

INSTALLATION GUIDE – PURLIN SYSTEMS

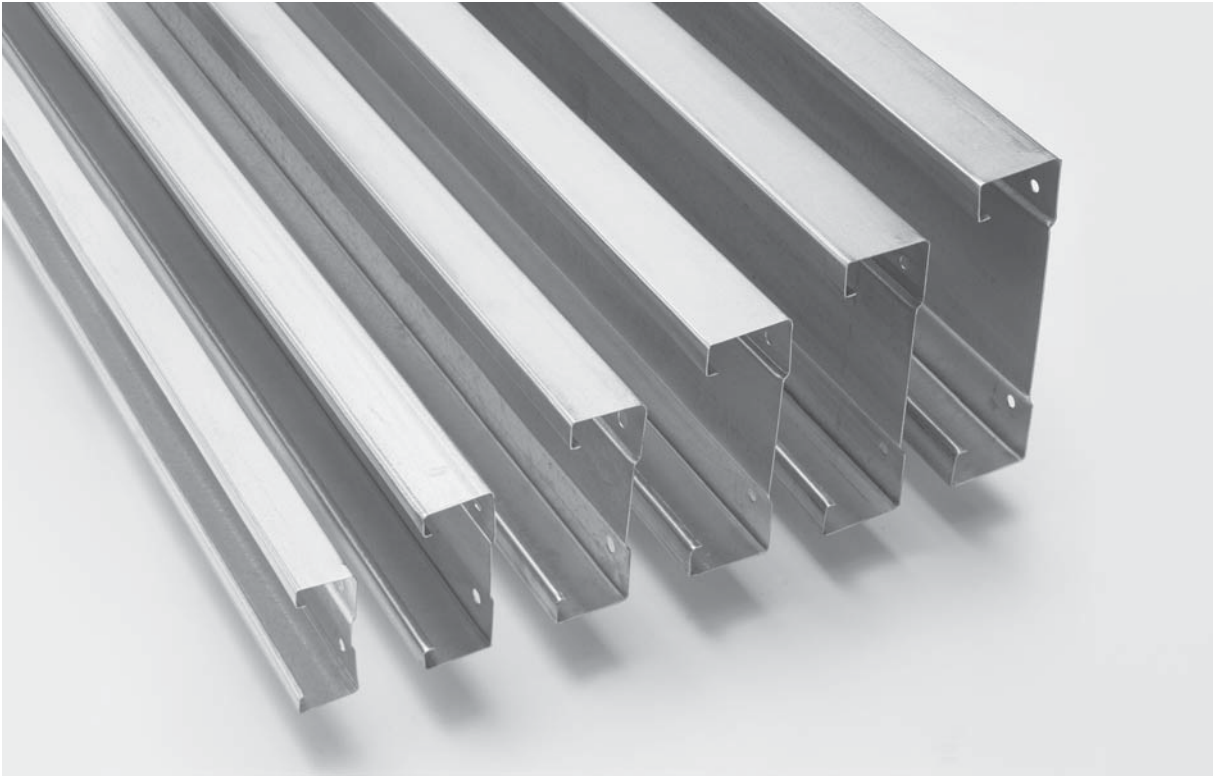
This guide is an extract from the Dimond Structural Systems Manual and it is to be read in conjunction with the full Dimond Structural Systems Manual available at www.dimond.co.nz under the Architects/Specifiers section. This guide will not be updated by Dimond and it is intended that the user updates this guide using the current Dimond Structural Systems Manual on our website.

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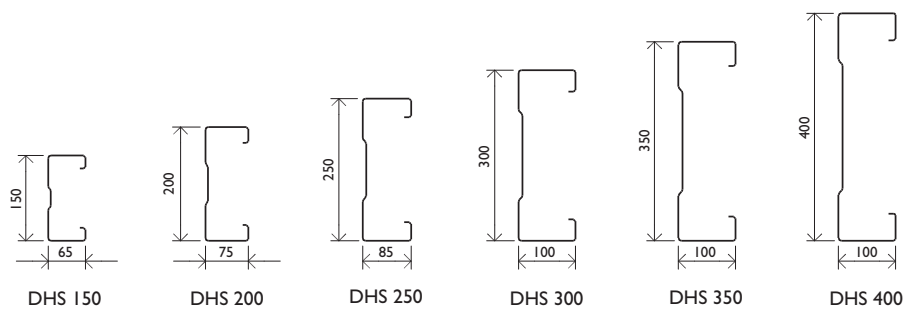
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INSTALLATION GUIDE – DHS PURLINS



DHS Purlins – Nominal Dimensions



2.2 PERFORMANCE

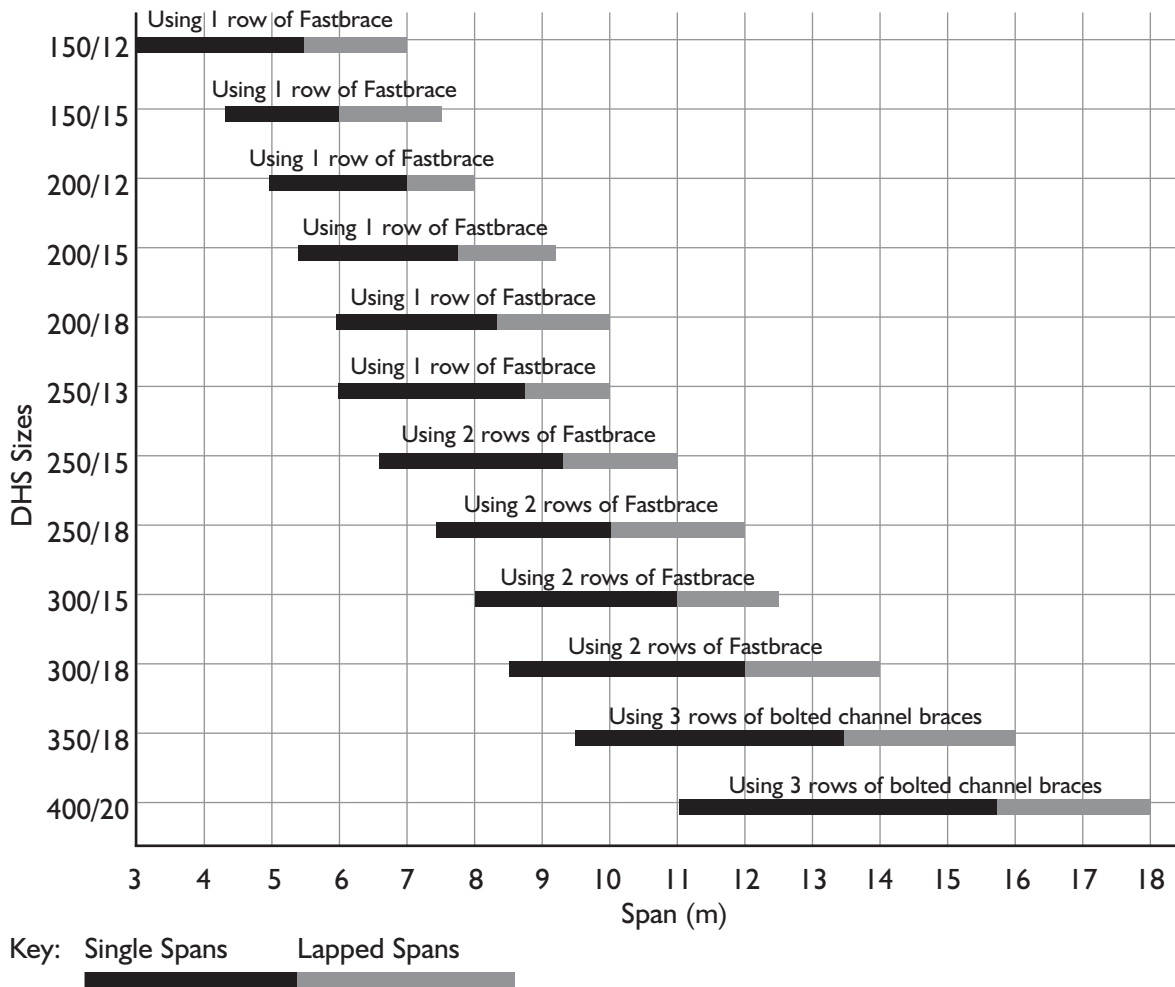
2.2.1 GENERAL DESIGN

The following charts and tables are based on typical product use and are intended as a quick reference guide only. These must not be used for design purposes or as a substitute for specific design (refer to Sections 2.3 and 2.4).

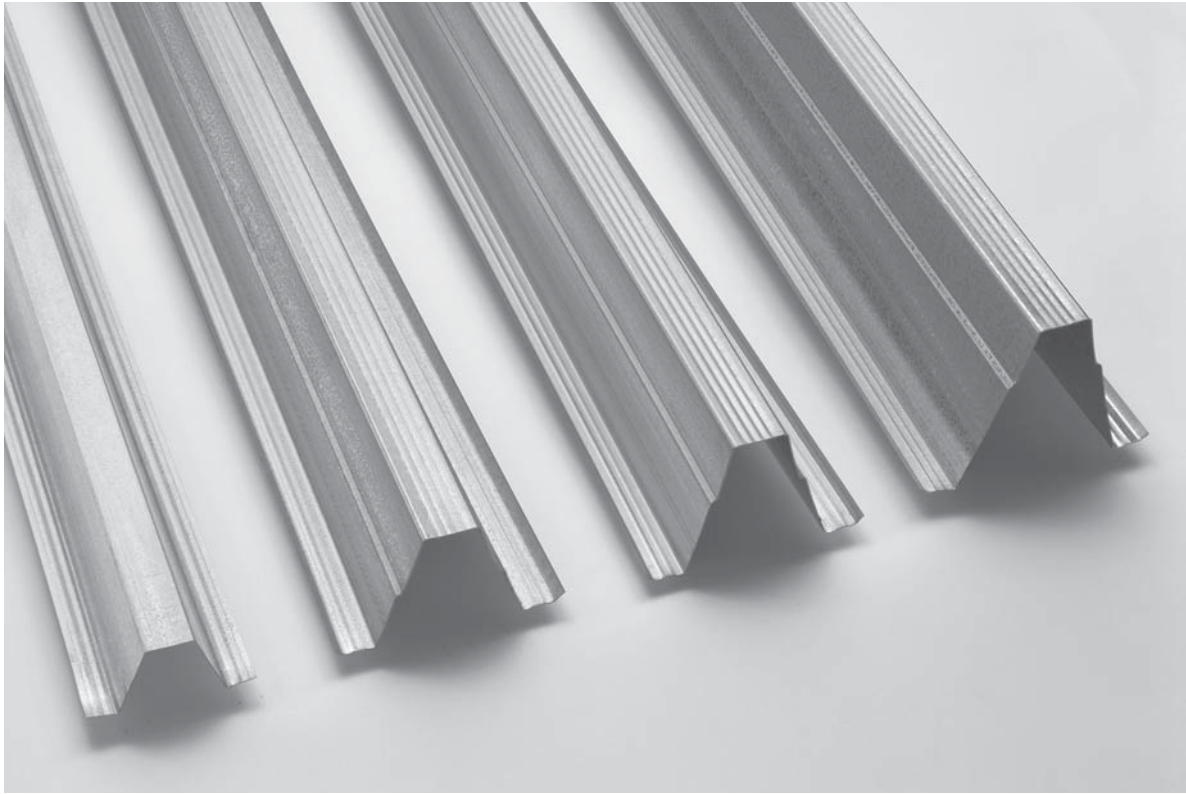
There may be specific cases in this section where the spans indicated on these charts and tables will not be achievable.

2.2.2 DHS PURLIN QUICK REFERENCE GUIDE

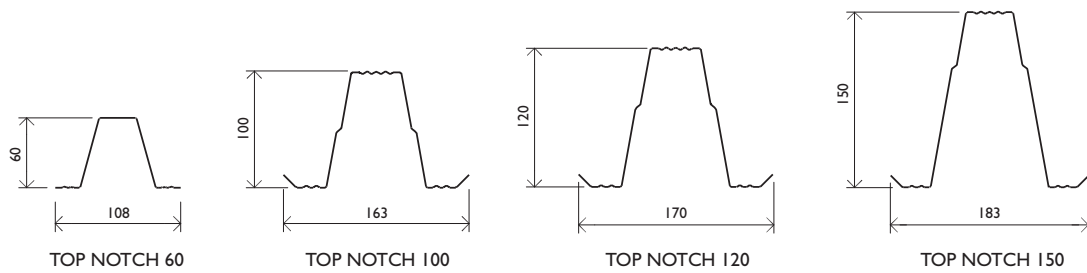
1. This guide is intended to be used as an indicator of the purlin and bracing options suitable for particular spans.
2. Final purlin and bracing design must be based on detailed design specific to each building.



INSTALLATION GUIDE – TOP NOTCH



Top Notch – Nominal Dimensions



2.2.3 TOP NOTCH PURLIN QUICK REFERENCE GUIDE

The following quick reference guide is intended for use as a preliminary design for farm building and non-habitable sheds and is for guidance only. It is not a substitute for final design or building consent requirements.

1. The quick reference guide is based on AS/NZS 1170:2002 design actions with nominal internal (+0.3) pressures and an allowance for local peak pressures ($K_1 C_{pe} + C_{pi} = 1.4$), with a maximum building height of 8 metres and a maximum building height/depth ratio of 0.6.

Urban and rural purlins are designed for a 1 in 500 year Ultimate Limit State (ULS) wind event and wind serviceability deflections of span/150 (1 in 25 year wind event).

Farm purlins are designed for a 1 in 100 year Ultimate Limit State (ULS) wind event and maximum wind serviceability deflections of span/90 (1 in 25 year wind event).

2. In **snow** regions specific design is required. The tables are not appropriate above 200 metres elevation for Canterbury, Otago and Southland, nor above 450 metres for the West Coast, Marlborough and the Central/Lower North Island.
3. Terrain categories (TC) are defined as follows:

Urban areas are those built-up with numerous obstructions 3-5 metres high, such as areas of suburban housing (TC = 3).

