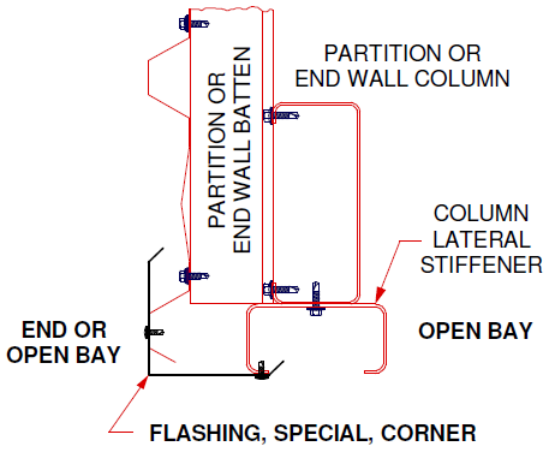
Where common Teks are used to fix flashing and sheeting, the frequency and Tek specified for the sheeting must be used together with other Teks as required. This applies to roller door head flashing, barge flashing and ridge capping.
Use **Tek15** to fix all vertical wall flashings. Teks are supplied to fasten each leg near the top and bottom and at spacings of 500mm maximum. eg. 2400 eave garage corner flashing is 2430 long. If Tek15's are fitted in each leg say 50mm from ends, 12-Tek15 would be supplied to be placed at 466mm nominal centres.



STANDARD CORNER FLASHING



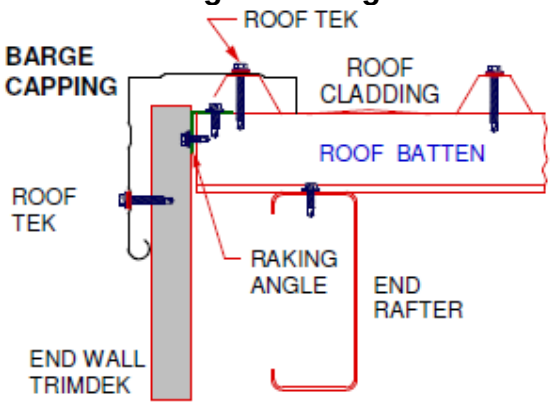
CORNER FLASHING AT OPEN ENDS OR OPEN BAYS AT CLEAR FRAMES



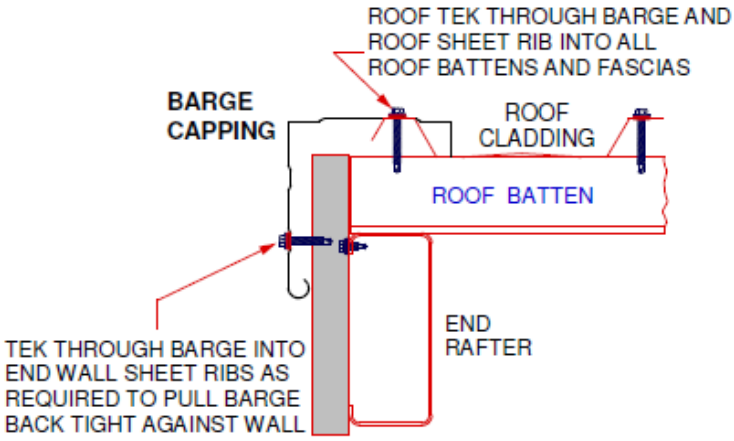
CORNER FLASHING AT END WALLS OR PARTITIONS BESIDE OPEN BAYS

Flashing and Finishing (continued)

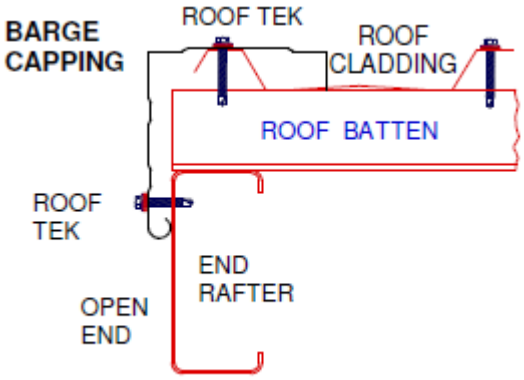
Standard Barge Flashing



SET BACK END WALL

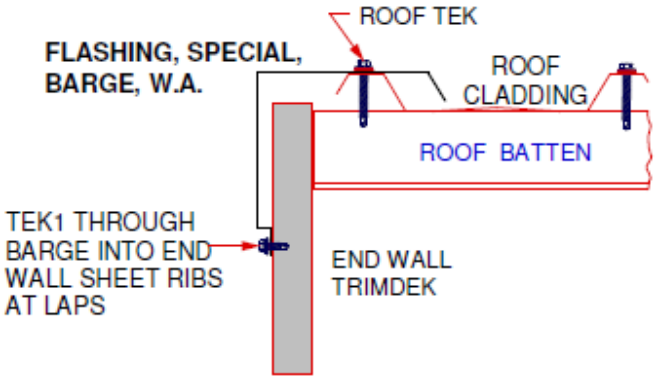


FLUSH END WALL



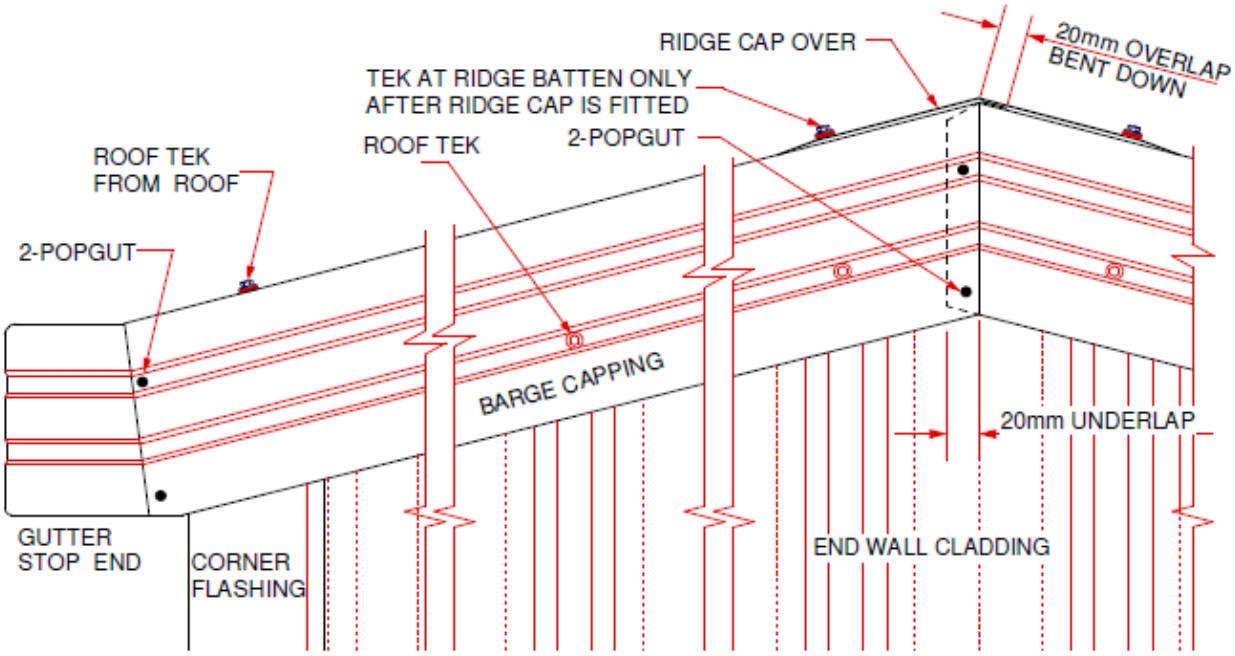
OPEN ENDS

OPEN ENDS



SPECIAL BARGE FOR W.A.

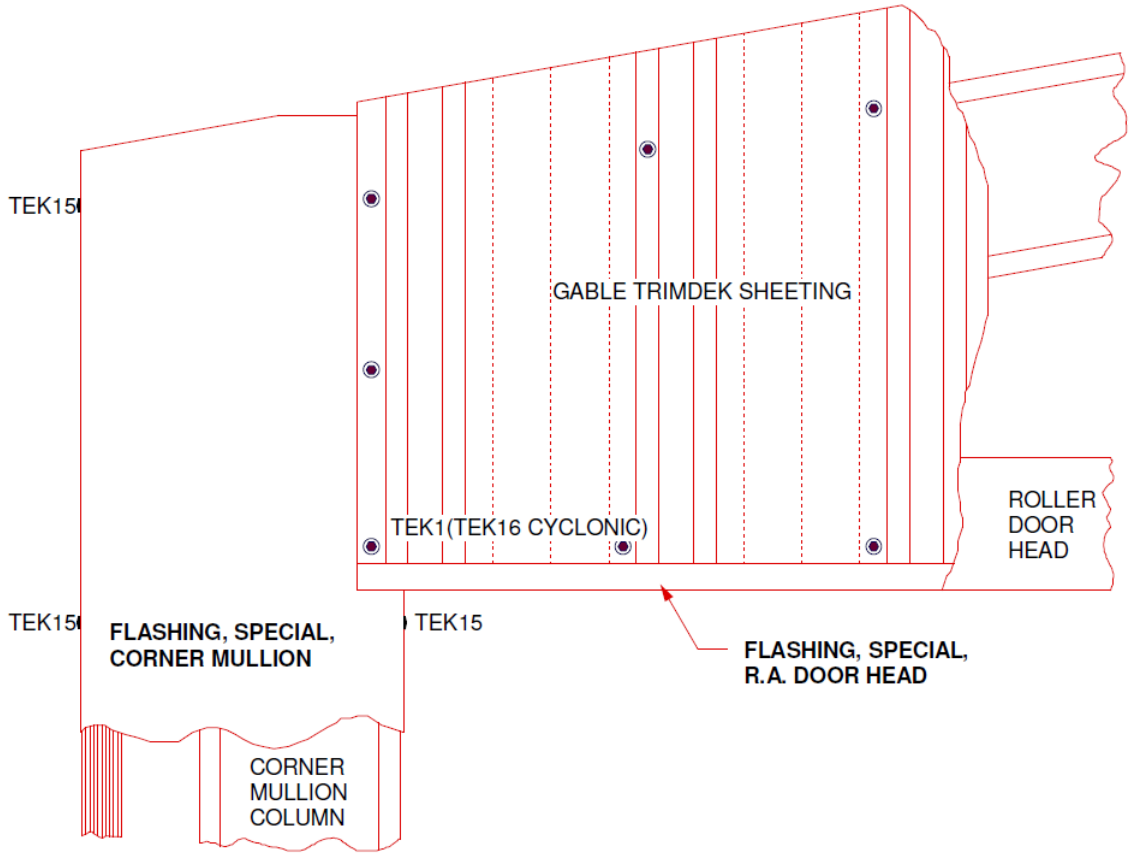
Finishing at Ridge and Gutter



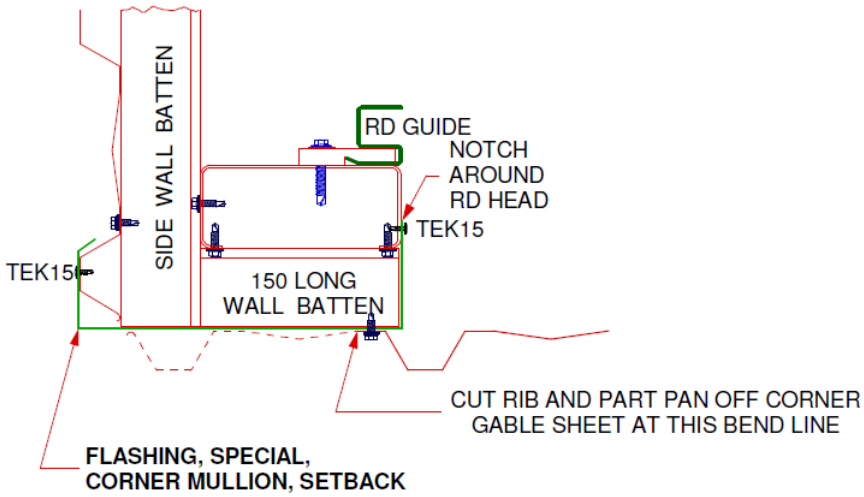
Flashing and Finishing (continued)

Special Flashing Arrangement at Corner Column/Mullion

Where the corner column is used as a roller door mullion a larger shared flashing is supplied to flash the corner & the mullion together and should be fitted as shown below.



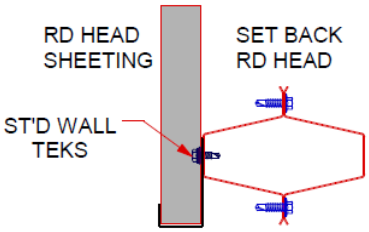
SPECIAL CORNER MULLION FLASHING AND TRIMDEK® GABLE SHEETING ARRANGEMENT



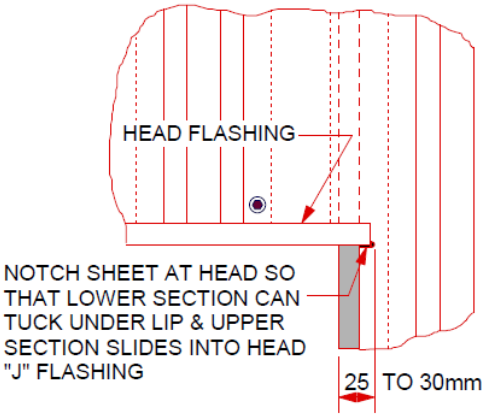
SET BACK END WALL

Flashing and Finishing (continued)

Roller Door Head Flashing



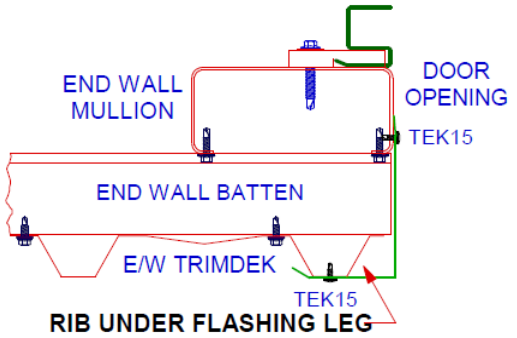
FLASHING, SPECIAL, RA.DOOR HEAD



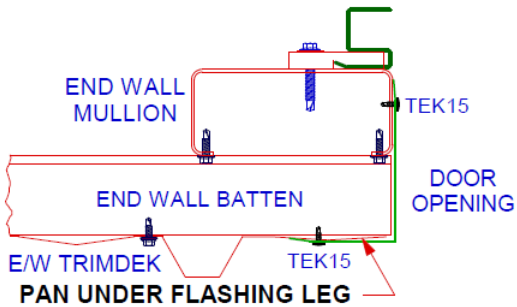
END FINISHING

Roller Door Mullion Finishing and Flashing

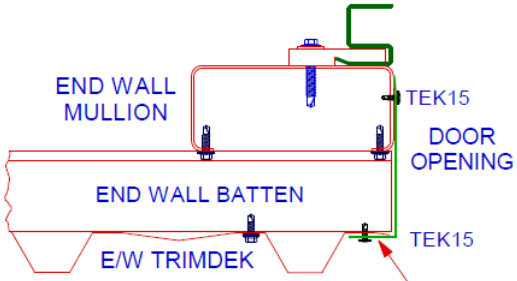
FLASHING, SPECIAL, RA.DOOR MULLION, SET BACK - SUPPLIED FOR ALL MULLIONS



RIB UNDER FLASHING LEG



PAN UNDER FLASHING LEG

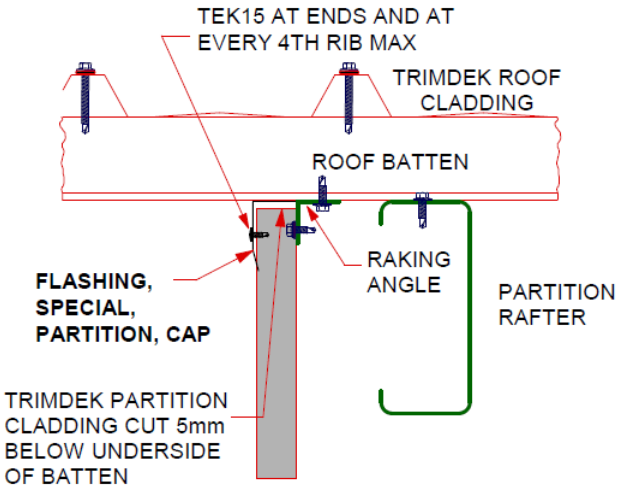


PART RIB UNDER FLASHING LEG
CUT BACK LEG OF FLASHING TO SUIT

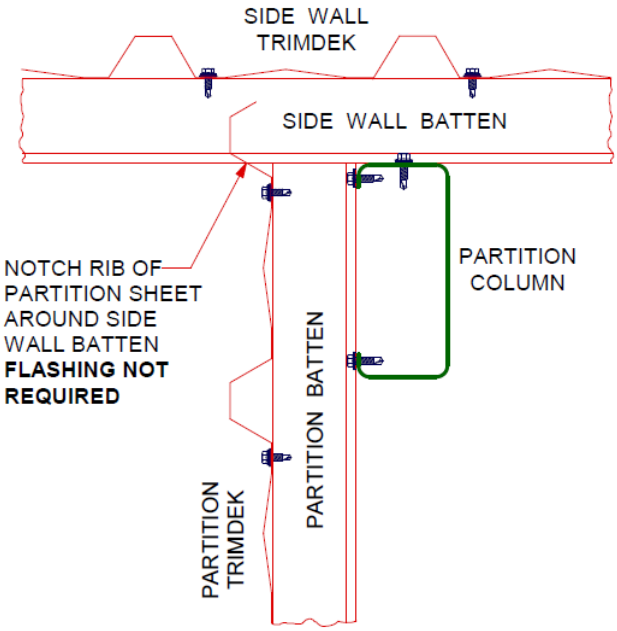
Flashing and Finishing (continued)

Partition Head Flashing

Taper cut top and fix partition wall sheets approximately 5mm below the underside of roof battens. Slip plain leg of partition cap flashing over top of partition wall sheets, push up against underside of roof battens and Tek in position. Tek15 at ends and every 4th rib.



PLAIN OR SET BACK FRAME RD PARTITION



PARTITION WALL TEE INTERSECTION

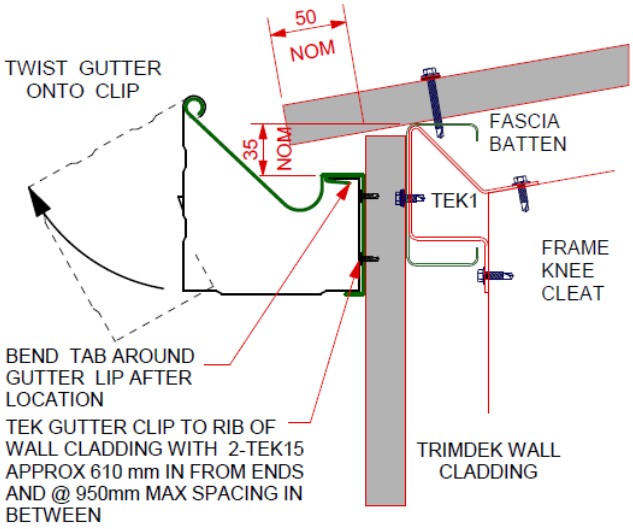
Gutters

SHEERLINE® Gutter

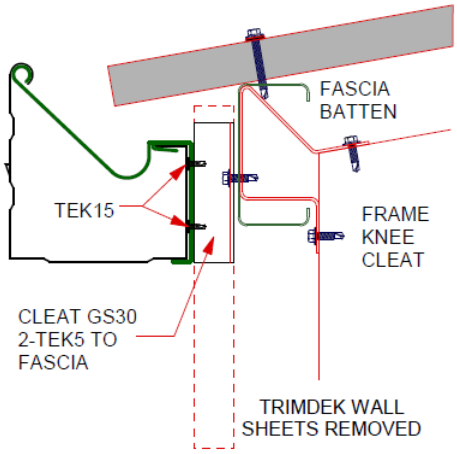
Sheerline gutter is supplied in lengths to cover one bay with laps at frames. They are fixed in position with special clips Teked to the ribs of the TRIMDEK® wall cladding with 2-TEK15. Clips should be located at the 4th rib in from each end (approximately 610mm) and at spacings not exceeding 950mm (every 5th rib) in between.

Where the side of a garage is completely open (no side wall sheets at all), gutter clips are Teked directly to the fascia batten. Where the side of a garage is partially sheeted, at areas with no wall sheeting the gutter bracket is Teked to a spacer cleat GS30 which in turn is Teked to the fascia with 2-TEK5 to bring brackets out in line with the brackets fixed to wall sheet ribs.

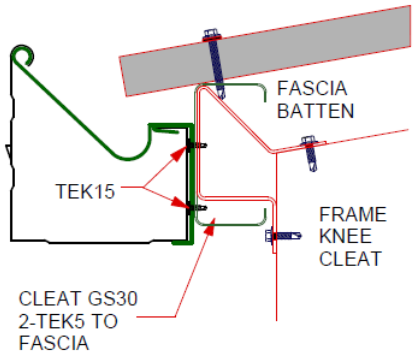
Stop ends to suit the gutter profile are used to finish gutters at ends and are fixed with 6 pop rivets (code POPGUT) and silicone sealant. Laps are joined and sealed with 6 pop rivets and silicone sealer as for stop ends.



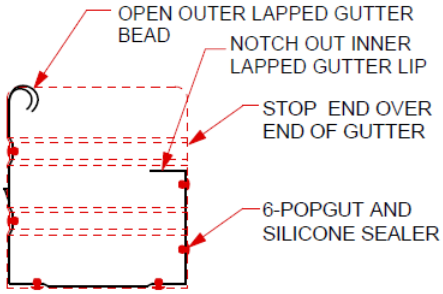
SECTION AT SHEETED WALL



SECTION AT OPEN AREA OF PARTIALLY SHEETED WALL



SECTION AT UNSHEETED WALL

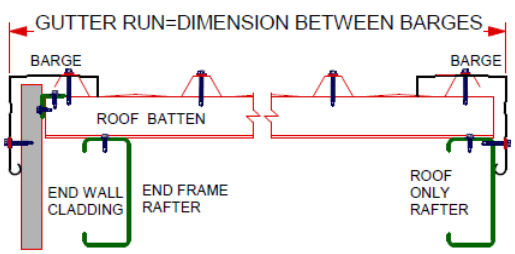


TYPICAL RIVET ARRANGEMENT AT STOP END OR GUTTER LAP

Fitting of stop ends and downpipe spigots and joining gutters at laps is more easily carried out on the ground and then the gutter run is lifted and rolled onto clips as one, provided enough help is available for lifting the length of run. To do this the overall length of gutter must be established.

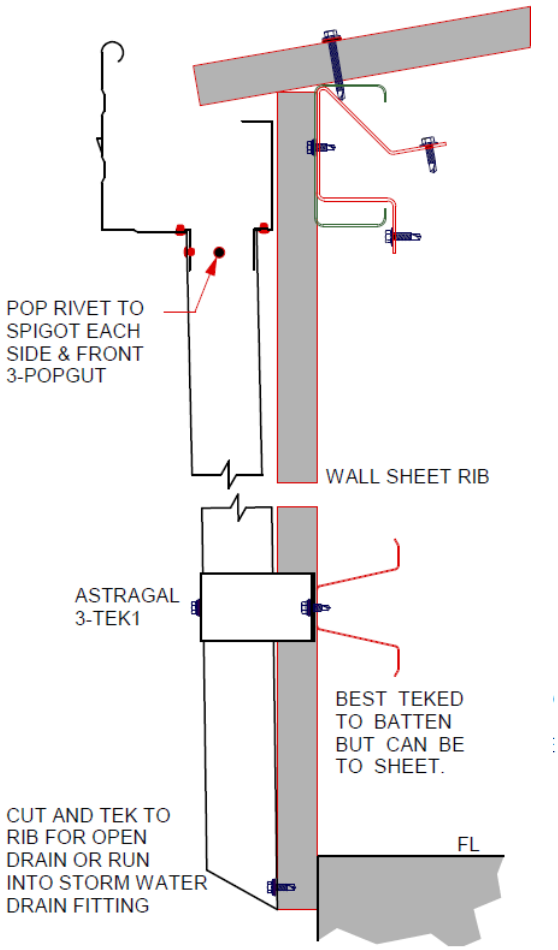
Overall Length of Gutter

Total gutter length = the distance between the face of barges.
If the barges are fitted or partially fitted simply measure the distance between the inner faces.
If the barges are not fitted
OVERALL LENGTH = THE DISTANCE OVER END WALL SHEETING +32mm
If end or ends are open without wall or gable infill sheeting then measure to the outside face of frames instead of sheeting.

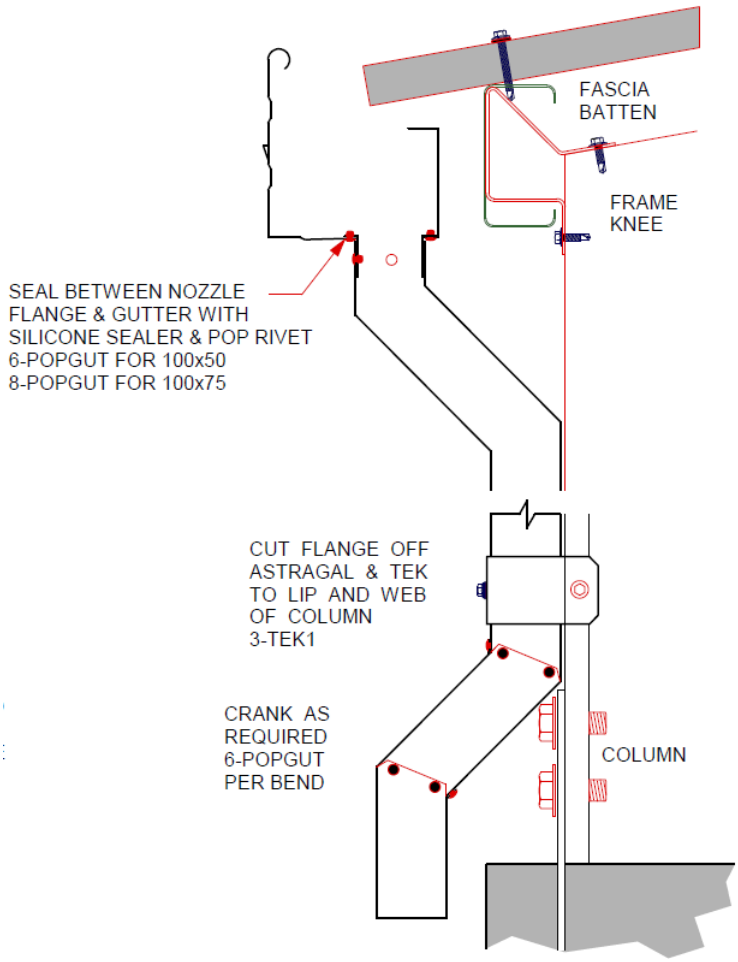


Downpipes

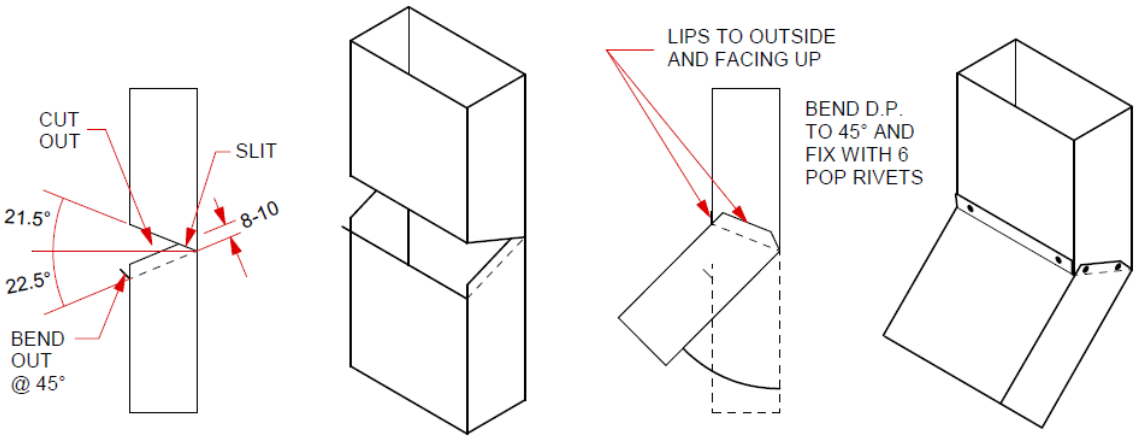
Downpipes are supplied in 1800mm and 2400mm lengths and are tapered to allow lap joints, large end to top.
Two sections may need to be cut from one of the lengths supplied to make up the required lengths of 2 complete downpipe drops. Minimum lap is 50 mm.
100x50 is the standard size downpipe. 100x75 is optional and is supplied as standard in some areas.
For each downpipe drop a spigot, an astragal (strap) for each downpipe length used in the drop and associated Teks and Pop Rivets are supplied.



TYPICAL DOWNPIPE ARRANGEMENT AT CLAD WALL



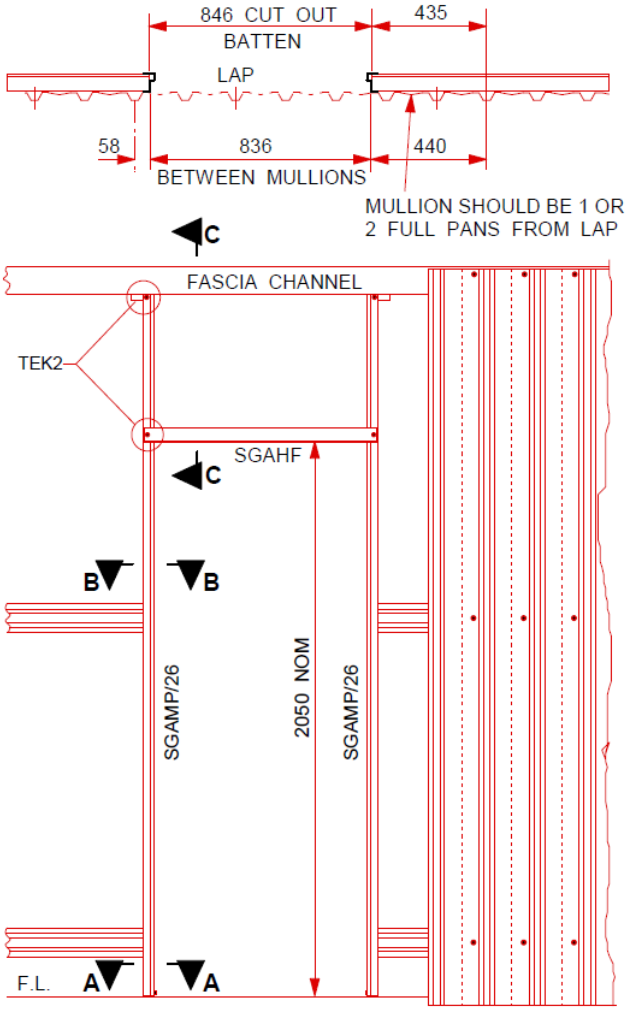
TYPICAL DOWNPIPE ARRANGEMENT AT OPEN COLUMN



TYPICAL 45° DP CRANK

Premium Access Doors

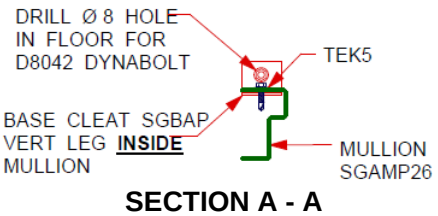
NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section on Page 77.



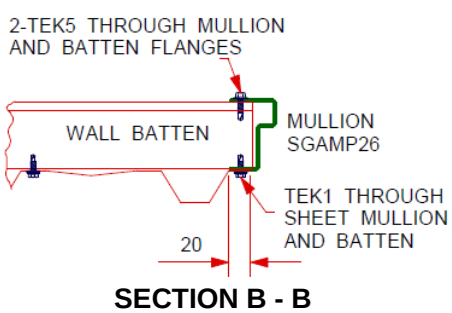
Door Opening Framing

1. When sheeting leave off 2 sheets in the area selected for door location (space out these 2 by holding in position or fixing with a couple of Teks until 3rd sheet is located) and continue sheeting.
2. Measure from rib centre line and cut battens as shown at left.
3. Fit cleat **NADC** or cut, notch and slot top of mullions to suit (SECT C-C). Note: Allow for thickness of base cleat under mullion.
4. Fit a mullion over batten ends & fascia or header batten, locate cleat **SGBA** in base of mullion (SECT A-A), plumb vertical and Tek at top and inside of battens only (SECT B-B & C-C).
5. Fit other mullion to 836 dimension top and bottom and Tek as for 4.
6. Line up bottom of mullions with edge of concrete, hold base cleats in position (SECT A-A), mark concrete through cleat holes and drill 2-8mm dia. x 40mm deep holes in concrete. Fix base cleats with D8042 Dynabolts. Tek mullion to base cleat, 1-Tek5 (SECT A-A).
7. Notch head flashing at ends to fit mullion recess and tek in position.
8. Measure & partially cut across the 2 sheets with an cold cut metal cutting disc to suit the head flashing height location and length. Extend cut approx. 20mm past mark to produce a slot to clear head flashing.
9. For vertical cut below head use cold cut metal cutting disc, nibbler or snips 20mm from rib (SECT B-B).
10. Locate sheets and tuck cut edges under mullion leg and fix. Ensure that a TEK1 passes through mullion and sheet and screws into each of the 4 batten ends.

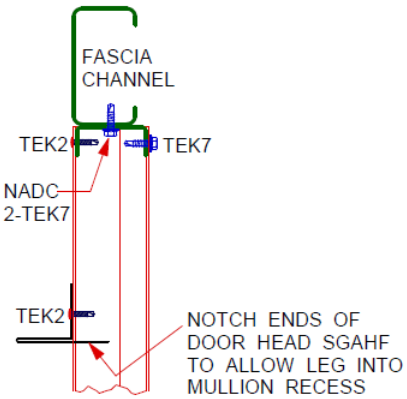
NOTE:
If standard fascia or batten height does not suit, an extra batten is supplied. Fix the batten supplied at approx. 2500 above floor for mullion connection.



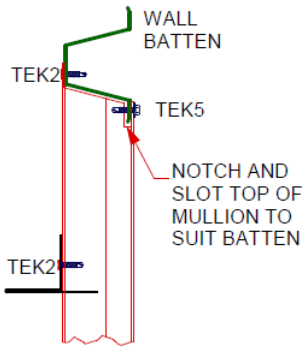
SECTION A - A



SECTION B - B



SECTION C - C
UNDER 2700 SIDE WALLS

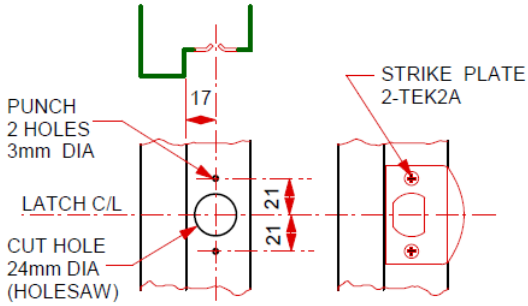


SECTION C - C
OVER 2700 SIDE WALLS
AND ALL END WALLS

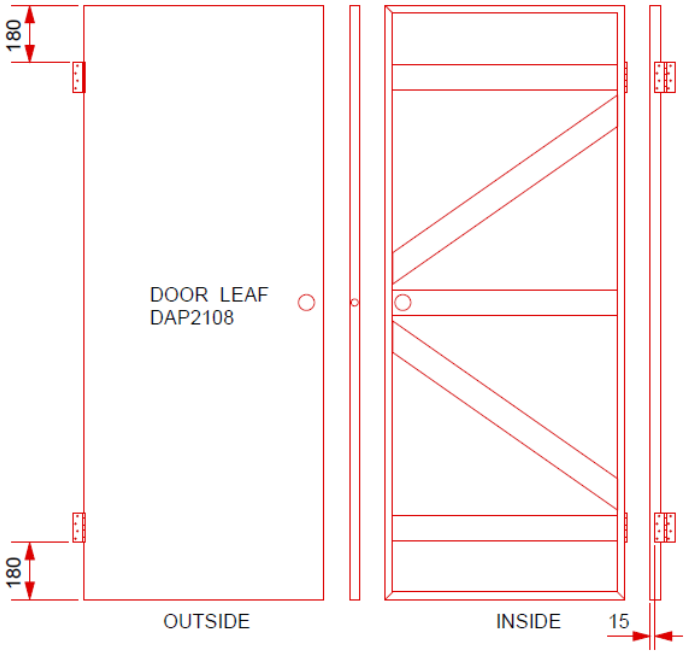
Premium Access Doors (continued)

Door Fitting

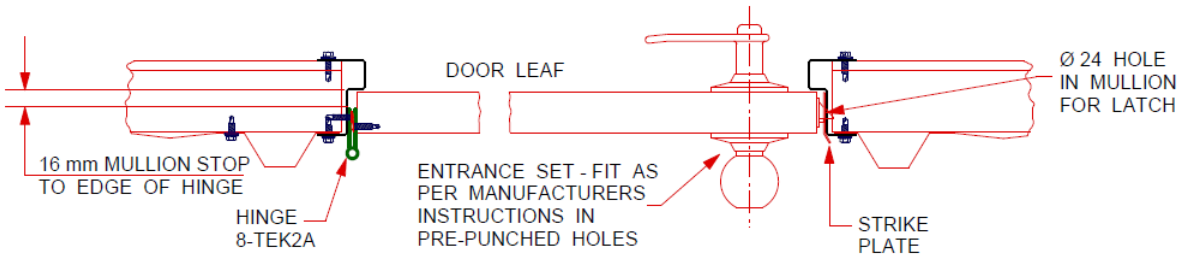
1. Fix 2 hinges to edge of door leaf. Locate edge of hinge 15mm in from inside face and 195mm from ends of door. Use 4-TEK2A at each hinge.
2. Fit entrance lock set in pre-punched holes generally in accordance with the manufacturer's instructions. Insert latch in 24mm diameter hole, locate knob and lever handle in 54mm diameter holes and lightly tighten 2 screws.
3. Ensure latch is located centrally with plate parallel to edge of door and punch 2 holes in edge through 2 holes in latch plate approximately 3 mm diameter and fix with countersunk screws provided. Note it is important that holes are punched and not drilled, as this result in a depression which allows seating of back of plate and greater screw stripping resistance. TIP - A 50x10 gauge (3.15mm diameter) nail can be used as the punch.
4. Fit door in opening and fix hinges to mullion with 4-TEK2A each hinge.
5. Mark centre line height of latch on mullion and punch 2 holes 3mm diameter in rebated section. Cut 24mm strike hole in mullion opposite latch to suit (see detail below). If a 24mm hole saw is not available, drill a couple of smaller holes and file until the latch and tang on strike are clear.
6. Tek or rivet cabin hook to wall at batten (2-TEK2 or 2-POPGUT). Rivet hook eye to door face to suit (2-POPGUT).



