2.3 SPECIFIC DESIGN – DHS PURLINS

2.3.1 INTRODUCTION

Dimond Hi-Span (DHS) Purlin Systems have been designed to comply with AS/NZS 4600:1996, based on physical testing and analysis carried out by the University of Sydney, who are recognised for their international expertise in the area of cold form design. The structural analysis software consisted of several modules including cross-sectional analysis, an AS/NZS 4600:1996 design module, in-plane structural analysis, and finite element lateral buckling analysis.

Methods in AS/NZS 4600:1996 for determining pure shear, combined bending/shear, lateral buckling and distortional buckling have, in some cases, resulted in lower purlin capacities than previously published. These are included in the design tables in this manual.

Appropriate design load combinations for each Limit State should be determined in accordance with AS/NZS 1170:2002. It is recommended these be expressed as uniformly distributed bending loads (kN/m) and axial compression loads (kN) for direct comparison with the tabulated data in this manual.

Self weight of the DHS Purlin Systems is not included in any load tables and must be calculated as part of the total dead load of the building elements supported by the purlin.

2.3.2 DESIGN CONSIDERATIONS

Data presented in this section is intended for use by structural engineers. Load situations other than uniformly distributed and axial loads will require specific design.

Design Capacities in the Limit State format have been derived by the application of a capacity factor, f:

Bending $f_b = 0.90$
Compression $f_c = 0.85$

A design yield strength of 500 MPa has been used for DHS purlins and girts. This is in line with the minimum specified yield for G500 material and is significantly less than the consistent minimum yield stress in the G450 material used in manufacture.

Design capacity of the DHS Purlin System is largely dependent on the amount of restraint provided to the purlin section. These design tables assume that bracing prevents both lateral movement and rotation of the section at that point.

It is also assumed that screw-fixed cladding significantly prevents lateral movement of the flange to which it is attached. Where this assumption does not hold, it is recommended that the number of braces required is specified such that the purlin load capacity, f_bW_{bx} is not less than the capacity for the Fully Restrained case (FR).

Uniformly loaded bending capacities (kN/m) and axial compression capacities (kN) are given for purlins and girts with 1, 2 or 3 braces. The Fully Restrained (FR) case may be used when the compression flange is fully restrained against lateral movement.

The Serviceability Linear Load, W_s (kN/m), is the load at which midspan deflection equates to span/150. As deflection is proportional to loading, W_s loads may be factored by the deflection ratio for any deflection within the limit of the linear load capacities.

Continued on next page

2.3.2 DESIGN CONSIDERATIONS *continued*

As a guide to acceptable deflection limits for serviceability of DHS used as purlins or girts, for wind and dead load actions, Dimond recommend the following limits:

- Where there is no ceiling:
  – Deflection for W_s Þ Span/150
  – Deflection for G Þ Span/300
- Where there is a ceiling:
  – Deflection for W_s Þ Span/200
  – Deflection for G Þ Span/360.

For specific deflection limits reference must be made to AS/NZS 1170.0:2002.

These tables are intended for use where roofing or cladding is attached to one DHS purlin or girt flange. Loads are assumed to be applied about the major axis of symmetry (X-X). Loads for intermediate spans may be calculated by linear interpolation.

For roofs, the dead load of roofing and purlins is assumed to be tied across the ridge or into the ridge beam for monoslope roofs. This avoids purlins sagging out of plane down the roof slope.

For walls, the following table gives the maximum allowable wall heights for Dimond bracing systems, where the dead load of cladding and girts is assumed to be carried in tension to an eaves beam by Fastbrace or brace channels. Specific design of the brace system and connections is required for wall heights greater than the limits shown or where the bracing is designed to carry compression loads.

	Maximum Wall Height	
Purlin Thickness BMT (mm)	**Fastbrace**	**Bolted Channel Bracing**
1.15, 1.25	5.0m	15.0m
1.45	6.5m	15.0m
1.75	8.0m	15.0m
1.95	–	15.0m

Basis to Table

1. Spacing between bracing lines and/or portal frames not greater than 3.5m.
2. Weight of cladding not greater than 6.7kg/m^2.

In order to minimise deflections in the girt member, we recommend a maximum spacing between bracing lines and/or portal frames of 3.5 metres.

Gravity type loads can be assumed to act perpendicular to the roof plane for roof pitches up to 10 degrees provided the DHS purlins are placed with their flanges facing up the slope. For pitches greater than 10 degrees, load components about the minor axis of symmetry (Y-Y) should also be considered.

Specific design is required for loads suspended from DHS purlin systems (such as ducting and piping). Hangers must be connected to the web of the purlins or to the bottom flange within 25mm of the web. Under no circumstances should loads be hung off the purlin lips.

Specific design is required to AS/NZS 4600 when designing DHS purlins as truss or portal members.

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2.3.2 DESIGN CONSIDERATIONS *continued*

The following table lists design capacities and distortional buckling stresses that were used in determining the load span tables.

Distortional Buckling Stresses and Design Capacities in Compression, Bending and Shear

	Compression	Bending			Shear	
DHS size	$f_c N_s$ (kN)	$f_b M_{sx}$ (kNm)	$f_{odx(TW)}$ (MPa)	$f_b M_{bdx}$ (kNm)	k_v	$f_v V_{vy}$ (kN)
DHS 150/12	94.7	6.93	413	5.82	7.80	14.03
DHS 150/15	133.4	9.60	526	7.93	7.53	27.27
DHS 200/12	101.2	9.85	321	8.62	7.62	10.06
DHS 200/15	142.8	14.15	409	11.82	7.45	19.78
DHS 200/18	188.9	18.96	498	15.21	7.33	34.31
DHS 250/13	123.3	15.00	290	13.36	8.03	10.75
DHS 250/15	153.6	18.82	339	16.40	7.89	16.53
DHS 250/18	203.3	25.29	412	21.18	7.73	28.54
DHS 300/15	161.9	23.85	271	21.39	8.00	13.83
DHS 300/18	214.6	31.89	330	27.74	7.83	23.85
DHS 350/18	222.4	38.37	301	33.48	7.70	19.97
DHS 400/20	270.1	53.28	300	45.29	7.51	23.50