Sheltered Rural assumes rural with some sheltering from trees and adjacent buildings (TC = 2^{1/2}).

Rural assumes open terrain or grassland with few, well-scattered obstructions such as isolated trees and buildings (TC = 2).

Farm indicates buildings of low importance with a low degree of hazard to life and other property on open terrain (TC = 2).

4. **Fasteners** use the following number and screw gauges, ie. 2/12g requires 2 x 12g screws:

	Top Notch Purlin			
	60	100	120	150
At purlin ends	2/12g	2/12g	2/14g	2/14g
At internal (continuous) supports	4/12g	6/12g	6/14g	8/14g

5. **Laps** shall be a minimum of 15% of maximum adjacent Top Notch span.

2.2.3 TOP NOTCH PURLIN QUICK REFERENCE GUIDE – ALL NEW ZEALAND (EXCEPT WELLINGTON & MARLBOROUGH SOUNDS)

Spacing	Span	Urban (TC=3)			Sheltered Rural (TC=2 ^{1/3})			Rural (TC=2)			Farm (TC=2)		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
1200	1.50	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75
1200	1.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75
1200	2.00	60x0.95	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75
1200	2.25	100x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75
1200	2.50	100x0.75	60x0.75	60x0.75	60x0.75	60x0.95	60x0.75	60x0.75	60x0.95	60x0.75	60x0.75	60x0.75	60x0.75
1200	2.75	100x0.75	60x0.95	60x0.95	60x0.75	60x0.95	60x0.95	60x0.95	60x0.95	60x0.95	60x0.95	60x0.95	60x0.95
1200	3.00	100x0.75	100x0.75	60x0.95	60x0.95	100x0.75	60x0.95	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	60x0.95
1200	3.25	100x0.95	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75
1200	3.50	100x0.95	100x0.75	100x0.75	100x0.95	100x0.95	100x0.75	100x0.95	100x0.95	100x0.75	100x0.95	100x0.75	100x0.75
1200	3.75	120x0.95	100x0.75	100x0.75	120x0.95	100x0.95	100x0.75	120x0.95	100x0.95	100x0.75	120x0.95	100x0.75	100x0.75
1200	4.00	120x0.95	100x0.95	100x0.75	150x0.95	100x0.95	100x0.75	150x0.95	100x0.95	100x0.95	120x0.95	100x0.75	100x0.75
1200	4.25	150x0.95	100x0.95	100x0.75	150x0.95	100x0.95	100x0.95	150x1.15	100x0.95	100x0.95	150x1.15	100x0.95	100x0.75
1200	4.50	150x0.95	100x0.95	100x0.95	150x1.15	120x0.95	100x0.95	150x1.15	120x0.95	120x0.95	150x1.15	100x0.75	100x0.75
1200	4.75	150x0.95	120x0.95	100x0.95	150x1.15	120x0.95	120x0.95	150x1.15	120x0.95	120x0.95	150x1.15	100x0.95	100x0.95
1200	5.00	150x1.15	120x0.95	120x0.95	150x1.15	120x0.95	120x0.95	150x1.15	120x0.95	120x0.95	150x1.15	100x0.95	100x0.95
1200	5.25	150x1.15	150x0.95	120x0.95	150x1.15	150x0.95	150x0.95	150x1.15	150x0.95	150x0.95	150x1.15	100x0.95	100x0.95
1200	5.50		150x0.95	120x0.95	150x1.15	150x0.95	150x0.95	150x1.15	150x0.95	150x0.95	150x1.15	100x0.95	100x0.95
1200	5.75		150x0.95	150x0.95	150x1.15	150x0.95	150x0.95	150x1.15	150x0.95	150x0.95	150x1.15	120x0.95	120x0.95
1200	6.00		150x1.15	150x0.95	150x1.15	150x0.95	150x0.95	150x1.15	150x0.95	150x1.15	150x1.15	120x0.95	120x0.95
1200	6.25		150x1.15	150x0.95	150x0.95	150x0.95	150x0.95	150x1.15	150x0.95	150x1.15	150x1.15	150x0.95	150x0.95
1200	6.50		150x1.15	150x0.95	150x1.15	150x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x0.95	150x0.95
1200	6.75		150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x0.95	150x0.95
1200	7.00			150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1200	7.25			150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1200	7.50			150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15

2.2.3 TOP NOTCH PURLIN QUICK REFERENCE GUIDE – ALL NEW ZEALAND (EXCEPT WELLINGTON & MARLBOROUGH SOUNDS)

Spacing	Span	Urban (TC=3)			Sheltered Rural (TC=2 1/2)			Rural (TC=2)			Farm (TC=2)		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
1700	1.50	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75
1700	1.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	60x0.95	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75
1700	2.00	60x0.95	60x0.75	60x0.75	60x0.75	60x0.75	60x0.75	100x0.95	60x0.75	60x0.75	60x0.95	60x0.75	60x0.75
1700	2.25	100x0.75	60x0.75	60x0.75	60x0.75	60x0.95	60x0.95	100x0.75	60x0.95	60x0.95	100x0.75	60x0.95	60x0.95
1700	2.50	100x0.75	60x0.95	60x0.95	60x0.95	100x0.75	100x0.75	100x0.95	60x0.95	100x0.75	100x0.75	100x0.75	60x0.95
1700	2.75	100x0.95	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.95	100x0.95	100x0.75	100x0.95	100x0.75	100x0.75
1700	3.00	100x0.95	100x0.75	100x0.75	100x0.75	100x0.75	100x0.75	100x0.95	100x0.95	100x0.75	100x0.95	100x0.75	100x0.75
1700	3.25	120x0.95	100x0.95	100x0.75	100x0.75	100x0.75	100x0.75	120x0.95	100x0.95	100x0.75	100x0.95	100x0.95	100x0.75
1700	3.50	120x0.95	100x0.95	100x0.75	100x0.75	100x0.75	100x0.75	150x0.95	100x0.95	100x0.95	150x0.95	100x0.95	100x0.75
1700	3.75	150x0.95	100x0.95	100x0.75	100x0.75	100x0.75	100x0.75	150x0.95	120x0.95	100x0.95	150x0.95	120x0.95	100x0.75
1700	4.00	150x0.95	120x0.95	100x0.95	100x0.95	100x0.95	100x0.95	150x1.15	120x0.95	120x0.95	150x1.15	120x0.95	100x0.95
1700	4.25	150x1.15	120x0.95	100x0.95	100x0.95	100x0.95	100x0.95	150x1.15	150x0.95	120x0.95	150x1.15	150x0.95	100x0.95
1700	4.50	150x1.15	150x0.95	100x0.95	100x0.95	100x0.95	100x0.95	150x1.15	150x1.15	150x0.95	150x1.15	150x0.95	100x0.95
1700	4.75	150x1.15	150x0.95	120x0.95	100x0.95	150x1.15	150x0.95	150x1.15	150x0.95	150x0.95	150x1.15	150x1.15	120x0.95
1700	5.00	150x1.15	150x1.15	120x0.95	100x0.95	150x0.95	150x0.95	150x1.15	150x0.95	150x1.15	150x1.15	150x0.95	120x0.95
1700	5.25	150x1.15	150x1.15	150x0.95	100x0.95	150x0.95	150x0.95	150x1.15	150x0.95	150x1.15	150x1.15	150x0.95	150x0.95
1700	5.50	150x1.15	150x1.15	150x0.95	100x0.95	150x0.95	150x0.95	150x1.15	150x0.95	150x1.15	150x1.15	150x0.95	150x0.95
1700	5.75	150x1.15	150x1.15	150x0.95	100x0.95	150x0.95	150x0.95	150x1.15	150x0.95	150x1.15	150x1.15	150x1.15	150x0.95
1700	6.00	150x1.15	150x1.15	150x1.15	100x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1700	6.25	150x1.15	150x1.15	150x1.15	100x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1700	6.50	150x1.15	150x1.15	150x1.15	100x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1700	6.75	150x1.15	150x1.15	150x1.15	100x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1700	7.00	150x1.15	150x1.15	150x1.15	100x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1700	7.25	150x1.15	150x1.15	150x1.15	100x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15
1700	7.50	150x1.15	150x1.15	150x1.15	100x0.95	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15	150x1.15

2.6 INSTALLATION

2.6.1 GENERAL

The fixing of Dimond Purlin Systems is generally carried out by steel fabricators and riggers who are familiar with installation of the Dimond Purlin range.

2.6.2 HANDLING & STORAGE

Correct handling and storage is critical to ensure the Dimond Purlin System is not damaged on site. The following points must be adhered to for maximum product durability and performance over the expected life of the product.

- A visual inspection should be carried out, when delivery is taken on site, of all the material supplied to ensure the product is free from damage and the galvanised coating is in good condition.
- Damaged product resulting in a distorted or buckled section shape must not be installed and should be replaced.
- Site storage must be clear of the ground on dunnage to allow the free movement of air around each bundle. When product is stored on site, it must be kept dry using covers over each product bundle.
- Wear protective gloves when handling the product. Treat all cut edges as sharp.
- Product must always be lifted when moved and not dragged as damage to the galvanised coating will occur.
- Dimond bracing must not be relied upon to act as lifting points during craneage of preassembled sections.

2.6.3 GENERAL FIXING & WORKMANSHIP

- Bundle labels should be checked to ensure the correct size and type is used for the designated area.
- Purlins are placed on the upside of the portal cleat (or at premarked centres for Top Notch), and fixed onto the cleat or rafter.
- Installation of DHS Purlins relies on the correct bolt type, diameter and washer being located through each cleat hole and tightened.
- Washers should be used under the bolt head or nuts against the DHS Purlin.
- Bolts should be tightened using the part turn tightening method, commonly termed snug fit. There are two stages, the first involves bringing the mating surfaces of the joint into effective contact by initially tightening the bolt. The second stage involves marking the bolt and nut relative to each other and then completing a further half turn.
- Self-drilling screws should be installed as per engineer's specification (refer Section 2.4.7 Fasteners), and tightened with mechanical drivers set to a preset torque setting. Avoid overtightening as this may damage the galvanised coating.
- Lapped purlins require additional fixings to be installed in the lapped region. Refer detail N in Section 2.3.16.15 for DHS Purlins or detail D in Section 2.4.11 for Top Notch Purlins.
- Additional strapping for Top Notch Purlins may be required as specified by the design engineer.
- The purlin system must not be subject to or installed on spans that are excessive for the loads imposed during construction, or in the serviceable life of the product. All construction loads must have the design engineer's approval, prior to loading.
- All connections including those between the purlin system and primary structural framework must be fully fixed and tightened before any loads are applied. Similarly bracing members must be correctly positioned and fastened prior to installation of the roofing or cladding.
- Gas cutting of holes, or welding of members, or connections are not recommended, as these may cause an unacceptable loss of member strength capacity. In addition gas cutting or welding will remove the galvanised coating locally around the welded area, reducing the product's durability.
- The recommended method for cutting of Top Notch is either by hacksaw or shear cut such as tin snips. If using an abrasive disc blade, care must be taken to ensure the swarf doesn't fall on other products causing rust stains, and the burred cut edge must be cleaned off and primed after cutting.
- DHS Purlins and Top Notch Purlins are not designed for walking on as manufacturing lubricant may still be present on these components. In addition Health and Safety requirements prohibit "walking the purlins". All on-site Health & Safety requirements must be adhered to.
- Roofing and wall cladding sheets can not be installed until the roofing contractor is satisfied that the support structure is complete, sound, and correctly aligned. This includes support around penetrations and openings.
- Curved roofs (whether draped/rolled or crimped) require purlin alignment within $\pm 5\text{mm}$ to minimise the risk of unacceptable finished appearance.
- Hanging of fixtures from the purlin lips, brace channel lips or brace channel flanges is not recommended. All fixtures must be attached to the web of the member they will be connected to and are subject to specific design by the engineer.
- Dimond Purlin Systems are not intended to be used as members to which fall arrest anchor points are attached.

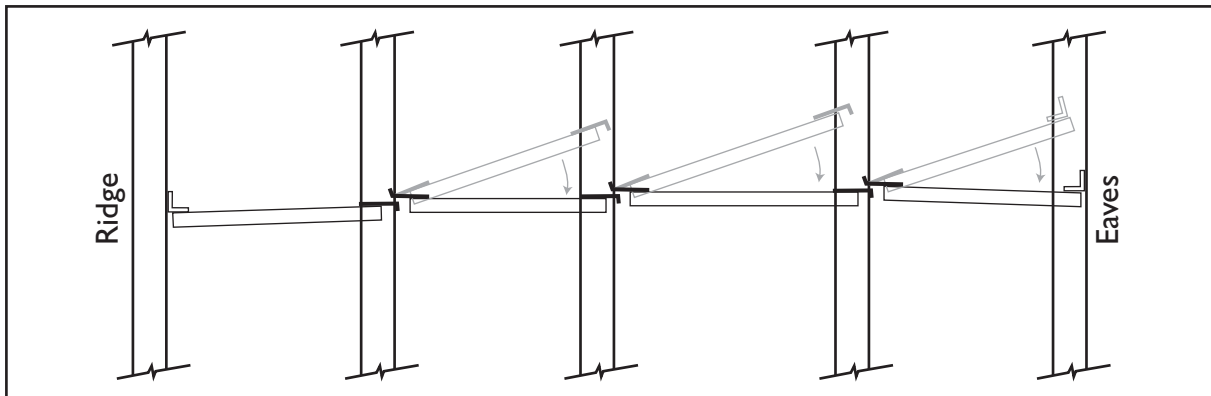
2.6.4 DHS BRACING INSTALLATION

Prior to the purlin system being fully tensioned up and loads applied, the bracing system must be installed.

2.6.4.1 FASTBRACE INSTALLATION

Installation of Fastbrace is started from the ridge and works down the roof slope, but the first row of Fastbrace must be bolted off on the top purlin before beginning the next row.