STRIKE PLATE FITTING



DOOR LEAF



TYPICAL SECTION AT FITTED ACCESS DOOR

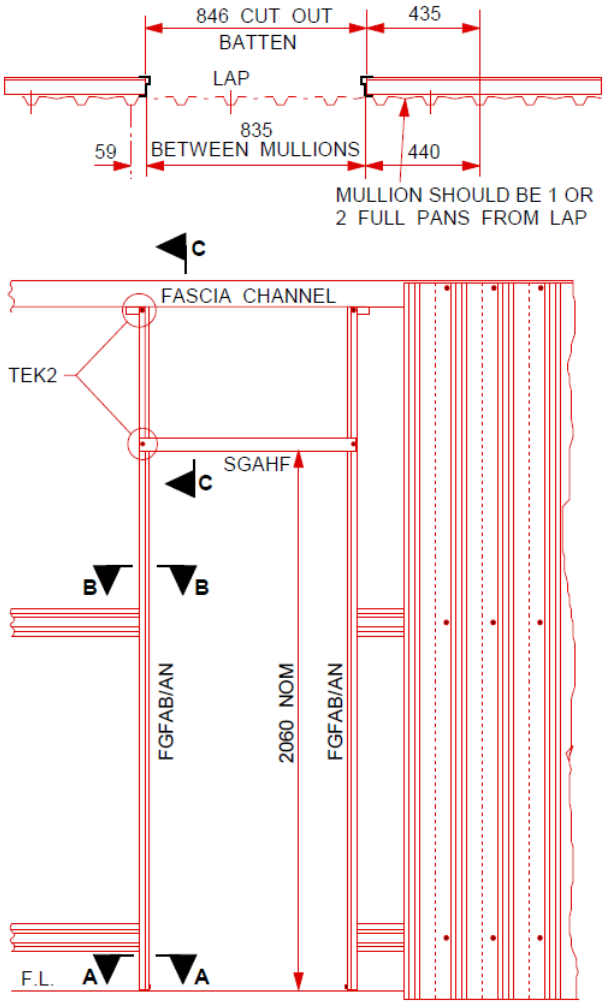
All details shown on this sheet are for outward opening doors. For inward opening doors simply rotate mullions & entry lock latch 180° & fix hinges with edge 15mm from outside face of door.

LIST OF COMPONENTS AND LOCATION IN PACK REQUIRED FOR DOOR ASSEMBLY AND FITTING

GARAGE DOOR SMALL ITEM PACK - PLASTIC BAG IN BOX			
QTY	**PART N°**	**DESCRIPTION**	**COMMENTS**
1	CABHOOK	100mm CABIN HOOK	CHROME PLATED
2	D8042	DYNABOLT, Ø8x42	ZINC PLATED
1	100STPBV	LOCKSET, LEVER HANDLE	100 SERIES, BRASS PLATED
2	HINGE/GAR	100x35 FIXED PIN BUTT HINGE	ZINC PLATED
8	POP GUT	POP RIVET, RAW42	
2	SGBAP	PREMIUM MULLION BASE CLEAT	GALV
6	TEK2	TEK, WAFER HD, #10:16x22	CLASS 3 - (EXTERNAL USE)
20	TEK2A	TEK, BUGLE HEAD, M5:14x20	CLASS 3 - (EXTERNAL USE)
12	TEK5	TEK, HWF, #12:14x20	CLASS 3 - (EXTERNAL USE)
2	NADC	MULLION CAP CLEAT	GALV
PACKED WITH OTHER ITEMS IN BHP SHRINK WRAP PACK			
1	DAP2608	PREMIUM ACCESS DOOR LEAF	ZINCALUME® OR COLORBOND®
1	SGAHF	FLASHING, AD HEAD	ZINCALUME® OR COLORBOND®
1	SGAMP/26	PREMIUM AD MULLION	GALV

Sentry Single Face Access Doors

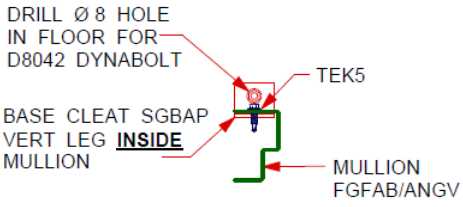
NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section on Page 77.



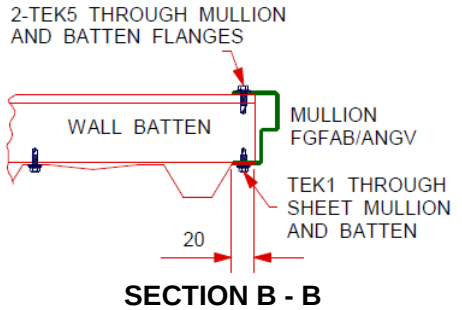
1. When sheeting leave off 2 sheets in the area selected for door location (space out these 2 by holding in position or fixing with a couple of teks until 3rd sheet is located) and continue sheeting.
2. Measure from rib centre line and cut battens as shown at left.
3. Fit cleat **NADC** or cut, notch and slot top of mullions to suit (SECT C-C). Note: Allow for thickness of base cleat under mullion.
4. Fit a mullion over batten ends & fascia or header batten, locate cleat SGBA in base of mullion (SECT A-A), plumb vertical and Tek at top and inside of battens only (SECT B-B & C-C).
5. Fit other mullion to 835 dimension top and bottom and Tek as for 4.
6. Line up bottom of mullions with edge of concrete, hold base cleats in position (SECT A-A), mark concrete through cleat holes and drill 2-8mm dia. x 40mm deep holes in concrete. Fix base cleats with D8042 Dynabolts. Tek mullion to base cleat, 1-Tek5 (SECT A-A).
7. Notch head flashing at ends to fit mullion recess and tek in position.
8. Measure & partially cut across the 2 sheets with a cold cut metal cutting disc to suit the head flashing height location and length. Extend cut approx. 20mm past mark to produce a slot to clear head flashing.
9. For vertical cut below head use cold cut metal cutting disc, nibbler or snips 20mm from rib (SECT B-B).
10. Locate sheets and tuck cut edges under mullion leg and fix. Ensure that a Roof screw passes through mullion and sheet and screws into each of the 4 batten ends.

Door Opening Framing

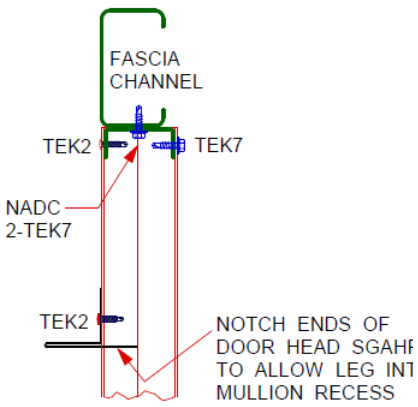
NOTE:
If standard fascia or batten height does not suit an extra batten is supplied. Fix the batten supplied at approx. 2500 above floor for mullion connection.



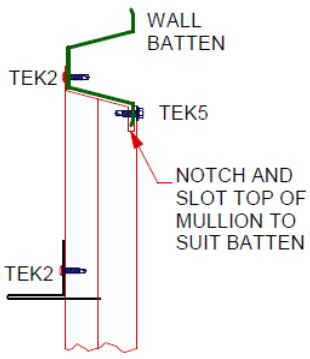
SECTION A - A



SECTION B - B



SECTION C - C
UNDER 3000 SIDE WALLS

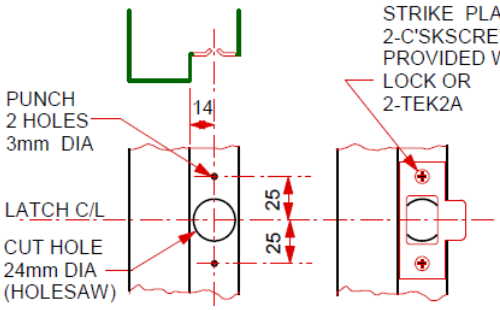


SECTION C - C
OVER 3000 SIDE WALLS
AND ALL END WALLS

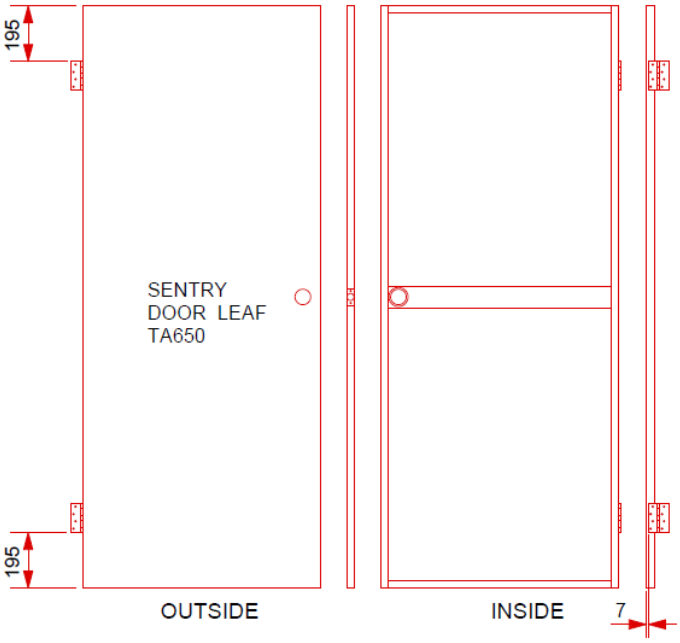
Sentry Single Face Access Doors (continued)

Door Fitting

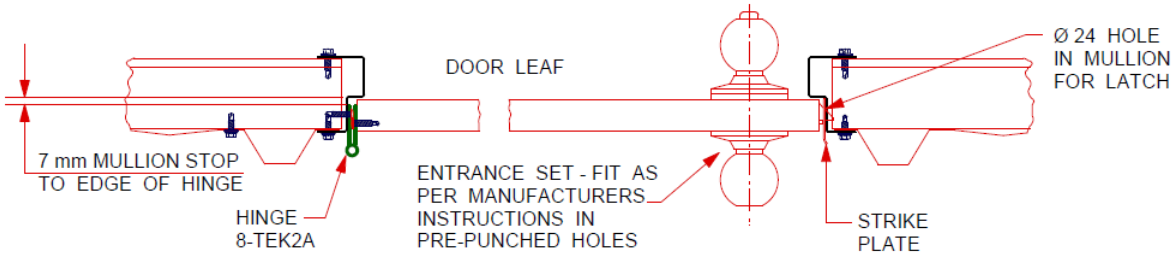
1. Fix 2 hinges to edge of door leaf. Locate edge of hinge 7mm in from inside face and 195mm from ends of door. Use 4-TEK2A each hinge.
2. Fit entrance lock set in pre-punched holes generally in accordance with the manufacturer's instructions. Insert latch in 24mm diameter hole, and fix with 2 countersunk screws provided. Locate entrance set body 54mm diameter hole, attach inner knob and tighten 2 screws.
3. Fit door in opening and fix hinges to mullion with 4-TEK2A each hinge.
4. Mark centre line height of latch on mullion and punch 2 holes 3mm diameter in rebated section. TIP - A 50x10gauge (3.15 diameter) nail can be used as the punch. Cut 24mm strike hole in mullion opposite latch to suit (see detail below). If a 24mm hole saw is not available, drill a couple of smaller holes and file until the latch and tang on strike are clear.
5. Tek or rivet cabin hook to wall at batten (2-TEK2 or 2-POPGUT). Rivet hook eye to door face to suit (2-POPGUT).



STRIKE PLATE FITTING



DOOR LEAF



TYPICAL SECTION AT FITTED ACCESS DOOR

All details shown on this sheet are for outward opening doors. For inward opening doors simply rotate mullions & entry lock latch 180° & fix hinges with edge 7mm from outside face of door.

LIST OF COMPONENTS AND LOCATION IN PACK REQUIRED FOR DOOR ASSEMBLY AND FITTING

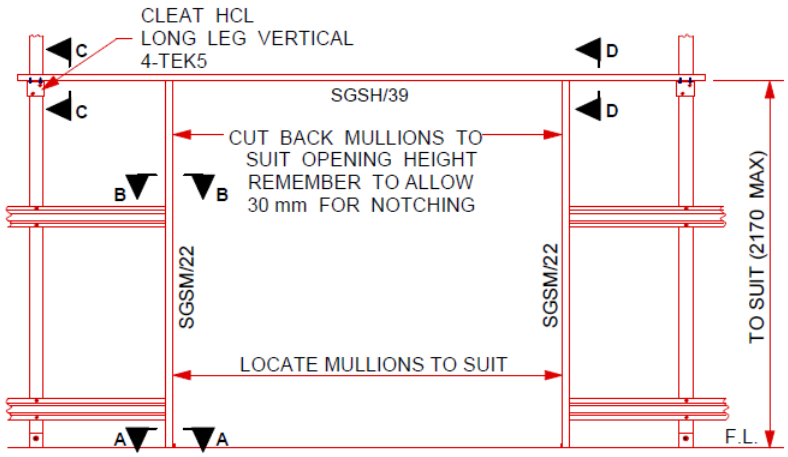
GARAGE SENTRY DOOR SMALL ITEM PACK - PLASTIC BAG IN BOX			
QTY	**PART N°**	**DESCRIPTION**	**COMMENTS**
1	CABHOOK	100mm CABIN HOOK	CHROME PLATED
2	D8042	DYNABOLT, Ø8x42	ZINC PLATED
2	HINGE/GAR	100x35 FIXED PIN BUTT HINGE	ZINC PLATED
8	POP GUT	POP RIVET, RAW42	
2	SGBAP	PREMIUM MULLION BASE CLEAT	GALV
6	TEK2	TEK, WAFER HD, #10:16x22	CLASS 3 - (EXTERNAL USE)
26	TEK2A	TEK, BUGLE HEAD, M5:14x20	CLASS 3 - (EXTERNAL USE)
12	TEK5	TEK, HWF, #12:14x20	CLASS 3 - (EXTERNAL USE)
2	NADC	MULLION CAP CLEAT	GALV
PACKED WITH OTHER ITEMS IN BHP SHRINK WRAP PACK			
1	SGAHF	FLASHING, AD HEAD	ZINCALUME® OR COLORBOND®
2	FGFAB/ANGV	SENTRY AD MULLION	GALV
PACKED SEPARATELY IN CORRUGATED CARDBOARD WRAP			
1	TA650	SENTRY SINGLE FACE AD LEAF	ZINCALUME® OR COLORBOND®
1	EDE SS 60	ENTRANCE LOCKSET	BRUSHED STAINLESS STEEL

Framed Openings

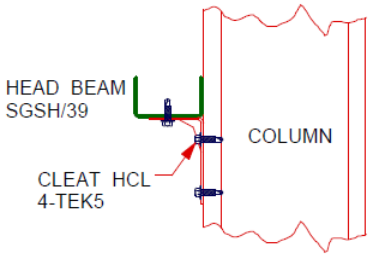
NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section on Page 77.

General

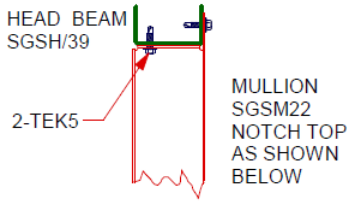
The framed opening kit is a general purpose kit suitable for fitting items not supplied by Endurance Sheds and Structures such as aluminium framed sliding glass doors and shop fronts etc. Mullions are 2200mm long to allow for a maximum head height of 2170mm. If lower head heights are required the mullions are simply cut to suit. Width is only restricted by the space available between garage columns (3890mm maximum).



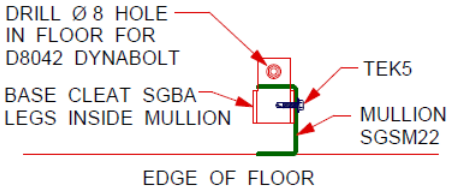
TYPICAL ARRANGEMENT



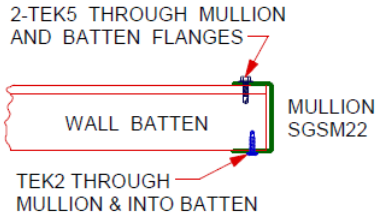
SECTION C - C



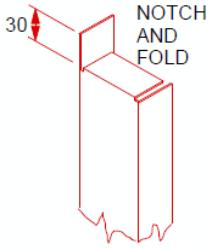
SECTION D - D



SECTION A – A



SECTION B - B



Framing

1. Opening may be located in side or end walls between columns of any Skillion Garage.
2. Establish opening size and location. Mullions should be placed to coincide with pans in wall sheets.
3. Mark head height on columns either side of opening and tek two cleats HCL in position. (SECT C -C)
4. Cut head beam SGSH/39 back if necessary and locate on top of cleats HCL and tek in position, 2-TEK5.
5. If battens are already fitted, mark and cut out section 10mm longer than clear open width.
6. Cut, notch & slot top of mullions to suit (SECT D - D). Note: allow for thickness of base cleat under mullion.
7. Fit a mullion over batten ends (if fitted) and under header beam, locate cleat SGBA in base of mullion (SECT A-A), plumb vertical and tek at top and inside of battens only (SECT B-B & D-D).
8. Fit opposite mullion. Check clear open width dimension at top and bottom and tek as for 7.
9. Line up bottom of mullions with edge of concrete, hold base cleats in position (SECT A-A), mark concrete through cleat holes and drill 2-8mm diameter x 40mm deep holes in concrete. Fix each base cleat with 1-D8042 Dynabolt. Tek mullion to base cleat, 1-TEK5 (SECT B-B).
10. Where battens have not been fitted cut and tek battens to columns and into mullions with 2-TEK5 on inside only (SECT B - B).

Finishing - Opening Only

Cut wall sheets to suit, slip pan under mullion leg and tek through mullion and sheet into batten with 1-TEK2.

Finishing - Aluminium Sliding Door or Similar - Fin Fixing

Tek door frame through fins to head and mullions as required. Ensure 1-TEK2 is through fin and mullion into each batten. Fix sill as required. Cut wall sheets to suit and fit and TEK1 to head and mullions.

Finishing - Aluminium Sliding Door or Similar - Timber Reveals

Tek, bolt or screw reveals to head and mullion webs as required. Tek through mullion to batten with 1-TEK2. Fix sill as required. Neatly cut wall sheets to suit and fit and TEK1 to head and mullions.

NOTE: For cyclonic garages replace TEK1 with TEK16 and TEK5 with TEK7.

Windows

NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section.

600mm and 790mm High Non-Cyclonic

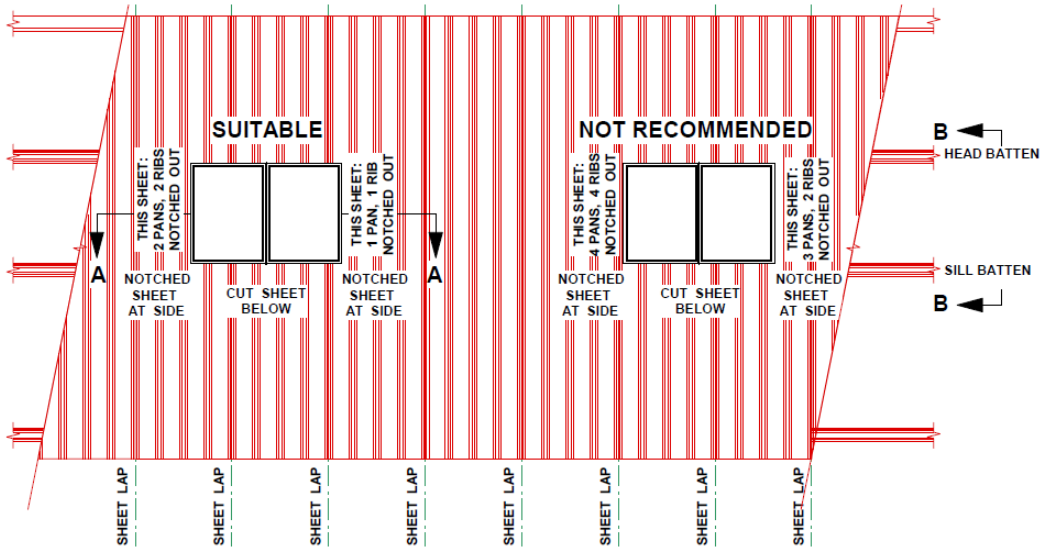
General

Aluminium sliding windows are best fitted during the fixing of wall sheeting.
Window opening kits and window kits for Skillion Garages in non-cyclonic areas, using 600mm or 790mm high windows, include the following components:

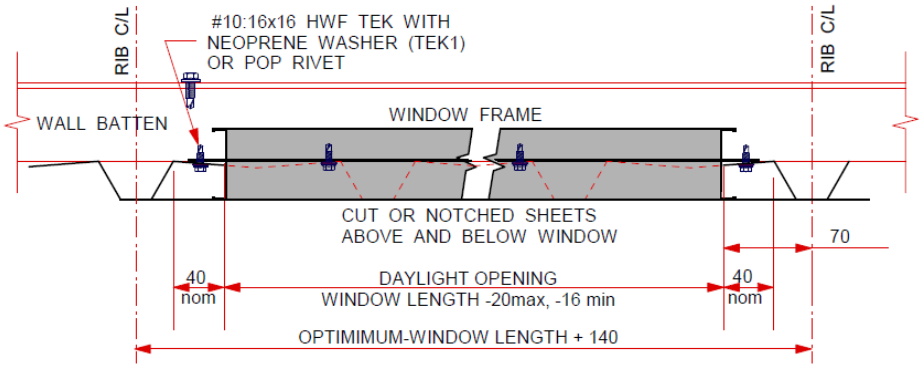
1 x 61-64mm topspan batten - 4200mm long
4 x TEK7 #14-10x20 hex head tek screws, for fastening of 4200 long batten.
4 x TEK2 #10-16x22 wafer head screws, for fastening of window fin to battens. Generally one Tek2 per corner.
? x TEK1 #10-16x16 head tek screw. For fixing of wall cladding to window head, and sill.

Window Location

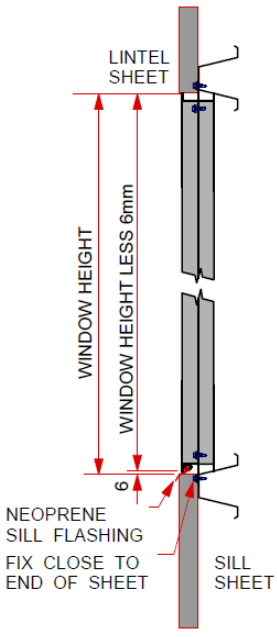
It is recommended not to locate the window next to a sheet lap so when the wall sheets are cut, only a small width of sheeting is left on the lap. It is preferable to locate the window so the lap is actually cut out. Refer to the diagram below



RECOMMENDED LOCATION FOR WINDOW



SECTION A – A



SECTION B – B

Procedure

1. Locate the position of the window, and cut to length any side wall battens that may be located within the extent of the window opening.
2. Fix sheeting up to 1st notched window sheet. Check with spirit level to ensure this sheet is plumb.
3. Mark out notched sections on the appropriate wall sheets.
4. Cut sheets for above and below window to match areas above and below notched out sections on full height sheets.
5. Fix 1st notched sheet in position at full length pan beside lap only.
6. Position window into opening. Use a spirit level to check that window is sitting inside the window opening both plumb and level. Window must fit snuggly within the opening, and window frame must not foul any tek screws. If tek screws foul the window, remove and re-locate tek screws.
7. Using a #2 Phillips head driver, fasten the window fins at each corner into head and sill battens. Window should be now self-supporting.
8. Fix all wall sheeting around the window with Tek1 screw.
9. Ensure that the neoprene sill flashing (if supplied) is sitting correctly under the window, and over the sill cladding.

600mm, 790mm and 900mm High Cyclonic and 900mm high Non-Cyclonic

Introduction

IMPORTANT NOTE: THIS INFORMATION IS SPECIFIC TO "CYCLONIC" CONDITIONS ONLY.

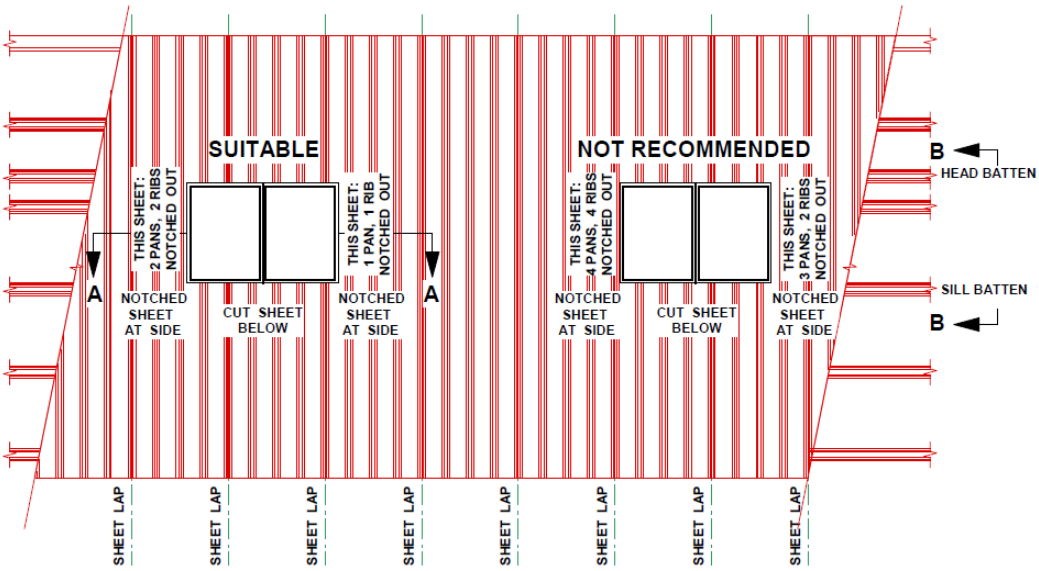
In some instances, the 790mm window height may exceed the maximum allowable side wall batten spacing, or the EDS-calculated side wall batten spacing. Extra components are necessary in the cyclonic window & cyclonic window opening kits that will allow wall battens to be fixed between the window sill and window head. Please note that the head batten may be a side wall batten, providing maximum allowable batten spaces are not exceeded.

General

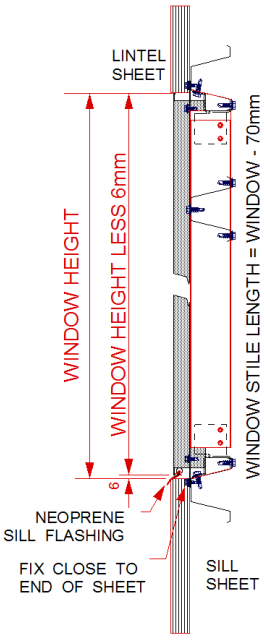
Aluminium sliding windows are best fitted during the fixing of wall sheeting.
Window opening kits and window kits for Skillion garages in cyclonic areas, using 600mm, 790mm or 900mm high windows include the following components:
4 x TC61 - window mullion to 64mm tophat connection cleat.
1 x 61-64mm topspan batten - 4200mm long.
? x TEK7. #14-10x20 hex head tek screws, for fastening of cleats to window mullions and battens.
? x TEK2. #10-16x22 wafer head screws, for fastening of window fin to battens and window mullions.
Generally one TEK2 per corner and 4 intermediate to window sill, window head, and window stiles.
? x TEK16 #14-10x25 head tek screw. For fixing of wall cladding to window head, sill and window mullions.
2 x Mullions. Supplied in lengths 70mm shorter than window opening height , measuring 64 x 35 x 1.

Window Location

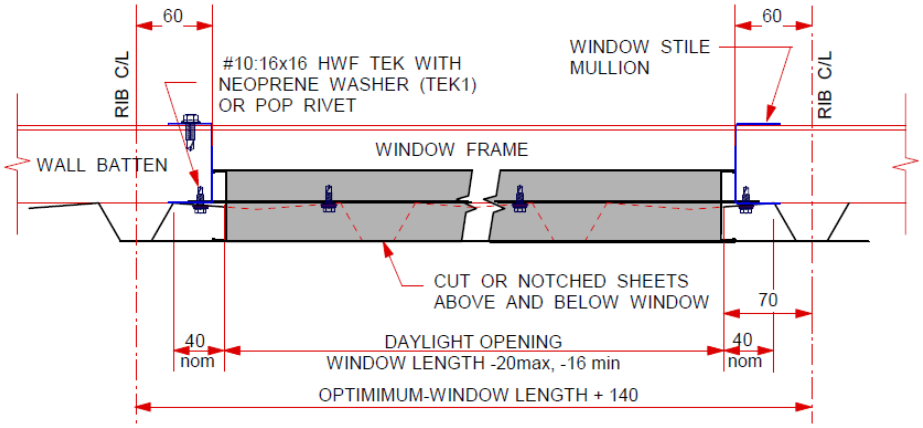
It is recommended not to locate the window next to a sheet lap so when the wall sheets are cut, only a small width of sheeting is left on the lap. It is preferable to locate the window so that the lap is actually cut out. Refer to the diagram below.



RECOMMENDED LOCATION FOR WINDOW

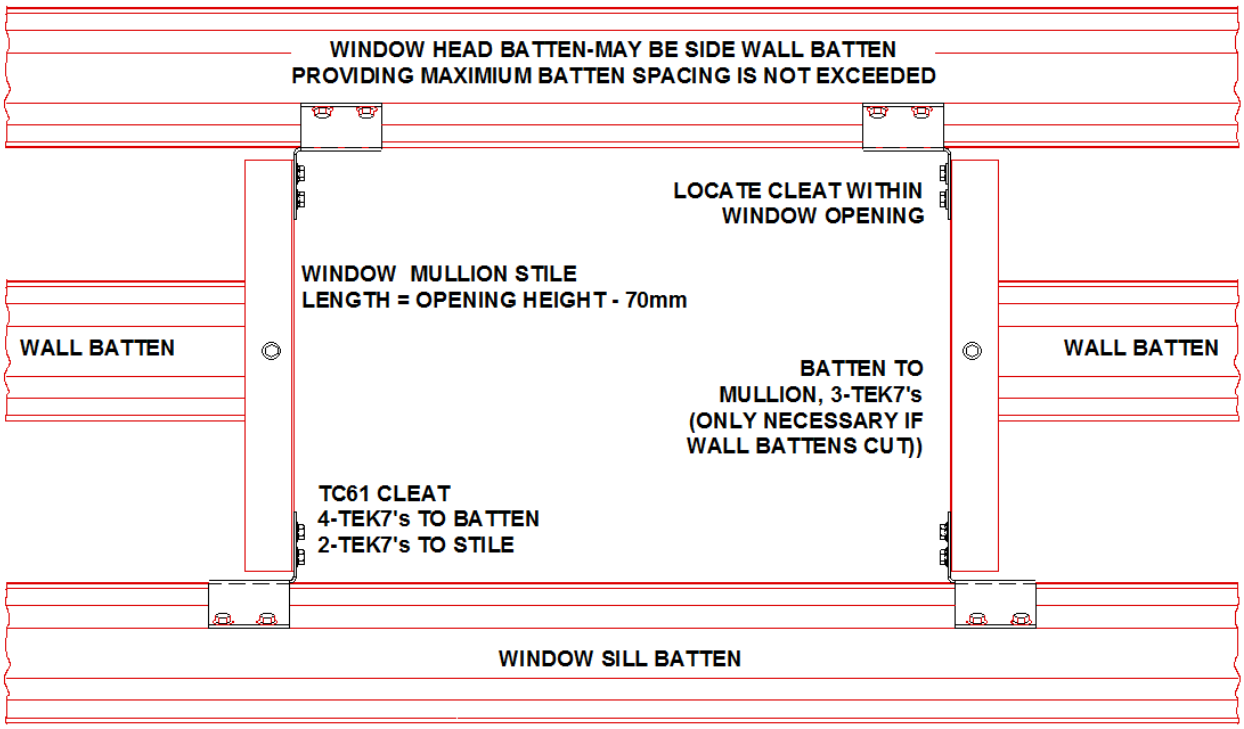


SECTION B – B



SECTION A – A

600mm, 790mm and 900mm High Cyclonic and 900mm High Non-Cyclonic (continued)



WINDOW OPENING FRAMIING
VIEWED FROM OUTSIDE

Procedure

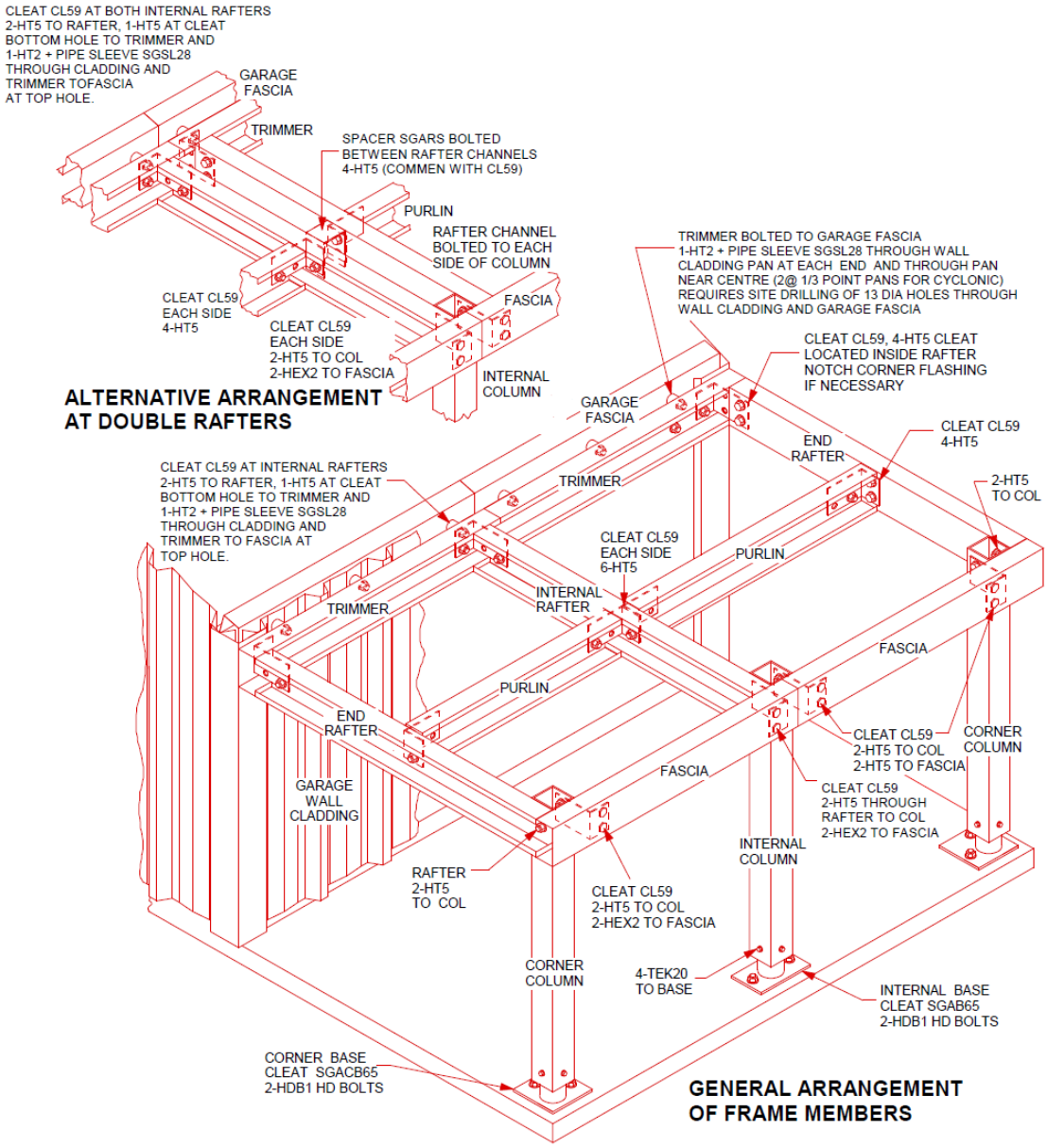
1. Locate the position of the window, and cut to length any side wall battens that may be located within the extent of the window opening.
2. Fix sheeting up to 1st notched window sheet. Check with spirit level to ensure this sheet is plumb.
3. Locate window stiles as per section A-A. Ensure that cleat TS64 is located within the window opening, and fix cleat to mullion. Again, ensure that mullions are plumb.
4. Mark out notched sections on the appropriate wall sheets.
5. Cut sheets for above and below window to match areas above and below notched out sections on full height sheets.
6. Fix 1st notched sheet in position at full length pan beside lap only.
7. Position window into opening. Use a spirit level to check that window is sitting inside the window opening both plumb and level. Window must fit snuggly within the opening, and window frame must not foul any tek screws. If tek screws foul the window, remove and re-locate tek screws.
8. Using a #2 Phillips head screwdriver, fasten the window fins at each corner into head and sill battens. Window should be now self-supporting.
9. Fix additional Tek2 screws at midpoints between corners, to mullion, head and sill battens.
10. Fix all wall sheeting around the window with appropriate cyclonic wall cladding tek screw.
11. Ensure that the neoprene sill flashing (if supplied) is sitting correctly under the window, and over the sill cladding.