- $f_c N_s$: Design section capacity in pure compression, determined in accordance with AS/NZS 4600:1996 Clause 3.4.1 with f_c = 0.85.
- $f_b M_{sx}$: Design section capacity in pure bending about the major (x) axis, determined in accordance with AS/NZS 4600:1996 Clause 3.3.2 with f_b = 0.95 and the web modelled as a single stiffened flat element.
- $f_b M_{bdx}$: Design member capacity in pure bending about the major (x) axis based on failure by distortional buckling, determined in accordance with AS/NZS 4600:1996 Clause 3.3.3.3 with f_b = 0.90. The corresponding distortional buckling stress ($f_{odx(TW)}$) is determined using a rational elastic buckling analysis of the whole cross-section.
- k_v: Shear buckling coefficient for the web following the procedures outlined in Section R6.2 of the ECCS document entitled *European Recommendations for Steel Construction: The Design of Profiled Sheeting* (ECCS, 1983). The ECCS procedures provide a sound basis for determining k_v where a stiffening swage is present in the web.
- $f_v V_{vy}$: Design shear capacity for a shear force in the direction of the y-axis, determined in accordance with AS/NZS 4600:1996 Clause 3.3.5 with f_v = 0.90.

2.3.3 COMBINED BENDING AND COMPRESSION DESIGN

When purlins are designed to act under combined bending and axial loads, for example purlins transmitting end wall loads to braced bays, interaction of combined bending and axial loads may be shown in the following equations:

1. If $N^*/\mathrm{f}_c N_c \le 0.15$, the following interaction equation may be used:

$$\frac{N^*}{\mathrm{f}_c N_c} + \frac{W_x^*}{\mathrm{f}_b W_{bx}} \le 1.0$$

This is usually the case when purlins are used primarily as bending members near capacity and are also required to take a nominal level of axial compression.

If $N^*/\mathrm{f}_c N_c > 0.15$ then the following equations must be used:

2. $$\frac{N^*}{\mathrm{f}_c N_c} + \frac{C_{mx} W_x^*}{\mathrm{f}_b W_{bx} \mathrm{a}_{nx}} \le 1.0$$

3. $$\frac{N^*}{\mathrm{f}_c N_s} + \frac{W_x^*}{\mathrm{f}_b W_{bx}} \le 1.0$$

where

N^*	=	Design axial compressive load (kN).
$\mathrm{f}_c N_c$	=	Axial compression member capacity (kN) in the absence of other actions.
$\mathrm{f}_c N_s$	=	Axial compression section capacity (kN). Refer Section 2.3.2 Design Considerations.
W_x^*	=	Design bending load (kN/m) about the x axis.
$\mathrm{f}_b W_{bx}$	=	Uniformly loaded bending capacity (kN/m) about the x axis.
C_{mx}	=	Restraint coefficient about the x, y axes respectively. It is reasonable to assume C_{mx} is 1.0 for unrestrained supports (i.e. simply supported) and 0.85 for restrained supports (end or internal spans).
a_{nx}	=	$1 - [N^*/\mathrm{f}_c N_{ex}]$.
$\mathrm{f}_c N_{ex}$	=	Euler buckling capacity (kN) about the major axis of symmetry (X-X).

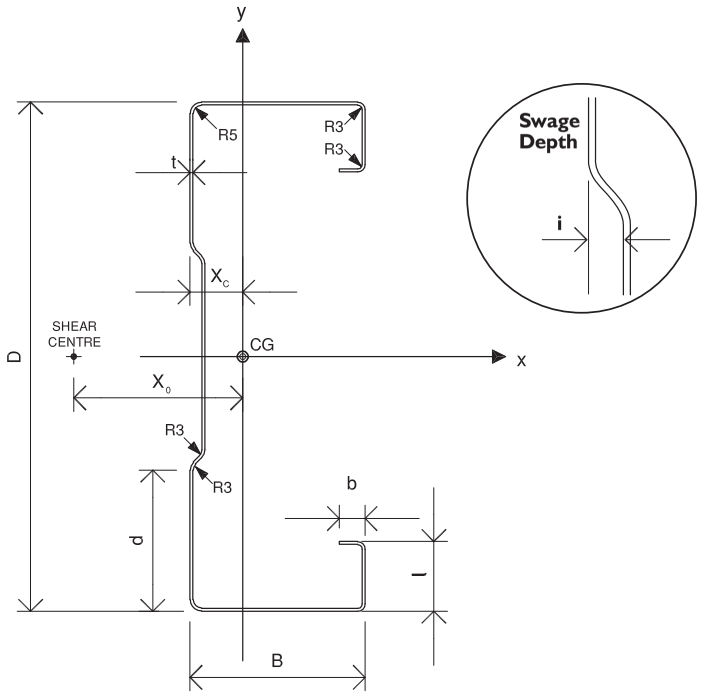
Flexure about the minor axis of symmetry (Y-Y) is assumed to be zero. If biaxial flexure is expected, specific design is required.

Solution of the interaction equation involves solving for the design axial compressive load (N^*), yielding the remaining axial capacity or directly substituting the known variables. These methods are illustrated in the sample calculations in Section 2.3.11.3.

Where DHS purlins are designed to take solely axial load, the design of the bolted connections must be considered. For example a DHS purlin designed as a load-bearing post, held top and bottom with bolts, will likely be limited by the capacity of bolts used.