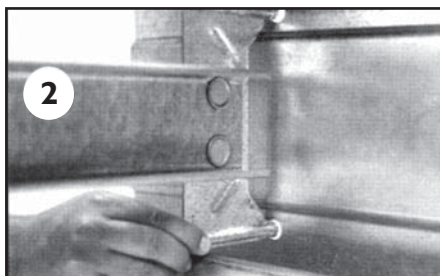
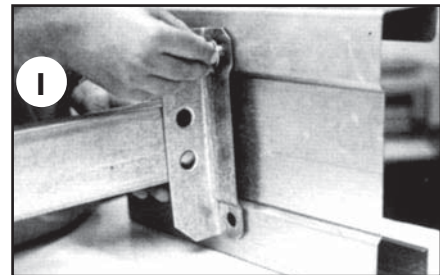
Standard Installation Procedure



Note: As the eaves and ridge braces are bolted, there is a 25mm offset to the bracing line. This offset can be aligned, refer Section 2.3.15.1 Fastbrace.

1. The end cleat is bolted to the purlin at the ridge.

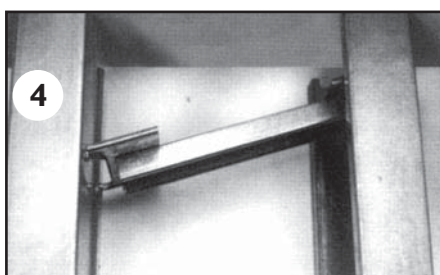
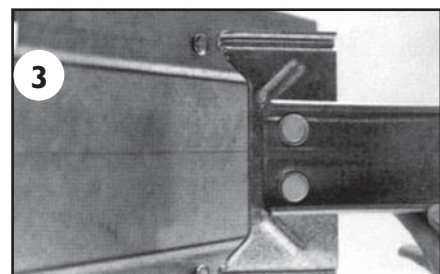
It is vital to make sure that the bolted cleat at the ridge is on the left of the brace (looking from the ridge down).



2. The locking tabs at the other end of the brace are then fitted into the second purlin and pushed to the right to lock (looking from the ridge down).

3. The second brace is then held at a 45 degree angle and inserted into the other side of the second purlin. Now rotate the brace until square to the purlin.

Ensure all locking tabs are fitted into the purlin holes.



4. Fit the other end of the brace into the next purlin. Steps 3 and 4 of this process are then repeated until the last cleat is bolted to the eave purlin.

Note that due to the versatility of the system, the process can be started at the ridge or the eaves.

Continued on next page

2.6.4.1 FASTBRACE INSTALLATION *continued*

Adjustable Fastbrace allows up to 20mm adjustment to be made anywhere in the Fastbrace system, simply by installing this adjustable brace and fully tightening two bolts. Further detail is in Section 2.3.15.

Purpose-made cranked sag rods, installed in the lower holes of the DHS ridge purlin at the bracing line, tie each roof plane together at the ridge. These rods should be fitted with washer and double nuts and fully tightened up prior to loading.

Bolted channel bracing relies on placing and tightening one bolt top and bottom through the brace cleat/purlin assembly. Hence the installation time required for bolted channel bracing is much longer than for Fastbrace.

2.3.15 DHS COMPONENTS

2.3.15.1 FASTBRACE

Product Description

Fastbrace is a lock-in bracing system which uses cleats with specially shaped lock-in tabs attached to each end of a 89 x 12 bracing channel, for use with DHS purlins up to and including DHS 300 series.

Pairs of Fastbrace are fitted from each side of the DHS purlin through prepunched 18mm diameter round bracing holes and are locked together, minimising erection time.

When a line of Fastbrace has been installed, the system provides resistance to restrict lateral movement of the DHS purlin and also supports the purlin flange.

Limitations for Use

The end brace at the first and last bracing points is secured using the standard bolted connection on the outermost cleat end.

To ensure straight alignment of the bracing system, the bracing holes can be offset by 25mm over the last purlin spacing to accommodate a bolted cleat. If this is not achieved, an angle of less than 2 degrees from a straight alignment is created, which in most cases is negligible and acceptable.

At the ridge, the lower bolt position is used to tie the bracing lines each side together using a sag rod.

Where back to back DHS purlins are used, bolted end brace components are required each side.

The durability of zinc coated products is dependent on the environment it will be used in, the grade of the zinc coating and the amount of maintenance that will be carried out over the life of the product. Refer Section 2.1.3 Environments for further guidelines.

Maintenance

Must be carried out in accordance with Section 2.1.6 Maintenance.

Handling and Storage

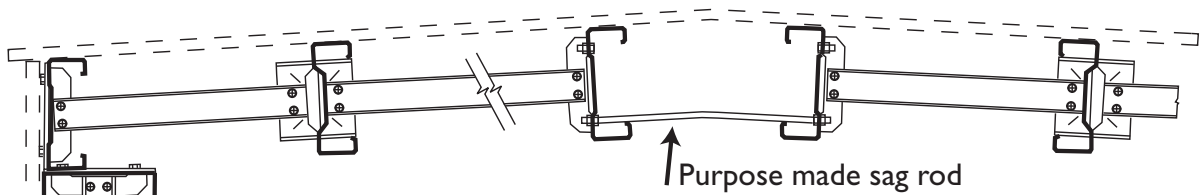
The Fastbrace system is delivered to site, usually strapped together, marked in bundles for installing in the same area of the roof structure. Refer to Section 2.6.2 Handling and Storage.

Material Specification

	Base metal thickness (BMT) (mm)	Steel grade	Yield strength f_y (MPa)	Standard zinc weight Z (g/m ²)
Bracing channel	1.15	G250	250	275
End cleats	2.00	G250	250	275

Tolerances:	Length	± 2mm
	Depth	± 1mm
	Width	± 1mm
	Web/flange angle	89 to 93 degrees

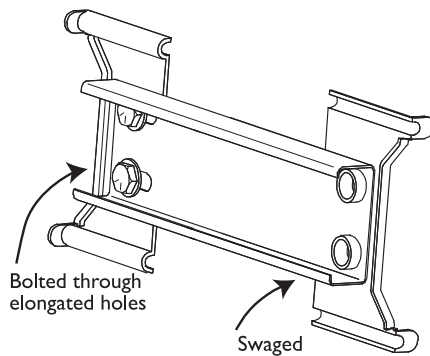
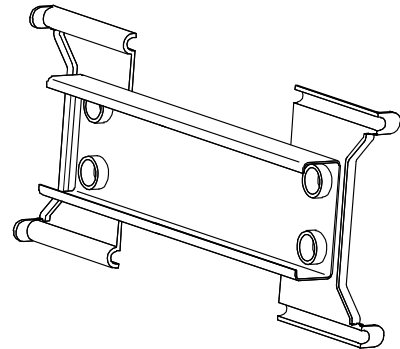
2.3.15.1 FASTBRACE *continued*



General Arrangement of the Fastbrace System

Standard Brace →

This is the standard Fastbrace component used almost everywhere in the system. It locks into other standard brace components, adjustable brace components, or end brace components.

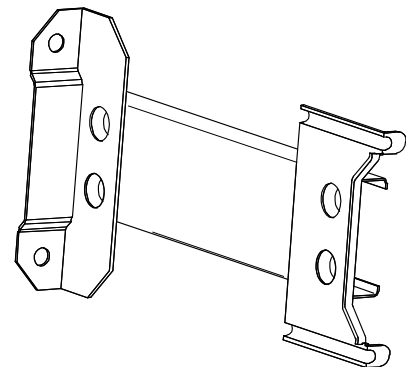


← **Adjustable Brace**

This is the adjustable component in the Fastbrace system and is used where some level of adjustment on the purlin line is required. The purlin is adjusted into line and the 12mm diameter hex flange bolts on the brace tightened. The adjustable brace offers up to 20mm of adjustment.

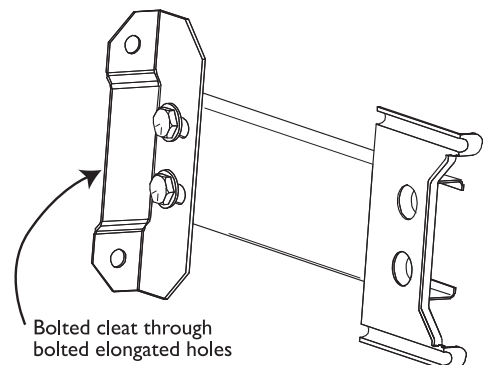
End Brace →

End brace is used at the end of a purlin bracing line, i.e. eaves or ridge, each side of a roof step, or at top and bottom girts on a wall. The end brace locks into either standard or adjustable brace at one end and is twisted between the purlin lips and bolted into position at the other end.



Adjustable End Brace →

Where the end purlin spacing is less than 800mm, an adjustable end brace with a bolted end cleat is available, as twisting of the end cleat is not practical. The adjustable cleat can be rotated up to 15 degrees from normal, to accommodate the change in angle from vertical portal to the roof slope of the rafter.



2.3.15.2 BOLTED CHANNEL BRACING

Product Description

The Dimond bolted channel bracing system uses cleats, clinched at each end of a 89 x 12 bracing channel, which are fastened through the DHS purlin with two bolts each end. Bolted channel bracing is used with the full DHS purlin range (DHS 150 to DHS 400 series).

This system uses bolted channel bracing between all purlins in the bracing line. Refer Section 2.3.9.1 for design basis.

At the ridge, the lower hole position is used to tie the bracing lines each side together using a sag rod.

Limitations for Use

The durability of zinc coated products is dependent on the environment it will be used in, the grade of the zinc coating and the amount of maintenance that will be carried out over the life of the product. Refer Section 2.1.3 Environments for further guidelines.

Maintenance

Must be carried out in accordance with Section 2.1.6 Maintenance.

Handling and Storage

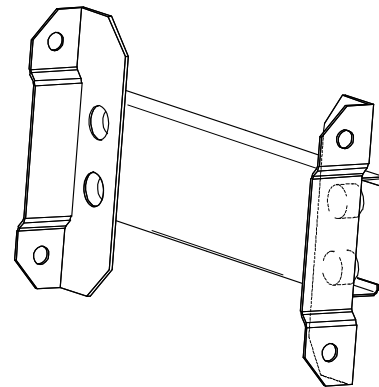
The channel bracing system is delivered to site, usually strapped together, marked in bundles for installing in the same area of the roof structure. Refer to Section 2.6.2 Handling and Storage.

For the material specifications of the bracing refer to Section 2.3.15.1.

Components

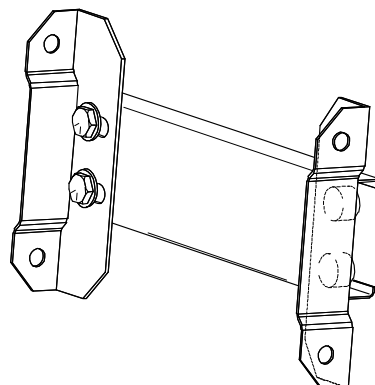
Bolted Channel Brace

This is the standard component used in the bolted channel bracing system and is used almost everywhere.



Adjustable Bolted Channel Brace

This is the adjustable component in the bolted channel bracing system and is used where some level of adjustment on the purlin line is required. The purlin is adjusted into line and the 12mm diameter hex flange bolts on the brace tightened. The adjustable brace offers up to 20mm of adjustment.



2.3.15.3 PORTAL CLEATS

These are typically supplied by the fabricator or installer and welded on to the portal frame. Cleat thicknesses range from 6mm to 12mm thickness. The hole centres are laid out to suit hole punchings in the DHS purlin, refer to Section 2.3.16.3 Hole Locations for details. The cleat height may need to be increased where an expansion step in the roof is detailed.

2.3.15.4 SAG RODS

Alternating sag rods and channel have been superseded by the use of Fastbrace and the bolted channel bracing as the preferred bracing method. However the rods are still used as a cranked sag rod at the ridge to join each side together. Usually supplied by the steel erectors and fabricators in 12mm diameter engineering round bar grade 250 MPa, galvanised or electroplated finishes, with double nuts and washers each end. Where loads require, 16mm diameter engineering round bar can be used.

2.3.15.5 TIMBER STRIP

Timber strip battens are fitted once the netting is in place to avoid roof insulation squashing down, over the purlin, as the roofing is screwed down.

Usually supplied and fixed on site by the fabricator. However Dimond recommend using an ex 50mm x 50mm timber batten or a depth of batten equal to the thickness of the insulation gauged two sides and treated to H3 timber preservation such as boric or LOSP (low, organic solvent preservative). The CCA treatment process should be avoided, due to chemical contact with galvanised surface.

The batten is fixed onto the top flange of the DHS Purlins, once the netting or safety mesh has been laid on the structure. Fixings to be 10g – 16 x 75mm. Countersunk rib head – wingtek. The coating finish is a zinc plated AS 3566 class 2 finish. Longer, other types of fixings may need to be considered when the timber depth is greater than 65mm.

Spacing of the wingteks is dependent on the DHS material thickness it is being fixed into. Refer to the following table.

DHS Purlin BMT (mm)	Max. screw centres (mm)
1.15	250
1.25 to 2.0	300

At these centres, the maximum outward load on the nailing strip is 5.0 kN/m.