Awnings

NOTE: The details in this section apply mainly to vertically-clad buildings. For horizontal cladding details, also refer to the "Horizontal Cladding" section.

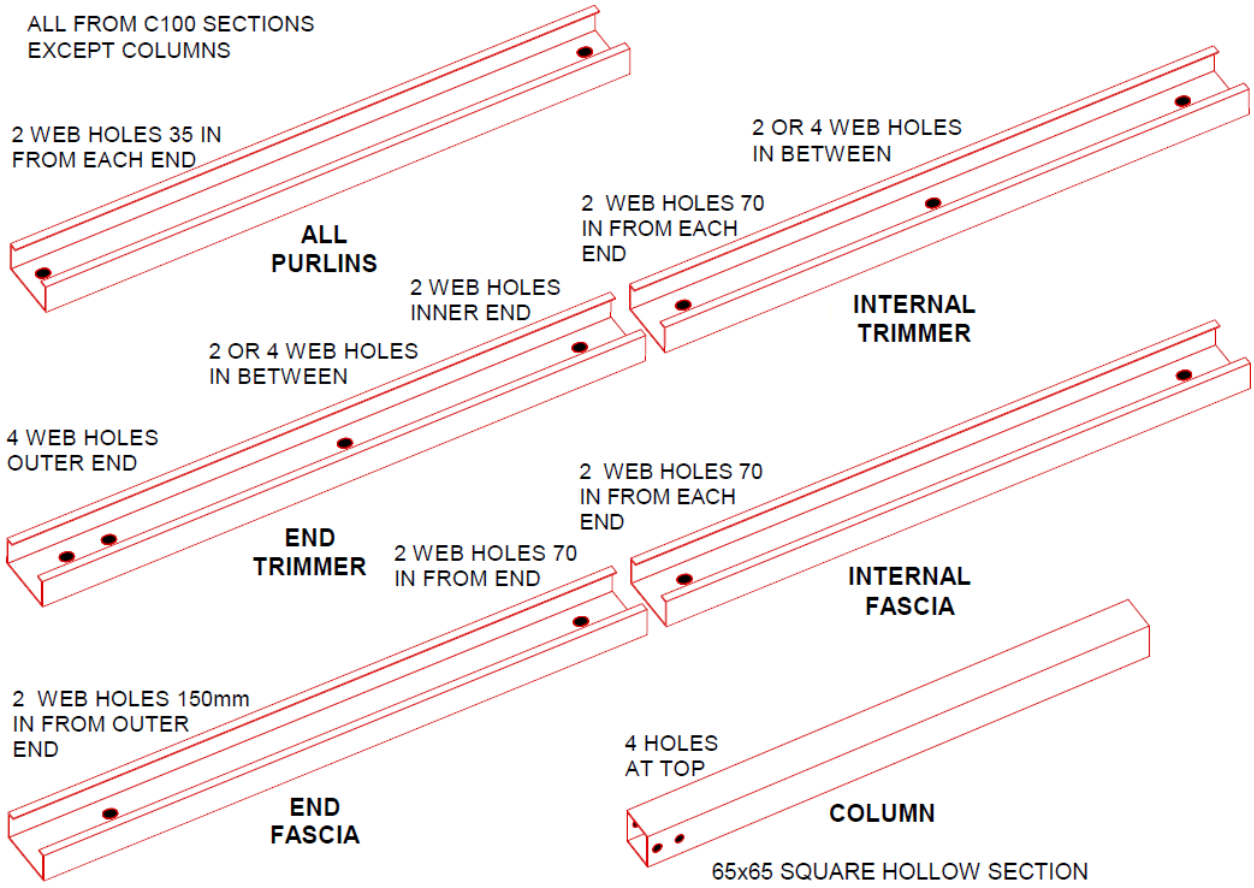
General

Awnings are designed so that they can be added to any existing Skillion Garage by simply removing the gutter and roof sheet tek screws at the fascia purlin. For new garage-awning combinations erect garage first but do not tek screw down roof sheets at fascia or fit gutter on the awning side.
Awnings attach to the fascia channel and are not suitable for fitting below the eaves line.
A set down of 75mm has been assumed between the garage floor and column footing levels. If set down is greater base cleats may extend below the end of columns by up to 150mm. If an even greater set down is required roof slope may be increased by up to 50mm. i.e. A total drop of 275mm may be accommodated.
If set down is less than 75mm column is simply cut back at base end to suit.
Frame is constructed from C100 channel eave trimmers, purlins, fascias and rafters with 65x65 SHS columns nominally in line with garage frames. Fabricated hot dip galvanized base plates are teked screwed inside end of columns and bolted to M12 hold down bolts cast into awning floor or pad footings. Connections are either direct member to member or via angle type cleats and fastened with 2-M12 bolts. TRIMDEK® profile sheeting is crest fixed to frame. Trimline gutter supplied for the garage is fitted to the web of fascia with standard gutter brackets. Trimline barge flashing is teked to top flange of end rafters and "pop" riveted to gutter stop end and garage barge.



Component Identification

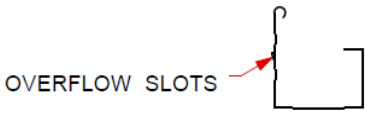
Members



Flashing/Gutter



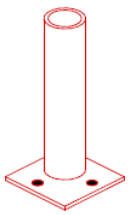
BARGE CAPPING



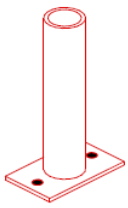
GUTTER

NOTE:
Gutter is that normally supplied with garage and is transferred to awning.

Cleats



CORNER COLUMN BASE CLEAT SGACB



INTERNAL COLUMN BASE CLEAT SGAB



GENERAL PURPOSE C100 CLEAT CL59



HOLD DOWN (HD) BOLT HDB1



AWNING CONNECTION SLEEVE SGSL28

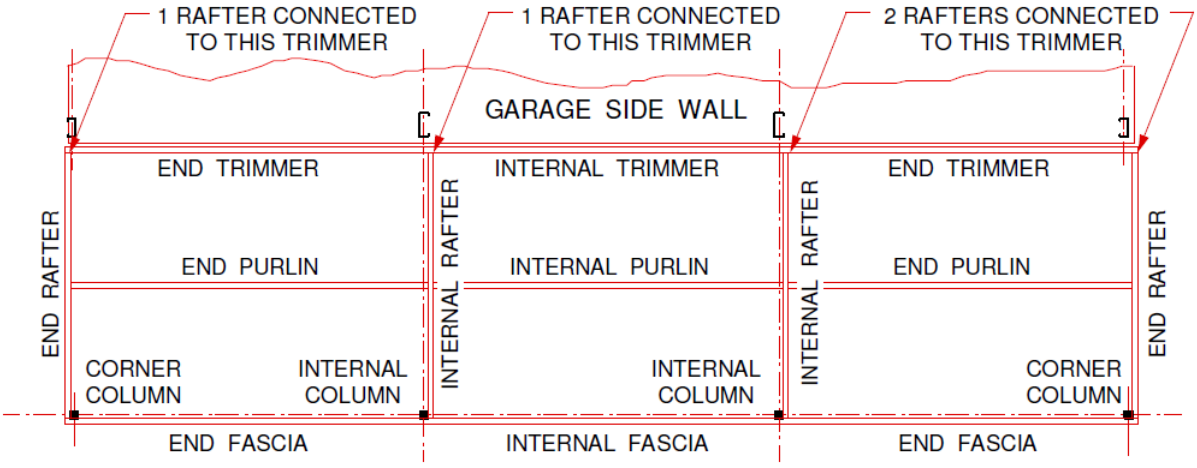
Framing

Slab or Pad Footings

Refer to computer generated slab or pad footing drawings for your Skillion Garage for Awning concrete details and HD bolt locations. If HD bolts have been placed incorrectly in concrete, M12 chemical anchors marketed by Ramset may be used.

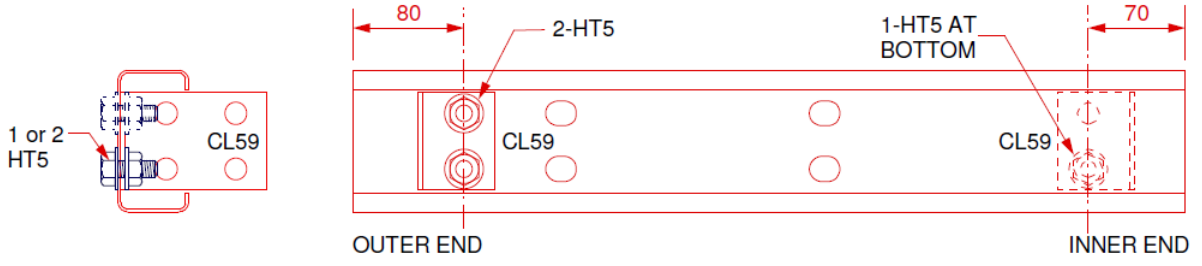
Framing

1. Refer to computer generated STRUCTURAL STEELWORK MARKING DIAGRAM and BILL OF MATERIALS and STRUCTURAL ADEQUACY CERTIFICATE for your Skillion Garage for main member mark number and location and to determine if your awning has single or double internal rafters (all end rafters are single). Double rafters are usually used for cyclonic conditions.
   It is important that you understand the arrangement of members. As can be seen from the typical plan below, single rafters are located on one side of the awning columns. End rafters are always located on the outside of corner columns. It is not important which side of column internal rafters are located but it is **IMPORTANT THAT ALL INTERNAL RAFTERS ARE LOCATED ON THE SAME SIDE** so that only one rafter is connected to each internal trimmer. Where double internal rafters are used members are symmetrical about columns and all trimmers have a rafter connected at each end.



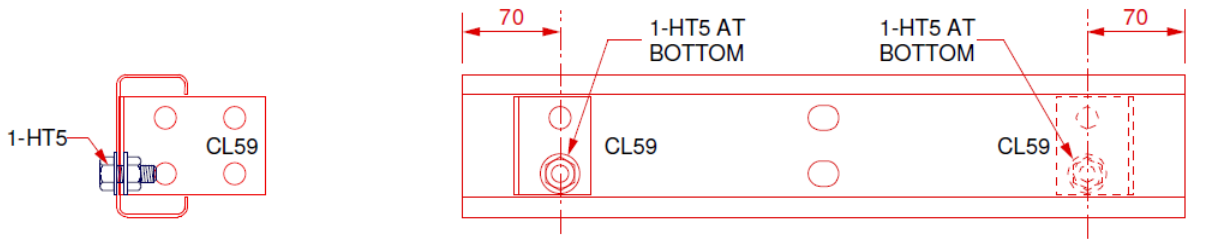
PLAN ARRANGEMENT OF TYPICAL AWNING WITH SINGLE RAFTERS

2. Identify members and components.
3. Bolt cleats CL59 to channel trimmers with HT5 bolts.



END TRIMMER

IF SINGLE INTERNAL RAFTERS ARE USED ONLY 1 OF THE 2 END TRIMMERS HAVE A CLEAT CL59 BOLTED TO THE INNER END

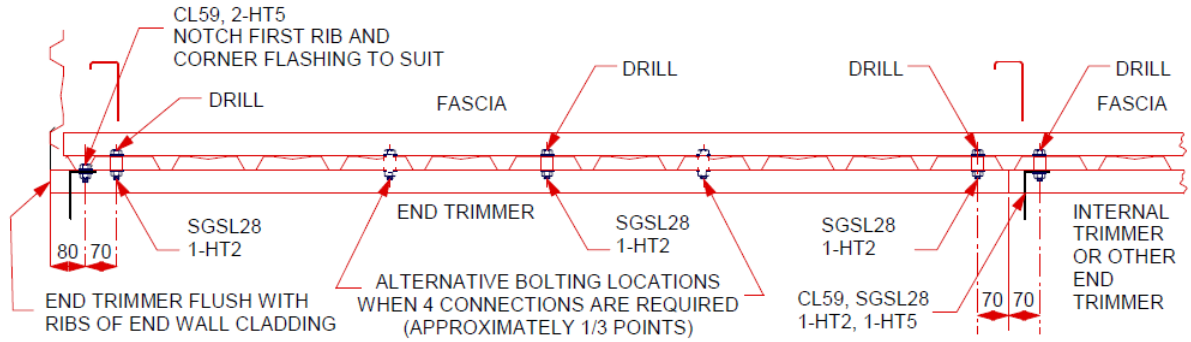


INTERNAL TRIMMER

FOR SINGLE INTERNAL RAFTERS CL59 IS BOLTED TO ONE END ONLY
FOR DOUBLE INTERNAL RAFTERS CL59 IS BOLTED TO BOTH ENDS

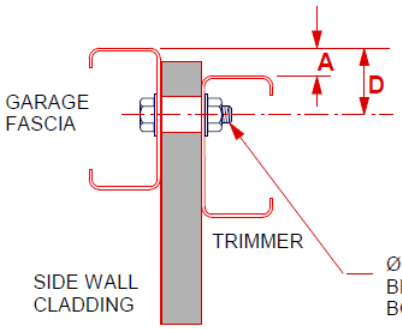
Framing (continued)

4. 13mm diameter holes need to be drilled through garage wall cladding pans and fascia for connection of awning trimmers. All trimmers require at least 3 connections while some cyclonic trimmers require 4. Hold trimmers up near the top of side wall sheets as indicated below, and mark longitudinal location of holes through the prepunched holes in trimmers. Depending on the pitch of the parent building, measure down distance "D" (from Roof Pitch Chart below) from corner of fascia and drill holes.



TYPICAL PLAN VIEW INDICATING LONGITUDINAL LOCATION OF TRIMMER CONNECTIONS

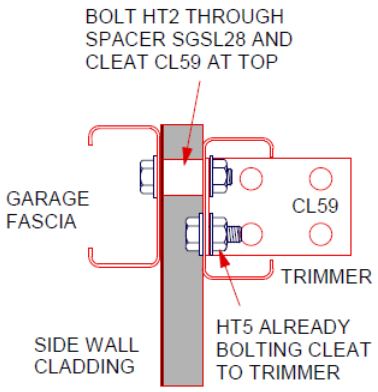
5. Bolt trimmers to fascias.



TYPICAL CONNECTION OF TRIMMERS

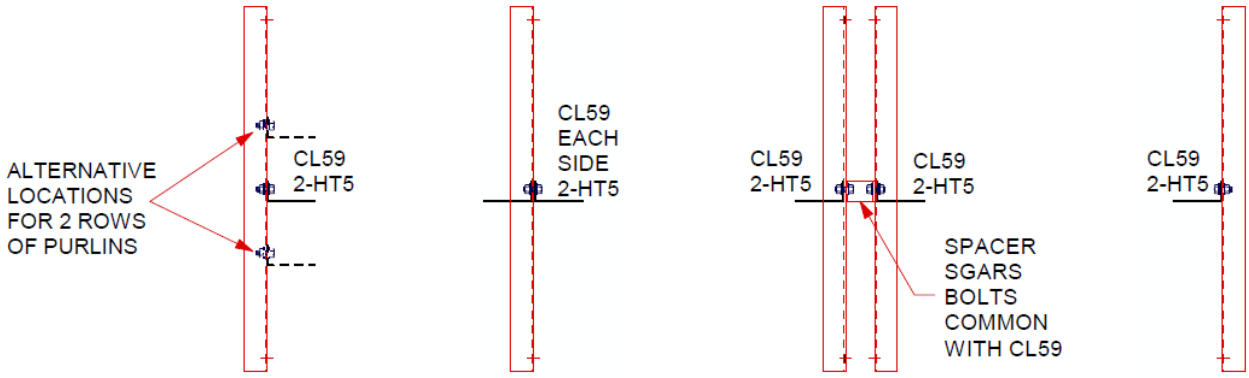
ROOF PITCH CHART

SLOPE	"A"mm	"D"mm
5°	7	37
10°	14	44



TRIMMER CONNECTION AT INTERNAL RAFTERS

6. Bolt purlin cleats to rafters. Check steelwork marking diagram for 1 or 2 rows of purlins and for single or double internal rafters.

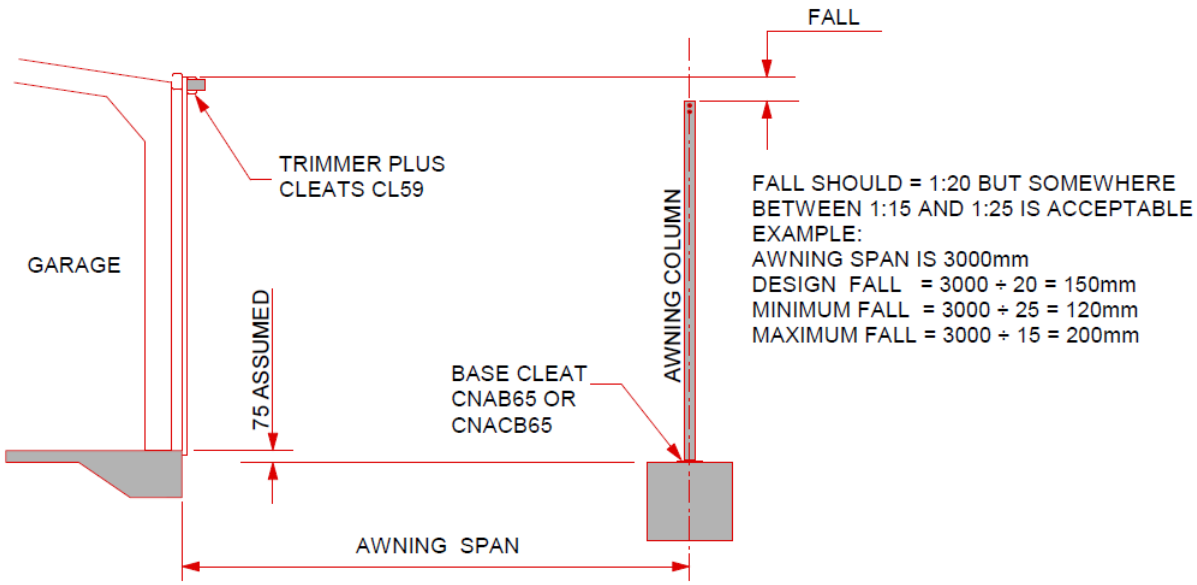


END RAFTER | **SINGLE INTERNAL RAFTER** | **DOUBLE INTERNAL RAFTER** | **END RAFTER**

Framing (continued)

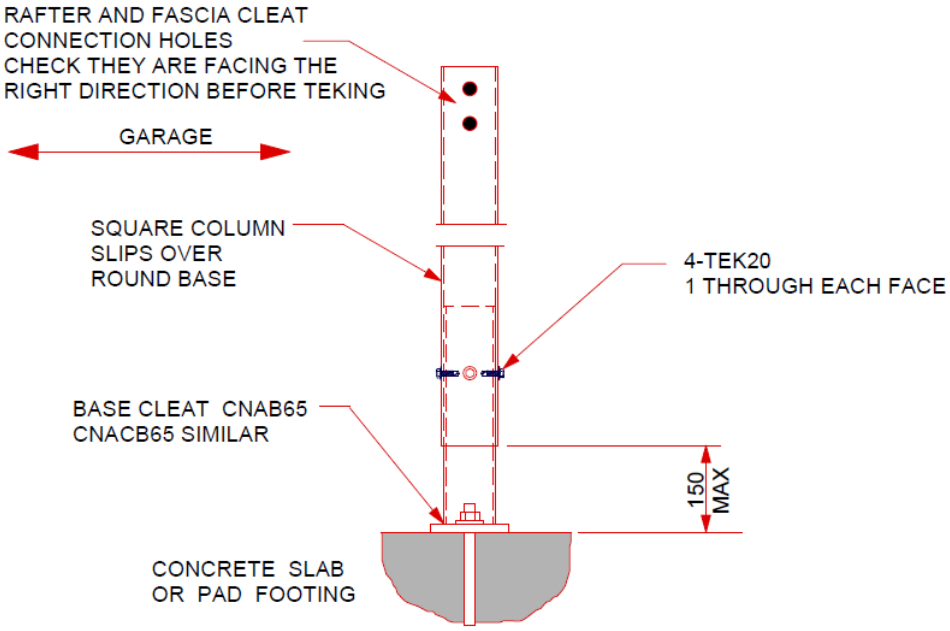
7. Bolt column base cleats SGACB65 and SGAB65 to M12 HD bolts cast in concrete.

8. Locate columns over base cleat vertical pipe section and check fall from top of trimmer to top of columns as shown below.



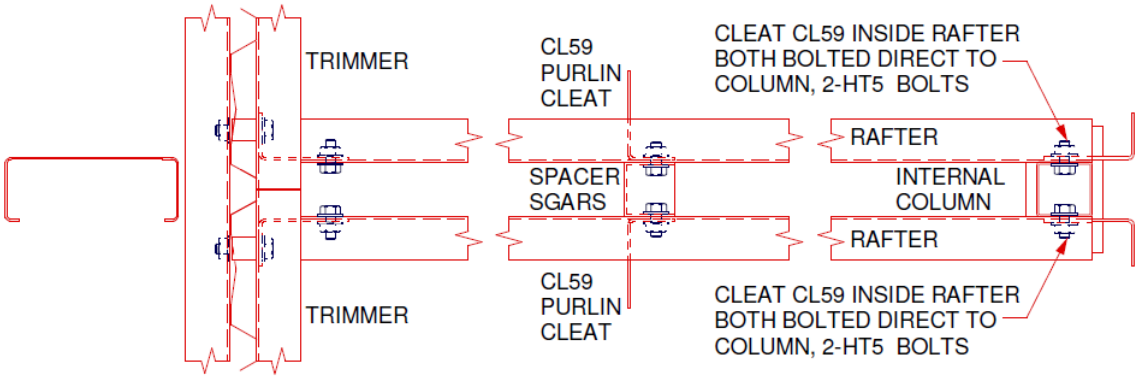
9. If the fall is too small simply cut the required amount off the bottom of column (plain end).
   If the fall is too great the base cleat may be used as an extension. Lower end of column may be located up to 150mm above the concrete surface.

10. Ensure tops of all columns are level and faces are square to garage and tek column to base with 4-TEK20.

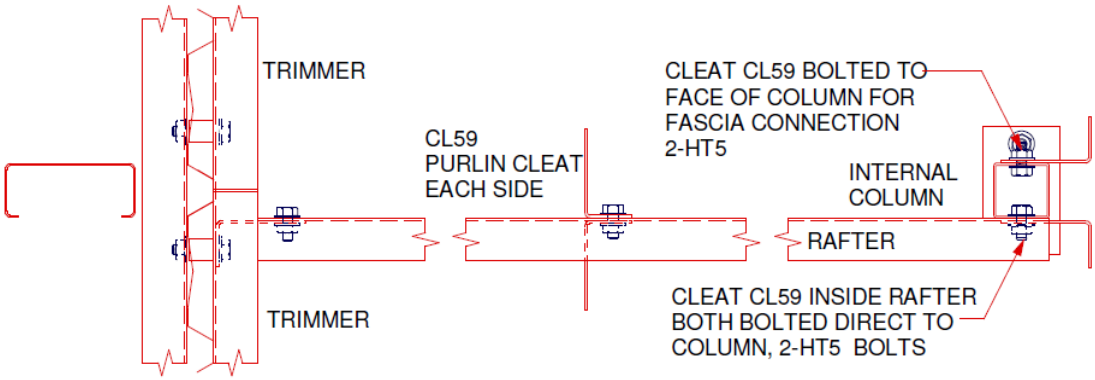


Framing (continued)

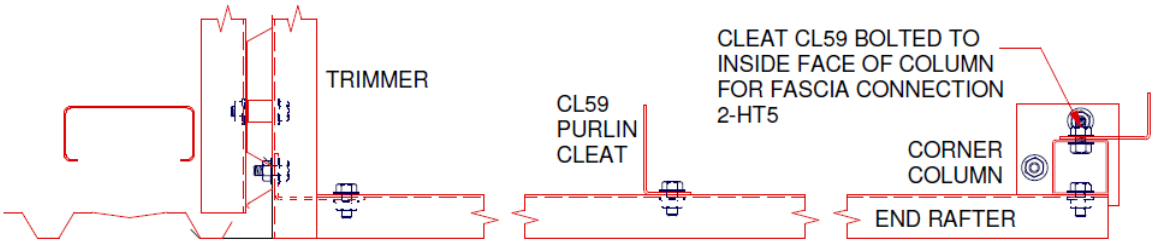
11. Locate end of rafters over cleats CL59 at trimmers and bolt other end to columns.



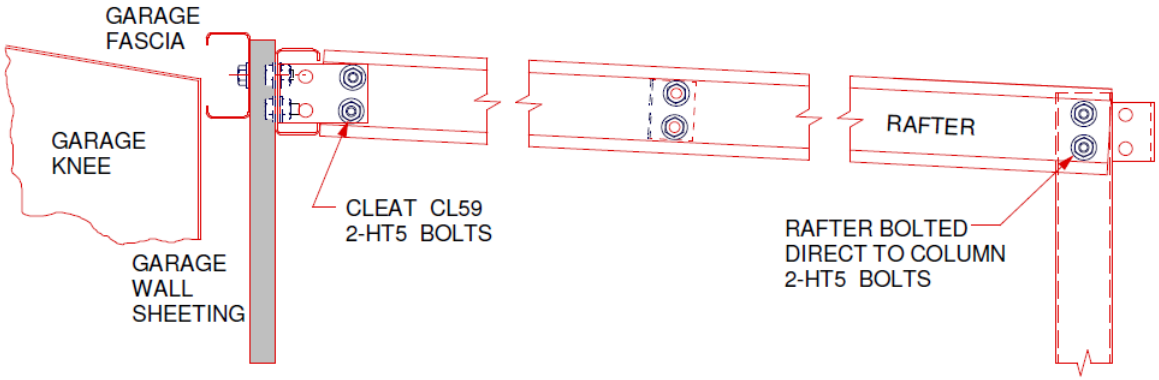
PLAN VIEW AT DOUBLE INTERNAL FRAME



PLAN VIEW AT SINGLE INTERNAL FRAME



PLAN VIEW AT END FRAME



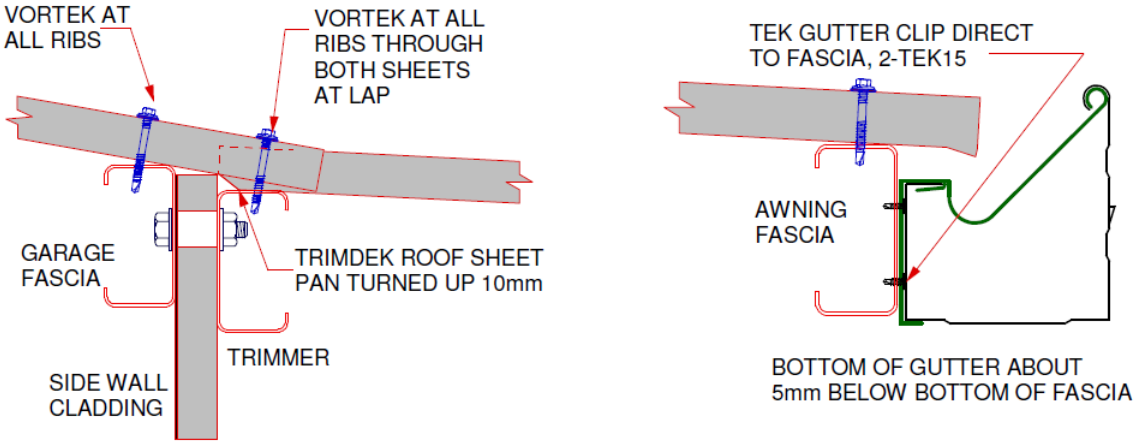
TYPICAL FRAME

12. Locate fascia's over cleats CL59 at columns and bolt top cleats with 2-HEX2 each end.
13. Locate purlins over cleats CL59 at rafter 1/2 or 1/3 points and bolt to cleats with 2-HT5 each end.
14. Square up frame check columns for vertical and tighten all bolts. The awning is now ready for roof cladding.

Finishing

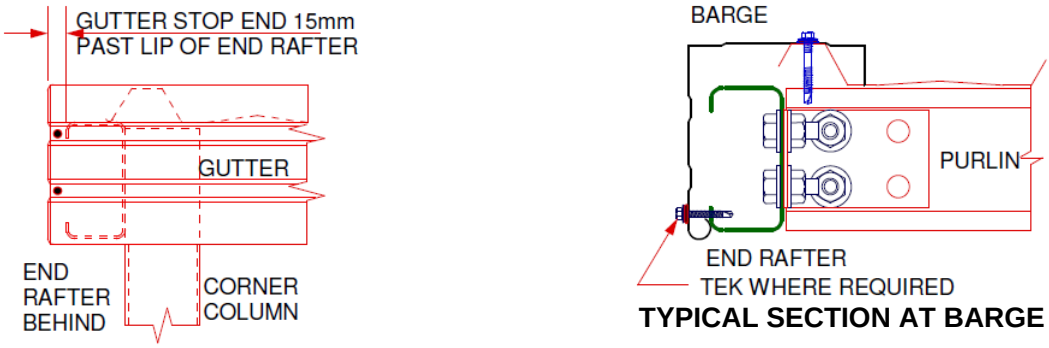
Roof Cladding and Trim

15. Turn up pans at garage end of roof sheets 10mm only.
16. Lift garage roof sheet and slide awning sheet under and locate hard up against garage wall cladding.
17. Tek roof sheets to trimmers, purlins and fascia's using the Teks and fixing patterns shown in the "Wall and Roof Cladding" pages, and the special details at change in roof slope shown below.



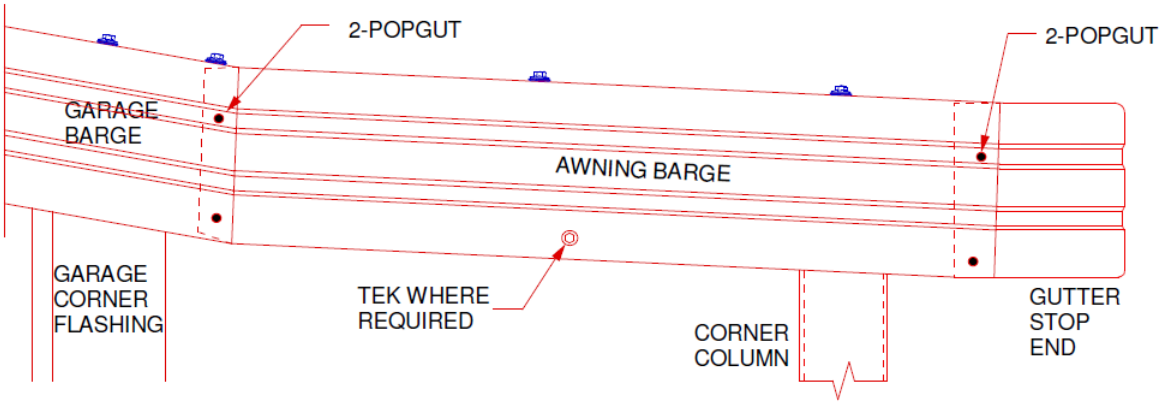
TYPICAL ARRANGEMENT

18. Fix gutter and downpipe generally as shown in "Sheerline Gutter and Downpipe" pages with the few variations shown below.



TYPICAL SECTION AT BARGE

19. Barge is fitted in a similar manner to garage shown in "**Standard Barge Flashing**" on page 42. Cut barge to length, trim ends to suit and fit the inner end under garage barge and the other end over the gutter stop end and pop rivet at ends.



Annexes

General

The notes herein are to be used as a guide to highlight and indicate basic connections for annexes onto Skillion garages. The following notes are to be used as a guide to locate and assemble the annexe components.

Skillion Annexes are designed to fasten to the side wall of Skillion Garages and are available in roof pitches of 5° and 10° only.

Annexes have versatility in their cladding configurations. The annexes may be fully open on the walls, partially sheeted, or fully sheeted to three sides. The annexes may fix to a fully sheeted, fully open or partially sheeted wall on the parent Skillion garage.

Types of Annexes

There are two different types of annexe designs - a "cranked" roof design and a "stepped" roof design. The type of annexe will determine the components at the annexe/parent garage connection point.

A Cranked roof design is described as the annexe connecting to the parent building at the fascia connection. Therefore, the two different roof pitches will meet and crank at this point.

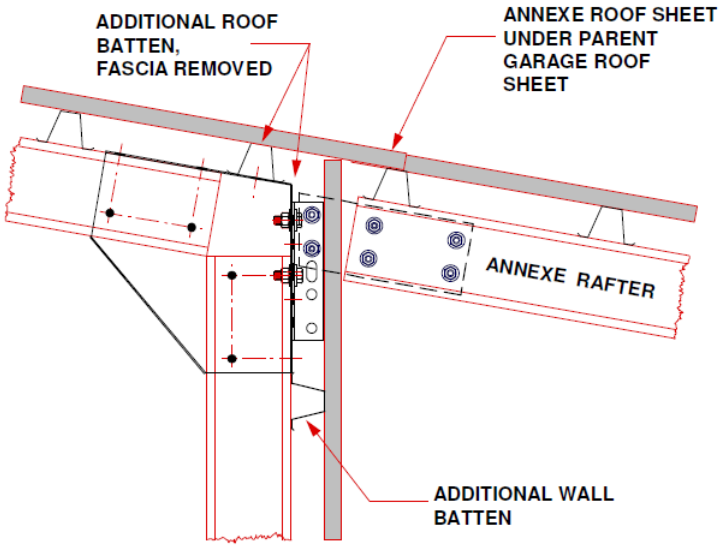
A Stepped roof design is where the annexe rafter connects to the parent building column below the fascia. This therefore creates a "loft" wall between the annexe roof and the parent building fascia.

Annexe Effect to Parent Skillion Garage

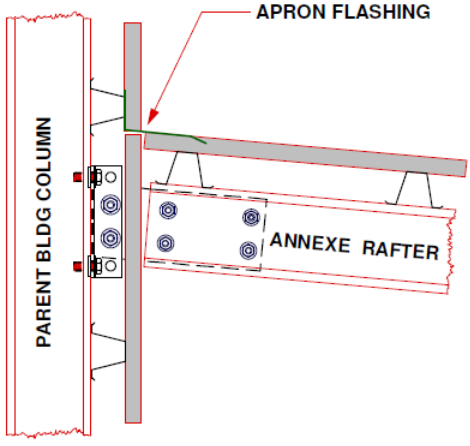
With stepped roofs, there is no effect to the parent garage. However, a cranked roof annexe will necessitate changes to the parent garage.