2.3.4 DHS SECTION PROPERTIES

DHS Section	Depth D mm	Width B mm	Thickness t mm	Mass kg/m	Weight kN/m	d mm	Swage Depth i mm	b mm	l mm	x_c mm	x_0 mm
DHS 150/12	150	65	1.15	2.99	0.030	54	4	10	23	24.0	56.6
DHS 150/15	150	65	1.45	3.74	0.037	54	4	10	23	23.9	56.1
DHS 200/12	200	75	1.15	3.71	0.037	62	4	10	28	26.3	62.0
DHS 200/15	200	75	1.45	4.65	0.046	62	4	10	28	26.2	61.4
DHS 200/18	200	75	1.75	5.59	0.055	62	4	10	28	26.1	60.8
DHS 250/13	250	85	1.25	4.87	0.048	67	6	12	33	29.4	67.1
DHS 250/15	250	85	1.45	5.63	0.056	67	6	12	33	29.3	66.7
DHS 250/18	250	85	1.75	6.76	0.067	67	6	12	33	29.3	66.2
DHS 300/15	300	100	1.45	6.66	0.066	67	7	12	38	34.0	76.1
DHS 300/18	300	100	1.75	8.01	0.079	67	7	12	38	33.9	75.6
DHS 350/18	350	100	1.75	8.83	0.087	77	7	12	43	32.7	73.4
DHS 400/20	400	100	1.95	10.74	0.106	79	7	12	48	31.8	70.9



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

DHS Section	FULL (GROSS) SECTION PROPERTIES											EFFECTIVE SECTION PROPERTIES						
	A_g mm²	I_x 10^6mm⁴	I_y 10^6mm⁴	Z_x 10^3mm³	$Z_{y(+ve)}$ 10^3mm³	$Z_{y(-ve)}$ 10^3mm³	r_x mm	r_y mm	b_y mm	J mm⁴	I_w 10^9mm⁶	$A_{e(fy)}$ mm²	I_{ex} 10^6mm⁴	$I_{ey(+ve)}$ 10^6mm⁴	$I_{ey(-ve)}$ 10^6mm⁴	Z_{ex} 10^3mm³	$Z_{ey(+ve)}$ 10^3mm³	$Z_{ey(-ve)}$ 10^3mm³
DHS 150/12	381	1.33	0.24	17.8	5.9	10.2	59.2	25.3	166	168	1.44	223	1.18	0.24	0.16	14.6	5.9	4.9
DHS 150/15	477	1.66	0.30	22.2	7.3	12.6	59.1	25.1	165	334	1.76	314	1.57	0.30	0.22	20.2	7.3	6.6
DHS 200/12	473	2.90	0.40	29.0	8.2	15.2	78.4	29.1	207	208	4.04	238	2.37	0.40	0.25	20.7	8.2	6.2
DHS 200/15	593	3.63	0.49	36.3	10.1	18.9	78.2	28.9	206	415	4.96	336	3.22	0.49	0.33	29.8	10.1	8.6
DHS 200/18	712	4.34	0.59	43.4	12.0	22.4	78.1	28.7	206	726	5.82	445	4.12	0.59	0.42	39.9	12.0	10.8
DHS 250/13	620	5.86	0.66	46.8	11.8	22.4	97.2	32.6	246	323	10.47	290	4.62	0.66	0.39	31.6	11.8	8.6
DHS 250/15	717	6.76	0.76	54.1	13.6	25.8	97.1	32.5	245	502	11.97	361	5.62	0.76	0.47	39.6	13.6	10.5
DHS 250/18	861	8.10	0.90	64.8	16.1	30.7	97.0	32.3	245	879	14.13	478	7.20	0.90	0.60	53.2	16.1	13.8
DHS 300/15	849	11.55	1.22	77.0	18.4	35.8	116.7	37.9	292	595	27.41	381	8.93	1.22	0.73	50.2	18.4	13.5
DHS 300/18	1020	13.86	1.45	92.4	22.0	42.7	116.5	37.7	292	1042	32.47	505	11.46	1.45	0.92	67.1	22.0	17.6
DHS 350/18	1125	20.22	1.60	115.6	23.7	48.8	134.1	37.7	333	1149	48.48	523	16.36	1.60	0.96	80.8	23.7	18.0
DHS 400/20	1368	31.31	1.91	156.5	28.0	60.0	151.3	37.4	380	1734	75.70	635	25.75	1.91	1.14	112.2	28.0	21.4

Note: Notation used is consistent with Table 1.4 in AS/NZS 4600:1996 (+ve) = Lip in compression (–ve) = Web in compression

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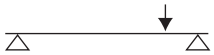
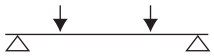
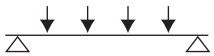
2.3.5 CONVERSION FORMULAE FROM POINT LOADS TO EQUIVALENT UNIFORM BENDING LOADS

For DHS Purlins – Ultimate Strength

Formula $W = F \times \frac{P}{L}$

Where W = Uniform bending load
F = Factor "F" from table below
P = Point load ↓
L = Length of span

Type	Symbol	Factor "F"			
		Simple	End or Internal	Lapped End	Lapped Internal
One equidistant point load		2	1.75	1.75	1.5
One eccentric point load		1.5	1.5	1.5	1
Two equidistant point loads		2.67	2.5	2.5	1.75
Three equidistant point loads		4	3	3	2.5
Four equidistant point loads		4.8	4	4	3
Five equidistant point loads		6	5	5	4

These formulae are only applicable to DHS Purlins. Refer to the Top Notch Purlin Section 2.4.4 for Top Notch formulae.

The formula assumes all point loads are equal in magnitude.

These factors "F" are an approximation to the pure derivation and are to be used as a guide only.

2.3.6 INTRODUCTION TO DHS PURLIN SYSTEMS CAPACITY TABLES

The capacity tables given in Sections 2.3.7 and 2.3.8 relate to the following span configurations:

Single span – pinned at both ends.
End span – pinned at one end and fixed at the other.
Internal span – fixed at both ends.