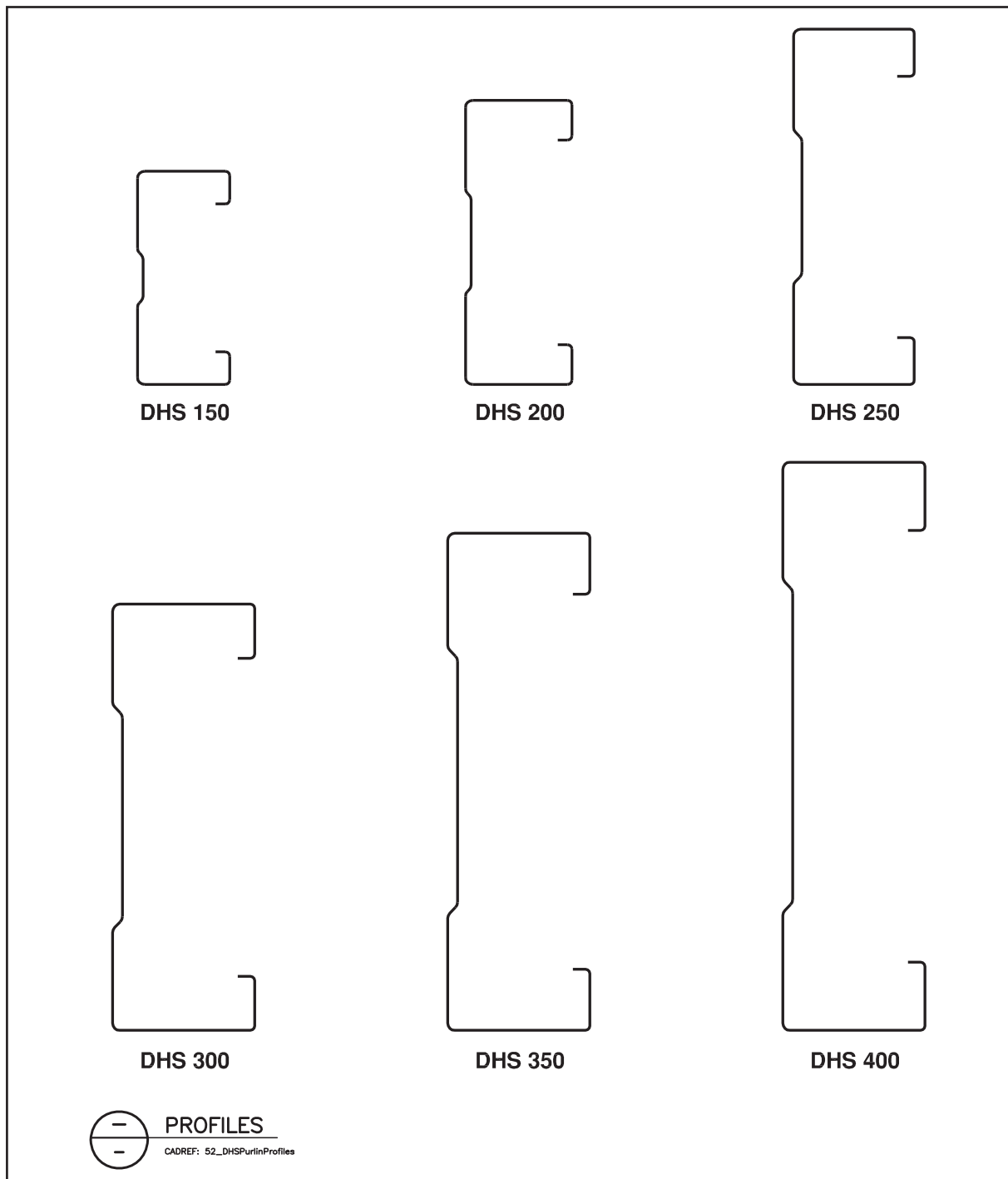
2.3.16 DHS CAD DETAILS

DHS CAD details are shown in this section. For the latest DHS CAD details, please download from the Dimond website www.dimond.co.nz. Follow the steps below:

1. Log in to the Architects/Specifiers section.
2. Click on the green “Structural Systems Manual” button.
3. Click on the “Download CAD details” button.
4. Select from product list shown to view CAD details available for that product.

Please note all of these details are to be used as a guide only and are not intended for construction. Specific design details are required to be provided by the design engineer.

2.3.16.1 DHS PROFILES



Not to scale.

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

2.3.16.2 RECOMMENDED DIMENSIONS OF PORTAL CLEATS FOR USE WITH DHS PURLINS & GIRTS

PORTAL CLEATS
CADREF: 60_DHSPortalCleats

CLEATS AT INTERNAL SUPPORTS (NOT SUPPLIED BY DIMOND)

CLEATS AT END SUPPORTS (NOT SUPPLIED BY DIMOND)

DHS PURLIN	DIMENSIONS		
	B	X	Y
150/12 AND 15	41	80	150
200/12, 15 AND 18	48	120	200
250/13, 15 AND 18	53	160	250
300/15 AND 18	60	200	300
350/18	65	240	340
400/20	70	280	380

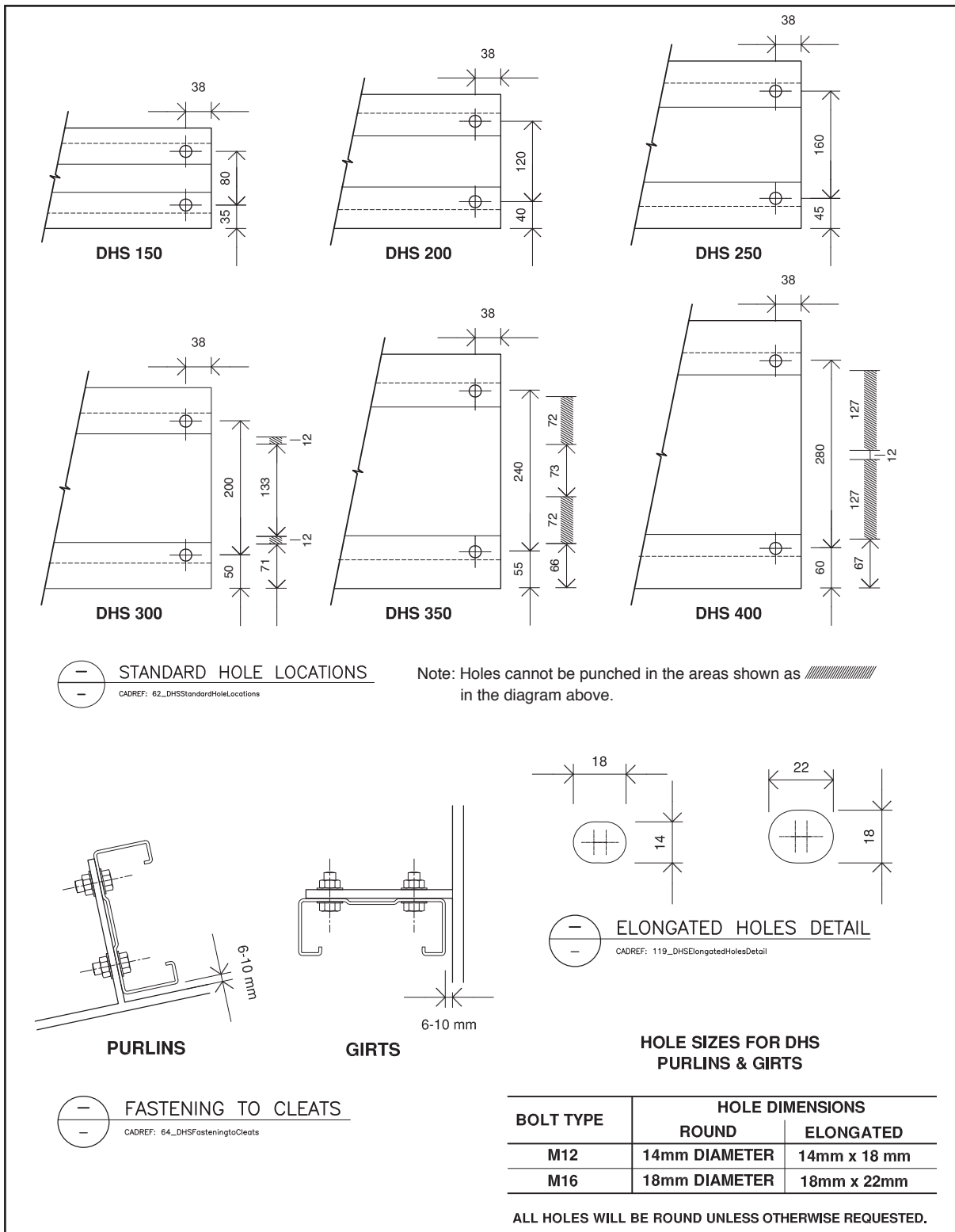
CLEAT DIMENSIONS
CADREF: 61_DHSCleatDimensions

Not to scale.

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

2.3.16.3 HOLE LOCATIONS



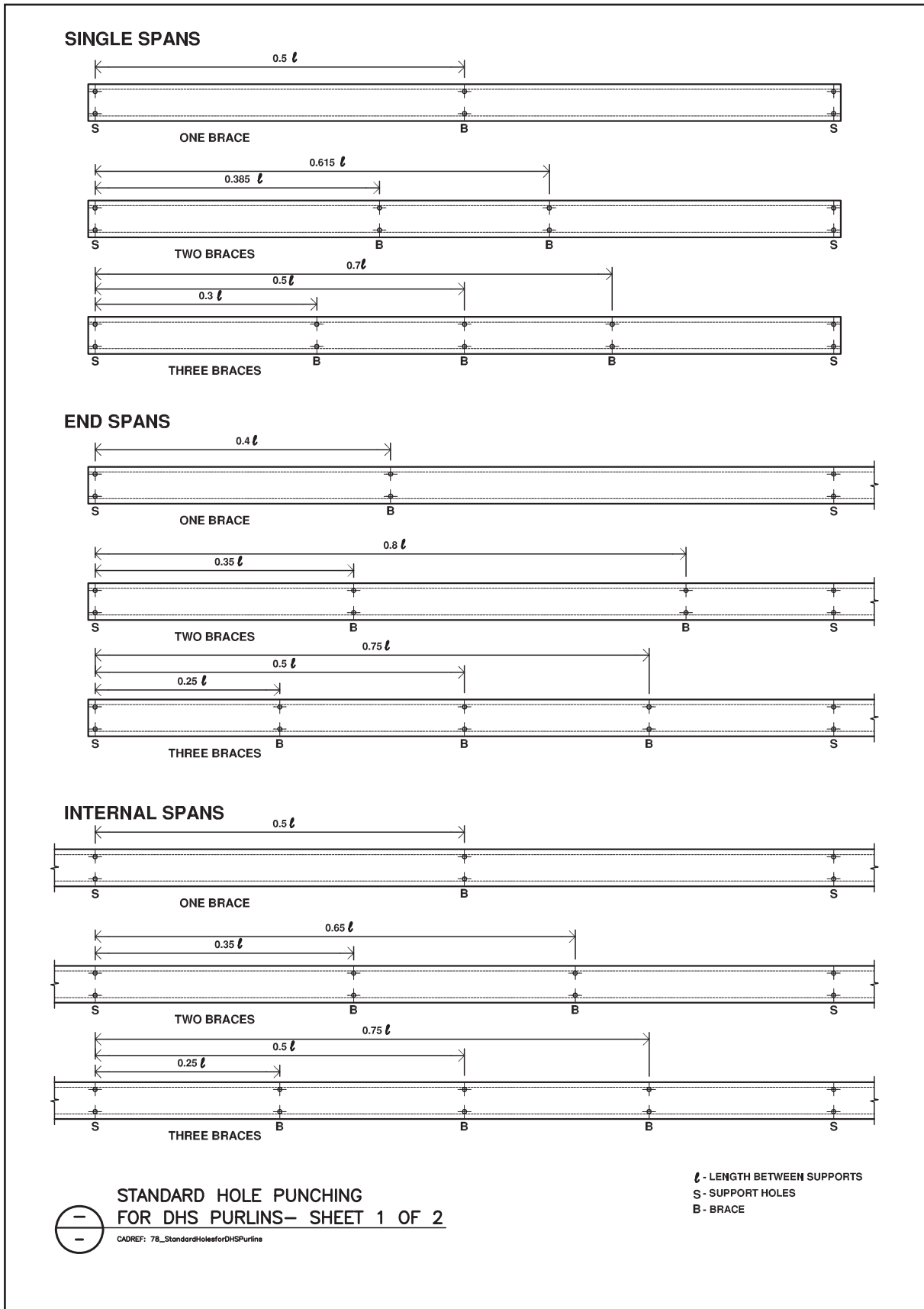
Not to scale.

Note: DHS Purlins are supplied complete with standard pre-punched holes where required for connection at portal cleats, bracing points and laps. Special holes in other locations (flanges and web) may be available upon request. Contact Dimond on 0800 775 777 for details.