The tapered fascia on the parent garage is replaced with additional 64mm battens that are fixed to the rafters at the fascia end, and onto the columns for fixing of side wall sheets. This alteration is required so that the annexe connection point is maximized for the annexe roof sheeting to fit under the parent garage roof sheeting. At this point, it is critical for roof sheeting ribs on both the parent garage and the annexe to line up. If a cranked annexe roof is selected, the roof sheets on the parent garage adjacent the annexe will be 50mm longer than the other side. This will allow for lapping of the two roof sheets to sufficiently "seal".

When there are roller doors on the adjacent side wall of the parent garage for a cranked roof annexe, the fixing of the roller door mullions will be through the batten flanges into the mullion lips with 4-Tek7's per batten per mullion.



TYPICAL CRANKED ROOF FASCIA CONNECTION



TYPICAL STEPPED ROOF CONNECTION

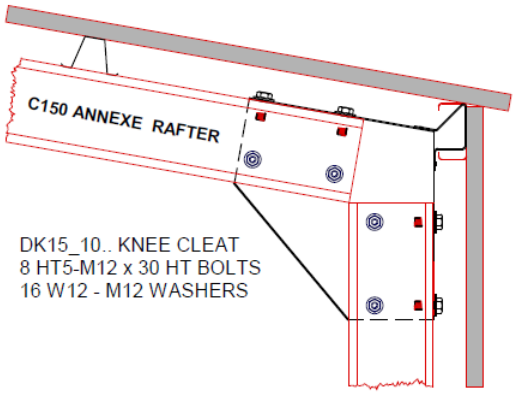
Cranked and Stepped Roof Types

Annexe Framing Members

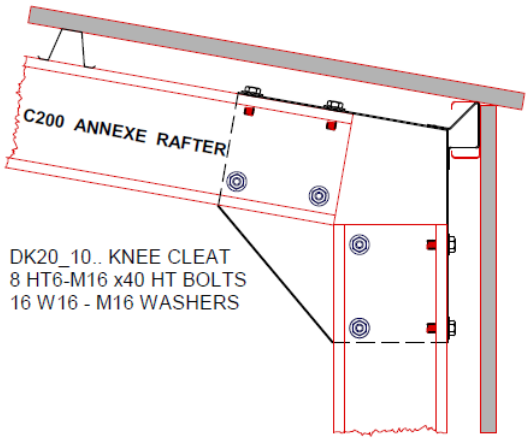
Skillion Annexes are constructed similarly to the parent Skillion Garage.
Columns, rafters and end wall mullions are either C150 or C200, utilising all thicknesses available in both section sizes.
All roof and wall battens are 64mm Topspan, with various thicknesses as specified.

Annexe Framing Connections

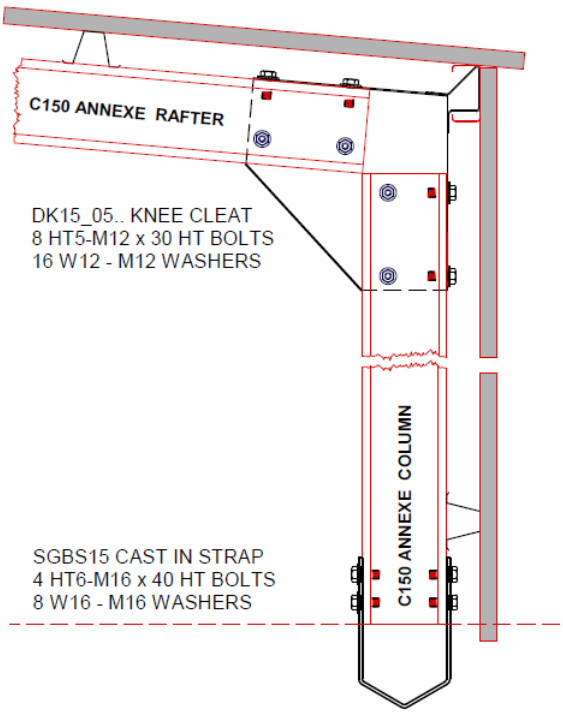
Skillion Annexes have connections similar to the parent Skillion Garage.
The knee connections have a specific knee cleat designed for a 5° or 10° roof pitch. The base connections are the same as the parent Skillion garage.



C150 FRAMED ANNEXE 10° KNEE

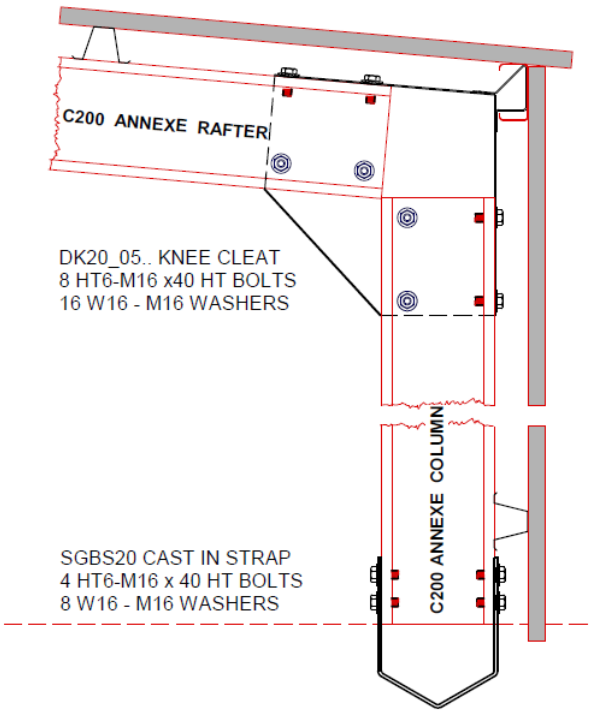


C200 FRAMED ANNEXE 10° KNEE



C150 FRAMED ANNEXE 5° KNEE

AND C150 BASE CONNECTION DETAILS



C200 FRAMED ANNEXE 5° KNEE

AND C200 BASE CONNECTION DETAILS

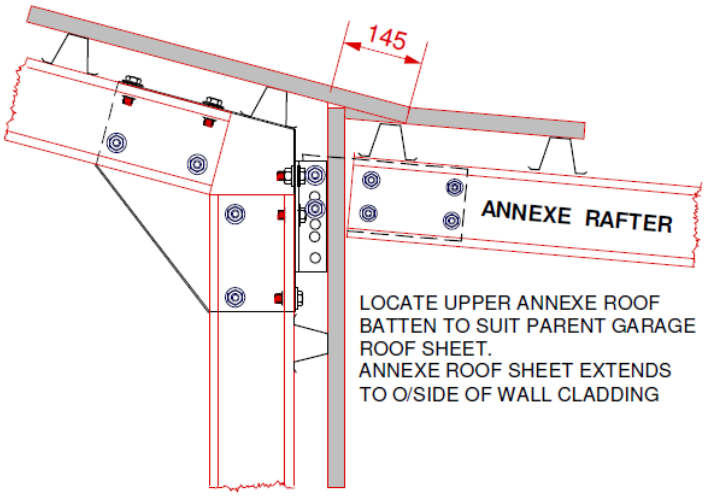
Cladding

General

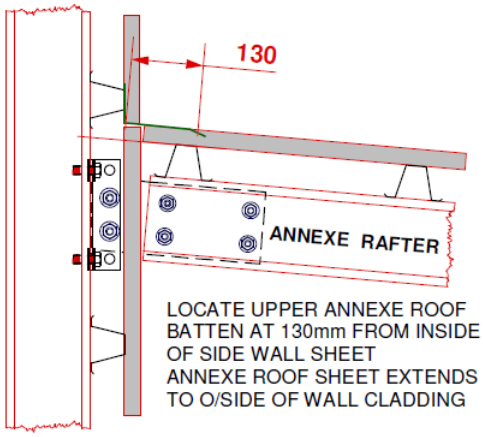
Roof and wall cladding options for Skillion Annexes are the same material as the parent Skillion Garage. For example, if CUSTOM ORB® is nominated as the roof cladding for the parent garage, the same cladding will apply if an annexe is selected. Fixing of roof cladding is as per Skillion Garage assembly guide. Likewise, this rule is applicable for wall cladding.

Roof Sheeting

The length of the roof sheeting is determined by a number of factors-the span of the annexe, the type of cladding, the side wall configuration of the parent Skillion Garage, the side wall configuration of the annexe side wall (the gutter side), and if gutters are selected. In all cases where gutters are selected, the roof sheet travel into the gutter is 50mm.
The side wall configuration is best described as how the wall is sheeted. There may not be any sheeting at all, some bays may be open and others sheeted, or the wall may be fully sheeted along its length.
If there is a combination of open and sheeted walls on both the annexe and parent garage, EDS will design the annexe roof sheeting for the shortest length sheet to apply to the whole annexe roof length.
The placement of the uppermost annexe roof batten is where the parent Skillion roof sheet extends 145mm past the intersection of the underside of the roof sheeting and the inner face of the side wall cladding (outside of wall batten). Refer to the diagram below.



**ANNEXE ROOF SHEET/ROOF BATTEN DETAIL
FOR CRANKED ANNEXE ROOF**

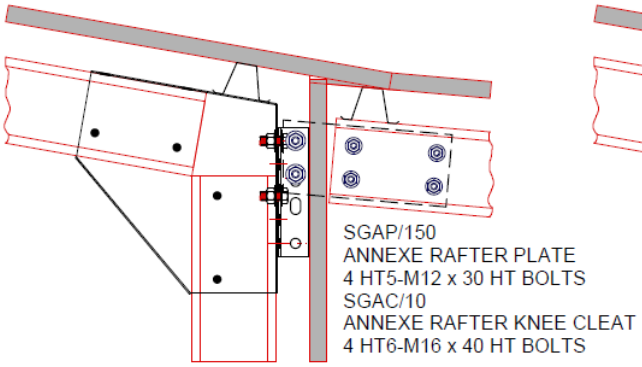


**ANNEXE ROOF SHEET/ROOF BATTEN DETAIL
FOR STEPPED ANNEXE ROOF**

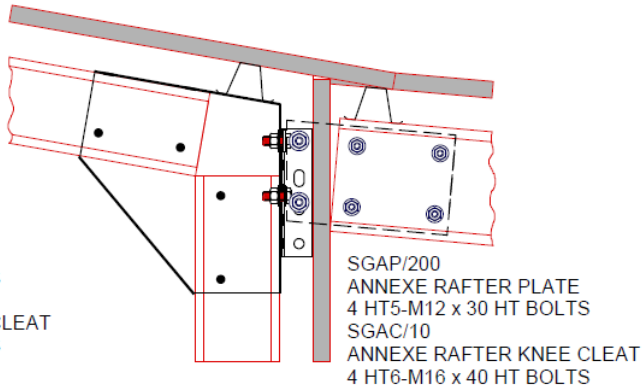
Cranked 5° Annexe Roof to 10° Skillion Roof

General

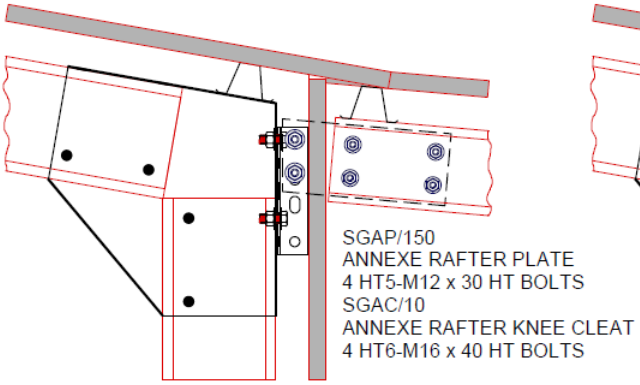
These diagrams show basic connection details for a 5° Annexe roof Cranked to a Skillion Garage with a roof pitch of 10°.



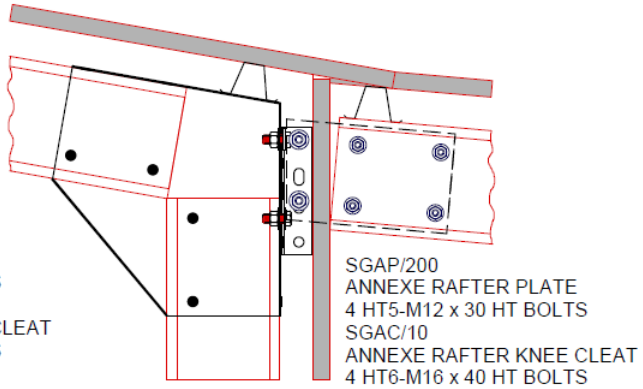
C150 GARAGE FRAME, C150 ANNEXE



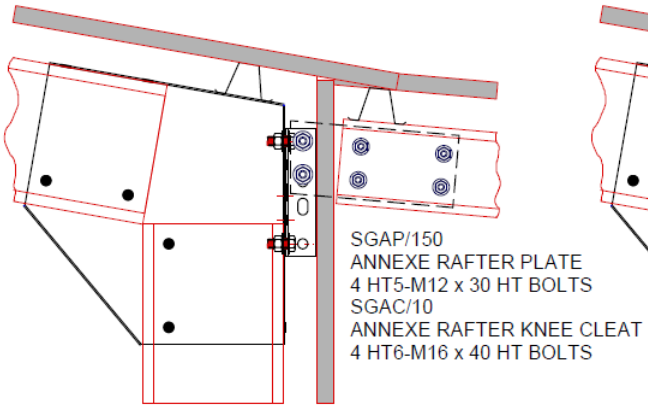
C150 GARAGE FRAME, C200 ANNEXE



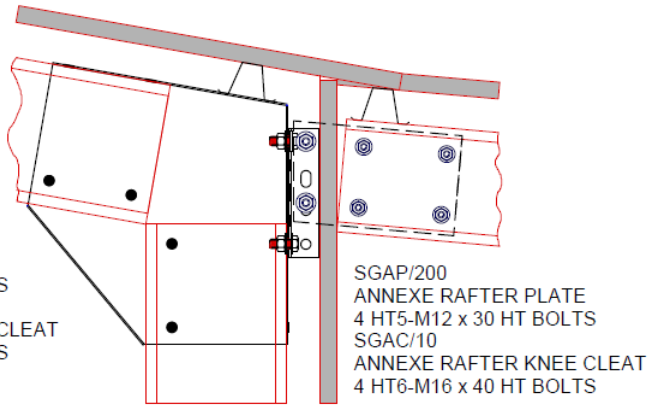
C200 GARAGE FRAME, C150 ANNEXE



C200 GARAGE FRAME, C200 ANNEXE



C250 GARAGE FRAME, C150 ANNEXE

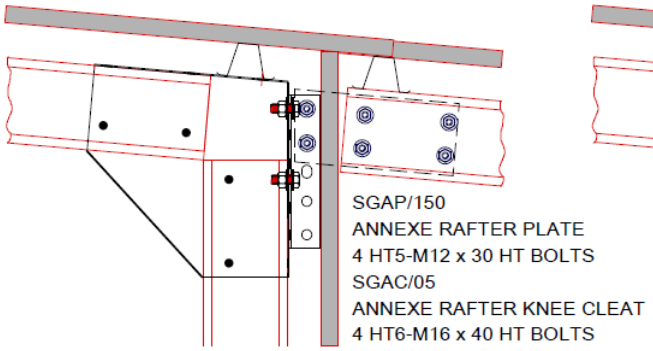


C250 GARAGE FRAME, C200 ANNEXE

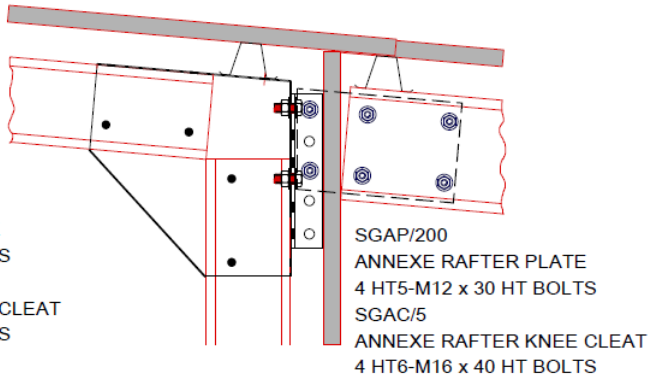
Cranked 5° Annexe Roof to 5° Skillion Roof

General

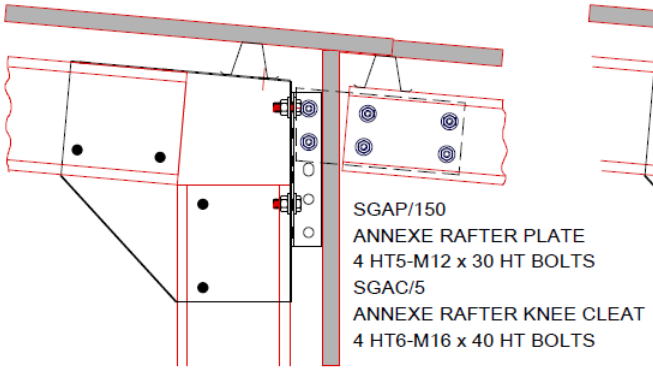
These diagrams show basic connection details for a 5° Annexe roof Cranked to a Skillion Garage with a roof pitch of 5°.



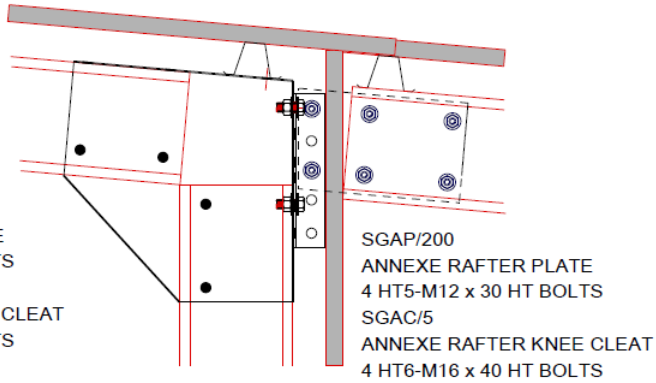
C150 GARAGE FRAME, C150 ANNEXE



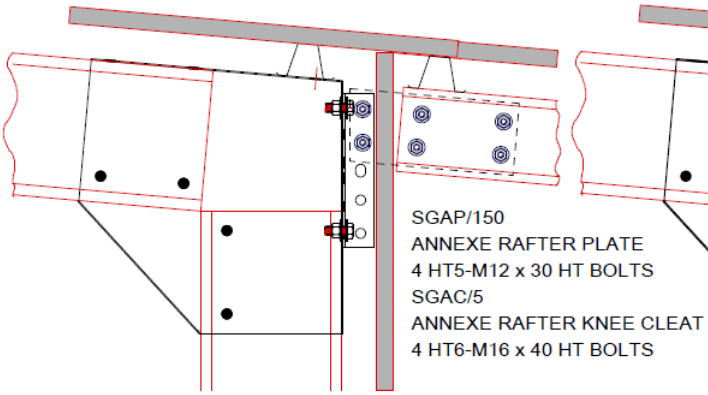
C150 GARAGE FRAME, C200 ANNEXE



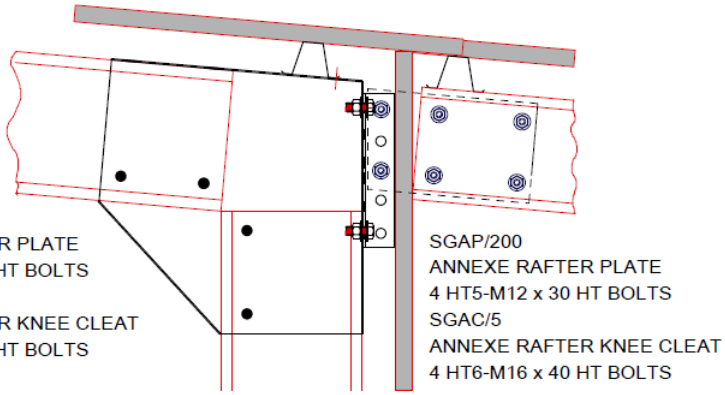
C200 GARAGE FRAME, C150 ANNEXE



C200 GARAGE FRAME, C200 ANNEXE



C250 GARAGE FRAME, C150 ANNEXE

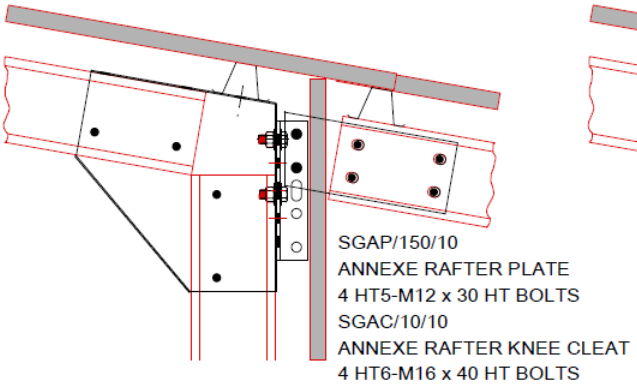


C250 GARAGE FRAME, C200 ANNEXE

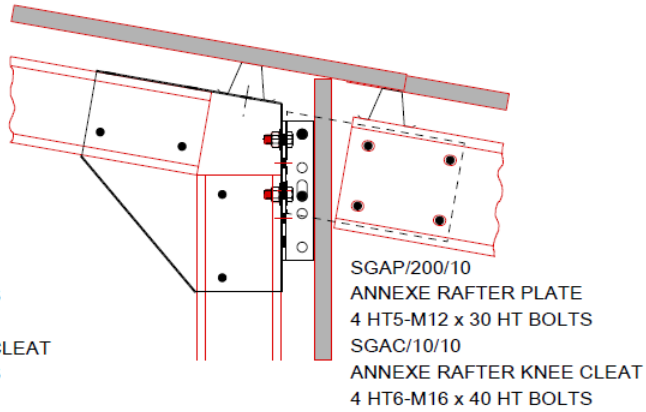
Cranked 10° Annexe Roof to 10° Skillion Roof

General

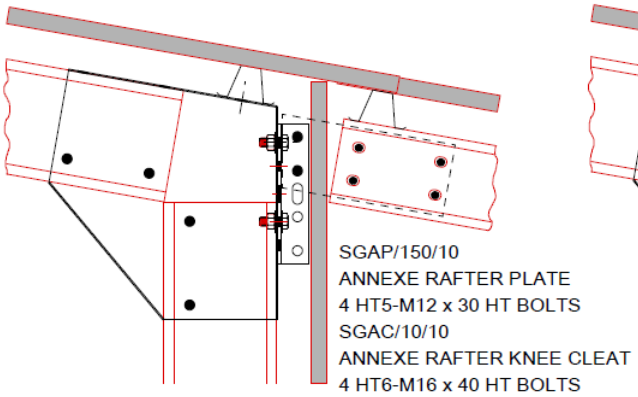
These diagrams show basic connection details for a 10° Annexe roof Cranked to a Skillion Garage with a roof pitch of 10°.



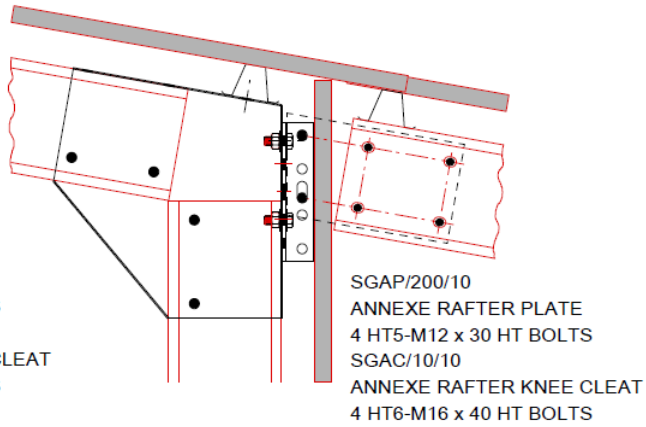
C150 GARAGE FRAME, C150 ANNEXE



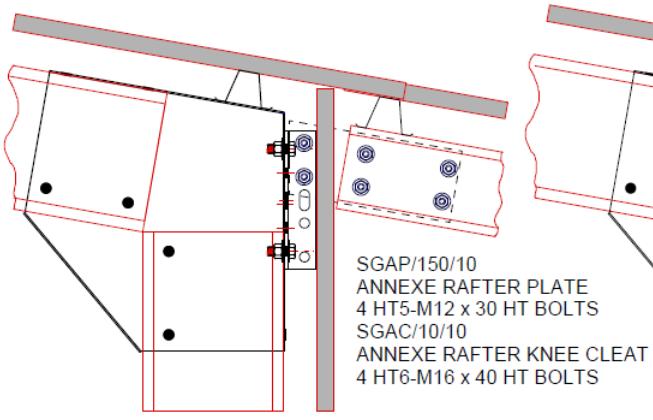
C150 GARAGE FRAME, C200 ANNEXE



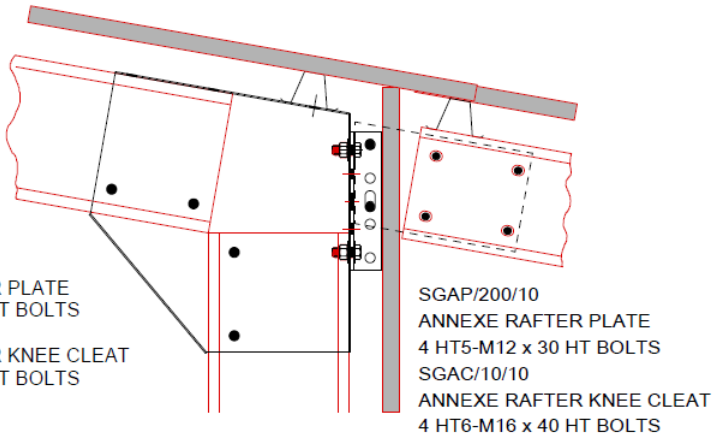
C200 GARAGE FRAME, C150 ANNEXE



C200 GARAGE FRAME, C200 ANNEXE



C250 GARAGE FRAME, C150 ANNEXE



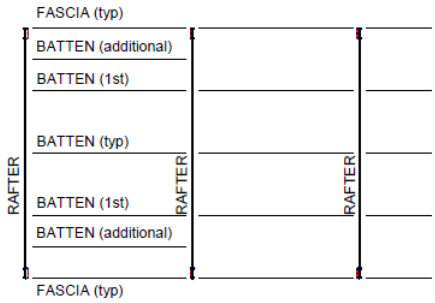
C250 GARAGE FRAME, C200 ANNEXE

Additional Purlin for Annexe with 5° Roof Pitch, Non Eaves Overhang

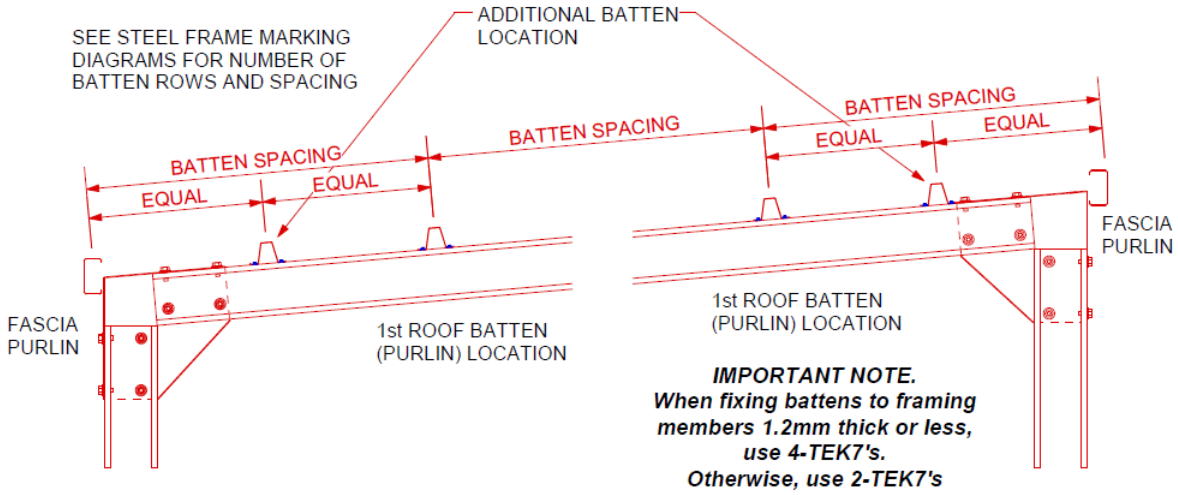
General

When the roof pitch of the Skillion Annexe is 5°, an additional roof corner batten (purlin) is required to suit engineering requirements.

For the 5° roof pitch Annexe with a **Non Eaves Overhang Condition**, the additional roof batten (purlin) is located half way between the fascia and first roof batten (purlin) at all roof corner bay locations between successive rafters. Battens are teked to the Rafter flanges with the same tek count per end as specified for all other roof purlins in that Skillion Engineering range.



STEELWORK ROOF PLAN - NON EAVES OVERHANG



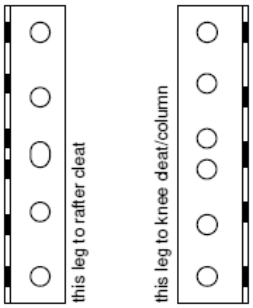
TYPICAL ROOF TOPSPAN BATTEN LOCATION

For buildings **with an Eaves Overhang Condition**, refer to the Eaves Overhang section of this guide.

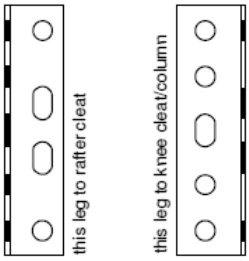
Cleats to Columns

General

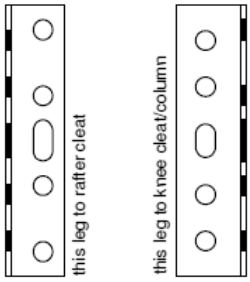
These diagrams show different members for identification, and specify which holes are required based on framing member configurations. The specified holes are indicated by a solid black circle on the cleat leg to column (parent Skillion knee cleat) drawing.



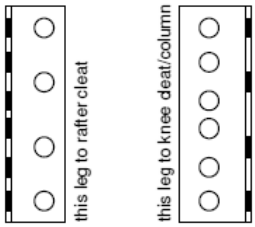
SGAC/05



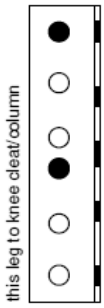
SGAC/10



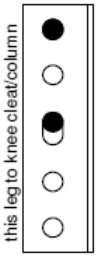
SGAC/10/10



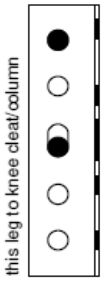
SGAC/20



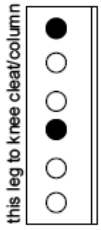
SGAC/05
ON C150 COLUMN



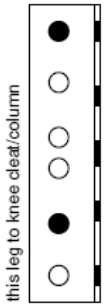
SGAC/10
ON C150 COLUMN



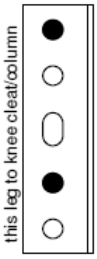
SGAC/10/10
ON C150 COLUMN



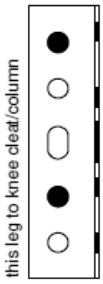
SGAC/20
ON C150 COLUMN



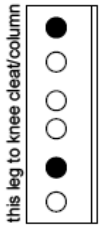
SGAC/05
ON C200 COLUMN



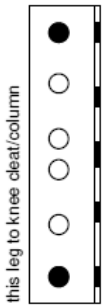
SGAC/10
ON C200 COLUMN



SGAC/10/10
ON C200 COLUMN



SGAC/20
ON C200 COLUMN



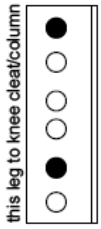
SGAC/05
ON C250 COLUMN



SGAC/10
ON C250 COLUMN



SGAC/10/10
ON C250 COLUMN

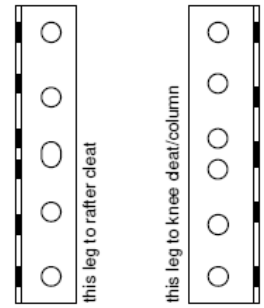


SGAC/20
ON C250 COLUMN

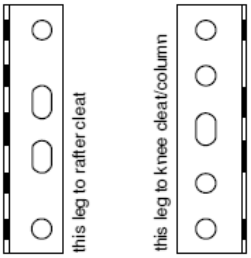
Cleats to Rafters

General

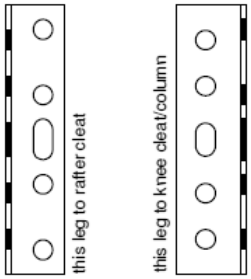
These diagrams indicate which holes are required for rafter plate connection based on framing member configurations. The specified holes are indicated by a solid black circle on the cleat leg for rafter plate connection.



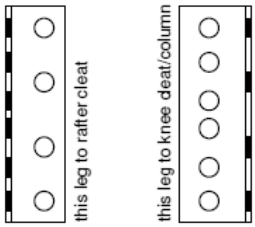
SGAC/05



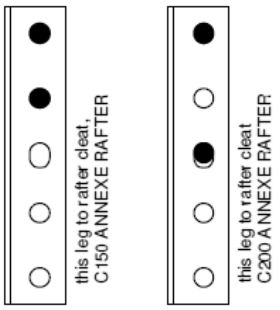
SGAC/10



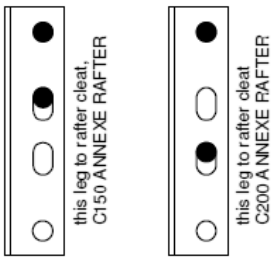
SGAC/10/10



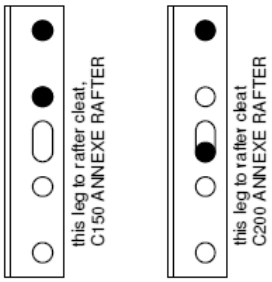
SGAC/20



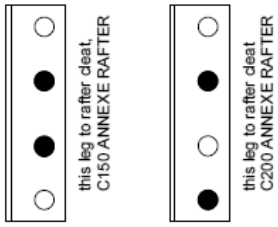
SGAC/05
ON C150 COLUMN



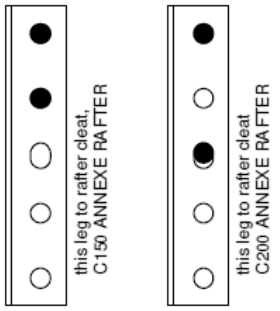
SGAC/10
ON C150 COLUMN



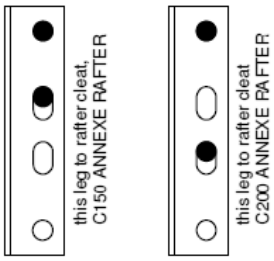
SGAC/10/10
ON C150 COLUMN



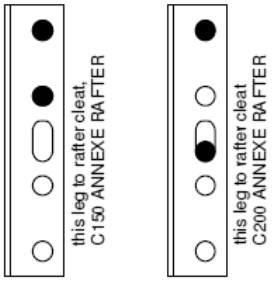
SGAC/20
ON C150 COLUMN



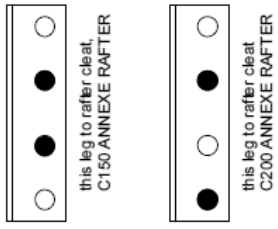
SGAC/05
ON C200 COLUMN



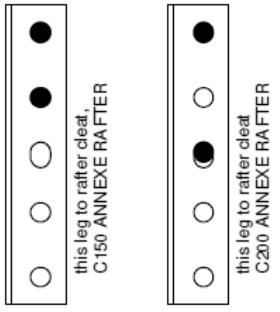
SGAC/10
ON C200 COLUMN



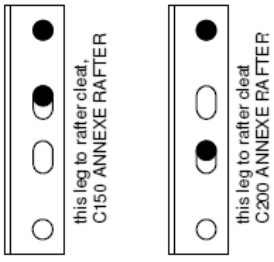
SGAC/10/10
ON C200 COLUMN



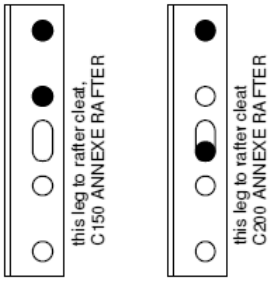
SGAC/20
ON C200 COLUMN



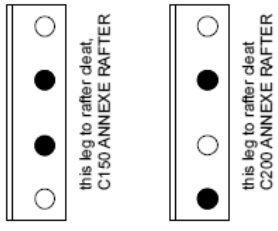
SGAC/05
ON C250 COLUMN



SGAC/10
ON C250 COLUMN



SGAC/10/10
ON C250 COLUMN

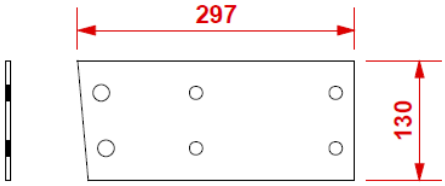


SGAC/20
ON C250 COLUMN

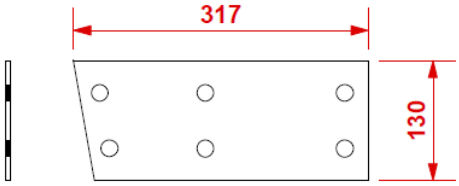
Cleats to Rafters (continued)

General

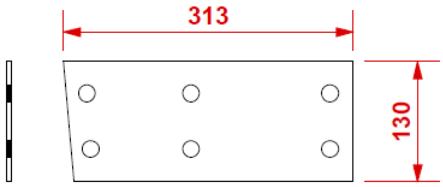
These diagrams indicate rafter plates based on framing member configurations and whether the shed is designed for cyclonic or non-cyclonic horizontal cladding use.