Note: End and internal spans can be continuous or lapped.

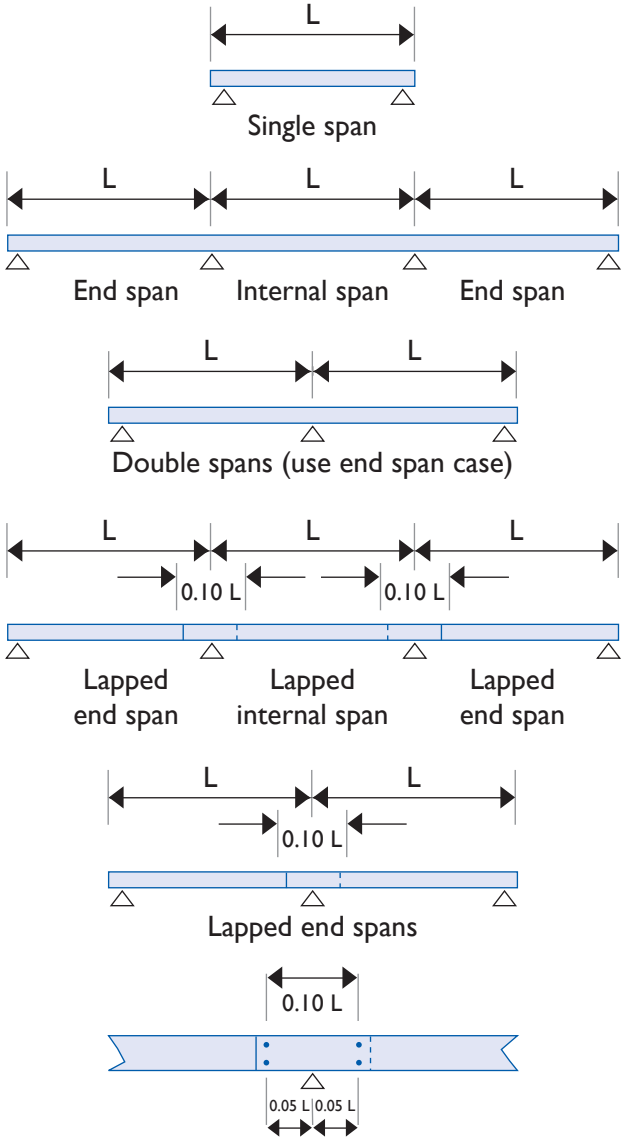
No bolt slip or member rotation has been allowed for at fixed ends.

Use of end span tables with corresponding internal span tables assumes that the end span is within plus 5% or minus 10% of the internal spans, provided that for a 3 span configuration both end spans are reduced by the same amount. Otherwise specific design to AS/NZS 4600 is required.

As a guide, single spans are used most frequently, particularly where purlins are set down between the rafters. Deflections may govern on larger spans.

End and continuous configurations may be used where lower deflections are required.

Lapped end and lapped internal configurations are more economical on large purlin spans where better strength and lower deflections are required.



All lap lengths are to be a minimum of 0.1 of the maximum span, measured from bolt centre to bolt centre each end of the lap, positioned equally each side of the portal rafter. Refer detail N in Section 2.3.16.15.

L = Span length

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2.3.7 DHS LOAD SPAN TABLES – SINGLE SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0	5.17	5.17	5.17	5.17	4.73																									
3.5	3.80	3.80	3.80	3.80	3.02	5.18	5.18	5.18	5.18	3.92	5.63	5.63	5.63	5.63	5.86															
4.0	2.91	2.91	2.91	2.91	2.05	3.96	3.96	3.96	3.96	2.65	4.31	4.31	4.31	4.31	4.03	5.91	5.91	5.91	5.91	5.51	7.60	7.60	7.60	7.60	6.80	5.37	5.37	5.37	5.37	7.48
4.5	2.30	2.30	2.30	2.30	1.45	3.09	3.13	3.13	3.13	1.86	3.40	3.40	3.40	3.40	2.90	4.67	4.67	4.67	4.67	3.91	6.00	6.00	6.00	6.00	4.82	4.77	4.77	4.77	4.77	5.37
5.0	1.73	1.86	1.86	1.86	1.06	2.29	2.53	2.53	2.53	1.36	2.69	2.75	2.75	2.75	2.16	3.78	3.78	3.78	3.78	2.87	4.86	4.86	4.86	4.86	3.54	4.27	4.27	4.27	4.27	3.99
5.5	1.26	1.54	1.54	1.54	0.80	1.67	2.09	2.09	2.09	1.02	2.09	2.28	2.28	2.28	1.65	3.02	3.12	3.12	3.12	2.17	3.85	4.02	4.02	4.02	2.66	3.43	3.53	3.53	3.53	3.05
6.0	0.94	1.29	1.29	1.29	0.62	1.24	1.76	1.76	1.76	0.78	1.63	1.91	1.91	1.91	1.29	2.35	2.62	2.62	2.62	1.68	2.94	3.38	3.38	3.38	2.05	2.73	2.96	2.96	2.96	2.39
6.5	0.71	1.10	1.10	1.10	0.49	0.94	1.50	1.50	1.50	0.62	1.27	1.63	1.63	1.63	1.02	1.79	2.23	2.23	2.23	1.33	2.24	2.88	2.88	2.88	1.61	2.20	2.53	2.53	2.53	1.91
7.0	0.55	0.94	0.95	0.95	0.39	0.72	1.26	1.29	1.29	0.49	1.00	1.40	1.40	1.40	0.82	1.39	1.93	1.93	1.93	1.07	1.73	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	1.55
7.5	0.43	0.78	0.82	0.82	0.32	0.56	1.03	1.12	1.12	0.40	0.81	1.21	1.22	1.22	0.67	1.09	1.68	1.68	1.68	0.87	1.36	2.16	2.16	2.16	1.05	1.41	1.90	1.90	1.90	1.28
8.0						0.44	0.84	0.99	0.99	0.33	0.65	1.02	1.07	1.07	0.56	0.87	1.47	1.47	1.47	0.72	1.07	1.90	1.90	1.90	0.86	1.15	1.66	1.67	1.67	1.07
8.5											0.53	0.86	0.95	0.95	0.47	0.70	1.25	1.30	1.30	0.60	0.85	1.60	1.68	1.68	0.72	0.94	1.43	1.48	1.48	0.90
9.0											0.43	0.74	0.85	0.85	0.39	0.57	1.07	1.16	1.16	0.50	0.69	1.34	1.50	1.50	0.60	0.79	1.23	1.32	1.32	0.77
9.5											0.35	0.62	0.76	0.76	0.34	0.47	0.89	1.04	1.04	0.43	0.56	1.11	1.34	1.34	0.51	0.66	1.06	1.18	1.18	0.66
10.0											0.29	0.53	0.67	0.69	0.29	0.38	0.75	0.94	0.94	0.37	0.46	0.93	1.21	1.21	0.44	0.56	0.92	1.06	1.06	0.57
10.5																0.32	0.63	0.85	0.85	0.32	0.38	0.79	1.10	1.10	0.38	0.48	0.79	0.97	0.97	0.49
11.0																					0.32	0.67	0.97	1.00	0.33	0.40	0.68	0.86	0.88	0.43
11.5																					0.27	0.57	0.85	0.92	0.29	0.34	0.59	0.77	0.80	0.38
12.0																										0.29	0.52	0.68	0.74	0.33
12.5																										0.25	0.45	0.61	0.68	0.29
13.0																														
13.5																														
14.0																														
14.5																														
15.0																														
15.5																														
16.0																														
16.5																														
17.0																														
17.5																														
18.0																														