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

2.3.16.4 STANDARD HOLE PUNCHING FOR DHS PURLINS



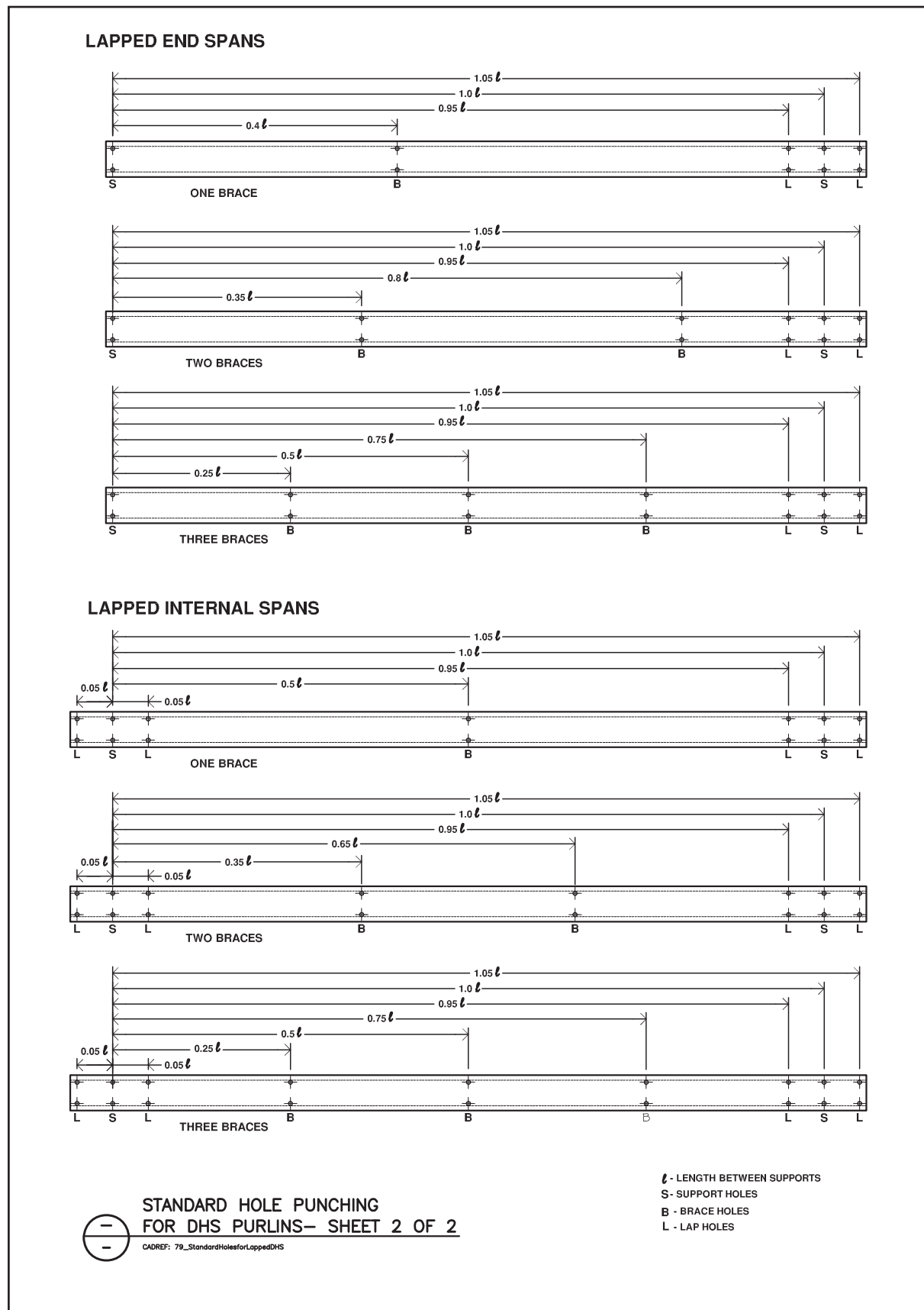
Not to scale.

Note: When using Fastbrace 18mm diameter round holes must be used.

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

2.3.16.5 STANDARD HOLE PUNCHING FOR DHS PURLINS



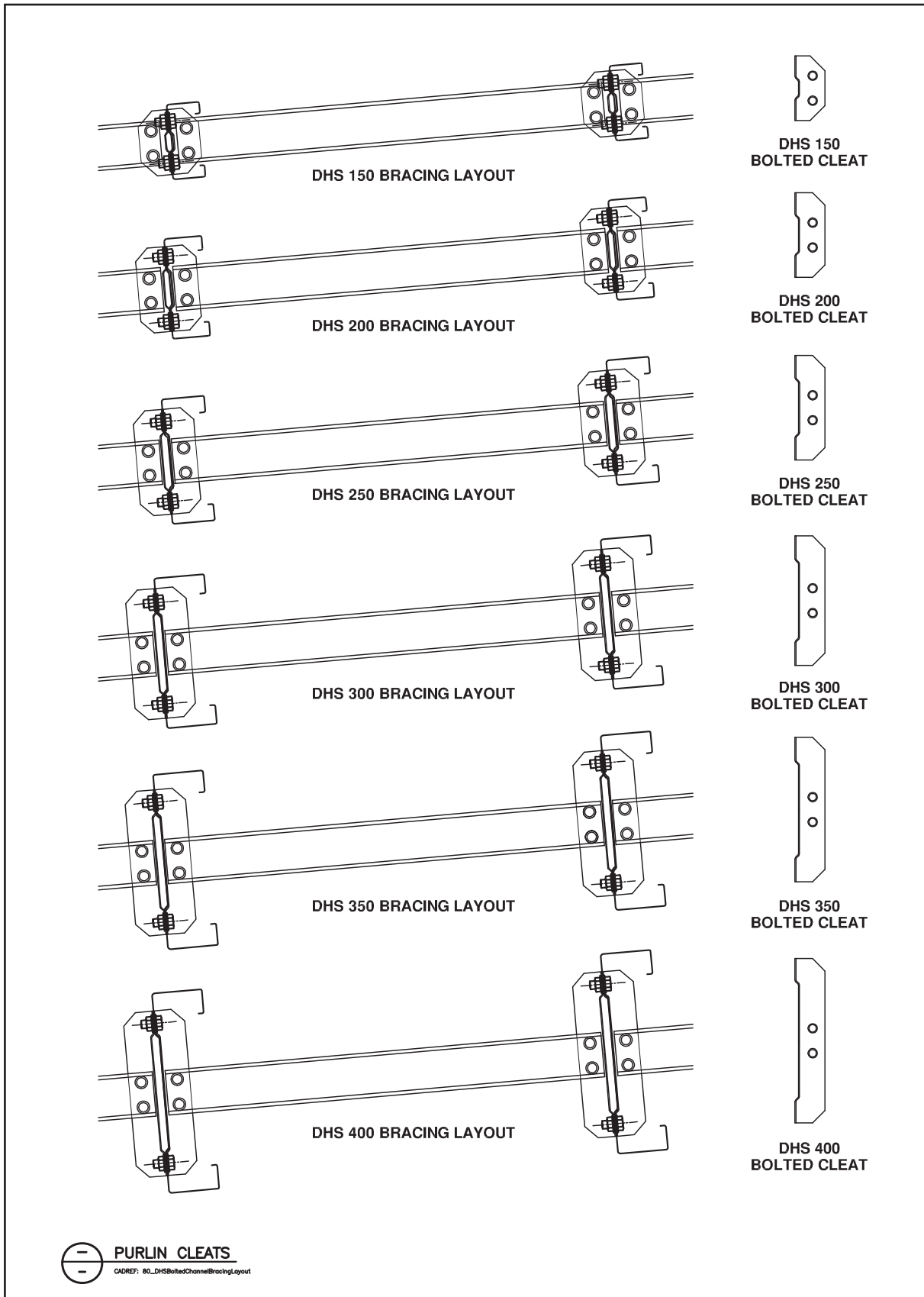
Not to scale.

Note: When using Fastbrace 18mm diameter round holes must be used.

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2.3.16 DHS CAD DETAILS *continued*

2.3.16.6 BOLTED CHANNEL BRACING LAYOUT

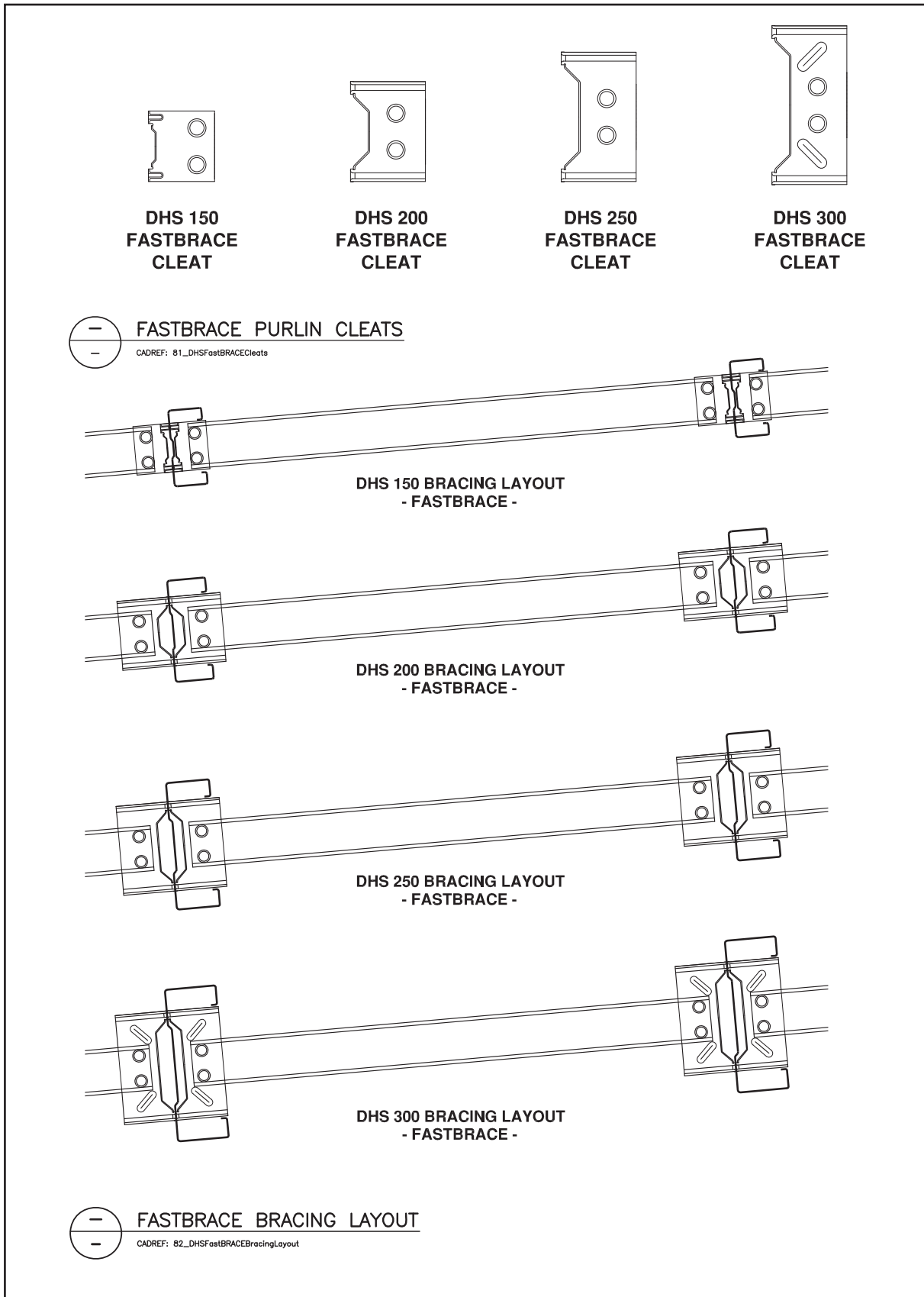


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2.3.16 DHS CAD DETAILS *continued*

2.3.16.7 FASTBRACE CLEATS AND BRACING LAYOUT

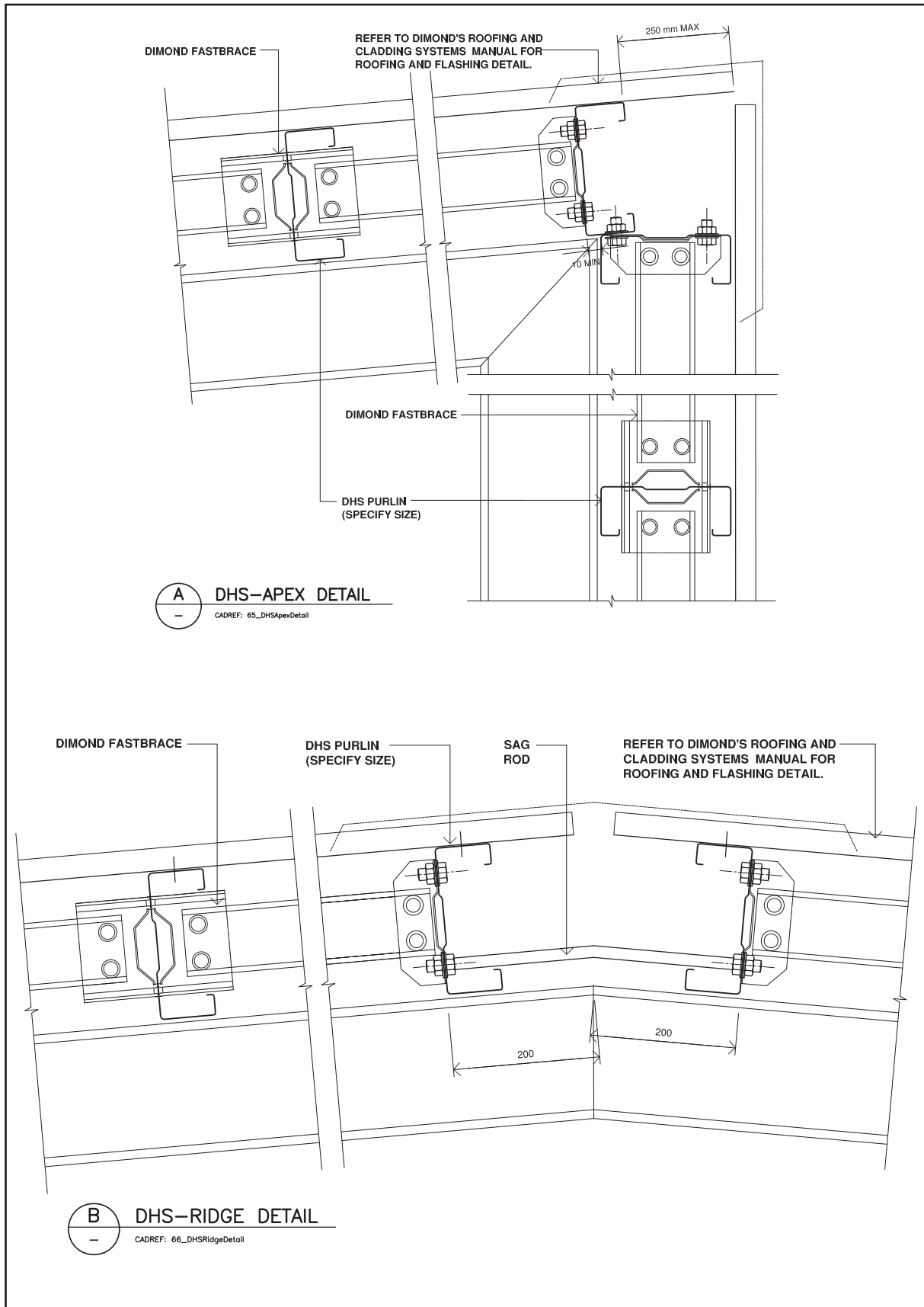


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2.3.16 DHS CAD DETAILS *continued*