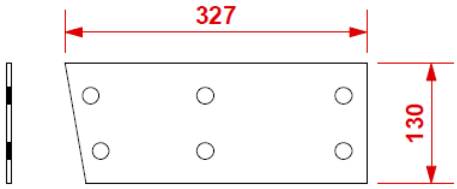
SGAP/150



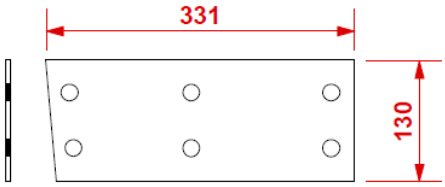
SGAP/150/10



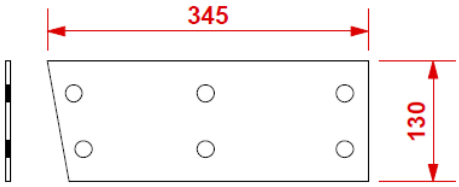
DHARP/150/22



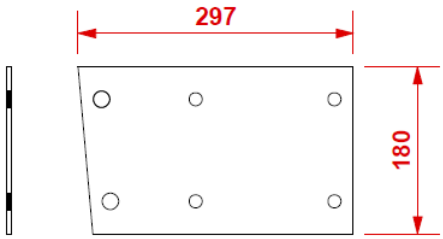
DHARP/150/22/10



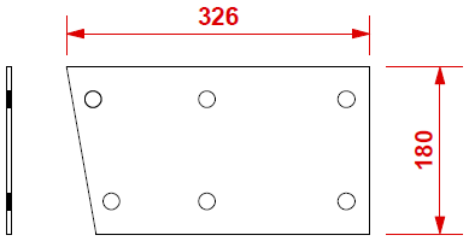
DHARP/150/40



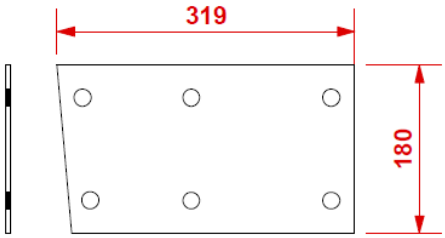
DHARP/150/40/10



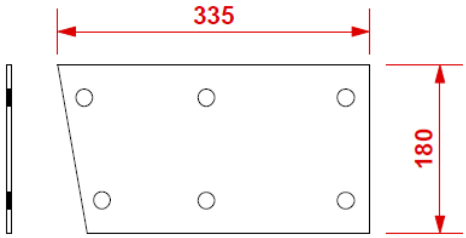
SGAP/200



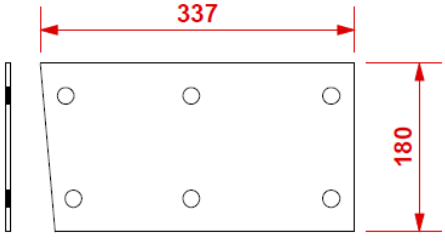
SGAP/200/10



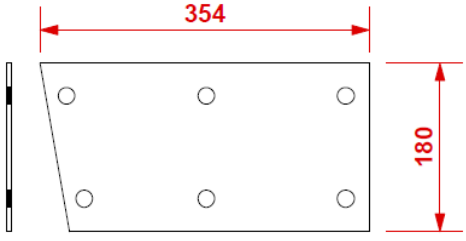
DHARP/200/22



DHARP/200/22/10



DHARP/200/40

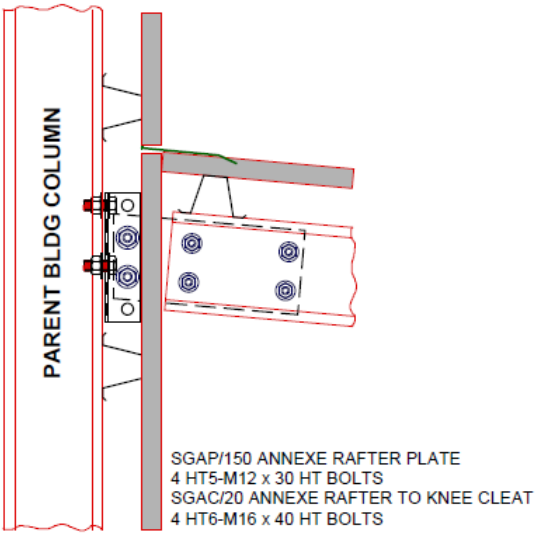


DHARP/200/40/10

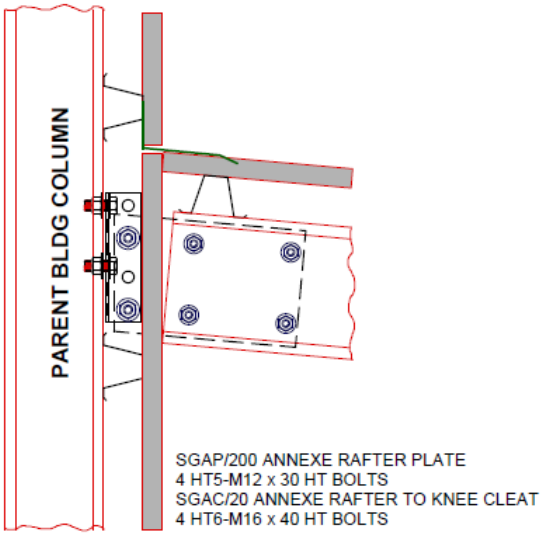
Stepped Roof

General

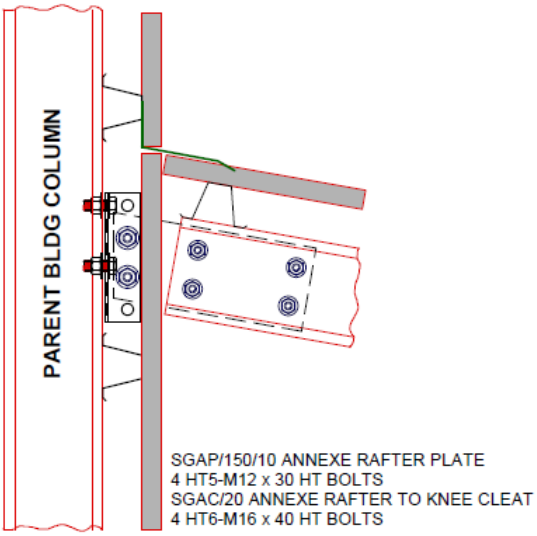
These diagrams show basic connection details for a Stepped roof annexe to a Skillion garage. The roof pitch of the parent Skillion garage is irrelevant.



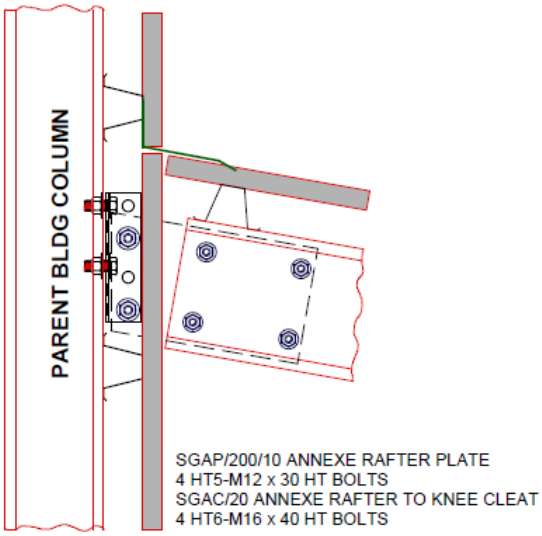
C150 STEPPED 5° ANNEXE RAFTER TO ANY COLUMN



C200 STEPPED 5° ANNEXE RAFTER TO ANY COLUMN



C150 STEPPED 10° ANNEXE RAFTER TO ANY COLUMN



C200 STEPPED 10° ANNEXE RAFTER TO ANY COLUMN

Horizontal Cladding

When the building is clad with ribs of the CUSTOM ORB® in a horizontal orientation, the SGAP cleats will be replaced with a similar DHARP cleat, that vary dependant on the roof pitch and the cyclonic or non-cyclonic conditions.

Designations are typical as below example:

DHARP/200/22/10

DHARP	Skillion Horizontal Annexe Rafter Plate
200	C200 annexe rafter
22	non cyclonic 22mm vertical batten
10	annexe roof pitch in degrees

Cleat Orientations

Connection Arrangement - Both Cranked & Stepped

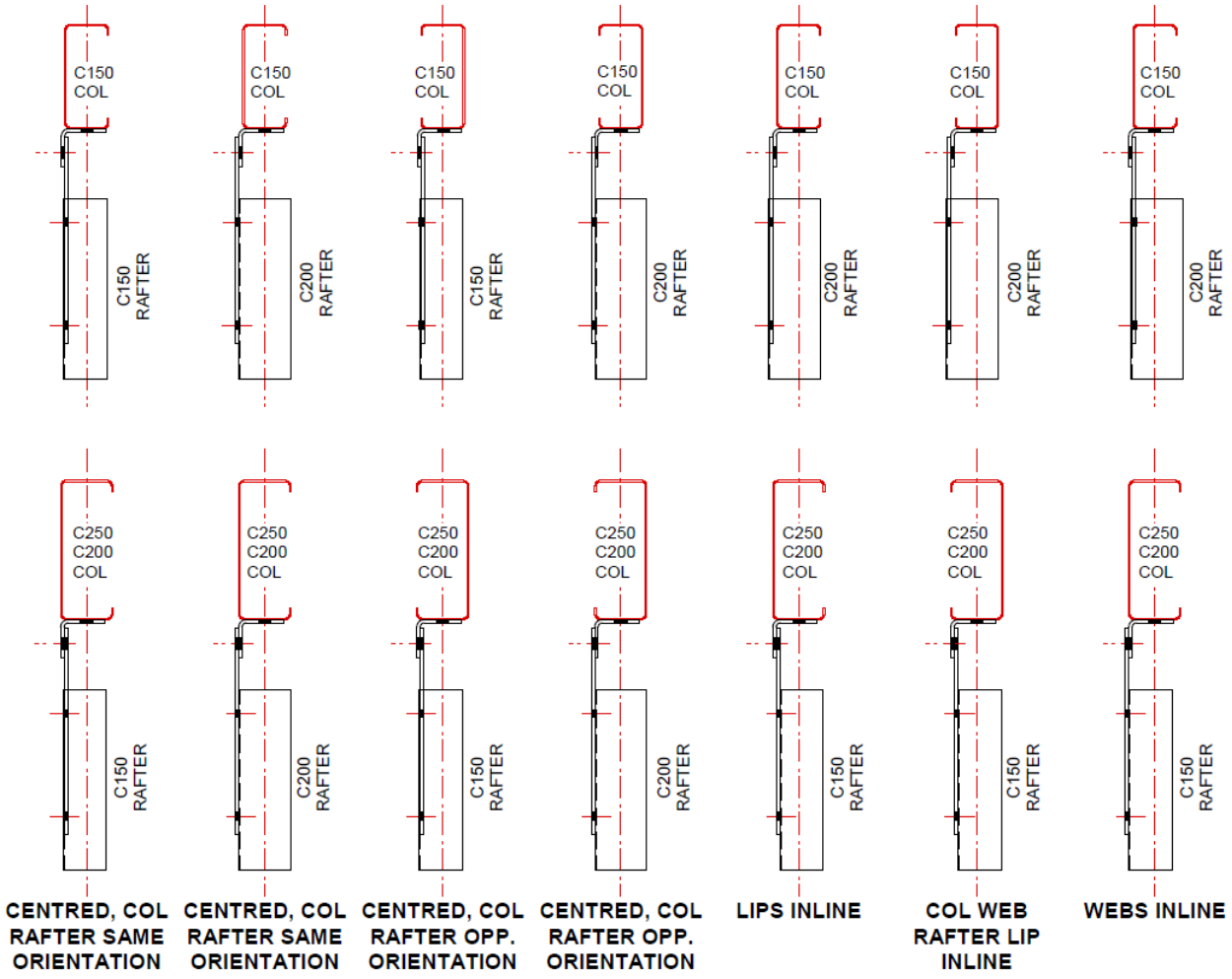
In most cases, the rafter plate (SGAP/150, SGAP/150/10, SGAP/200 or SGAP/200/10) is fixed to the outer annexe rafter web with 4-HT5 bolts (M12 x 30, + 8-M12 washers). It is also fastened to annexe column cleat (SGAC/05, SGAC/10, or SGAC/20) with 2-HT6 bolts (M16 x 40 + 4-M16 washers). This will be similar for the horizontal cladding rafter plates marked DHARP/150/22, DHARP/150/22/10, DHARP/150/40, DHARP/150/40/10, DHARP/200/22, DHARP/200/22/10, DHARP/200/40 and DHARP/150/40/10.

The annexe column cleat is fastened to the knee cleat/column flange with 2-HT6 bolts. This cleat is an unequal angle, having one 65mm leg & one 55mm leg. The 65mm leg is always fastened to the knee cleat or the column flange, whilst the annexe rafter plate is always fixed to the 55mm leg.

For all cranked annexe roofs to all parent Skillion buildings for all roof pitches, the SGAC cleat will connect to the knee cleat and column holes 35mm down from the top of the column, and the knee cleat flange hole above.

The fixing of the rafter plate onto the rafter flange is entirely dependent on the annexe rafter's orientation against the parent Skillion column.

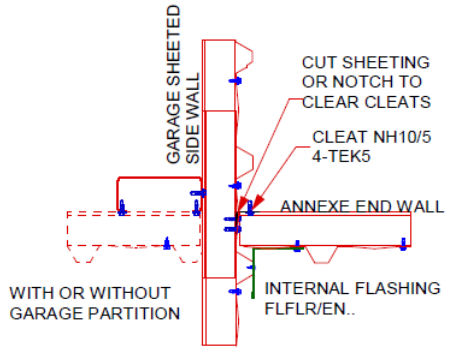
Refer to below diagrams for reference.



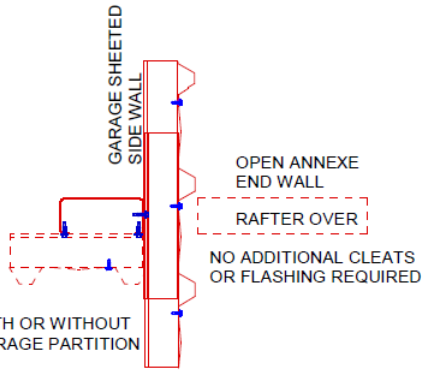
Flashing to Main Garage

Flashing and Cladding Treatment of Annexe End Wall or Partition Wall against Parent Skillion Garage

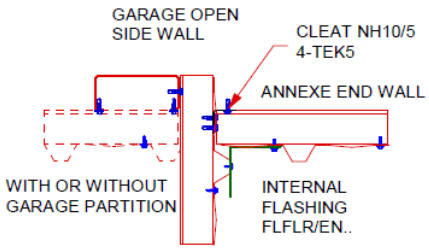
As with the parent Skillion Garage, all fully clad annexe partitions or end walls are ex C150's. Only open end annexe end walls can be C200's.
The details below indicate cladding and flashing treatment for internal partitions and end walls when the annexe is not the full length of the parent Skillion Garage.



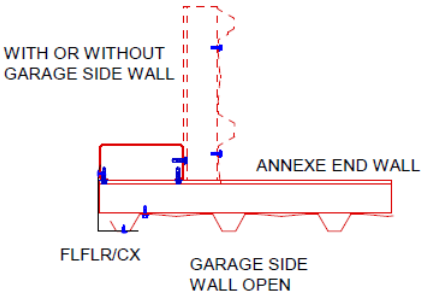
ANNEXE SHEETED END WALL AT CONTINUOUS GARAGE SIDE WALL



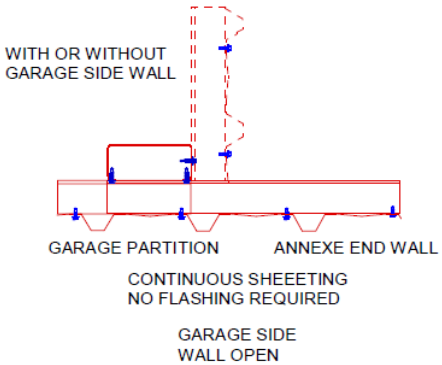
ANNEXE OPEN END WALL AT CONTINUOUS GARAGE SIDE WALL



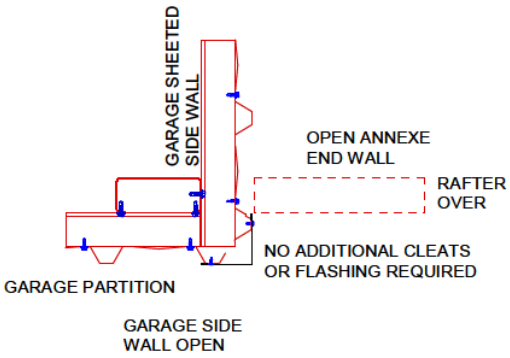
ANNEXE SHEETED END WALL SHEETED GARAGE SIDE WALL PAST CORNER



ANNEXE SHEETED END WALL OPEN GARAGE SIDE WALL PAST CORNER



ANNEXE SHEETED END WALL, GARAGE PARTITION, OPEN GARAGE SIDE WALL PAST CORNER

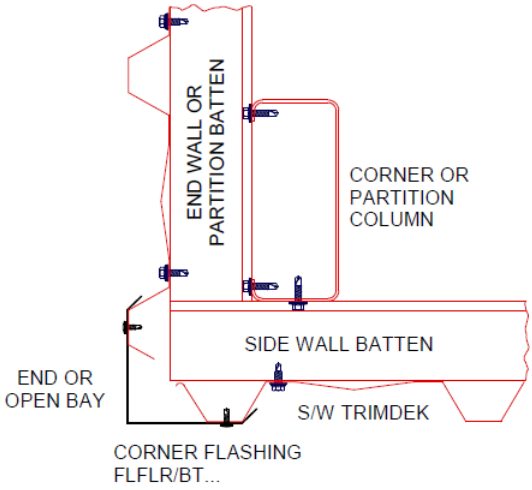


ANNEXE OPEN END WALL AT GARAGE PARTITION OPEN GARAGE SIDE WALL PAST CORNER

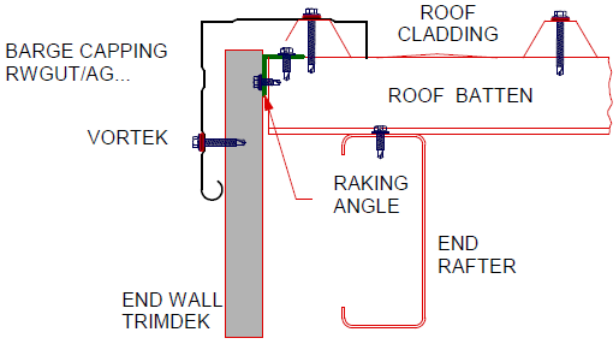
Annexe Corner and Barge Flashing

General

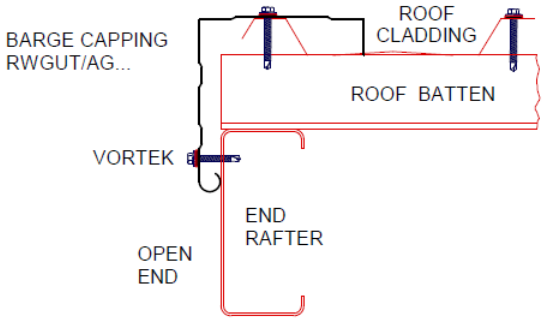
The flashing and finishing off at Skillion Annexe end walls are similar to those requirements for the parent Skillion garage.
The type of cladding will affect the flashing type. The below details are for TRIMDEK® (High Profile) cladding to roof and walls.
For CUSTOM ORB® (Corrugated) cladding, alternative flashings will be supplied - refer to Bill of Materials and Cladding diagrams.



STANDARD CORNER FLASHING



BARGE FLASHING, SHEETED ANNEXE END WALL



BARGE FLASHING, OPEN ANNEXE END WALL

Horizontal Cladding

Introduction

CUSTOM ORB® (Corrugated) cladding can be horizontally fixed to Skillion Skillion Garages.

This guide has been produced to highlight and indicate the basic arrangements required when using this cladding option.

General

The basic Skillion garage arrangement will have additional battens external to the horizontal wall battens. These battens are fixed vertically, and are fastened to all wall battens and the fascia.

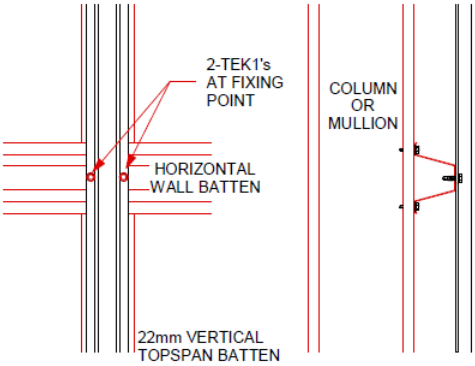
For non-cyclonic designs, the vertical battens are 22mm high topspan battens (TS2242).

For cyclonic designs, the vertical battens are 40mm high topspan battens (TS4055).

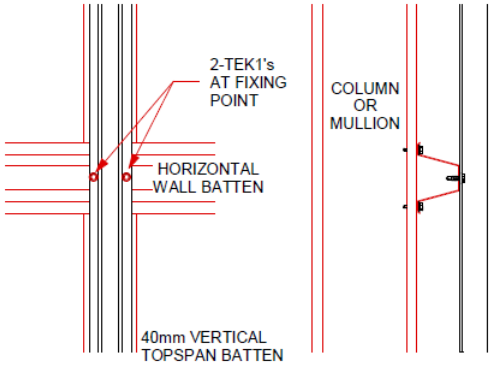
Vertical battens are to be fixed at centres not exceeding 450mm.

Vertical Batten Fixing

At every vertical batten fixing point, fasten with 2-Tek1's.



22mm VERTICAL BATTEN TO HORIZONTAL WALL BATTEN DETAIL



40mm VERTICAL BATTEN TO HORIZONTAL WALL BATTEN DETAIL

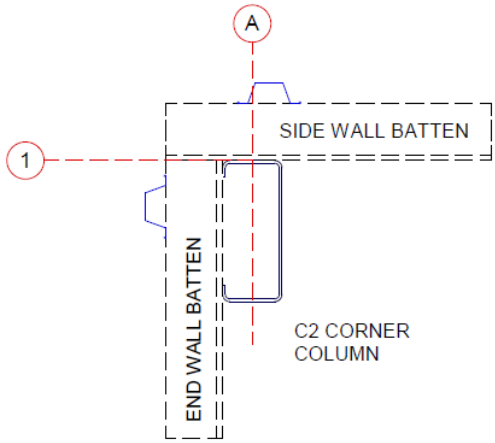
Primary and Secondary Vertical Battens

Vertically fixed battens are grouped as either primary or secondary battens.

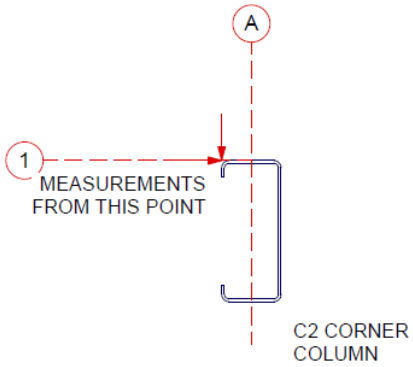
Primary Vertical Battens

Primary battens are those battens which need to be specially located to suit cladding runs, cladding laps, wall openings, flashings etc. The positioning of the battens will be indicated in a primary batten location table, which can be found on the Steelwork Marking Plan.

Dimensions as indicated in this table are to be taken from the intersection point of the C2 corner column's flange and web, at Grid reference A1. All dimensions are to the centre line of the primary batten. The image below indicates the point of reference for the dimensions:



C2 CORNER ARRANGEMENT



**PRIMARY BATTEN
MEASUREMENT DATUM POINT**

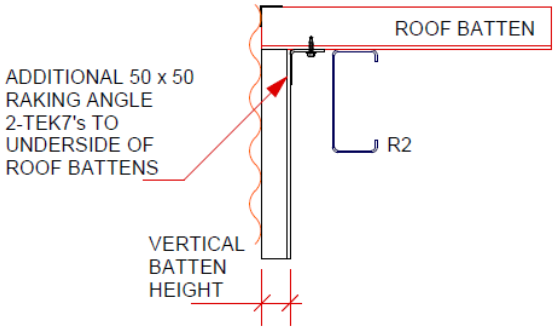
Secondary Vertical Battens

Secondary battens are those battens which are located between Primary battens. The positioning of the battens will be generally indicated as dotted lines on the Steelwork Marking Plan. No specific positioning of these battens is required but need to be spaced at centres not exceeding 450mm between the Primary battens.

Vertical Battens to End Walls / Open End with Gable Infill's

On clad gable end walls and open end walls with gable infill's, an additional run of raking angle is required for fixing of the vertical battens.

An additional run of 50x50 galvanized raking angle is supplied, and is fastened to the underside of the roof battens with 2-Tek 7's. Accurately locate these angles to suit the height of the vertical battens - 22mm for non-cyclonic, 40mm for cyclonic, from the end of the roof purlins. Refer to the image below:

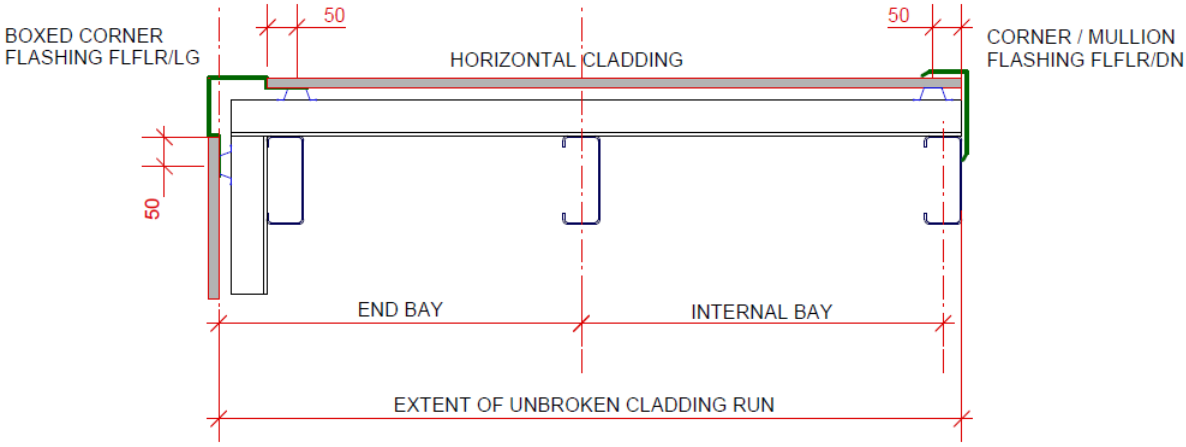


**50 x 50 ADDITIONAL BATTEN
LOCATION AND FIXING DETAIL**

Fixing of Cladding

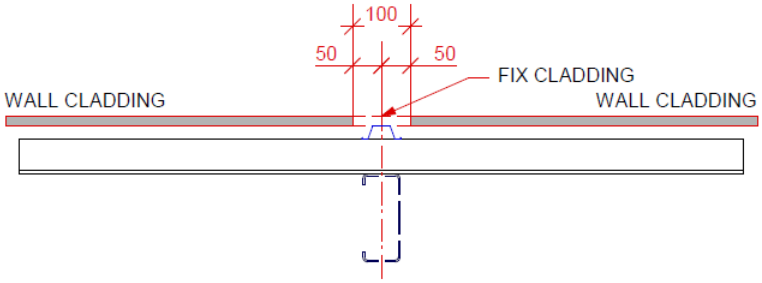
Cladding is to be fixed at Primary and Secondary batten locations with 5-Tek1 valley fasteners for non-cyclonic buildings and with 5-Tek16 valley fasteners for cyclonic buildings.

At the start and finish of each batten run, the cladding is to be fixed to the supporting batten approximately 50mm from the extent of the cladding run. Refer to the image below:



UNBROKEN CLADDING RUN FROM CLAD END WALL TO UNCLAD INTERNAL FRAME

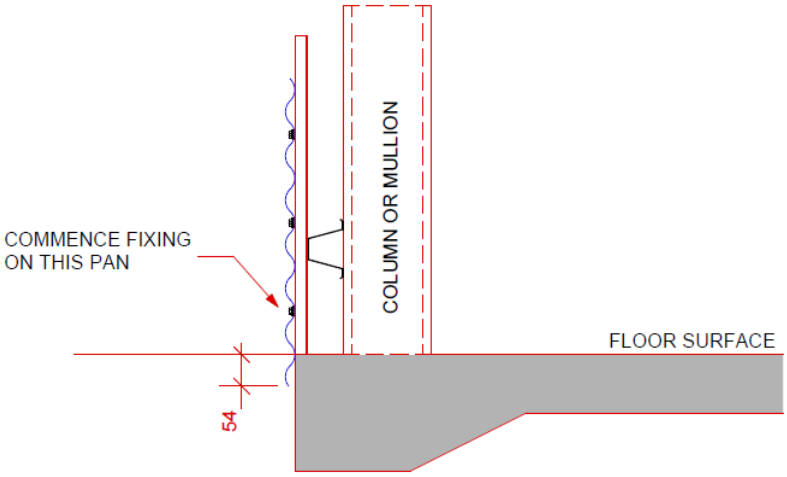
Wall cladding, when lapped, is to be fixed centrally about a vertical batten. The length of the cladding lap is to be 100mm. Refer to the image below:



**LAPPED CLADDING FIXING
ABOUT A VERTICAL BATTEN DETAIL**

Fixing of the Bottom Wall Sheet

The bottom wall sheet must be set so that the centre of the first valley is level with the floor surface. Ensure that the overlap on the sheet is towards ground level, and set the end of the overlap 54mm past the floor surface. Refer to the image below:

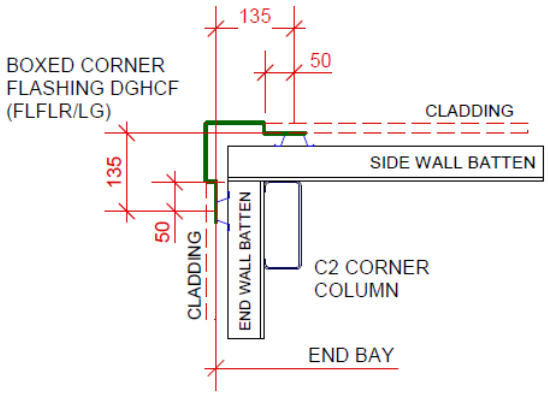


**BOTTOM WALL SHEET
LOCATION AND FIXING DETAIL**

Flashings

Corner Flashings

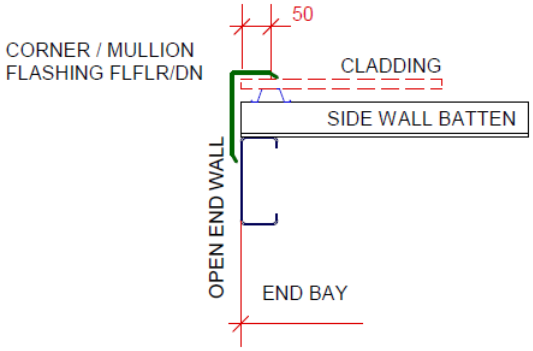
All fully clad external corners are to use cladding DGHCF (FLFLR/LG..). It is a purpose designed corner flashing that allows the side and end wall cladding to marry into the flashing recess. Refer to the image below:



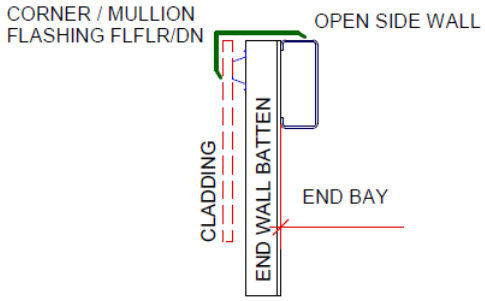
BOXED CORNER FLASHING DETAIL

Before fixing any side or end wall cladding, locate the boxed corner flashing DGHCF, and TEMPORARILY fix to the vertical battens with valley fixing screws at 1000mm centres on each flashing leg ABOVE the bottom sheet location. Remove these temporary screws as required.

At any external corner which isn't fully clad, use flashing FLFLR/LG..). In this instance, the shorter leg of the cladding is to be fixed against the sheeting. Refer to the images below:



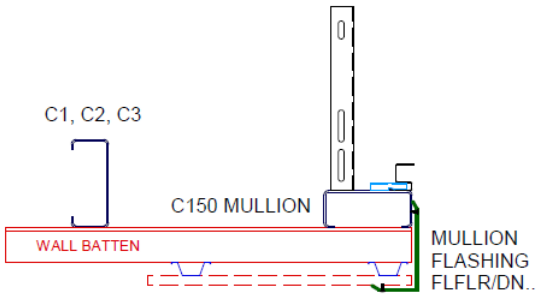
CLAD SIDE / OPEN END FLASHING DETAIL



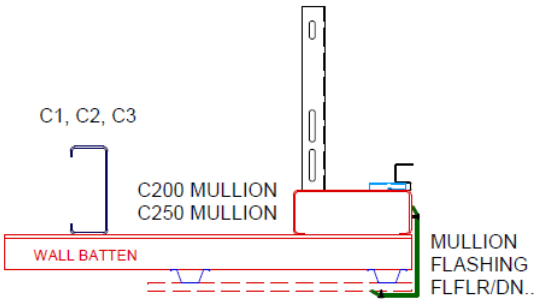
CLAD END / OPEN SIDE FLASHING DETAIL

Roller Door Mullion Flashing

All roller door mullions are to be flashed with mullion flashing FLFLR/DN. Refer to the images below for typical roller door mullion flashing arrangements:



DOMESTIC ROLLER DOOR MULLION FLASHING DETAIL

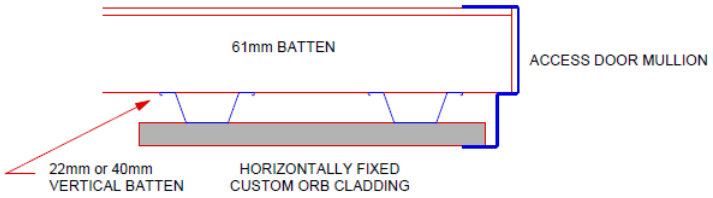


INDUSTRIAL ROLLER DOOR MULLION FLASHING DETAIL

Premium and Larnec Access Doors

Essentially, access doors are fitted the same way as for vertical clad buildings. However, the way the access door mullion is orientated about the batten differs slightly from vertical clad buildings.