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_S: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – SINGLE SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0																														
3.5																														
4.0																														
4.5																														
5.0	5.24	5.24	5.24	5.24	4.90	6.77	6.77	6.77	6.77	6.35	5.53	5.53	5.53	5.53	7.44															
5.5	4.31	4.33	4.33	4.33	3.75	5.60	5.60	5.60	5.60	4.81	5.03	5.03	5.03	5.03	5.69															
6.0	3.44	3.64	3.64	3.64	2.94	4.63	4.70	4.70	4.70	3.73	4.61	4.61	4.61	4.61	4.46															
6.5	2.77	3.10	3.10	3.10	2.35	3.74	4.01	4.01	4.01	2.95	3.86	4.05	4.05	4.05	3.56	5.17	5.25	5.25	5.25	4.63										
7.0	2.21	2.67	2.67	2.67	1.91	2.98	3.45	3.45	3.45	2.37	3.18	3.49	3.49	3.49	2.89	4.26	4.52	4.52	4.52	3.77	5.15	5.46	5.46	5.46	5.17					
7.5	1.78	2.33	2.33	2.33	1.57	2.36	3.01	3.01	3.01	1.94	2.64	3.04	3.04	3.04	2.39	3.54	3.94	3.94	3.94	3.11	4.27	4.76	4.76	4.76	4.26	5.95	6.26	6.26	6.26	6.54
8.0	1.45	2.04	2.04	2.04	1.30	1.88	2.64	2.64	2.64	1.60	2.17	2.67	2.67	2.67	1.99	2.91	3.46	3.46	3.46	2.60	3.52	4.18	4.18	4.18	3.56	4.91	5.66	5.66	5.66	5.46
8.5	1.20	1.79	1.81	1.81	1.09	1.52	2.34	2.34	2.34	1.34	1.79	2.36	2.36	2.36	1.68	2.41	3.07	3.07	3.07	2.20	2.91	3.70	3.70	3.70	3.00	4.06	5.01	5.01	5.01	4.60
9.0	0.99	1.54	1.61	1.61	0.92	1.24	2.08	2.09	2.09	1.13	1.49	2.11	2.11	2.11	1.43	2.02	2.74	2.74	2.74	1.86	2.43	3.30	3.30	3.30	2.56	3.39	4.47	4.47	4.47	3.92
9.5	0.82	1.34	1.45	1.45	0.78	1.02	1.80	1.87	1.87	0.96	1.26	1.85	1.89	1.89	1.23	1.70	2.45	2.45	2.45	1.59	2.05	2.96	2.96	2.96	2.20	2.85	4.01	4.01	4.01	3.37
10.0	0.68	1.16	1.31	1.31	0.67	0.85	1.57	1.69	1.69	0.82	1.07	1.62	1.71	1.71	1.07	1.45	2.17	2.21	2.21	1.37	1.74	2.63	2.67	2.67	1.91	2.42	3.62	3.62	3.62	2.92
10.5	0.57	1.00	1.19	1.19	0.58	0.71	1.35	1.53	1.53	0.71	0.91	1.43	1.55	1.55	0.93	1.23	1.91	2.01	2.01	1.18	1.49	2.31	2.42	2.42	1.66	2.07	3.22	3.28	3.28	2.54
11.0	0.48	0.86	1.08	1.08	0.51	0.59	1.16	1.40	1.40	0.62	0.79	1.26	1.41	1.41	0.82	1.04	1.69	1.83	1.83	1.03	1.28	2.04	2.21	2.21	1.46	1.79	2.85	2.99	2.99	2.23
11.5	0.41	0.75	0.96	0.99	0.45	0.50	0.99	1.28	1.28	0.54	0.68	1.12	1.29	1.29	0.72	0.89	1.50	1.67	1.67	0.91	1.11	1.81	2.02	2.02	1.29	1.55	2.52	2.73	2.73	1.97
12.0	0.35	0.66	0.86	0.91	0.39	0.42	0.86	1.16	1.17	0.47	0.59	0.98	1.18	1.18	0.64	0.76	1.32	1.54	1.54	0.80	0.97	1.60	1.86	1.86	1.15	1.35	2.23	2.51	2.51	1.75
12.5	0.30	0.58	0.77	0.83	0.35	0.36	0.74	1.04	1.08	0.42	0.52	0.86	1.07	1.09	0.57	0.66	1.16	1.42	1.42	0.71	0.84	1.40	1.71	1.71	1.02	1.17	1.96	2.31	2.31	1.56
13.0	0.26	0.51	0.69	0.77	0.31	0.31	0.65	0.94	1.00	0.37	0.45	0.76	0.97	1.01	0.51	0.57	1.03	1.30	1.31	0.63	0.73	1.24	1.57	1.58	0.92	1.01	1.73	2.14	2.14	1.40
13.5						0.27	0.57	0.84	0.93	0.33	0.40	0.67	0.88	0.93	0.46	0.50	0.91	1.18	1.21	0.57	0.63	1.10	1.42	1.46	0.82	0.87	1.54	1.98	1.98	1.26
14.0						0.23	0.50	0.75	0.86	0.30	0.35	0.60	0.80	0.87	0.41	0.43	0.81	1.07	1.13	0.51	0.55	0.98	1.29	1.36	0.74	0.76	1.37	1.80	1.84	1.14
14.5											0.30	0.54	0.72	0.81	0.37	0.38	0.73	0.97	1.05	0.46	0.48	0.88	1.18	1.27	0.66	0.66	1.22	1.64	1.72	1.03
15.0											0.27	0.48	0.66	0.76	0.33	0.33	0.66	0.89	0.98	0.41	0.42	0.79	1.07	1.19	0.60	0.58	1.10	1.49	1.61	0.94
15.5											0.24	0.43	0.60	0.71	0.30	0.29	0.59	0.81	0.92	0.38	0.37	0.71	0.98	1.11	0.55	0.51	0.99	1.36	1.50	0.85
16.0																0.26	0.53	0.73	0.86	0.34	0.33	0.64	0.89	1.04	0.50	0.45	0.89	1.24	1.41	0.77
16.5																0.23	0.47	0.66	0.81	0.31	0.29	0.58	0.80	0.98	0.45	0.40	0.81	1.12	1.33	0.71
17.0																					0.26	0.53	0.73	0.92	0.41	0.36	0.73	1.02	1.25	0.65
17.5																					0.23	0.48	0.67	0.87	0.38	0.32	0.67	0.93	1.18	0.59
18.0																					0.21	0.44	0.61	0.82	0.35	0.29	0.61	0.85	1.11	0.54