2.3.16.8 APEX & RIDGE DETAILS

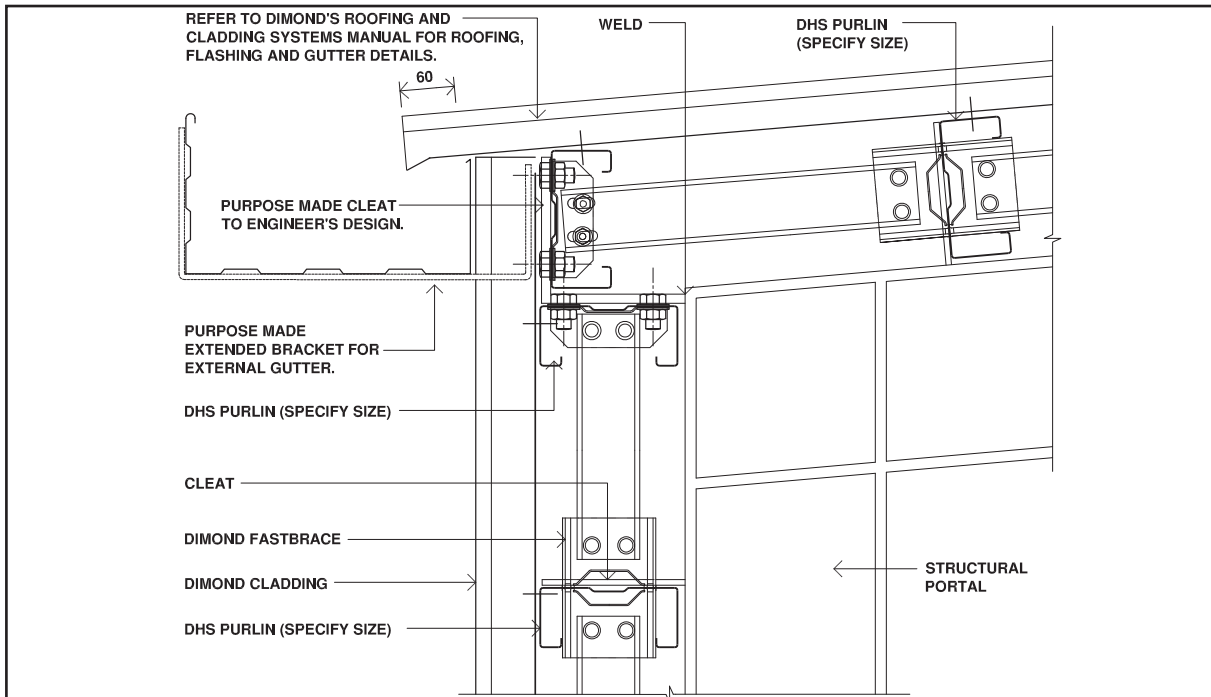


Not to scale.

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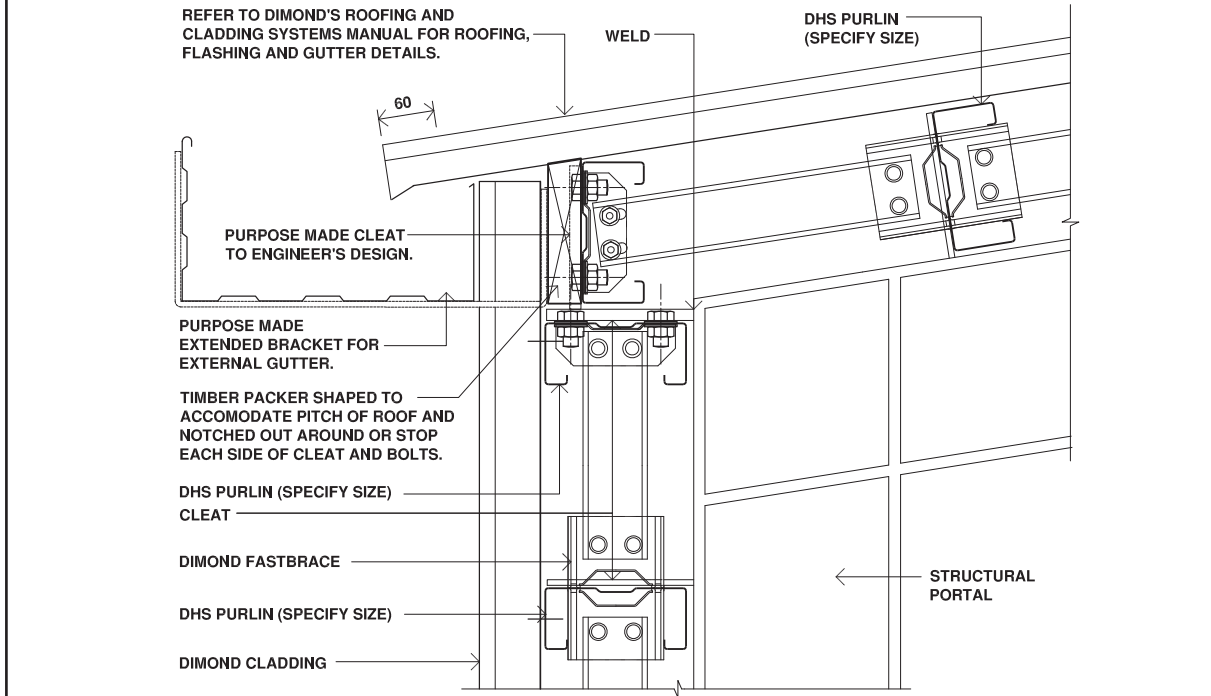
2.3.16 DHS CAD DETAILS *continued*

2.3.16.9 DHS EAVES DETAILS



C
DHS EAVES—DETAIL FOR ROOF PITCH UP TO 5°
CADREF: 67_DHSEavesDetail1

NOTES:
 - THIS DETAIL TO BE USED ONLY FOR ROOF WITH A PITCH OF 5° OR LESS.
 - THIS DETAIL SHOWS GIRTS OUTSIDE PORTAL. FOR DETAIL SHOWING GIRTS BETWEEN PORTAL LEGS PLEASE REFER TO DETAIL E.
 - BOLTED CONNECTION BETWEEN THE GIRTS & CLEATS HAVE BEEN OMITTED FOR DETAIL CLARITY.



D
DHS EAVES— DETAIL FOR ROOF PITCH OVER 5°
CADREF: 68_DHSEavesAlternateDetail2

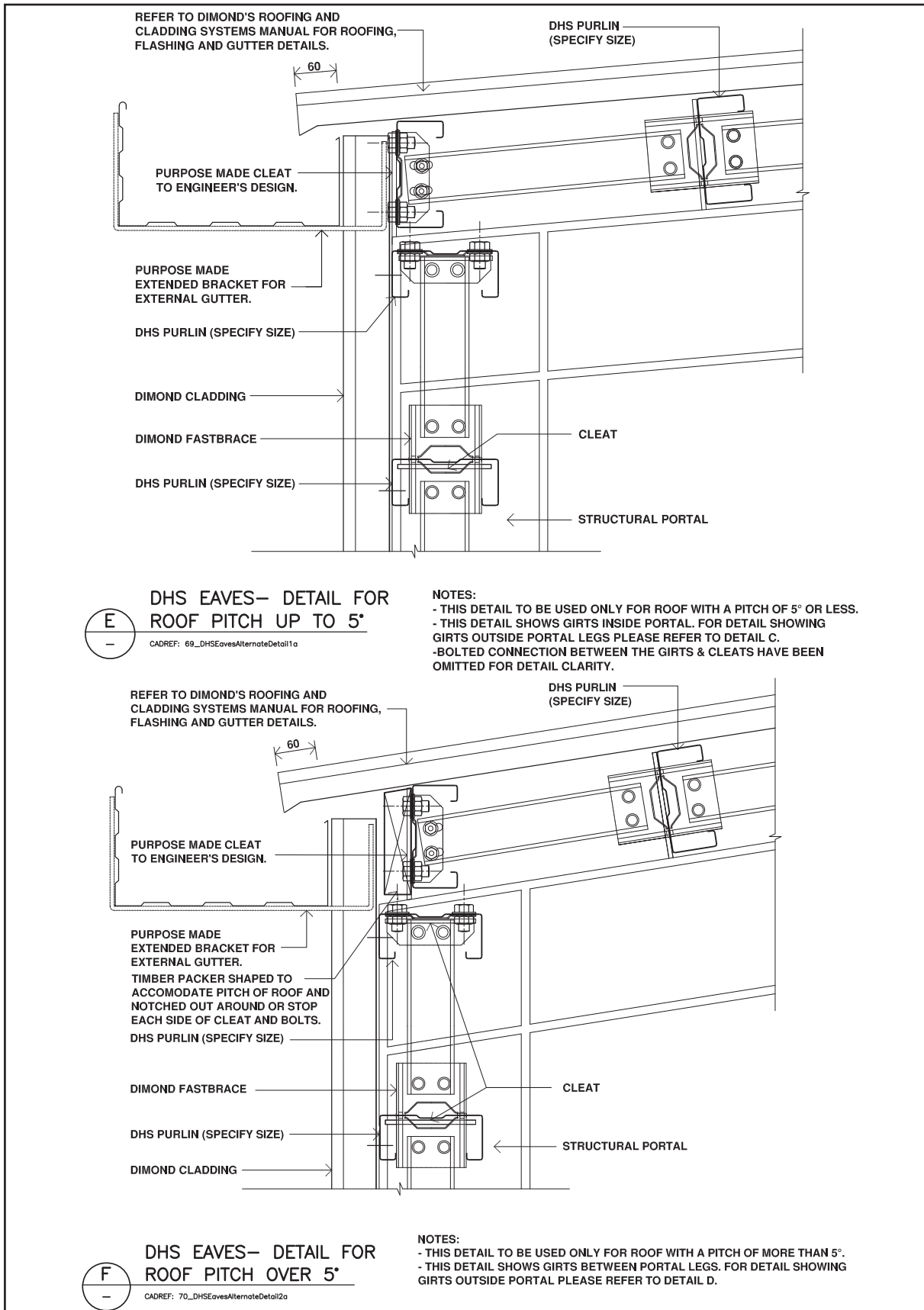
NOTES:
 - THIS DETAIL TO BE USED ONLY FOR ROOF WITH A PITCH OF MORE THAN 5°.
 - THIS DETAIL SHOWS GIRTS OUTSIDE PORTAL. FOR DETAIL SHOWING GIRTS BETWEEN PORTAL LEGS PLEASE REFER TO DETAIL F.

Not to scale.

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

2.3.16.10 DHS EAVES DETAILS 2

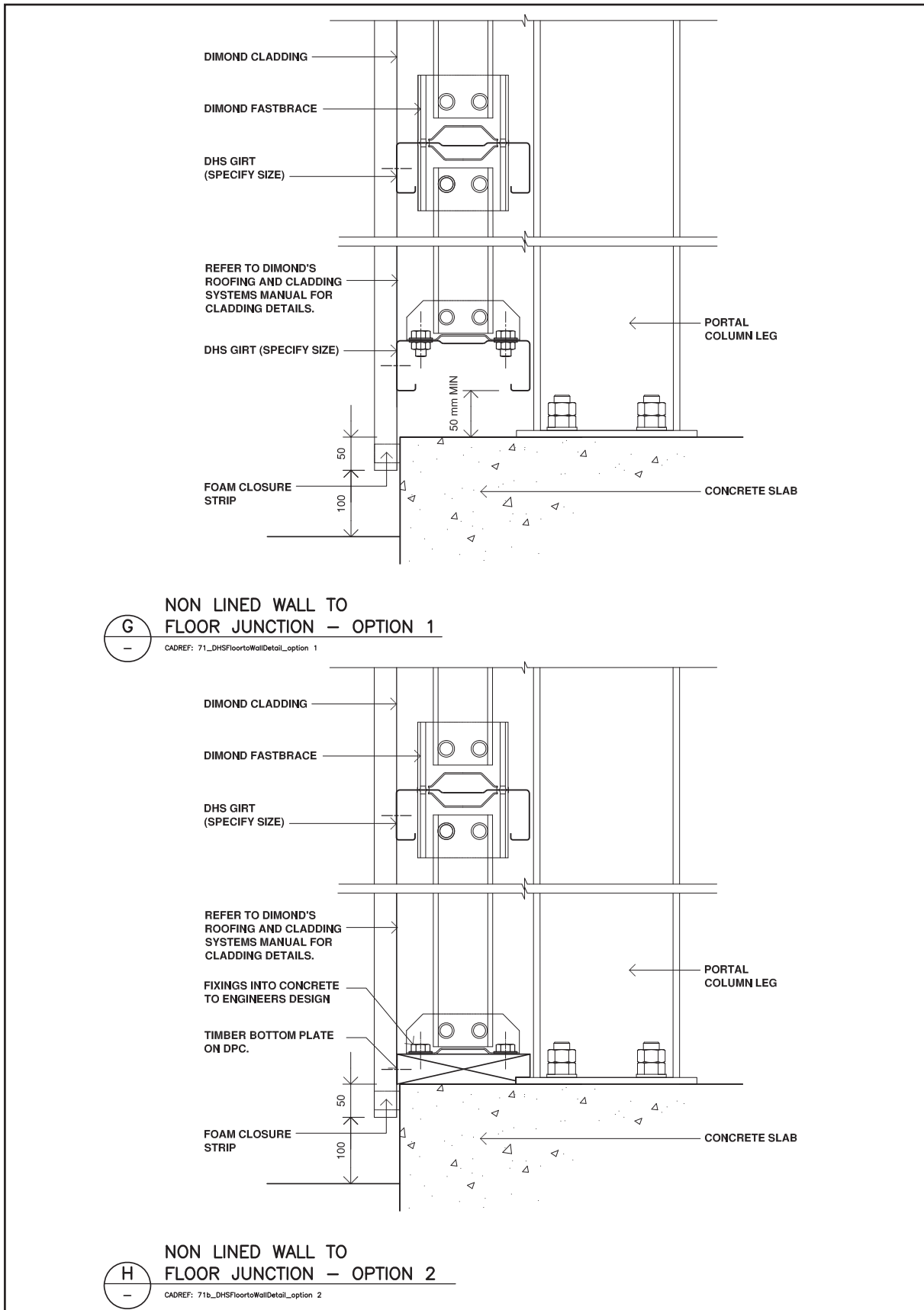


Not to scale.