For horizontally clad buildings, the access door mullions encase the horizontal TS64 batten, the vertical batten and the horizontally fixed CUSTOM ORB® cladding. Refer to the image below:



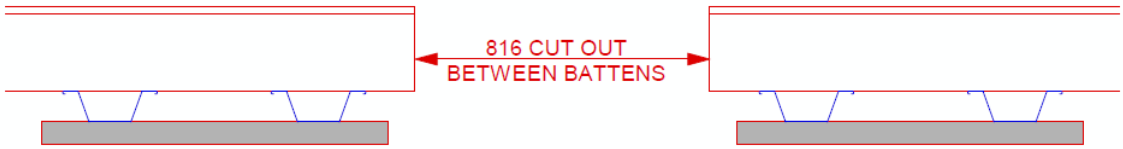
ACCESS DOOR MULLION ORIENTATION DETAIL

Door Opening Framing

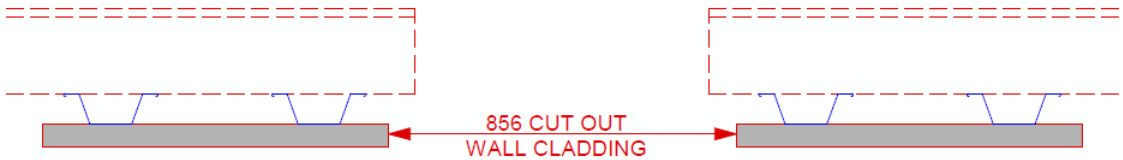
The following images provide wall opening cut out information for 820mm wide access doors in horizontally clad Skillion Garages:



CUT OUT BETWEEN ACCESS DOOR MULLION DETAIL



CUT OUT BETWEEN HORIZONTAL WALL BATTEN DETAIL



CUT OUT OF WALL CLADDING DETAIL

Windows

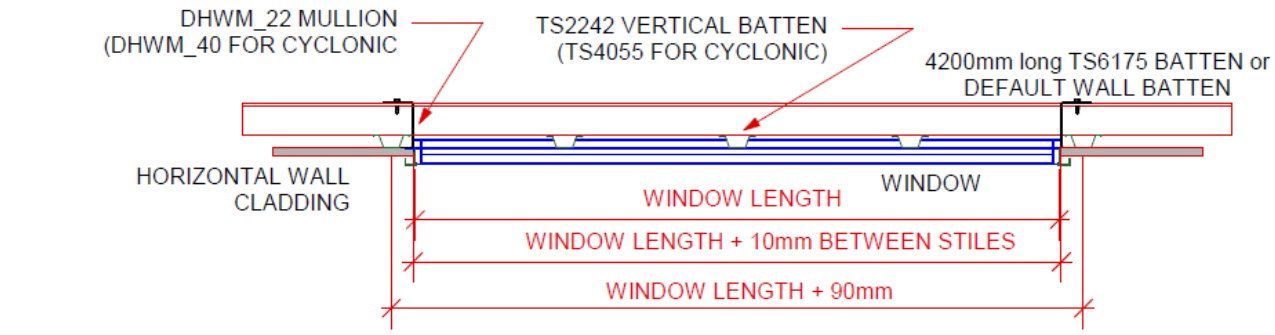
General

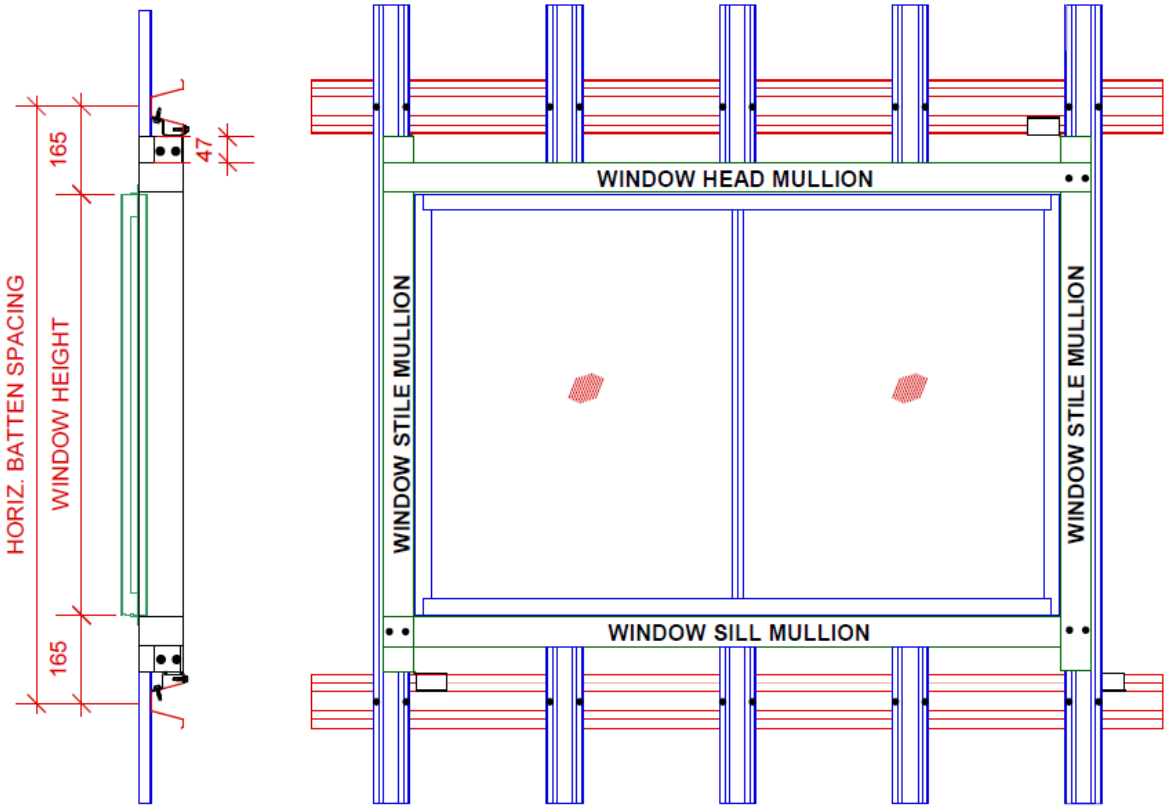
Window opening kits and window kits for Skillion Garages with horizontally fixed CUSTOM ORB® cladding consist of the following components:

4 x TC64: Window mullion to 64mm Topspan batten connection cleat.
1 x TS6475: Horizontal fixed wall batten x 4200 long.
2 x DHWM_22: Window mullion @ 1010mm long, window stile (DHWM_40 for cyclonic).
2 x DHWM_22: Window mullion @ window length + 120mm, window sill and window head (DHWM_40 for cyclonic).
28 x TEK 7: #14-10x20 tek screw (6 per TC61 cleat, 2 per TS6475 batten end).
20 x TEK1: #10-16x16 tek screws, non coloured, for fixing of vertical battens.
20 x TEK1: #10-16x16 tek screws, coloured, for fixing of wall cladding. (Note: 30 screws for 1274, 1505 or 1731mm long windows).
32 x TEK2: #10-16x22 wafer head screws (8 per window, 24 for fixing of head and sill to stiles).
1 x TS2242: Vertical batten for fixing about window opening. (For cyclonic, TS4055 supplied).

General Arrangement

Refer to the images below:

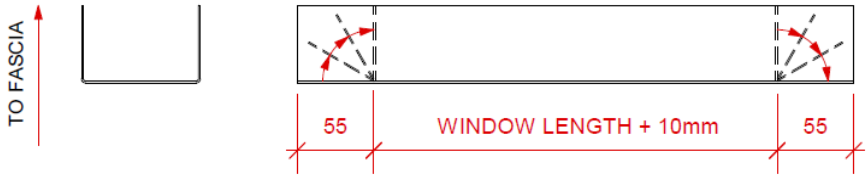




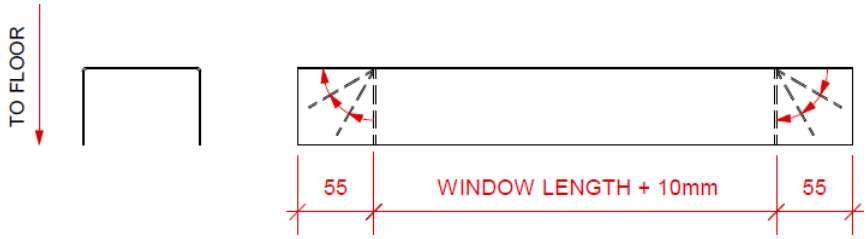
Window Framing and Fitting Procedure

Framing

1) Locate the 4200mm long TS6475 wall batten at a centred distance of window height plus 330mm above or below a TS64 side wall batten.
2) Fix two vertical battens (TS2242 or TS4055) centrally about the window opening at window length + 90mm.
   Fasten to each horizontal TS64 batten with 2xTEK1.
3) Cut two DHWM_22 or DHWM_40 THAT ARE NOT 1010mm LONG to window length + 120mm. Notch the web of each mullion 55mm deep and fold up or down so that the folded web can fix to the web of the vertical stile. The sill is orientated with the fold down, and the head is orientated with the fold up.
   Refer to the images below:



WINDOW HEAD ORIENTATION AND FOLD DETAIL



WINDOW SILL ORIENTATION AND FOLD DETAIL

4) Fasten the TC64 batten connection cleats to the 64mm Topspan horizontal battens vertical window stiles DHWM_22 or DHWM_40 with 6-Tek7's.
   Fit 2xTEK7 to the mullion (stile) web, 2xTEK7 through TC64 into back of TS64 batten, and 2xTEK7 through TS64 into front of TS64 batten.
5) Fix the window sill mullion to the vertical stile with 2-TEK2 wafer head screws to each leg, including the sill fold down. The bottom of the sill should be seated between 105 & 110mm from the centre of the TS64 sill batten. Ensure the sill mullion is level.
6) Fix the window head mullion to the vertical stile with 2-TEK2 wafer head screws to each leg, including the head fold up. Ensure that a clear open of window height + 10mm is between the sill and the head, and the head is level.
7) Locate any secondary vertical battens within the extent of the window length. These battens can be cut so that they extend only to the head and sill mullions, or they may be tucked into these mullions. Fit to horizontal battens with 2-TEK1.
8) Cut wall sheeting about the opening to suit the window dimensions. Note that the wall cladding may be slightly undercut at the window sill.

Window Fitting

9) Locate the window centrally within the framed opening, and fix the window to the frame with 1-TEK2 wafer head tek screw at each corner by screwing through the window fin into the stiles, sill and head.
   Then add additional Tek2 fasteners midpoint of each corner. A total of 8-TEK2 fasteners should be fitted with a Phillips Head #2 driver.
10) Screw off wall sheeting into vertical wall battens.
11) Fit window head flashing if applicable.

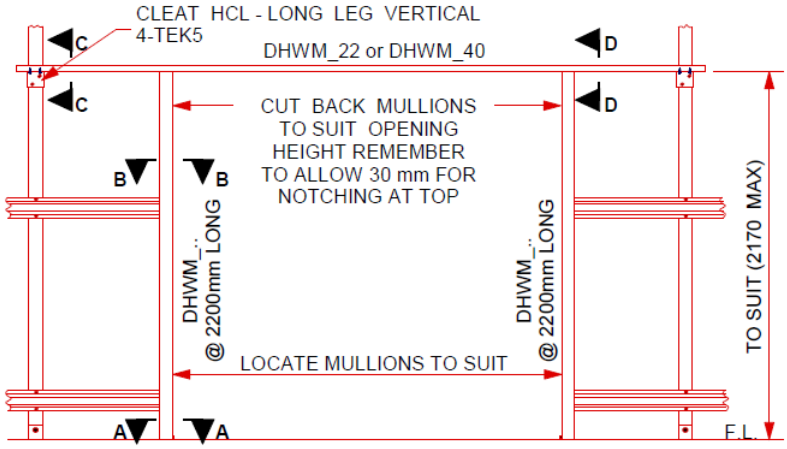
Framed Openings

General

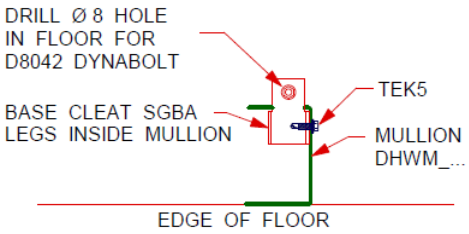
The framed opening kit is a general purpose kit suitable for fitting items not supplied by Endurance Sheds and Structures such as aluminium framed sliding glass doors and shop fronts etc. Mullions are 2200mm long to allow for a maximum head height of 2170mm. If lower head heights are required the mullions are simply cut to suit. Width is only restricted by the space available between garage columns.

General Arrangement

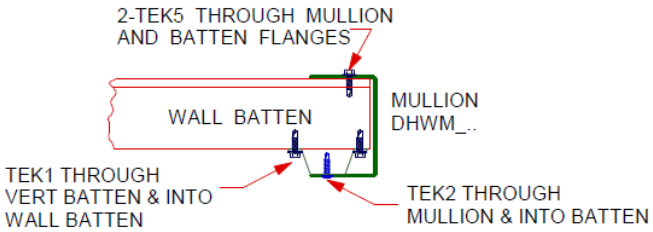
Refer to the images below:



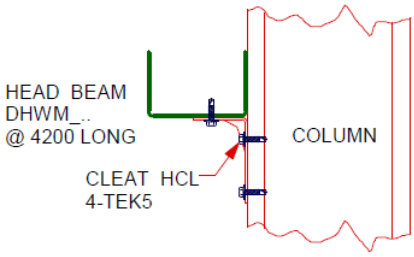
TYPICAL ARRANGEMENT



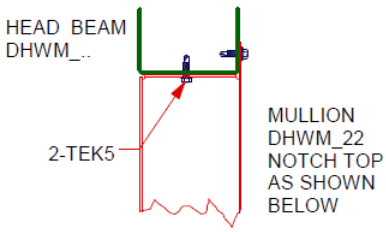
SECTION A - A



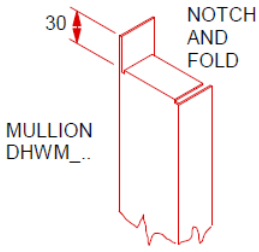
SECTION B - B



SECTION C - C



SECTION D – D



Framed Openings (continued)

Framing Up

1. The framed opening kits are of general nature, and can be located in side or end walls between columns or mullions of any Skillion Garage with horizontally fixed CUSTOM ORB® cladding.

2. Establish the opening size and location.

3. Mark the head height on columns/end mullions on either side of the opening, and fasten two cleats HCL into position (refer to Section C-C on the previous page).

4. Cut head beam DHWM_22(for non-cyclonic or DHWM_40) supplied 4200mm long back if necessary, and locate on top of HCL cleats with 2-TEK5 fasteners at each HCL cleat.

5. If horizontal wall battens are already located, mark and cut out section 10mm longer than the required opening width.

6. Centrally locate a vertical batten 35 to 40mm in from the end of the horizontal battens, and fix to horizontal battens with 2-TEK1 fasteners.

7. Fix off the intermediate vertical battens to the opening head DHWM_.. with 1-TEK2 fastener.

8. Cut, notch and slot the top of the DHWM_.. mullions supplied in 2200mm lengths to suit. (Refer to Section D-D on the previous page). **NOTE: ALLOW FOR THE THICKNESS OF THE SGBA BASE CLEAT UNDER THE DHWM_.. MULLIONS.**

9. Fit a mullion over the horizontal batten ends and under the head beam, locate the SGBA mullion (refer to Section A-A on the previous page), plumb vertical, and tek fix at top and intermediate battens only (refer to Section B-B & Section D-D on the previous page). Use 1-TEK2 fastener at horizontal batten location to fasten the cut DHWM_.. vertical mullions to the vertical battens.

10. Fit opposite mullion. Check for the required clear opening width dimension at the top and bottom. Fasten off the mullion as per the previous step.

11. Line up the bottom of the mullions so that they are flush with the edge of the concrete. Hold base cleats in position (refer to Section A-A on previous page), mark the concrete through the cleat holes, and drill 2-8mm diameter x 40mm deep holes in the concrete. Fix each base cleat with 1-D8042 Dynabolt.
    Tek fasten the mullion to the base cleat with 1-TEK5 (Refer to Section B-B on the previous page).

12. Fasten off the bottom girts to the mullions.

13. Check for full fastening of mullion to battens.

Cladding and Finishing

14. Cut the wall cladding around the opening so that the cladding does not violate the opening, and fully fix the cladding to all vertical battens, and vertical and horizontal mullions.

Awning Trimmer to Fascia Connection

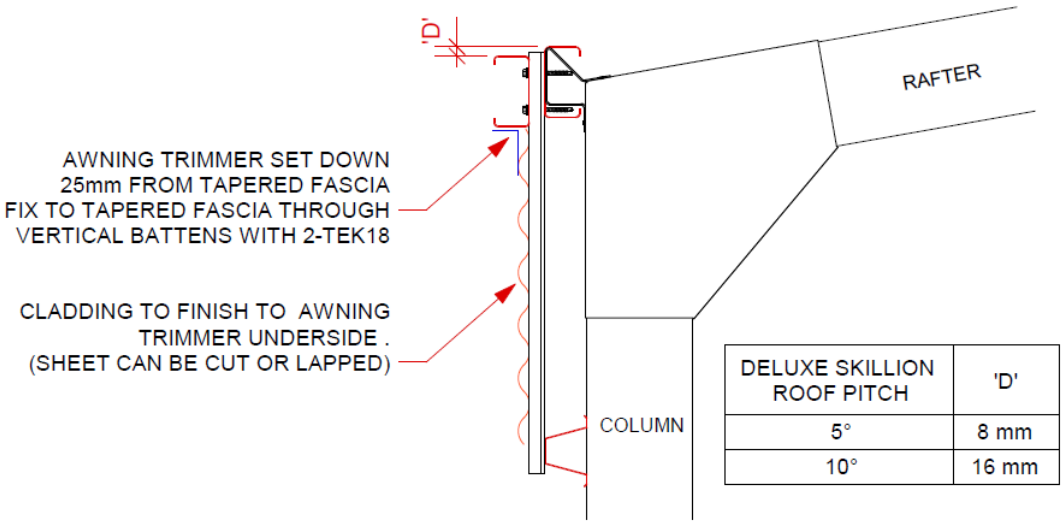
Essentially, the method of constructing an awning to be attached to a Skillion Garage with horizontally fixed CUSTOM ORB® is the same as for vertically clad Skillion Garages.

However, there is a difference between the cladding types for the awning trimmer and the parent Skillion Garage.

On a vertically clad Skillion Garage, the awning trimmer is fixed directly on the outside of the full length side wall sheeting. Fastening of the awning trimmer is by locating a spacer that suits the rib height of the cladding, and bolting through the spacer back to the parent Skillion fascia.

With a horizontally clad Skillion Garage, this connection differs slightly. Unlike the vertical clad buildings, wall sheeting is to finish to the underside of the awning trimmer.

In lieu of cladding rib spacers and bolts, fix the awning trimmer directly to the vertical battens with 2-TEK18 at each vertical batten location. Locate the trimmer so that the trimmer flange is measurement 'D' below the top of the fascia on the side wall. Refer to the diagram below:



DELUXE SKILLION ROOF PITCH	'D'
5°	8 mm
10°	16 mm

The side wall cladding can be flashed off to the trimmer with flashing "DGHATF".
Fasten the flashing to the wall cladding with TEK15, and fasten to the trimmer underside with supplied wall cladding valley fasteners-TEK1 OR TEK16.

Overhangs Supplement

Introduction

The Skillion Garage and attached Skillion Annexe have the ability to have both a **Side Eave Overhang** and an **End Overhang.**

Overhangs are available in spans of either 450mm or 600mm which are dependent on the engineering wind design speed.

This supplement has been produced as a guide to indicate the basic arrangements, connection and preferred assembly methods used when assembling a Skillion Garage with the Overhang option.

The example displayed in Figure 1- OVERHANGS indicates the difference between the orientations of the **Side Eave Overhang** and the **End Overhang**.
The orientation displayed is similar for both the gable Skillion Garage and any attached Skillion Annexe.

NOTE: the eave height of a Skillion Garage will be measured to the top of the internal fascia and not the external fascia.

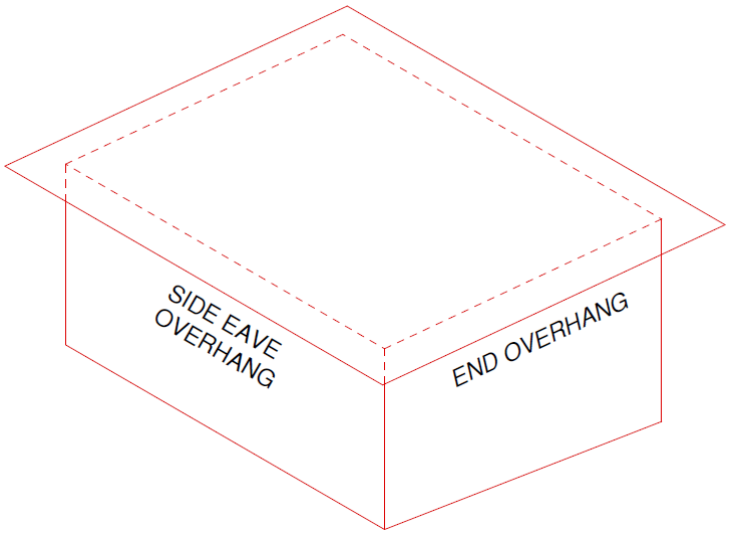


Figure 1- OVERHANGS

Throughout this section terminology for sizes will be displayed as a guide only. See example below for explanation.
XX is used in many descriptions to identify the variable size of a part.
In the example 3-HTXX bolts.

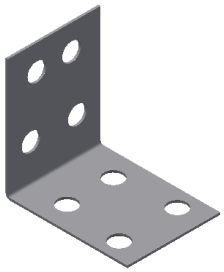
- 3 specifies number of bolts
- HT specifies high tensile
- XX specifies that the bolt size is varying and will depend on the connection detail shown for the specific engineered connection. (M12, M16, M20)

In the example C150(XX) section.

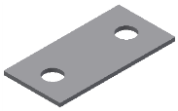
- C150 specifies the C-Section Size used (150)
- XX specifies the gauge or material thickness

Overhang Connection Cleats

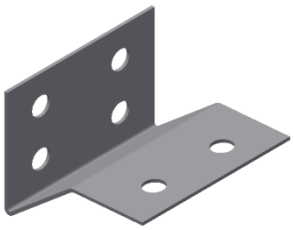
NOTE: Some cleats from the main Skillion Garage are also used on the Eaves Overhang.
Only new (Overhang-only) cleats are shown below.



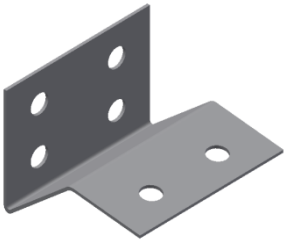
FICL
EAVES OVERHANG
FASCIA INNER CLEAT



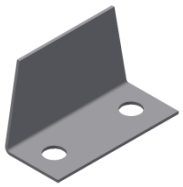
NCP10
C100,
FASCIA CLEAT PLATE



LFOC_05, LFOC_10,
LOWER FASCIA
OUTER CLEAT



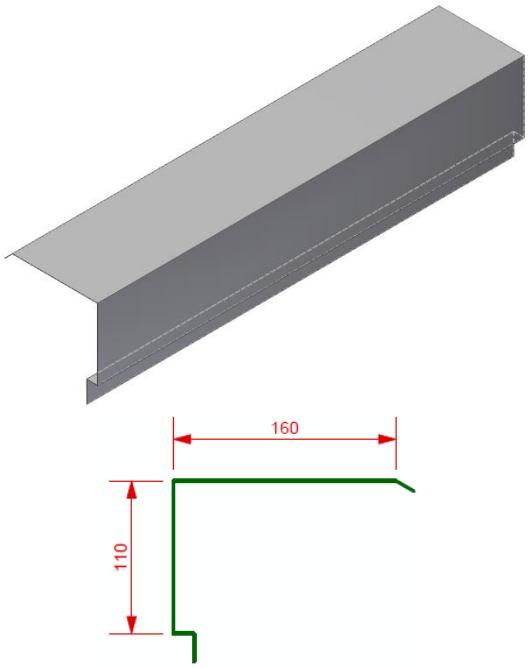
UFOC_85, UFOC80
UPPER FASCIA
OUTER CLEAT



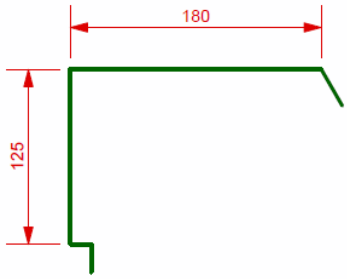
NCC10S, NCC10L
C150, C200, C250 RD MULLION
C100 FASCIA CLEAT

Overhang Flashings

NOTE: Some flashings from the main Skillion Garage are also used on the Eave Overhang. Only new (Overhang-only) flashings are shown below.



**BARGE FLASHING, SUIT CUSTOM ORB®
SPECIAL FOR EAVES OVERHANG**



**BARGE FLASHING, SUIT TRIMDEK®
SPECIAL FOR EAVES OVERHANG**

Roof Bracing with Eaves Overhang

NOTE:
Where an Eave Overhang condition exists, Roof Bracing shall remain connected to the Inner Fascia. Roof Bracing does not extend to the Outer Fascia of an Eaves Overhang.

Side Wall Eaves Overhang

Introduction

Side Wall Eaves Overhang can be added to both the Skillion Garage and the Skillion Annexe using the below connections and assembly methods.

The addition of a Side Wall Eave Overhang to the Skillion Garage and / or the Skillion Annexe arrangement will utilise a C150(XX) punched C-section which is bolt connected to the building knee assembly to produce an Side Wall Eaves Overhang condition.

There are two span options for the Side Wall Eave Overhang dependent on the design wind speed design used for the garage design:
- For **Non-Cyclonic Designs**, (Region A and Region B) the Side Wall Eave Overhang options will include spans of either a 450mm or a 600mm.
- For **Cyclonic Designs**, (Region C) the Side Wall Eave Overhang option will include a span of 450mm only.
- Side Wall Eaves overhang is not suitable or available for buildings in Region D.

The eaves overhang is only available for the full length of the Skillion or related Annexe.

Eaves Height

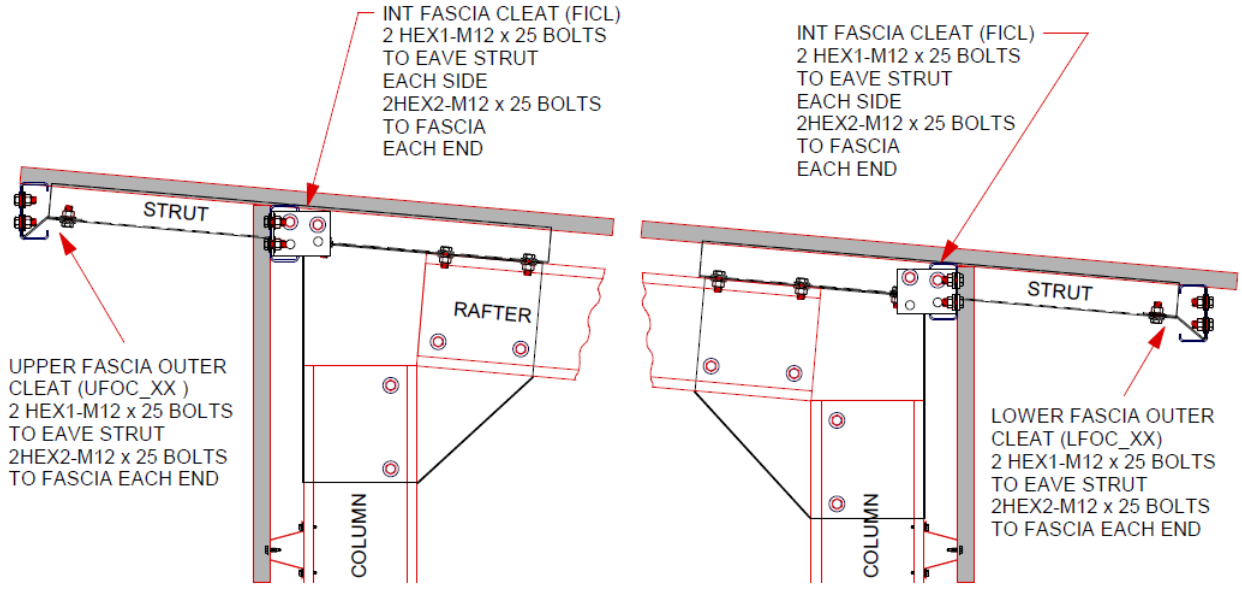
The Eave Height of a Skillion with Side Wall Eave Overhangs will be measured to the top of the side wall sheet or top of the Internal Fascia (not the external fascia). Minimum Eaves Height will be applied to the selection of Eaves Height depending on the roof pitch.

Side Eave Overhang Strut Fixing

The overhang Strut fixes to the knee Rafter flange, utilising the two HT.. Bolts at the Rafter flange knee connection, plus an additional HT bolt (total 3-HT.. bolts).

Eave Overhang Fascia Fixing

The overhang will incorporate both an internal and an external facia which will utilise bolted connections to the C150(XX) strut. NOTE: Care must be taken to place the correct strut in the correct knee location.



C150 SKILLION GARAGE AND ANNEXE FRAME FOR 5° AND 10° ROOF PITCH
C200 SKILLION GARAGE AND ANNEXE FRAME FOR 5° AND 10° ROOF PITCH
C250 SKILLION GARAGE AND ANNEXE FRAME FOR 5° AND 10° ROOF PITCH

Steel Framework – C150 Framed Main Buildings

General

The Overhang strut consists of a punched C15024 constructed from zinc coated "C" section and bolted with high tensile bolts to the Skillion Garage or Skillion Annexe knee gusset plates to form an eaves overhang condition.

The Fascia for the Eave Overhang consists of both an inner and outer fascia. This condition can be selected for both the upper and lower roof slopes of the Skillion Garage and the lower slope of the Skillion Annexe.

Important

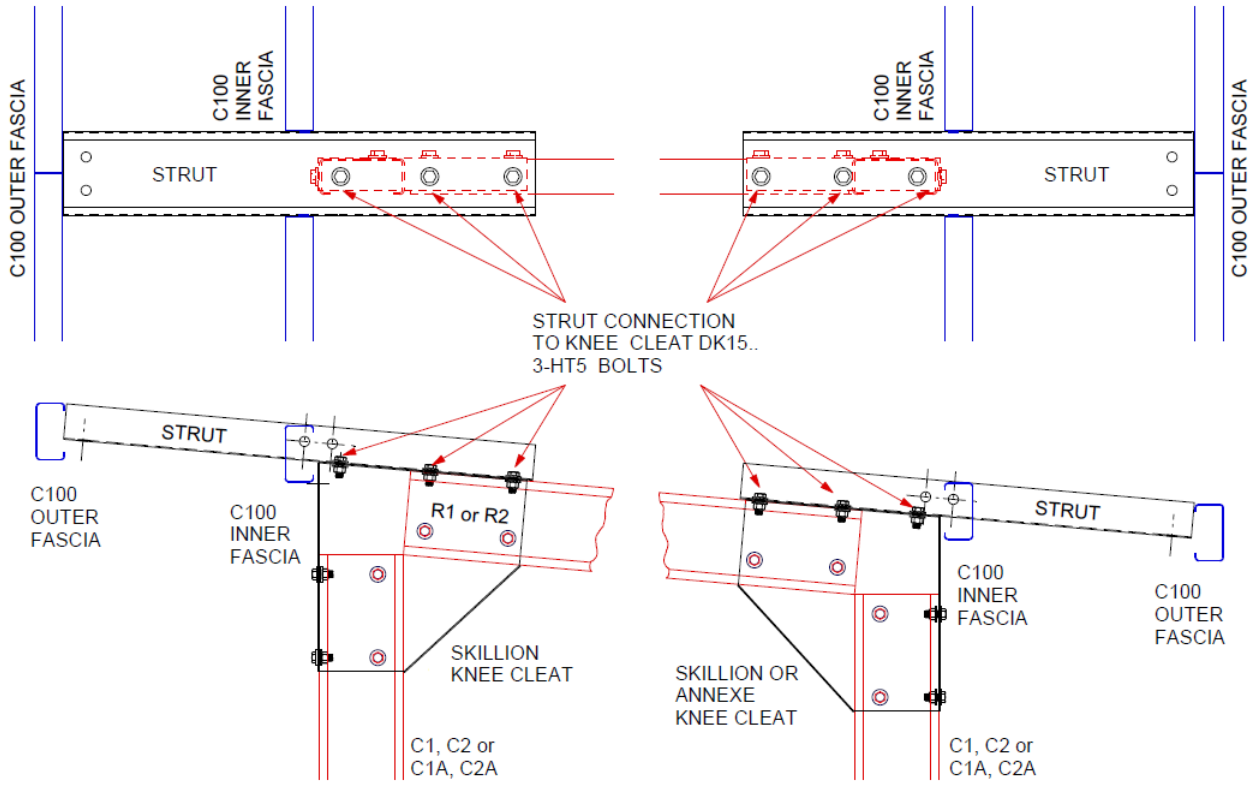
Structural Steelwork Marking Diagrams and Bill of Materials

The computer generated **Structural Steelwork Marking Diagram** the **Bill of Materials** and the **Structural Adequacy Certificate** supplied for your garage should be kept handy for reference during the erection of framework. These diagrams show the location of Overhang components including struts and fascia's but not connection cleats and gusset plates etc.

All members shown are labelled with a Mark Number. To identify a member, look up the Mark Number on the Bill of Materials to obtain a written description. Refer to the Member Identification sections of both the Main Building and the Side Wall Eaves Overhang for individual images of items. Typical drawings of the locations of main members, cleats, fasteners and flashings can be found on the next few pages.

Frames

It is important that all high tension frame bolts are properly tensioned at knee connection. That is nipped up "snug tight" then tightened another half turn. Refer to the "Tensioning Requirement" section on Page 19 for more details.



EAVE OVERHANG STRUT CONNECTION TO C150 SKILLION GARAGE AND C150 ANNEXE FRAME FOR 5° AND 10° ROOF PITCH

Steel Framework – C200/250 Framed Main Buildings

General

The Overhang strut consists of a punched C15024 constructed from zinc coated "C" section and bolted with high tensile bolts to the Skillion or Skillion Annexe knee gusset plates to form an eaves overhang condition.

The Fascia for the Overhang consists of both inner and outer fascias. This condition can be selected for both the upper and lower roof slopes of the Skillion and the lower slope of the Skillion Annexe.

Important

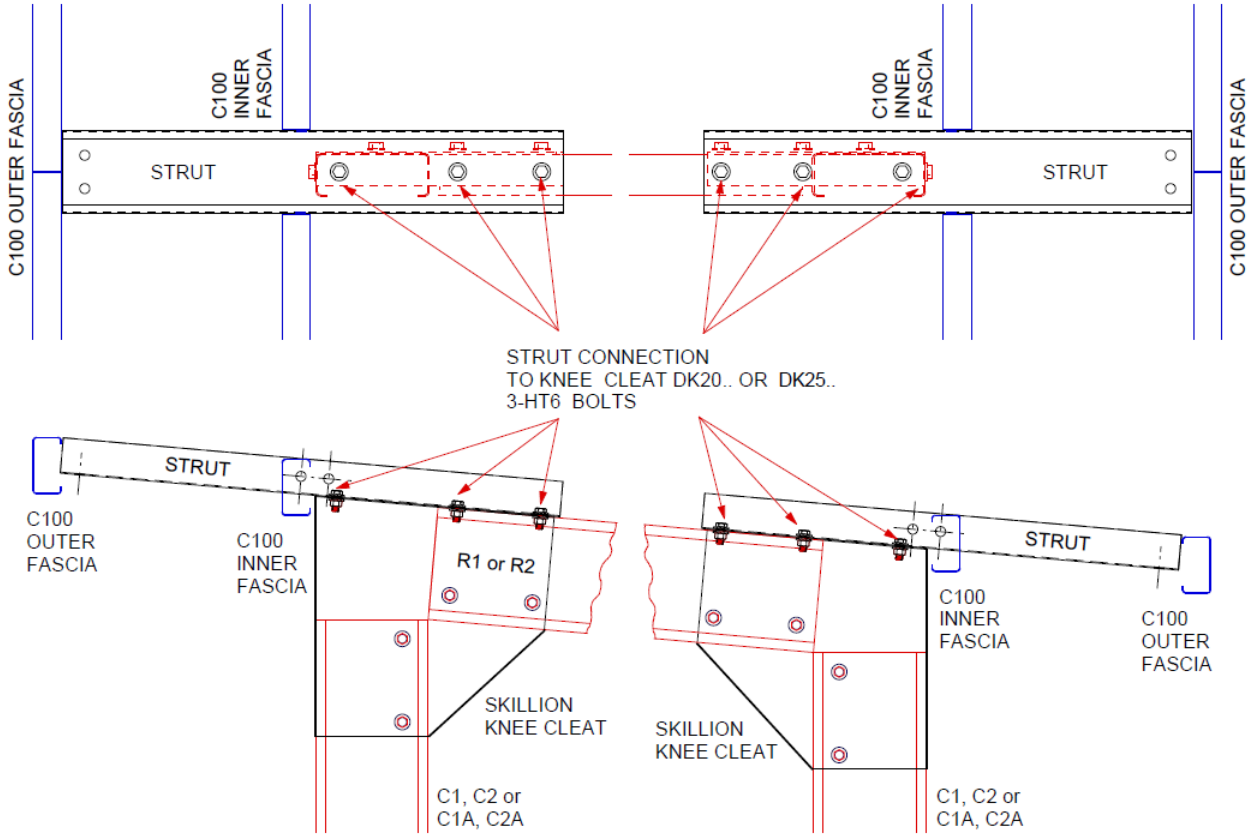
Structural Steelwork Marking Diagrams and Bill of Materials

The computer generated **Structural Steelwork Marking** Diagram the **Bill of Materials** and the **Structural Adequacy Certificate** supplied for your garage should be kept handy for reference during the erection of framework. These diagrams show the location of Overhang components including struts and fascia's but not connection cleats and gusset plates etc.