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_s: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – END SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0	4.75	4.75	4.75	4.75	10.78	7.05	7.05	7.05	7.05	14.30	4.57	4.57	4.57	4.57	21.64															
3.5	3.69	3.69	3.69	3.69	6.78	5.18	5.18	5.18	5.18	9.01	3.74	3.74	3.74	3.74	13.63	6.46	6.46	6.46	6.46	18.50	9.71	9.71	9.71	9.71	23.62	4.39	4.39	4.39	4.39	26.55
4.0	2.91	2.91	2.91	2.91	4.54	3.96	3.96	3.96	3.96	6.03	3.11	3.11	3.11	3.11	9.13	5.27	5.27	5.27	5.27	12.39	7.60	7.60	7.60	7.60	15.83	3.73	3.73	3.73	3.73	17.78
4.5	2.30	2.30	2.30	2.30	3.19	3.13	3.13	3.13	3.13	4.24	2.63	2.63	2.63	2.63	6.41	4.37	4.37	4.37	4.37	8.70	6.00	6.00	6.00	6.00	11.11	3.21	3.21	3.21	3.21	12.49
5.0	1.86	1.86	1.86	1.86	2.33	2.53	2.53	2.53	2.53	3.10	2.25	2.25	2.25	2.25	4.67	3.68	3.68	3.68	3.68	6.34	4.86	4.86	4.86	4.86	8.10	2.79	2.79	2.79	2.79	9.10
5.5	1.54	1.54	1.54	1.54	1.78	2.09	2.09	2.09	2.09	2.35	1.94	1.94	1.94	1.94	3.51	3.12	3.12	3.12	3.12	4.76	4.02	4.02	4.02	4.02	6.08	2.45	2.45	2.45	2.45	6.84
6.0	1.29	1.29	1.29	1.29	1.39	1.76	1.76	1.76	1.76	1.82	1.69	1.69	1.69	1.69	2.70	2.62	2.62	2.62	2.62	3.67	3.38	3.38	3.38	3.38	4.69	2.17	2.17	2.17	2.17	5.27
6.5	1.10	1.10	1.10	1.10	1.11	1.50	1.50	1.50	1.50	1.44	1.49	1.49	1.49	1.49	2.12	2.23	2.23	2.23	2.23	2.88	2.88	2.88	2.88	2.88	3.69	1.93	1.93	1.93	1.93	4.14
7.0	0.95	0.95	0.95	0.95	0.89	1.29	1.29	1.29	1.29	1.16	1.31	1.31	1.31	1.31	1.70	1.93	1.93	1.93	1.93	2.33	2.48	2.48	2.48	2.48	2.97	1.73	1.73	1.73	1.73	3.31
7.5	0.82	0.82	0.82	0.82	0.73	1.11	1.12	1.12	1.12	0.95	1.17	1.17	1.17	1.17	1.40	1.68	1.68	1.68	1.68	1.92	2.16	2.16	2.16	2.16	2.43	1.56	1.56	1.56	1.56	2.69
8.0	0.70	0.72	0.72	0.72	0.60	0.93	0.99	0.99	0.99	0.78	1.05	1.05	1.05	1.05	1.16	1.47	1.47	1.47	1.47	1.61	1.90	1.90	1.90	1.90	2.01	1.41	1.41	1.41	1.41	2.22
8.5	0.59	0.64	0.64	0.64	0.50	0.78	0.86	0.87	0.87	0.66	0.91	0.94	0.94	0.94	0.98	1.30	1.30	1.30	1.30	1.36	1.68	1.68	1.68	1.68	1.68	1.28	1.28	1.28	1.28	1.85
9.0	0.49	0.55	0.57	0.57	0.43	0.65	0.74	0.78	0.78	0.55	0.79	0.85	0.85	0.85	0.84	1.14	1.16	1.16	1.16	1.15	1.46	1.50	1.50	1.50	1.43	1.17	1.17	1.17	1.17	1.56
9.5	0.41	0.47	0.51	0.51	0.36	0.54	0.63	0.70	0.70	0.47	0.68	0.74	0.76	0.76	0.72	0.98	1.04	1.04	1.04	0.98	1.25	1.34	1.34	1.34	1.22	1.07	1.07	1.07	1.07	1.34
10.0	0.34	0.40	0.46	0.46	0.31	0.45	0.53	0.63	0.63	0.40	0.59	0.64	0.69	0.69	0.62	0.85	0.93	0.94	0.94	0.85	1.06	1.20	1.21	1.21	1.05	0.98	0.98	0.98	0.98	1.16
10.5						0.39	0.45	0.57	0.57	0.35	0.50	0.56	0.62	0.62	0.54	0.72	0.82	0.85	0.85	0.73	0.90	1.04	1.10	1.10	0.91	0.86	0.90	0.90	0.90	1.01
11.0						0.33	0.39	0.52	0.52	0.30	0.44	0.50	0.57	0.57	0.47	0.61	0.72	0.78	0.78	0.64	0.77	0.91	1.00	1.00	0.79	0.75	0.82	0.83	0.83	0.88
11.5											0.38	0.43	0.52	0.52	0.42	0.53	0.62	0.71	0.71	0.56	0.66	0.78	0.92	0.92	0.69	0.66	0.73	0.77	0.77	0.78
12.0											0.33	0.38	0.47	0.47	0.37	0.46	0.54	0.65	0.65	0.50	0.57	0.68	0.84	0.84	0.61	0.57	0.65	0.72	0.72	0.69
12.5											0.29	0.33	0.44	0.44	0.33	0.40	0.47	0.60	0.60	0.44	0.50	0.59	0.77	0.77	0.54	0.50	0.58	0.67	0.67	0.62
13.0											0.26	0.29	0.40	0.40	0.30	0.35	0.41	0.56	0.56	0.39	0.43	0.51	0.72	0.72	0.48	0.45	0.51	0.62	0.62	0.55
13.5																0.30	0.36	0.51	0.51	0.35	0.38	0.45	0.66	0.66	0.43	0.40	0.45	0.58	0.58	0.49
14.0																0.27	0.32	0.47	0.48	0.31	0.33	0.40	0.61	0.62	0.38	0.35	0.40	0.54	0.54	0.45
14.5																					0.29	0.35	0.55	0.57	0.35	0.31	0.36	0.49	0.50	0.40
15.0																					0.25	0.31	0.50	0.54	0.31	0.28	0.32	0.45	0.47	0.37
15.5																										0.25	0.29	0.41	0.44	0.33
16.0																										0.23	0.26	0.38	0.41	0.31
16.5																														
17.0																														
17.5																														
18.0																														