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2.3.16 DHS CAD DETAILS *continued*

2.3.16.11 FLOOR TO WALL DETAIL

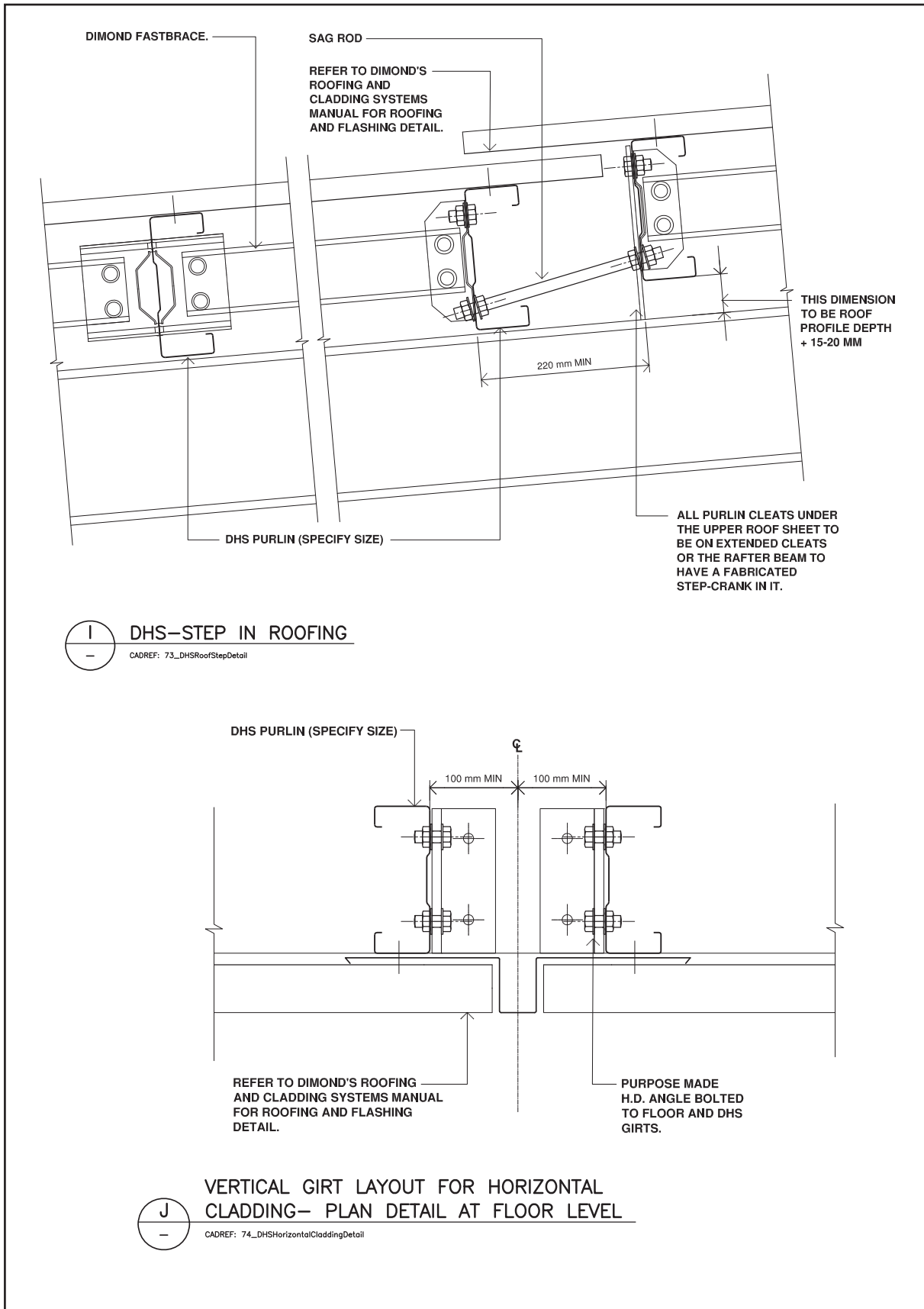


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2.3.16 DHS CAD DETAILS *continued*

2.3.16.12 ROOF STEP DETAIL AND HORIZONTAL CLADDING DETAIL

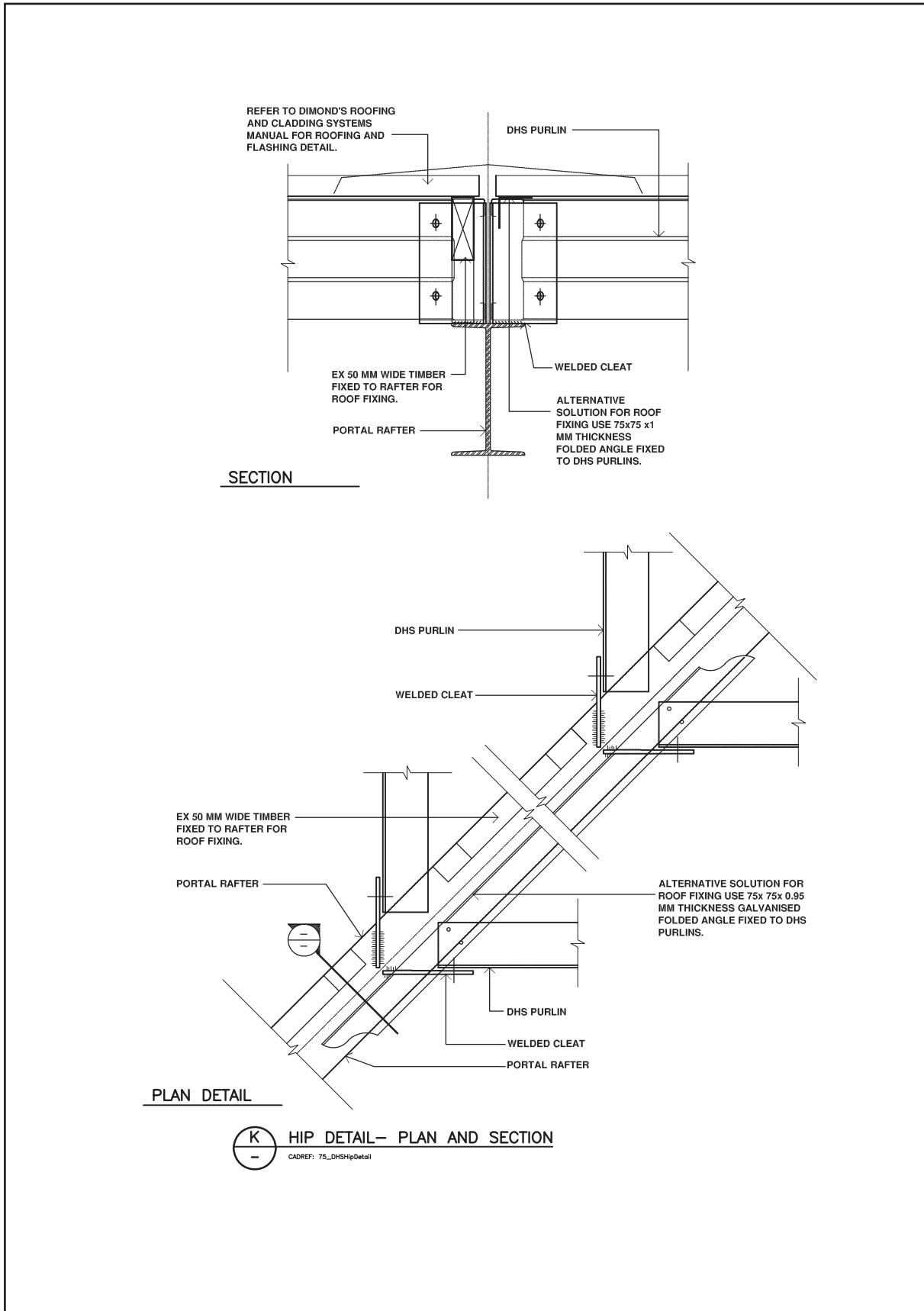


Not to scale.

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2.3.16 DHS CAD DETAILS *continued*

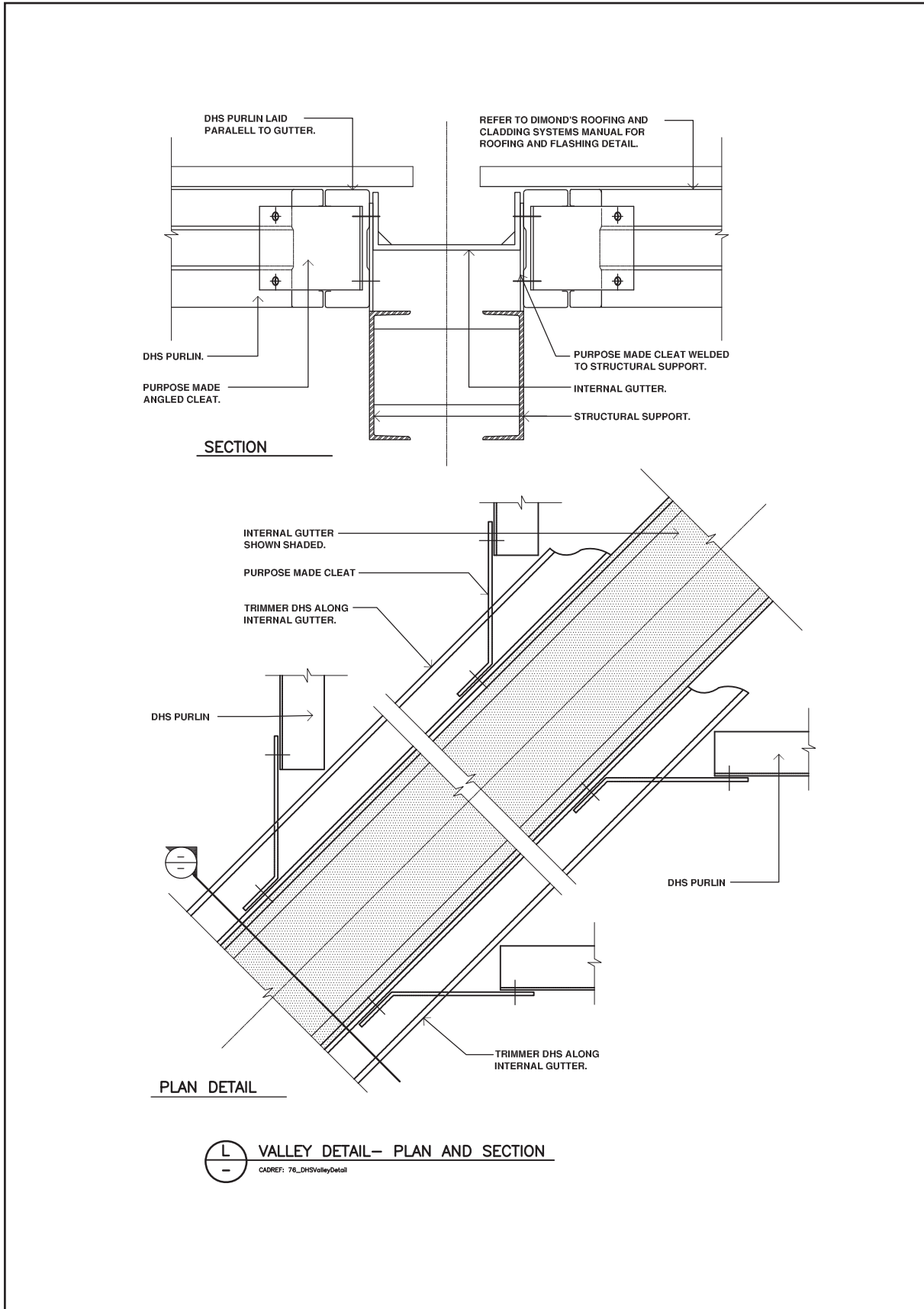
2.3.16.13 HIP DETAIL



Not to scale.