All members shown are labelled with a Mark Number. To identify a member, look up the Mark Number on the Bill of Materials to obtain a written description. Refer to the Member Identification sections of both the Main Building and the Side Wall Eaves Overhang for individual images of items. Typical drawings of the locations of main members, cleats, fasteners and flashings can be found on the next few pages.

Frames

It is important that all high tension frame bolts are properly tensioned at knee connection. That is nipped up "snug tight" then tightened another half turn. Refer to the "Tensioning Requirement" section on Page 19 for more details.



EAVE OVERHANG STRUT CONNECTION TO C200/250 SKILLION GARAGE AND C200 ANNEXE FRAME FOR 5° AND 10° ROOF PITCH

Overhang Fascia Connections

General

The fascia for the Overhang condition consists of both inner and outer fascias. This condition can be selected for both, the upper and lower eave of the Skillion and the lower eave of the Skillion Annexe.

The Inner Fascia supports both the roof sheet fixing and wall sheet fixing.
The Outer Fascia supports the roof sheet fixing and the upper capping flashing fixing.

Upper fascia outer cleats are designated UFOC.. and are connected to the overhang strut web by 2-HEX1 bolts. NOTE: Care to be taken selecting the correct upper fascia outer cleat to suit the correct roof pitch.

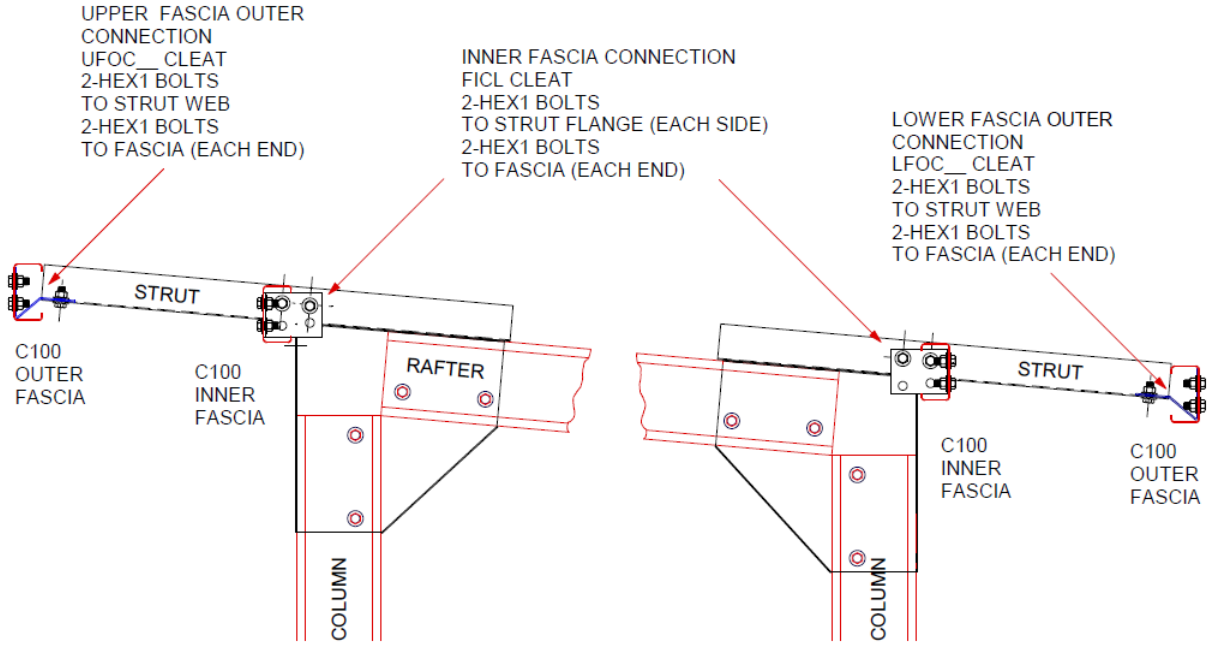
Lower fascia outer cleats are designated LFOC.. and are connected to the overhang strut web by 2-HEX1 bolts. NOTE: Care to be taken selecting the correct lower outer fascia cleat to suit the correct roof pitch.

Inner fascia cleats are designated FICL and are connected to the overhang strut flange by 2-HEX1 bolts.
NOTE: care must be taken when installing the FICL cleat as it is a 5° or 10° multi-use cleat and can easily be installed incorrectly. When installing use a level to make sure the orientation is correct and the cleat is installed with the fascia connection leg in an orientation 90° to the ground.

All fascia connections to the fascia cleats are by 2-HEX1 web bolts each end.

Important

Structural Steelwork Marking Diagrams and Bill of Materials
The computer generated Structural Steelwork Marking Diagram and the Bill of Materials supplied for your garage should be kept handy for reference during the erection of framework. These diagrams show the location of Overhang components including struts and fascia's but not connection cleats and gusset plates etc.
All members shown are labelled with a Mark Number. To identify a member, look up the Mark Number on the Bill of Materials to obtain a written description. Refer to the Member Identification sections of both the Main Building and the Side Wall Eaves Overhang for individual images of items. Typical drawings of the locations of main members, cleats, fasteners and flashings can be found on the next few pages.

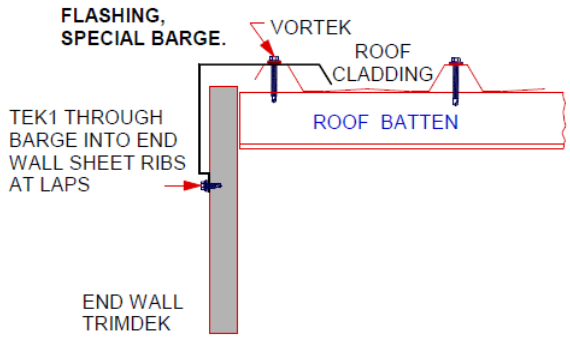


INNER AND OUTER FASCIA CONNECTIONS TO OVERHANG STRUT (ALL FRAMES)

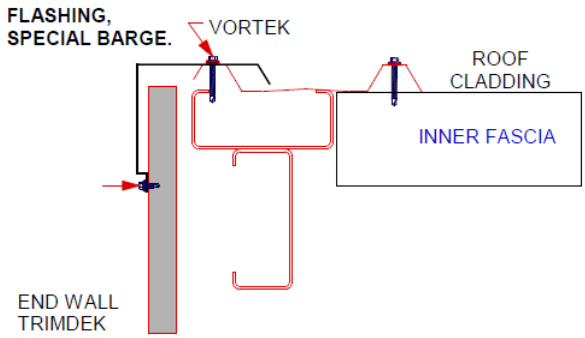
Overhang Fascia Connections (continued)

Barge Flashing

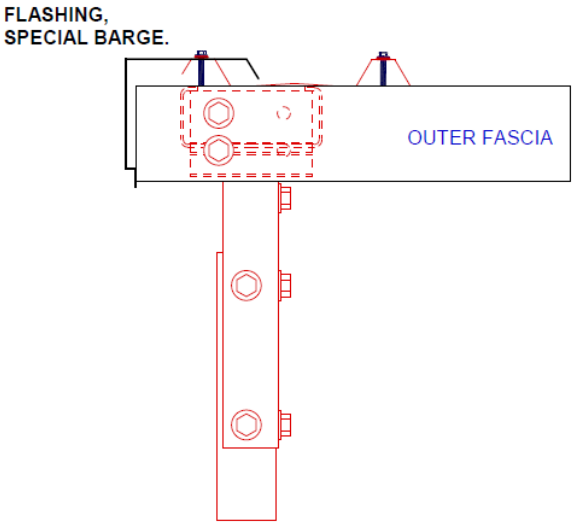
When an overhang condition exists a specific Barge Flashing is required.



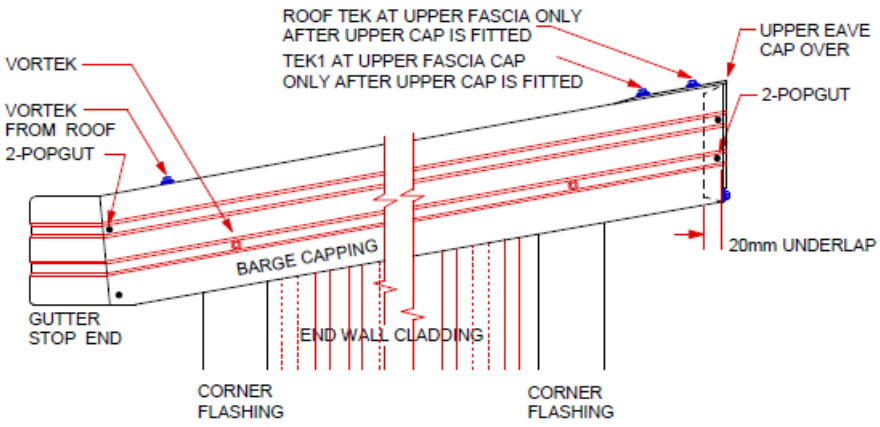
BARGE FOR OVERHANG AT ROOF BATTEN



BARGE FOR OVERHANG AT INNER FASCIA



BARGE FOR OVERHANG AT OUTER FASCIA



FINISHING AT UPPER EAVE AND GUTTER

FINISHING AT UPPER EAVE AND GUTTER

End Overhangs

Introduction

End Overhang can be added to both the Skillion Garage and the Skillion Annexe using the below connections and assembly methods.

The addition of an End Overhang to the Skillion Garage and or the Skillion Annexe arrangement will utilise a C150(XX) unpunched C-section which is TEK screw connected to the building rafter top flange and Side Wall Eave Overhang Strut to produce an End Overhang condition.

The End Overhang will include one span option independent on the wind speed design used:
- For all areas (Region A, Region B and Region C) the End Overhang option will include a span of 450mm only.
- End Overhang is not suitable or available for buildings in Region D.

End Overhang Strut Fixing

The End Overhang Strut will be marked in the Bill of Materials (BOM) as CS_XX. The section will be a C150(XX) C-Section with no flange or web punching.

The strut should be preassembled with the Skillion Garage and Annexe end bay roof battens prior to fitting to the garage. This will ensure that the End Overhang span of all roof battens is equal.

Assemble End Bay Roof Battens, NH10/5 cleats and unpunched C15012 strut using 2-TEK7 screws only at the outer end of the C150(XX) as shown in **DETAIL C.**

Note: Ensure to align the NH10/5 cleat flush with the end of the C150(XX) strut to ensure a no gap finish when attaching the barge support fascia. Tek screw from the underside to give a tidy finish.

End Overhang Roof Batten Fixing

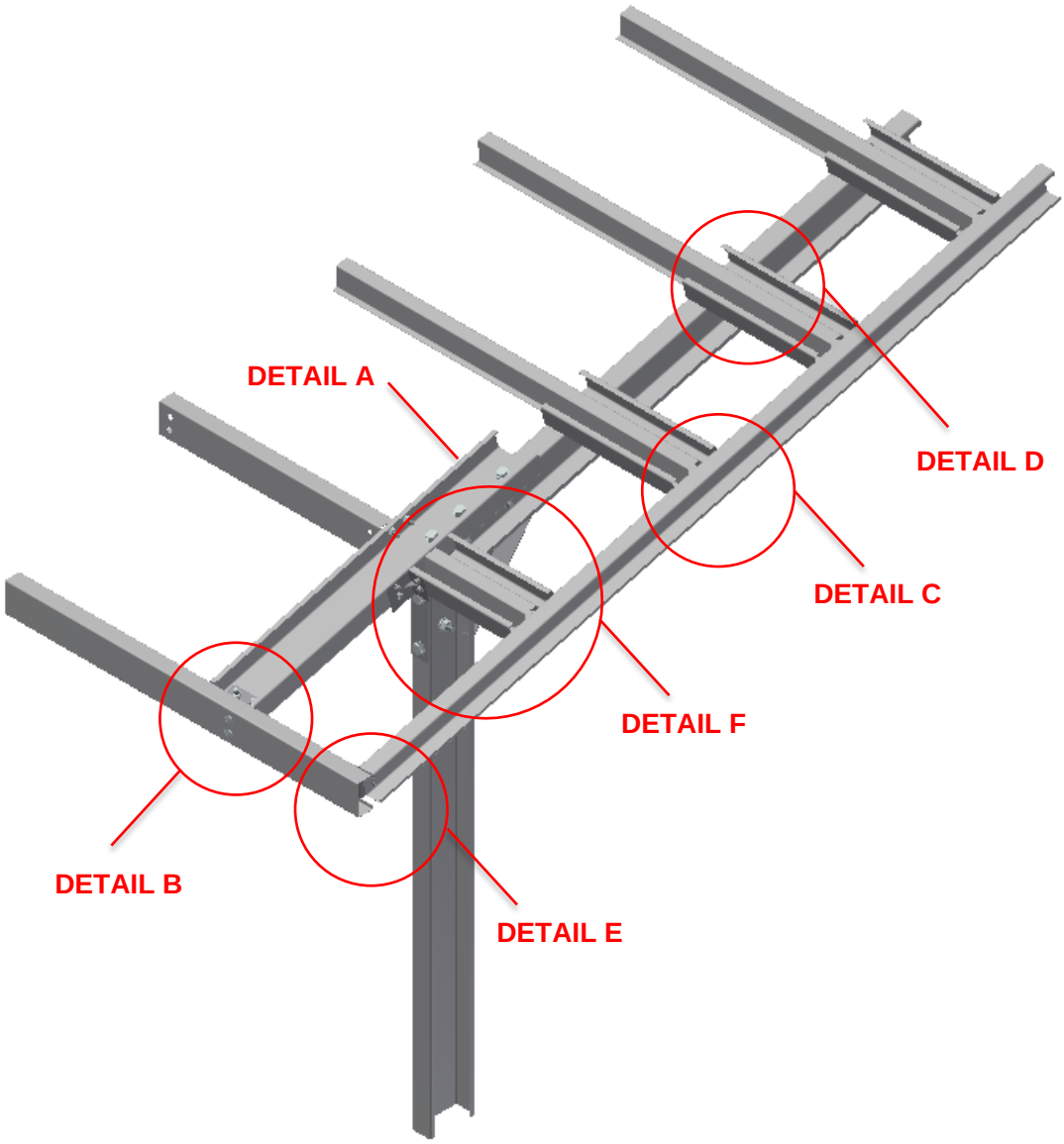
The End Overhang Strut fixes to the End Frame Rafter flange, utilising 2 @ Tek20's fixed through both the End Overhang Roof Batten TS64(XX) and the C150(XX) End Overhang Strut.

End Overhang Support Fascia Fixing

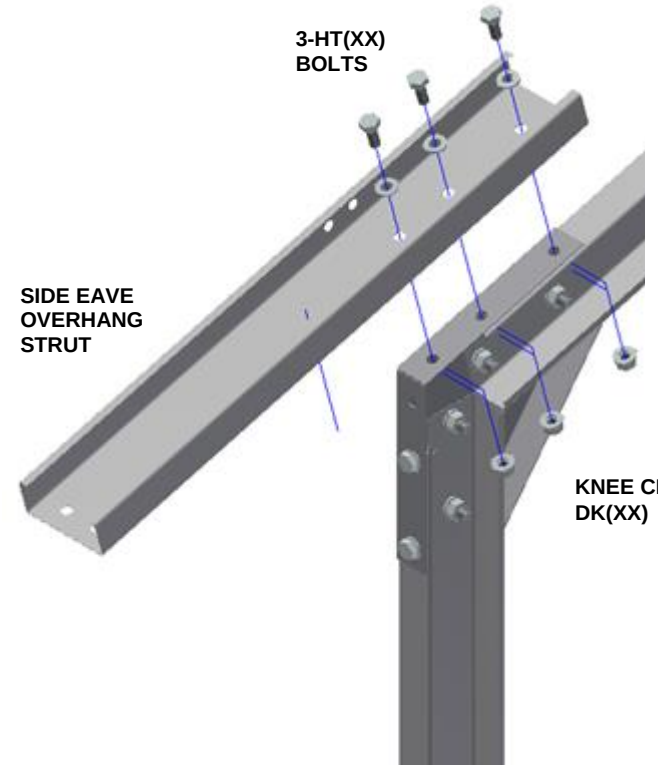
The End Overhang will incorporate a C100(XX) End Overhang Fascia which will utilise tek screwed connections to the ends of the composite C150(XX) End Overhang Strut and Roof Batten Overhang.

NOTE: Care must be taken to align both the End Bay Roof Batten and the C150(XX) End Overhang Strut to produce a 450mm End Overhang. For locations and spacing of the Roof Battens refer to your Endurance Sheds and Structures steelwork marking plan.

Side and End Overhang Frame Connections

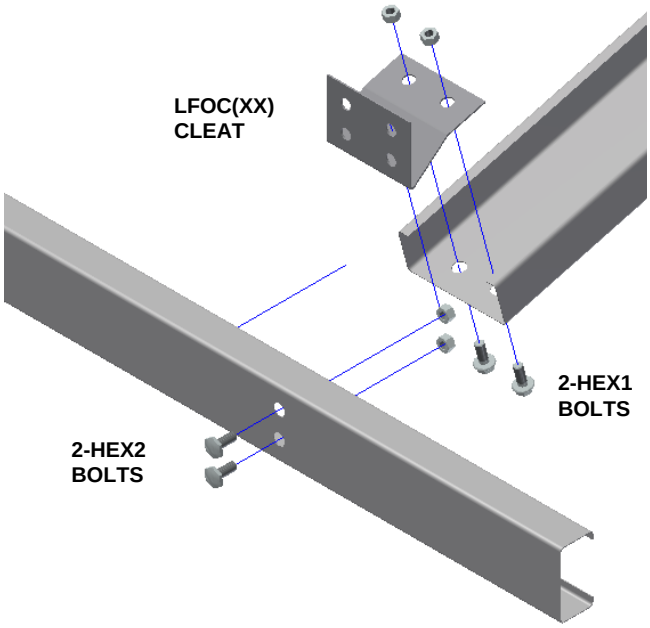


The above frame representation displays the assembled connections for both the Side Wall Eaves Overhang and the End Overhang.
The following details are exploded to their individual parts to show part orientation and recommended assembly methods.



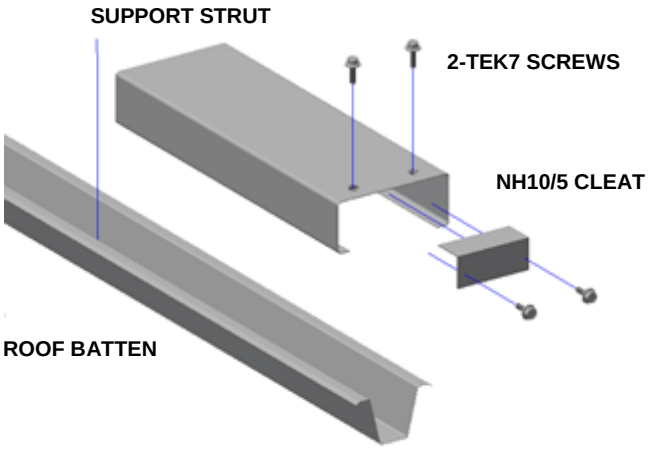
DETAIL A

This detail displays the connection of the Side Eave Overhang Strut (a punched C150(XX) section) The Side Eave Overhang Strut is attached to the Rafter Flange of the Knee Connection Cleat DK(XX) using 3-HT(XX) Bolts, 3-NUT(XX) and W(XX) washers (2 washers per bolt assembly)
The Eave Overhang Strut is best fitted when assembling the Knee connection.



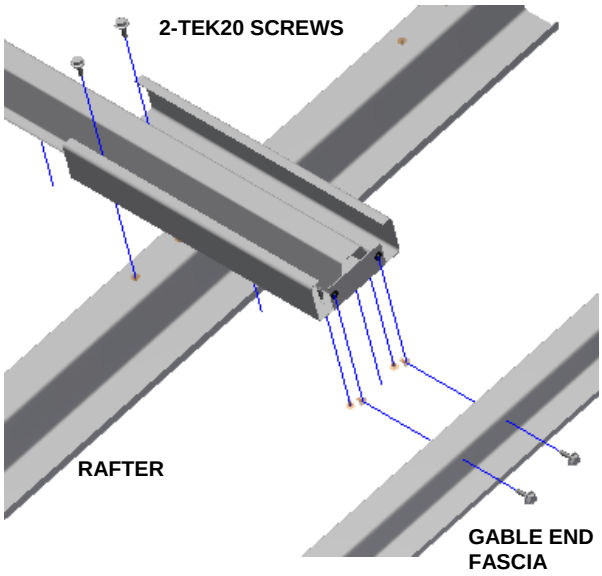
DETAIL B

This detail displays the connection of the Outer Side Eave Fascia. The LFOC(XX) cleat is fitted to the Side Eave Overhang Strut with 2-HEX1 bolts. The Outer Fascia C100(XX) section) is connected to the LFOC(XX) cleat with 2-HEX2 bolts.



DETAIL C

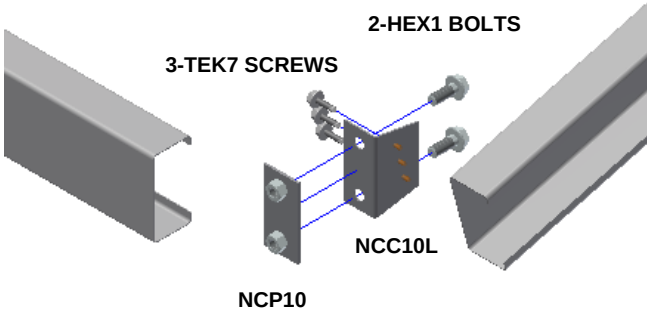
This detail displays the assembly of the End Overhang Support Strut and Roof Batten. The NH10/5 Cleat is fitted between the inside web of the C150(XX) Support Strut and the TS64(XX) Roof Batten with 2-TEK7 screws. Align the ends of the C150(XX) End Overhang Strut and the Roof Batten. This assembly is best pre assemble on the ground before attaching to the End Bay Rafters (shown in **DETAIL D**).



DETAIL D

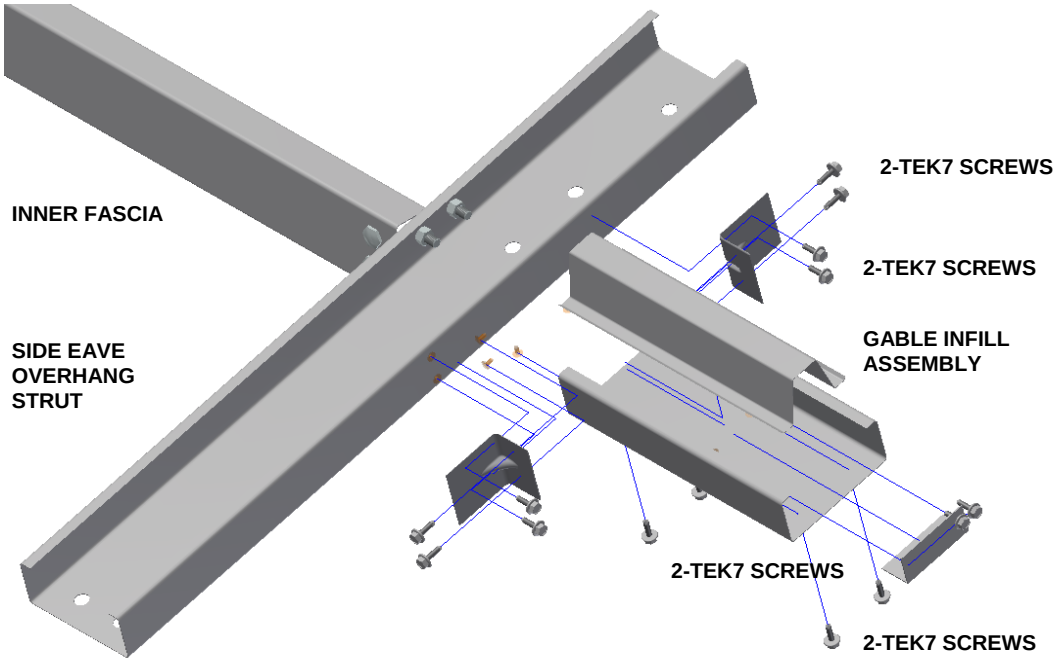
This detail displays the connection of the End Overhang Fascia Strut and Roof Batten assembly to the End Frame Rafters. The assembly from DETAIL C is placed along the rafter in the location specified on the steelwork marking plan, then tek screwed into position with 2-TEK20 screws.

The End Fascia should be attached using 2-Tek7 screws to each NH10/5 cleat so as the End Fascia top flange aligns with the top of the End Overhang Strut.



DETAIL E

This detail displays the connection of the End Overhang Fascia and the Outer Side Fascia Corner. In this connection the NCC10L cleat and the NCP10 clamp plate are connected around the lips of the Outer Side Eave Fascia with 2-HEX1 bolts. The NCC10L cleat is tek screwed to the corner of the End Overhang Fascia with 3-TEK7 screws.

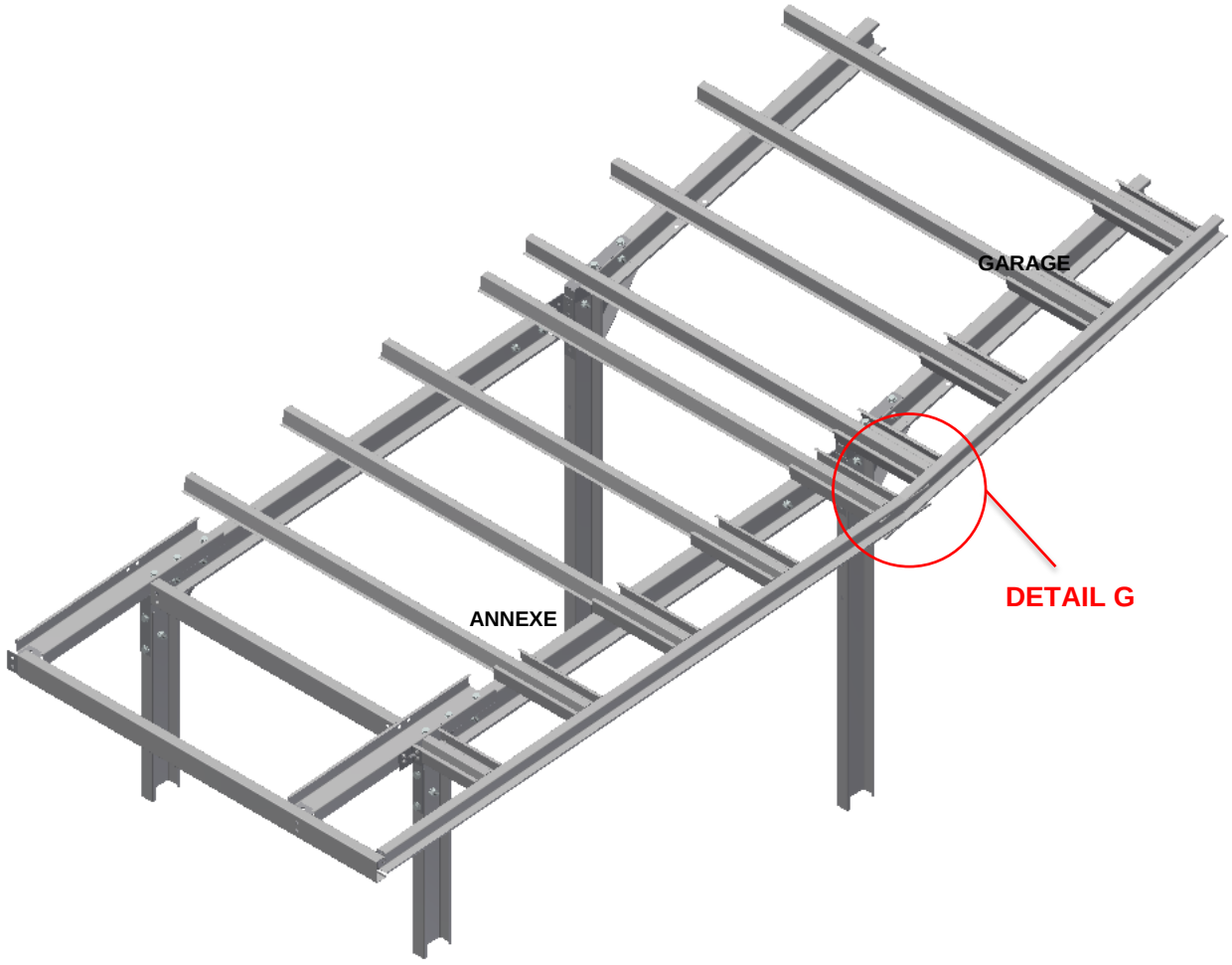


DETAIL F

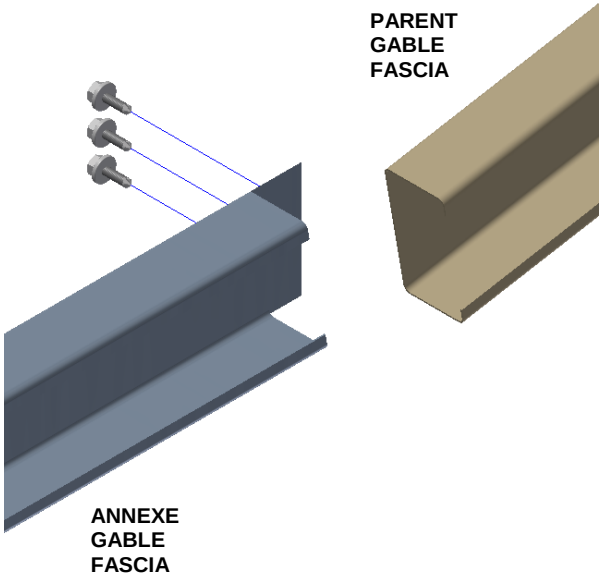
This detail displays both the assembly of the End Infill Strut and its connection to the Side Overhang Strut. The infill Strut is assembled similar to DETAIL C and DETAIL D. the inner connection to the Side Wall Overhang Strut is achieved by attaching a handy cleat to each side (Flange) of the Infill Strut with 2-TEK7 screws each side. The Infill Strut is then attached to the Side Overhang Strut using 2-TEK7 screws through the HCL cleat and to the Side Overhang Strut.

NOTE: care should be taken to align the Infill Strut at the Inner Fascia location to maintain a straight line of roof screws when sheeting the roof.

Roof - Cranked Connection

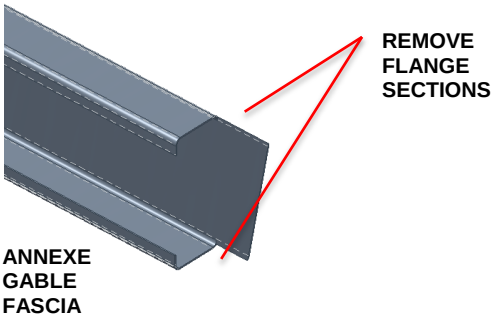


A cranked roof as shown above is described as a roof that the roof sheets of both the annexe and garage building intersect at a point When the annexe is cranked the gable end support fascia will be required to be cut on site at the point of intersection to provide a sturdy lapped connection.
DETAIL G indicates the cut method to provide a satisfactory connection.

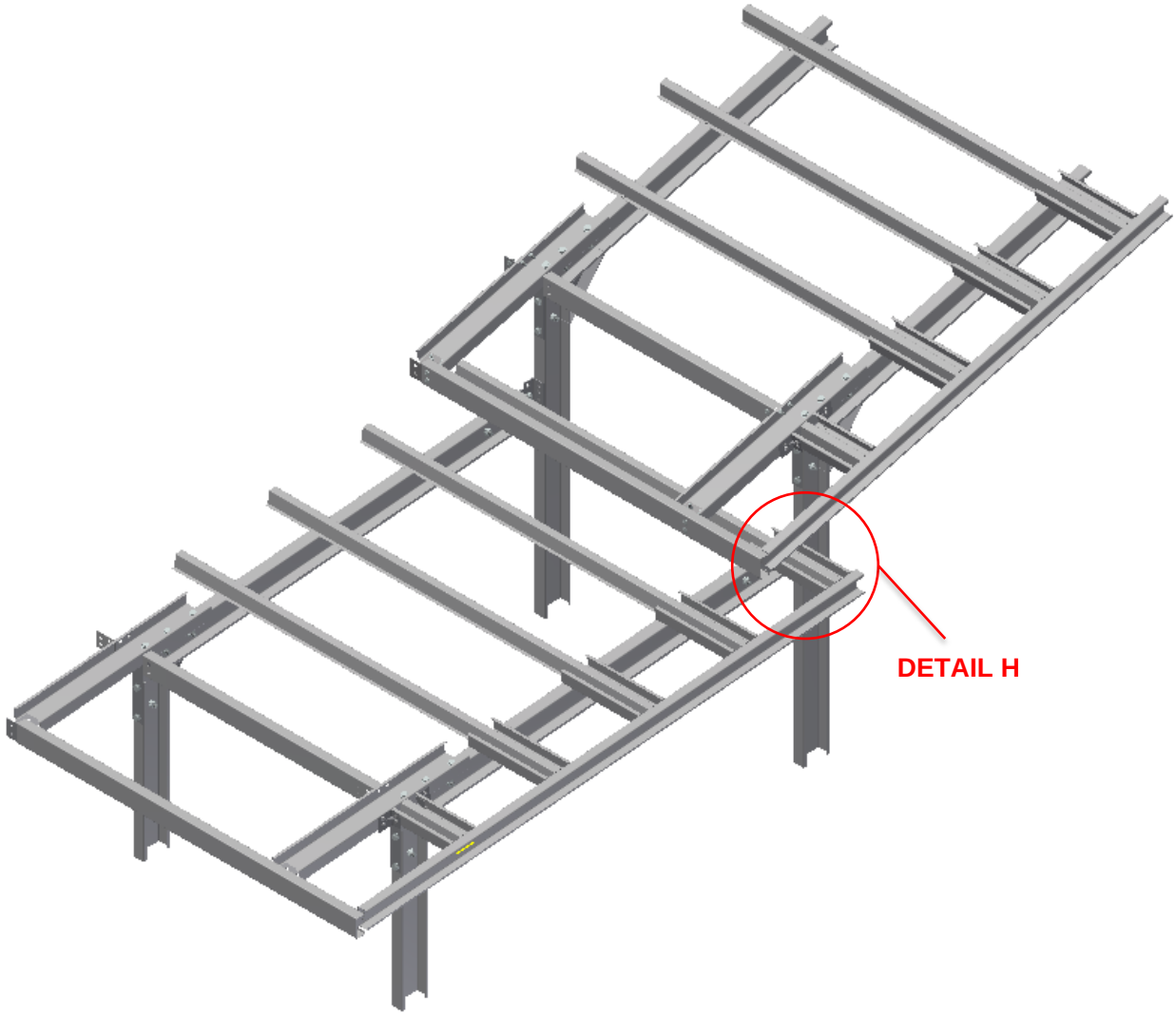


DETAIL G

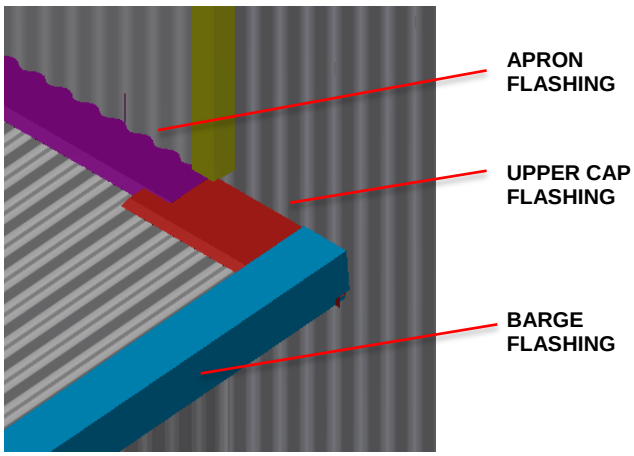
The gable end overhang will require the Barge Support Fascia C-section to be site cut to create a neat web joint at the intersection of the Parent Skillion Garage and the Annexe. This can be created by trimming the section flanges and web to create a web tab joining surface. Cut the Annexe Support Fascia C-section flanges to leave a tab on the web at least 50mm long as shown below.