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_S: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – END SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0																														
3.5																														
4.0	5.41	5.41	5.41	5.41	21.61	8.47	8.47	8.47	8.47	27.70	5.01	5.01	5.01	5.01	34.35															
4.5	4.61	4.61	4.61	4.61	15.17	7.12	7.12	7.12	7.12	19.45	4.36	4.36	4.36	4.36	24.13															
5.0	3.97	3.97	3.97	3.97	11.06	6.05	6.05	6.05	6.05	14.18	3.82	3.82	3.82	3.82	17.59	6.11	6.11	6.11	6.11	22.56	5.67	5.67	5.67	5.67	32.21					
5.5	3.45	3.45	3.45	3.45	8.31	5.20	5.20	5.20	5.20	10.65	3.39	3.39	3.39	3.39	13.21	5.35	5.35	5.35	5.35	16.95	5.04	5.04	5.04	5.04	24.20					
6.0	3.03	3.03	3.03	3.03	6.40	4.52	4.52	4.52	4.52	8.20	3.02	3.02	3.02	3.02	10.18	4.73	4.73	4.73	4.73	13.05	4.51	4.51	4.51	4.51	18.64	5.53	5.53	5.53	5.53	29.35
6.5	2.68	2.68	2.68	2.68	5.03	3.95	3.95	3.95	3.95	6.45	2.71	2.71	2.71	2.71	8.00	4.21	4.21	4.21	4.21	10.27	4.07	4.07	4.07	4.07	14.66	5.01	5.01	5.01	5.01	23.08
7.0	2.38	2.38	2.38	2.38	4.03	3.45	3.45	3.45	3.45	5.16	2.45	2.45	2.45	2.45	6.41	3.76	3.76	3.76	3.76	8.22	3.69	3.69	3.69	3.69	11.74	4.57	4.57	4.57	4.57	18.48
7.5	2.13	2.13	2.13	2.13	3.27	3.01	3.01	3.01	3.01	4.20	2.22	2.22	2.22	2.22	5.21	3.38	3.38	3.38	3.38	6.68	3.35	3.35	3.35	3.35	9.54	4.18	4.18	4.18	4.18	15.02
8.0	1.91	1.91	1.91	1.91	2.70	2.64	2.64	2.64	2.64	3.46	2.02	2.02	2.02	2.02	4.29	3.05	3.05	3.05	3.05	5.50	3.07	3.07	3.07	3.07	7.86	3.84	3.84	3.84	3.84	12.38
8.5	1.73	1.73	1.73	1.73	2.25	2.34	2.34	2.34	2.34	2.90	1.85	1.85	1.85	1.85	3.58	2.77	2.77	2.77	2.77	4.59	2.81	2.81	2.81	2.81	6.55	3.53	3.53	3.53	3.53	10.32
9.0	1.57	1.57	1.57	1.57	1.90	2.09	2.09	2.09	2.09	2.47	1.70	1.70	1.70	1.70	3.01	2.52	2.52	2.52	2.52	3.86	2.59	2.59	2.59	2.59	5.52	3.27	3.27	3.27	3.27	8.69
9.5	1.40	1.43	1.43	1.43	1.64	1.87	1.87	1.87	1.87	2.12	1.56	1.56	1.56	1.56	2.56	2.31	2.31	2.31	2.31	3.28	2.39	2.39	2.39	2.39	4.69	3.03	3.03	3.03	3.03	7.39
10.0	1.23	1.30	1.30	1.30	1.42	1.66	1.69	1.69	1.69	1.84	1.44	1.44	1.44	1.44	2.19	2.12	2.12	2.12	2.12	2.82	2.21	2.21	2.21	2.21	4.02	2.82	2.82	2.82	2.82	6.34