2.3.16 DHS CAD DETAILS *continued*

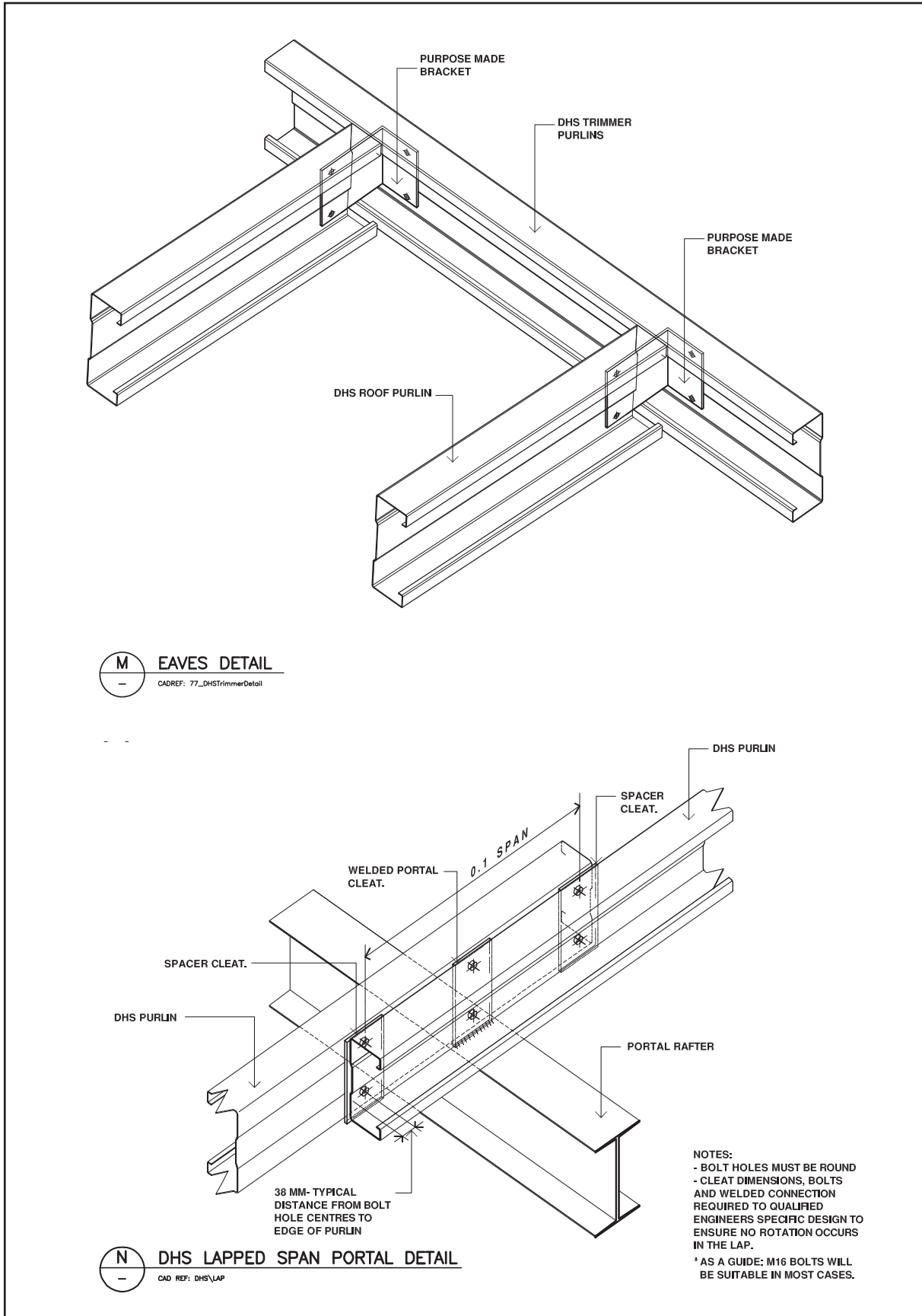
2.3.16.14 VALLEY DETAIL



Not to scale.

2.3.16 DHS CAD DETAILS *continued*

2.3.16.15 TRIMMER DETAIL AND LAPPED SPAN DETAIL



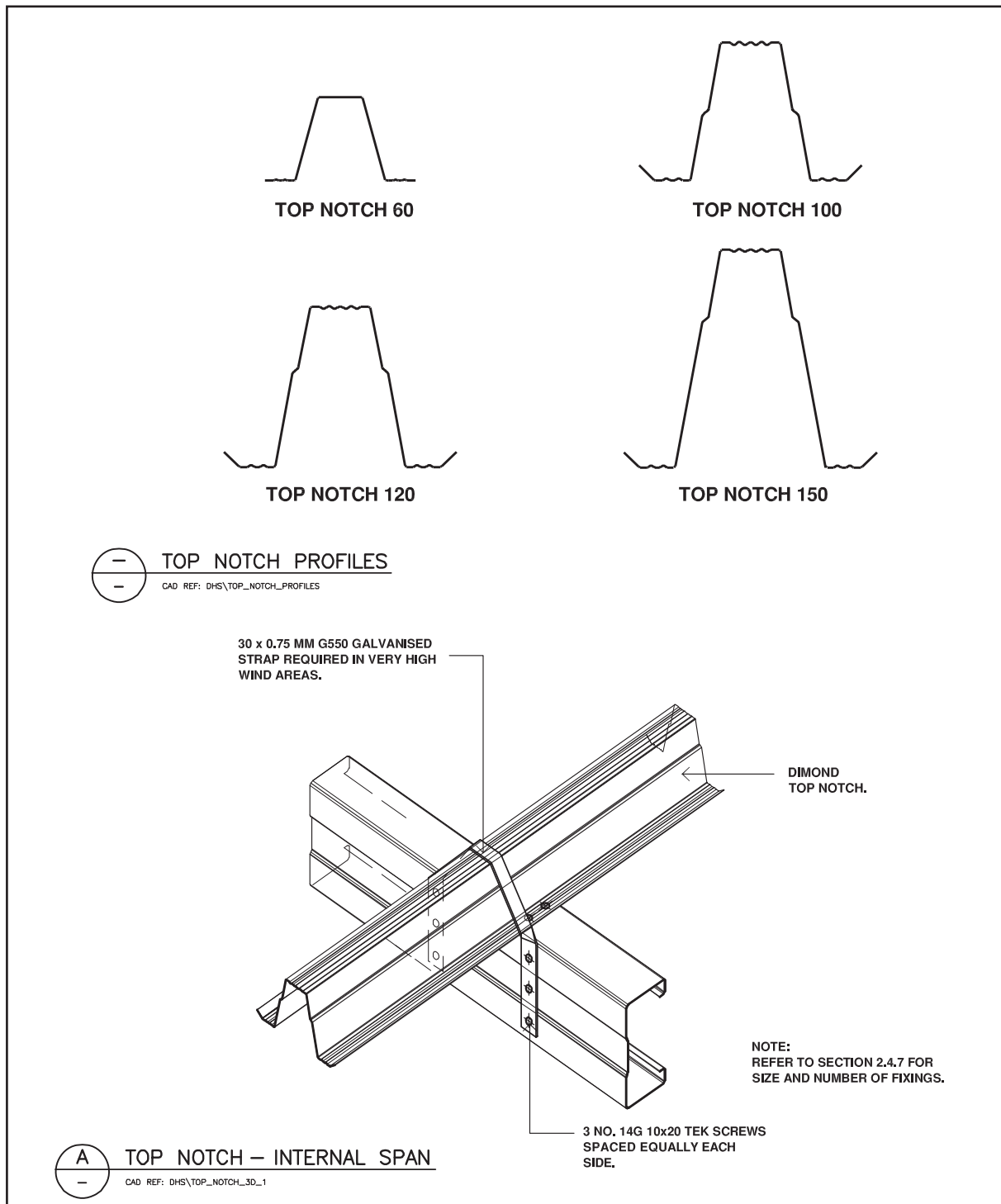
Not to scale.

2.4.11 TOP NOTCH CAD DETAILS

Top Notch CAD details are shown in this section. For the latest Top Notch CAD details, please download from the Dimond website www.dimond.co.nz. Follow the steps below:

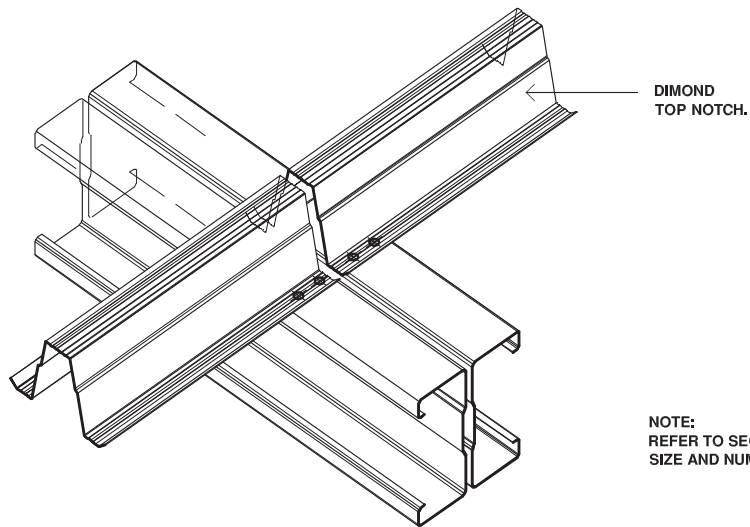
1. Log in to the Architects/Specifiers section.
2. Click on the green “Structural Systems Manual” button.
3. Click on the “Download CAD details” button.
4. Select from product list shown to view CAD details available for that product.

Please note all of these details are to be used as a guide only and are not intended for construction. Specific design details are required to be provided by the design engineer.

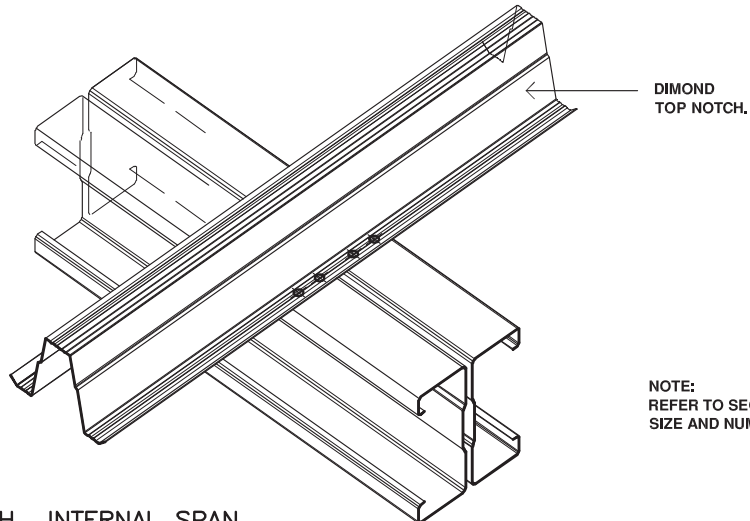


Not to scale.

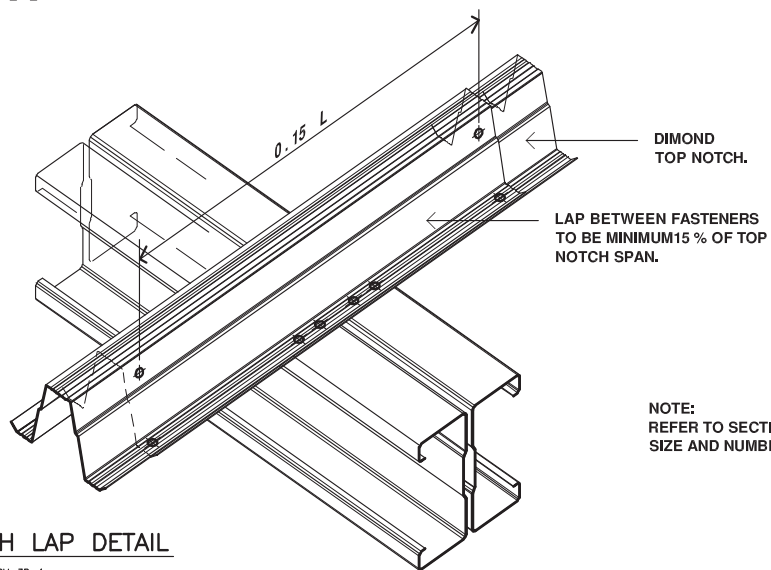
2.4.11 TOP NOTCH CAD DETAILS *continued*



B TOP NOTCH BUTT OR SINGLE SPAN JOINT
— CAD REF: DHS\TOP_NOTCH_3D_2



C TOP NOTCH INTERNAL SPAN
— CAD REF: DHS\TOP_NOTCH_3D_3

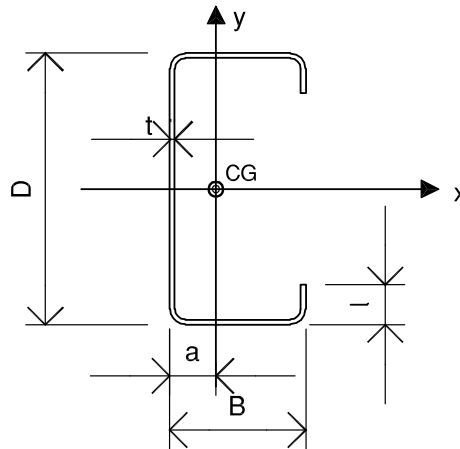


D TOP NOTCH LAP DETAIL
— CAD REF: DHS\TOP_NOTCH_3D_4

Not to scale.

2.5.1 DIMOND 100/19 PURLIN

Dimond manufacture the 100/19 C section which provides economy as a small section purlin or girt. Any limitation placed on the design and use of the Dimond Purlin Systems as detailed in this manual also apply to the Dimond 100/19 Purlin. Sag rods are used as the bracing system for the 100/19 Purlin.



Tabulated properties are based on full unreduced sections.

CODE	D x B mm	t mm	Mass kg/m	Weight kN/m	Area mm ²	l mm	a mm	I_{xx} (10 ⁶ mm ⁴)	I_{yy} (10 ⁶ mm ⁴)	Z_{xx} (10 ³ mm ³)
100 / 19	102 x 51	1.85	3.24	0.032	403	15	17.4	0.668	0.143	13.09

NOTE Mass assumes a total coated weight for the standard zinc coating of 275 g/m²

Design linear load capacities in kilonewtons per metre of span (kN/m), $\Phi_b W_{bx}$

SPAN m	BRACE		FR	W_s
	1	2		
3.0	4.44	4.71	4.71	2.52
3.5	2.91	3.47	3.47	1.58
4.0	1.96	2.66	2.66	1.06
4.5	1.31	2.00	2.10	0.74
5.0	0.90	1.50	1.69	.54
5.5	0.65	1.15	1.40	0.41
6.0	0.47	0.90	1.19	0.31
6.5	0.36	0.68	1.01	0.24
7.0	0.27	0.52	0.87	0.20
7.5		0.42	0.75	0.17
8.0		0.33	0.66	0.13

FR Assumes compression flange fully restrained.

W_s Linear load at a deflection of span / 150.

STANDARD HOLE PUNCHING FOR 100/19 PURLIN SIMPLE SPANS