Roof - Stepped Connection



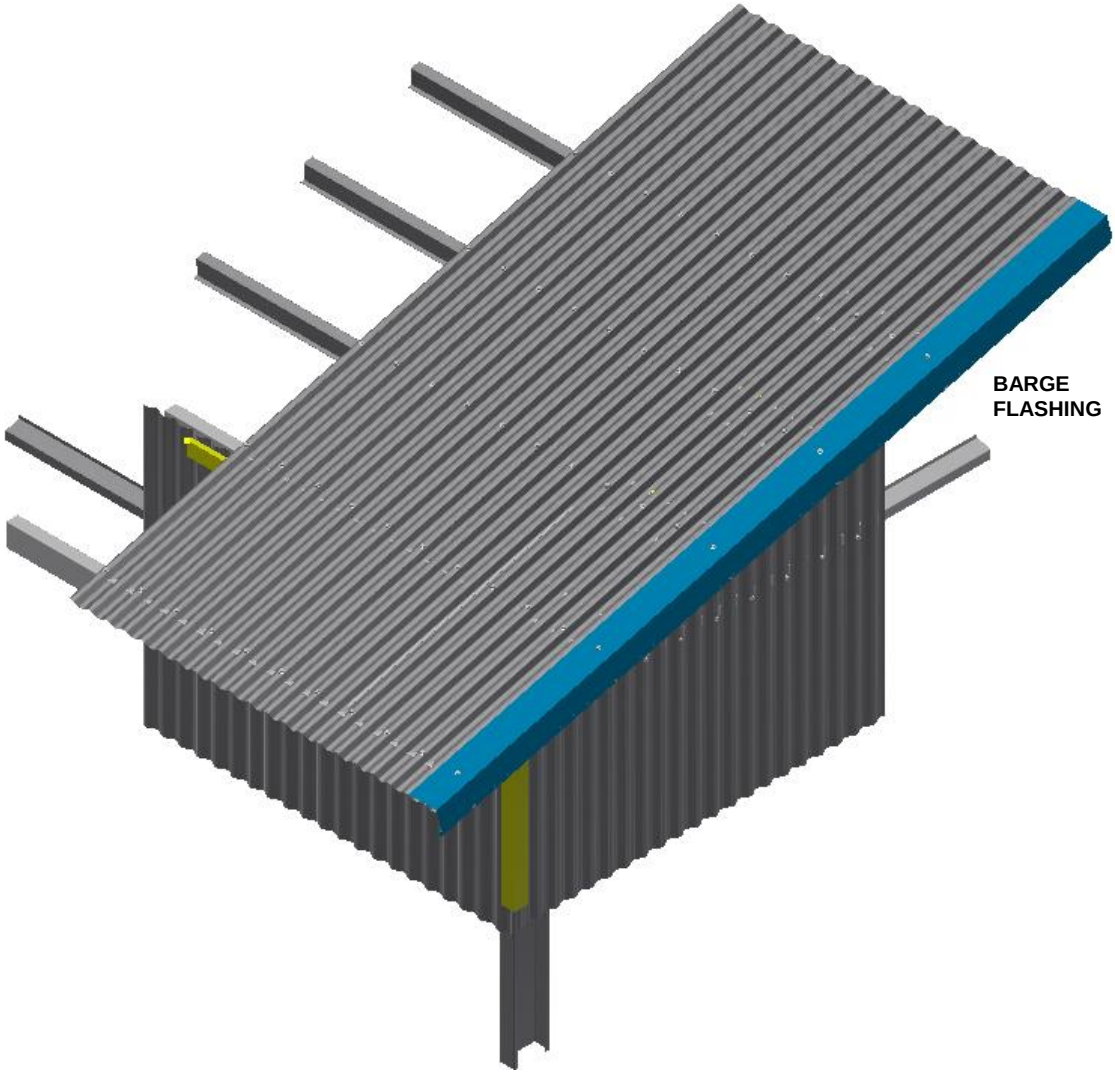
A stepped roof as shown above is described as two roofs that the roof sheets of both the annexe and garage building do not intersect. When the annexe is stepped the gable end support fascia on the annexe at **DETAIL H** will required a return cap flashing to be fitted to the upper side of the annexe roof sheeting.



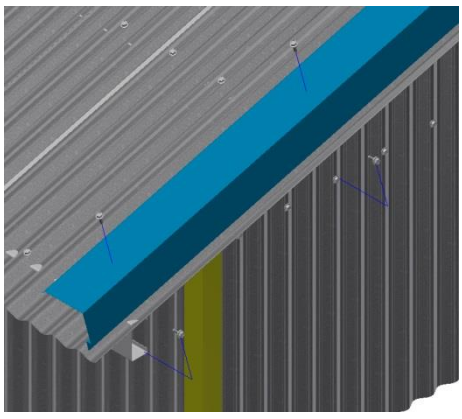
DETAIL H

This detail shows the flashing orientation for trimming the stepped Annexe End Overhang. The Upper Cap Flashing is trimmed and located under the Apron Flashing and under the Barge Flashing. The Upper Cap Flashing is tek screwed to the Annexe roof using 2 roof screws. The lower leg of the Upper Cap Flashing is tab cut to neatly fix to the Barge Flashing with 2 tek 1 screws.
The rear leg of the Upper Cap Flashing can be tek fixed to either the garage corner flashing or the Gable End Overhang strut on the annexe roof.
.

Flashings – Barge Capping



The above illustration displays the Barge Flashing in its final fitted location. The Barge Flashing is fixed to both the Roof Sheeting and the End Fascia lower section lips.



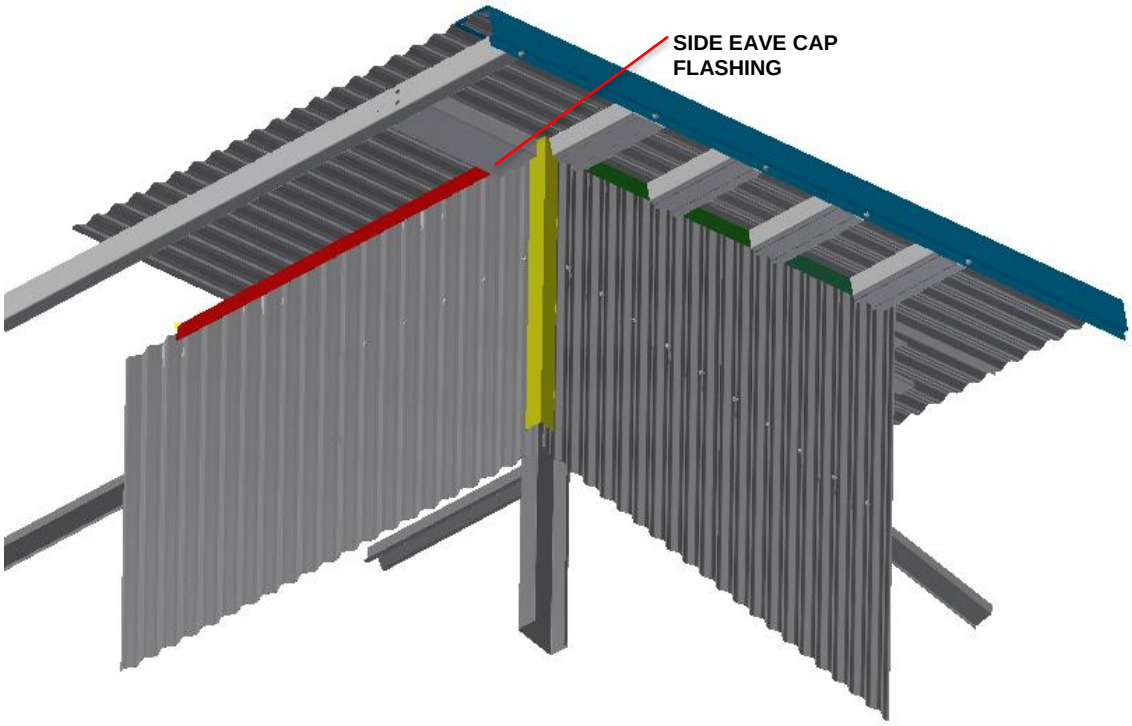
The Barge Flashing is fixed to the roof sheeting utilising roof screws. The roof tek is placed through both the sheeting and roof batten at all roof batten locations.

For roof tek screw type, spacing etc. refer to the previous section on Roof Sheeting.

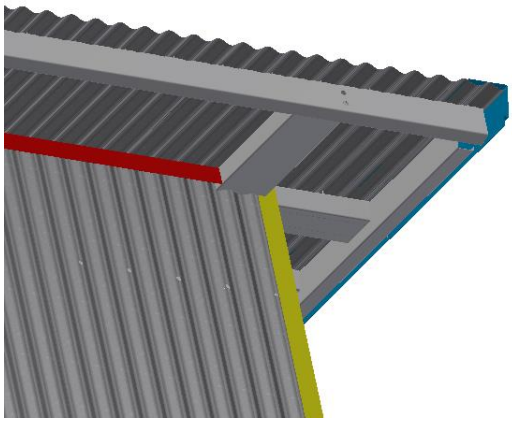
The Barge Flashing is side fixed to the End Barge Support Fascia utilising tek screws. Barge flashing position should be located as to provide a neat finish to gutter alignment.

For tek screw type, spacing etc. refer to the previous sections on Barge Flashings.

Flashing - Side Eave Capping



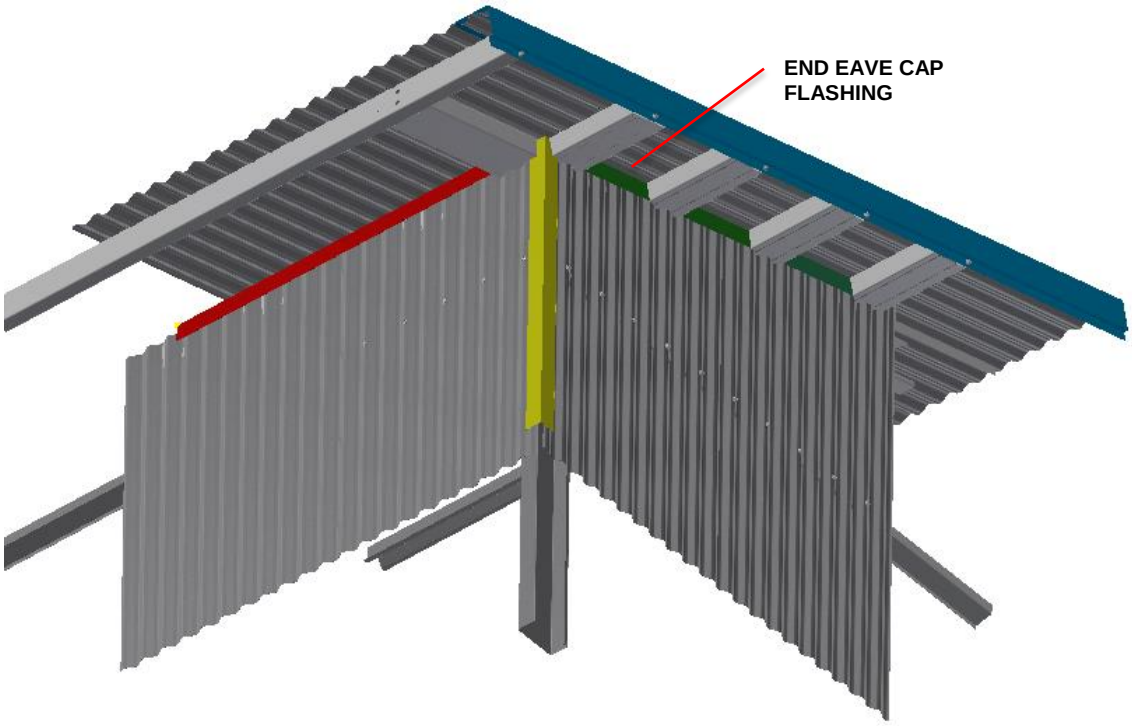
The Side Eave Cap Flashing provides a neat finish to the top of the side wall sheets.



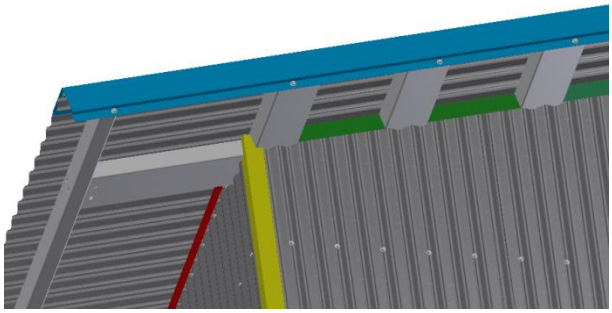
The Side Eave Cap Flashing is tek screwed to the wall sheets.

For tek screw type, spacing etc. refer to the section on Partition Cap Flashings.

Flashing - End Eave Capping



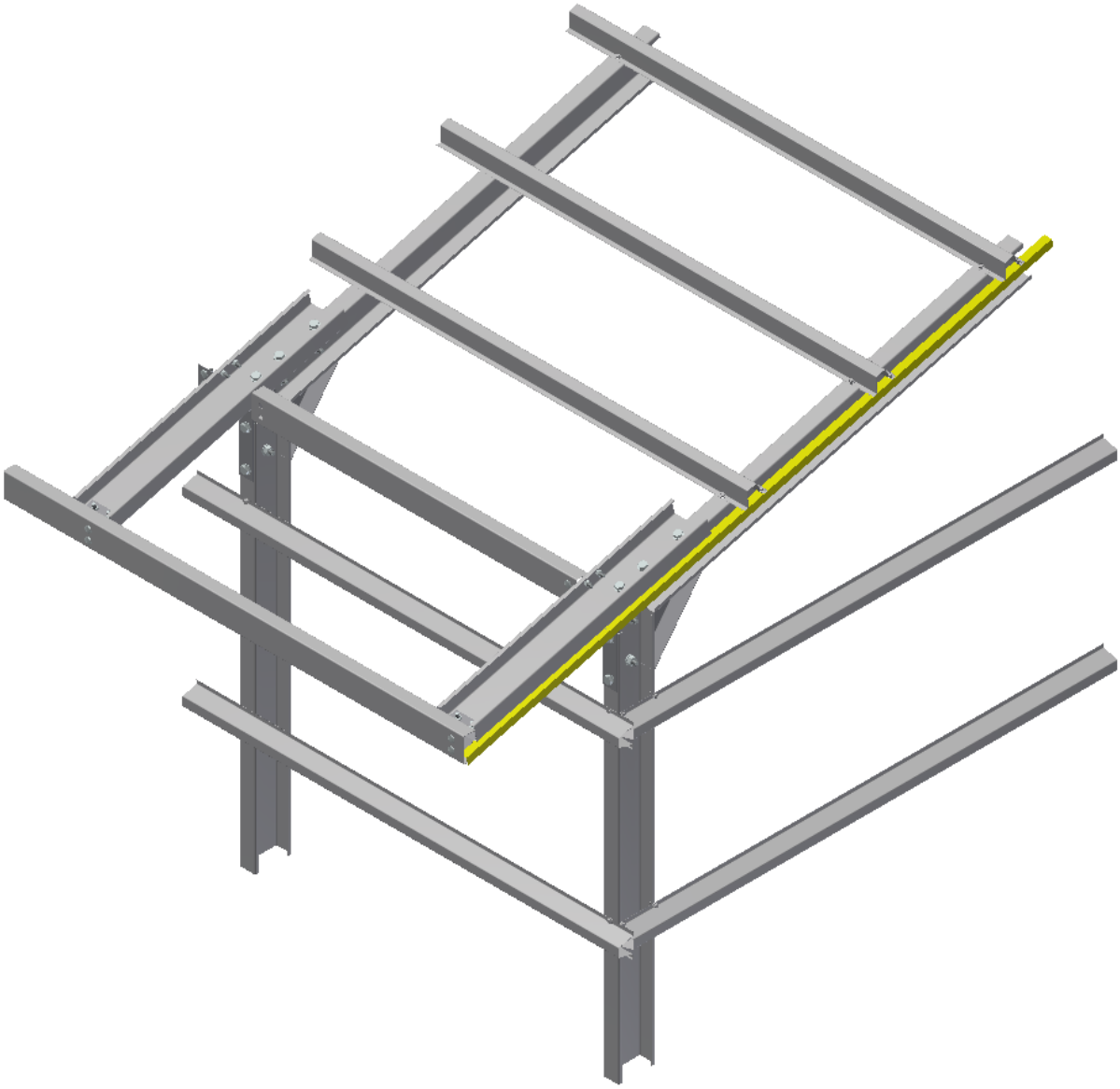
The End Eave Cap Flashing provides a neat finish to the top of the End Wall Sheeting.
End eave wall sheeting should be rake cut and notched around the overhang struts so as to extend to the underside of the roof sheeting. This will ensure that the end eave capping can be installed creating an effective building seal against weather and vermin.



The End Eave Cap Flashing is tek screwed to the wall sheeting ribs.
The flashing is supplied in a single length and will be required to be site cut to fit between the End Overhang Struts. The Cap Flashing will cover most imperfections when rake cutting the top of the End Wall Sheeting.

For tek screw type, spacing etc. refer to the previous section on Partition Cap Flashings

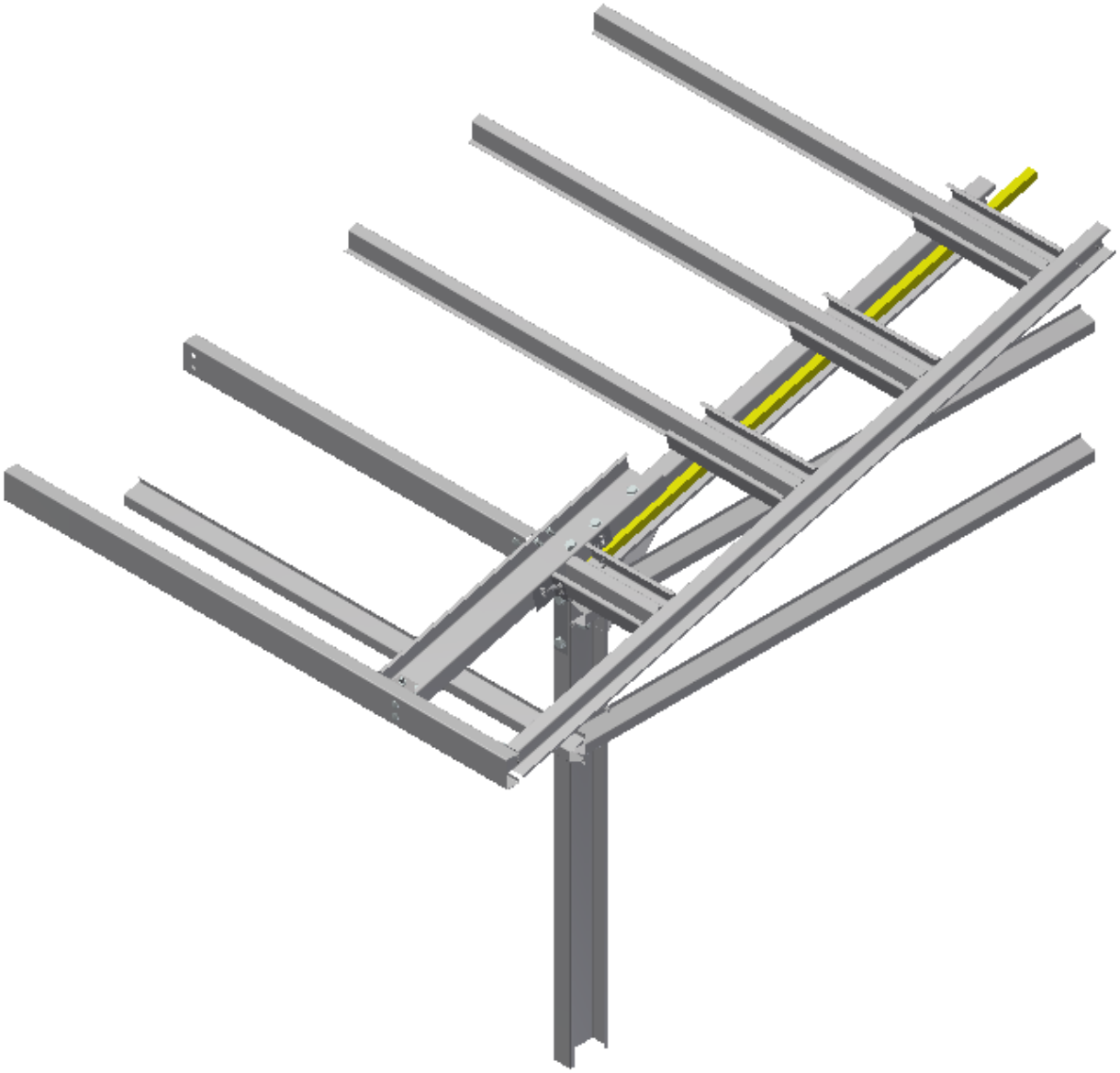
End Eave Raking Angles – No End Overhang



When a Side Eave Overhang and No End Overhang condition exists the End Wall Raking Angle extends to the Outer Side Fascia. The raking angle supports the top of the end wall sheeting and the Barge Flashing at the Side Eave Overhang.

For Tek screw type, spacing etc. refer to previous section on Raking Angles and Barge Flashing.

End Eave Raking Angles – End Overhang



When a Side Eave Overhang and End Overhang exist the End Wall Raking Angle extends to the Inner Side Fascia. The Raking Angle supports the top of the End Wall Sheeting.

For Tek screw type, spacing etc. refer to previous section on Raking Angles.

Additional Purlin for 5° Roof Pitch, with Eaves Overhang

General

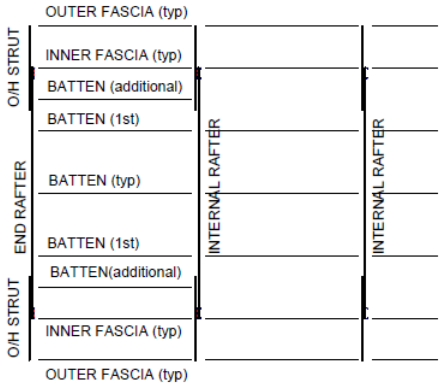
When the roof pitch of the Skillion Garage or the Skillion Annexe is 5°, an additional roof corner batten (purlin) is required to suit engineering requirements.

For the 5° roof pitch Skillion Garage and 5° roof pitch Annexe with an **Eave Overhang Condition**, the additional roof batten (purlin) is located half way between the inner fascia and first roof batten (purlin) at all roof corner bay locations between successive rafters.

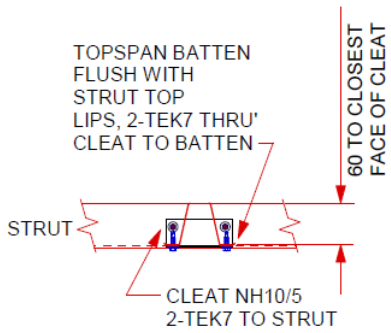
There are two possible conditions for the fixing of the additional roof batten:

1. When the additional roof batten location to the rafter flange is not obstructed by the eaves overhang strut. Battens are teked to the Rafter flanges with the same tek count per end as specified for all other roof battens in that Skillion Garage Engineering range.

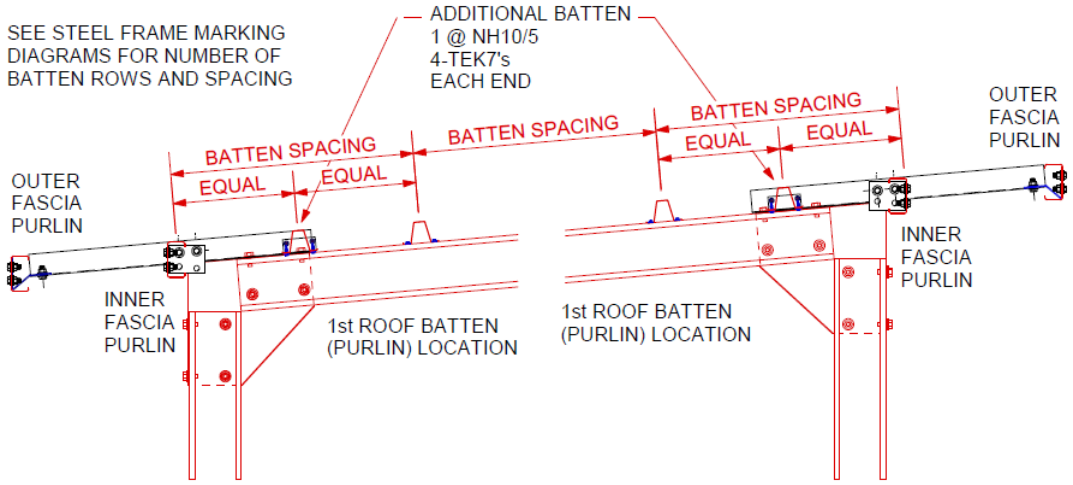
2. When the additional roof batten location to the rafter flange is obstructed by the eaves overhang strut. Battens will be required to be site cut to fit between end frame eave over hang strut and consecutive frame eaves overhang strut. Additional Roof battens are then connected to the flange of the overhang strut by the use of an NH10/5 cleat and 4-TEK7 (2-TEK7 to the batten toes and 2-TEK7 to the overhang flanges).



STEELWORK ROOF PLAN - EAVES OVERHANG



DETAIL



TYPICAL ROOF TOPSPAN BATTEN LOCATION

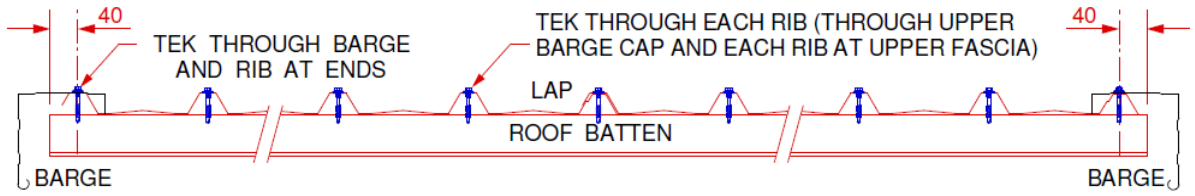
Roof Cladding Eave Overhangs

Roof Cladding at inner and outer fascias

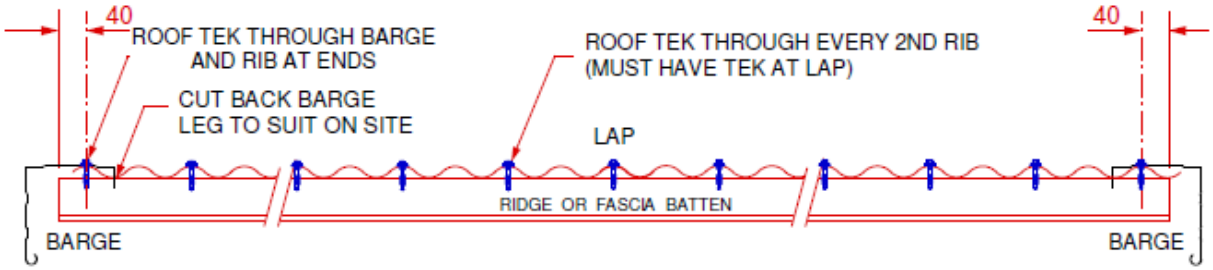
Standard roof cladding is TRIMDEK® (High Profile). CUSTOM ORB® (Corrugated) sheets are available as an option but some additional trimming of flashings is required. All roof fasteners are 50mm roof teks.

Sheets should be located so that lower end overhangs the outer fascia by approximately 50 to 60mm for travel into the gutter. The fixing pattern will be the same for both the inner and outer fascia's for Trimdek every rib to be teked to both the inner and outer fascia. For corrugated every second rib to be teked to both the inner and outer fascias.

See below details for the appropriate fascia roof tek fixing pattern.



TRIMDEK® (HIGH PROFILE) ROOF SHEET FIXING PATTERN



CUSTOM ORB® (CORRUGATED) ROOF SHEET FIXING PATTERN AT FASCIA AND RIDGE

Building Assembly Checklist

This assembly check list has been produced to assist the building kit Builder by providing progressive checks to assist in ensuring the building is assembled correctly and safely.

ENDURANCE SHEDS AND STRUCTURES JOB NUMBER	.....	EDS QUOTE NUMBER	.....
DEALER	.....	DEALER REP	.....
BUILDING TYPE	Skillion Garage	DATE OF COMPLETION	.....

Before the commencement of any works, it is essential that the Builder has read the assembly guide, has a copy of the assembly guide on site for reference, and has received from the Endurance Sheds and Structures Dealer a copy of all engineering and construction documentation relevant to this job only.

The Builder should be aware of all local and State Level Occupational Health and Safety requirements, Australian Standards for all primary and secondary accessories, and manufacturers' recommendations.

This Building Assembly Check List is relevant to the building only as it was ordered.

This Building Assembly Check List is intended to provide general guidance only. Endurance Sheds and Structures does not accept any responsibility for any errors or omissions made by the Endurance Sheds and Structures Dealer or any third party Builder when advising on, assembling or constructing any building constructed with Endurance Sheds and Structures products.
For the avoidance of doubt, this Building Assembly Checklist does not alter the duties and obligations of the Endurance Sheds and Structures Dealer in relation to the construction of Endurance Sheds and Structures products, as contained in the Accredited Dealer Agreement in place between Endurance Sheds and Structures and the Endurance Sheds and Structures Dealer.

PROGRESSIVE CHECKS

BASE CONNECTION

CHECK	*REQUIREMENT*
☐	All column hold-down bolts or cast in straps have been placed exactly as per Endurance Sheds and Structures documentation.
☐	All necessary components within this connection have been located and installed as per the supplied assembly guide.
☐	All hi-tensile bolting within this connection has been correctly tensioned to the values as nominated on the engineering documentation, and tensioned as per the method as advised in the assembly guide.

KNEE CONNECTION

CHECK	*REQUIREMENT*
☐	All necessary components within this connection have been located and installed as per the supplied assembly guide.
☐	All hi-tensile bolting within this connection has been correctly tensioned to the values as nominated on the engineering documentation, and tensioned as per the method as advised in the assembly guide.

APEX CONNECTION (RAFTER TO RAFTER)

CHECK	*REQUIREMENT*
☐	All necessary components within this connection have been located and installed as per the supplied assembly guide.
☐	All hi-tensile bolting within this connection has been correctly tensioned to the values as nominated on the engineering documentation, and tensioned as per the method as advised in the assembly guide.
☐	If the building type requires the apex connection to be pre-set and raised to minimize framing member deflection, it has been done so, and to the values and methods as advised in the assembly guide.

BACK TO BACK MEMBER FIXING (IF APPLICABLE)

CHECK	*REQUIREMENT*
☐	Rolled sections are fixed back to back at spacings not exceeding 1300mm for back to back column or rafters, or 1200mm for knee braces or rafter ties.
☐	For columns that do not have wall cladding fixed and are classified as open, columns must be fixed with a minimum of 2-M12 x 30 Grade 4.6 bolts at designated web punching's.

MEMBER STIFFENING AND LOCATING (IF APPLICABLE)

CHECK	*REQUIREMENT*
☐	For back to back framing members, web stiffeners have been installed with accurately any placed pre-drilled holes for any purlins or girt within the extent of the stiffener, and in accordance with and as advised in the assembly guide.
☐	Web stiffener friction plate angles have been installed on opposite web of web stiffener, with M16 x 50 hi-tensile bolts at the column or rafter connection.
☐	All necessary components within this connection have been located and installed as per the supplied assembly guide.
☐	Any flange stiffening to un-restrained columns are securely fastened to column flanges at centres not exceeding engineer's requirements, and in accordance with the assembly guide.

ROOF AND WALL BRACING

CHECK	*REQUIREMENT*
☐	All bracing is located within the building as specified on Steelwork Marking Plan or as specified on any engineering drawing or engineering notes.
☐	Any construction bracing supplied by Endurance Sheds and Structures is used in locations as designated.
☐	All strap bracing is located between the inside of the cladding, and the external surface of the fixing member.
☐	Strap bracing U-Bolt tensioner, if supplied, correctly installed.
☐	Strap bracing installed with the nominated amount of fasteners at each strap end, and to fixing members.
☐	If site cut lateral braces were supplied, the cuts must be neat and clean, allowing a snug fit to within 5mm of the framing member.
☐	The designated number of tek screws was fixed to both ends of each lateral brace.

ROOF AND WALL BRIDGING (IF APPLICABLE)

CHECK	*REQUIREMENT*
☐	The number of rows of bridging per bay as designated on the engineering documentation has been installed.
☐	Roof bridging is to extend from the fascia channel on one side wall to the fascia channel on the other side wall, and must be bridge continuously under the apex. All fixing is to be in accordance with the assembly guide.
☐	Side wall bridging is to extend from the fascia channel to the floor. All fixing is to be in accordance with the assembly guide.
☐	End wall bridging is to extend from the end frame rafter to the floor. All fixing is to be in accordance with the assembly guide.

CLADDING FIXING

CHECK	*REQUIREMENT*
☐	Roof cladding is fixed with the specified number and type of crest fixing tek screws at all fixing locations to suit the roof cladding profile.
☐	Roof cladding has necessary pan turn up under the ridge capping.
☐	Fiberglass sheeting is located with at least one full length metal sheet between fiberglass sheets, and not located adjacent to any end frame.
☐	Wall cladding is fixed with the specified number and type of pan fixing tek screws at all fixing locations to suit the wall cladding profile.
☐	All cladding and flashing fixing is in accordance with the assembly guide.

CONSTRUCTION - GENERAL

CHECK	*REQUIREMENT*
☐	Adequate stabilizing measures were in place during construction.
☐	No part was over-stressed during the construction process.

SLIDING DOORS

CHECK	*REQUIREMENT*
☐	The appropriate amounts of door rails were installed to suit the sliding door stile punching.
☐	The appropriate amounts of track support brackets were installed to suit the inner and outer fascia purlin punching.

ACCESSORY PLACEMENT

CHECK	*REQUIREMENT*
☐	Accessories such as access doors and windows must be located as per the Floor Plan and Elevation generated in EDS, and was installed in accordance with the assembly guide.

MAINTENANCE TO NON-FIELDERS MANUFACTURED PRODUCTS

CHECK	*REQUIREMENT*
☐	Maintenance to any product not manufactured by Fielders is as per the supplier's published recommendations.

DISMANTLING AND ALTERATIONS

CHECK	*REQUIREMENT*
☐	Any dismantling and/or alterations to the building, and particularly, the re-use of pre-loaded & pre-tensioned components, will require certification of engineering integrity by another engineer, and liability will need to be accepted by that engineer.

(Builder, dated)

Copyright 2016
Lysaght Building
Solutions Pty Ltd

Trading as RANBUILD

Maintenance Notes

Your shed may need some additional care to ensure long life and keep it looking at its best. Below are some guidelines in regards to maintenance for your building.

Regular washing with water will not only enhance cladding life, it will maintain its attractiveness for longer periods. Applications where the paint finish is automatically washed by rainwater do not usually require this maintenance, e.g. roof cladding. Areas requiring regular cleaning include wall cladding under eaves, garage doors and the underside of eave gutters.

Areas not regularly washed by rainwater should be hosed down at least every six months and more frequently in coastal areas where marine salt spray is prevalent, and in areas where high levels of industrial fallout occur. In cases where the regular maintenance referred to above does not remove all dirt that may have adhered to the surface of the paint, the following procedure should be carried out:

Wash the surface with a mild solution of pure soap or mild non-abrasive kitchen detergent in warm water. Application should be with a sponge, soft cloth or soft bristle nylon brush, and should be gentle to prevent shiny spots. The cladding should be thoroughly rinsed with clean water immediately after cleaning to remove traces of detergent.

Never use abrasive or solvent type cleaners (turpentine, petrol, kerosene, paint thinners) on COLORBOND® steel and ZINCALUME® steel. If cared for in accordance with these instructions, your building components will give many years of low maintenance life.

ZINCALUME® steel (and COLORBOND® steel manufactured with a ZINCALUME® steel substrate), are NOT recommended for immersion in or contact with wet cement. Rapid corrosion and degradation of the coating alloy will occur.

The placing of garden soil directly against steel cladding is strongly discouraged as corrosion of the sheeting will rapidly occur about the area covered with soil. Similarly, contact with corrosive materials such as fertiliser, mulch, salt, steam, heavy condensation, coal tar, urine and chlorine, etc., should be avoided.

Moisture or moisture retaining materials should not be permitted to remain in intimate contact with ZINCALUME® steel, COLORBOND® steel or galvanized steel. Such contact will ultimately result in corrosion of the material.

The major factors influencing corrosion are the continual retention of moisture and the differential concentration of oxygen at the material surface. Gutters are frequent victims, with insufficient fall leading to ponding of water. The accumulation of debris (leaf matter, dirt etc.) that results in continual immersion is the most common reason for unsatisfactory performance of guttering.

Structural framing components and fasteners exposed to the weather or any of the above should be regularly coated with an anti-corrosive coating. Note that new zinc coated and galvanised components may need etching before coating.

ZINCALUME® and COLORBOND® are registered trademarks of BlueScope Steel Pty Ltd.