10.5	1.08	1.17	1.19	1.19	1.23	1.45	1.53	1.53	1.53	1.60	1.33	1.33	1.33	1.33	1.89	1.95	1.95	1.95	1.95	2.43	2.05	2.05	2.05	2.05	3.47	2.62	2.62	2.62	2.62	5.47
11.0	0.95	1.04	1.08	1.08	1.08	1.28	1.40	1.40	1.40	1.41	1.24	1.24	1.24	1.24	1.65	1.77	1.80	1.80	1.80	2.13	1.91	1.91	1.91	1.91	3.02	2.45	2.45	2.45	2.45	4.76
11.5	0.83	0.92	0.99	0.99	0.96	1.12	1.24	1.28	1.28	1.24	1.15	1.15	1.15	1.15	1.45	1.58	1.66	1.66	1.66	1.88	1.78	1.78	1.78	1.78	2.64	2.29	2.29	2.29	2.29	4.16
12.0	0.72	0.82	0.91	0.91	0.85	0.97	1.11	1.17	1.17	1.10	1.05	1.07	1.07	1.07	1.29	1.41	1.53	1.54	1.54	1.67	1.66	1.66	1.66	1.66	2.33	2.15	2.15	2.15	2.15	3.66
12.5	0.64	0.73	0.83	0.83	0.76	0.85	0.99	1.08	1.08	0.98	0.94	1.00	1.00	1.00	1.15	1.26	1.38	1.42	1.42	1.49	1.52	1.55	1.55	1.55	2.06	2.02	2.02	2.02	2.02	3.24
13.0	0.56	0.65	0.77	0.77	0.68	0.74	0.88	1.00	1.00	0.87	0.83	0.93	0.94	0.94	1.03	1.12	1.24	1.31	1.31	1.34	1.35	1.46	1.46	1.46	1.84	1.88	1.90	1.90	1.90	2.88
13.5	0.50	0.58	0.72	0.72	0.61	0.65	0.78	0.93	0.93	0.78	0.74	0.84	0.88	0.88	0.93	1.00	1.12	1.21	1.21	1.20	1.20	1.36	1.37	1.37	1.66	1.67	1.79	1.79	1.79	2.57
14.0	0.45	0.51	0.66	0.66	0.55	0.57	0.68	0.86	0.86	0.70	0.66	0.76	0.82	0.82	0.84	0.89	1.02	1.13	1.13	1.09	1.08	1.23	1.29	1.29	1.50	1.49	1.69	1.69	1.69	2.31
14.5	0.40	0.46	0.62	0.62	0.50	0.51	0.61	0.80	0.80	0.63	0.59	0.68	0.78	0.78	0.76	0.80	0.92	1.05	1.05	0.98	0.96	1.11	1.21	1.21	1.36	1.34	1.55	1.59	1.59	2.09
15.0	0.36	0.41	0.57	0.58	0.45	0.45	0.54	0.75	0.75	0.57	0.53	0.62	0.73	0.73	0.69	0.72	0.83	0.98	0.98	0.89	0.87	1.00	1.14	1.14	1.23	1.20	1.40	1.51	1.51	1.90
15.5	0.32	0.37	0.52	0.54	0.41	0.40	0.48	0.70	0.70	0.52	0.48	0.55	0.69	0.69	0.63	0.65	0.75	0.92	0.92	0.82	0.78	0.90	1.08	1.08	1.12	1.09	1.26	1.43	1.43	1.73
16.0	0.29	0.34	0.48	0.51	0.38	0.36	0.43	0.65	0.66	0.47	0.43	0.50	0.65	0.65	0.57	0.59	0.68	0.86	0.86	0.75	0.71	0.82	1.02	1.02	1.03	0.98	1.14	1.35	1.35	1.58
16.5	0.26	0.31	0.44	0.48	0.35	0.32	0.39	0.59	0.62	0.43	0.39	0.45	0.61	0.62	0.53	0.54	0.62	0.81	0.81	0.68	0.64	0.74	0.97	0.97	0.94	0.89	1.04	1.29	1.29	1.45
17.0	0.23	0.28	0.41	0.45	0.32	0.29	0.35	0.55	0.58	0.39	0.36	0.41	0.57	0.58	0.48	0.49	0.56	0.76	0.76	0.63	0.58	0.68	0.92	0.92	0.87	0.81	0.94	1.22	1.22	1.33
17.5						0.26	0.31	0.51	0.55	0.36	0.33	0.38	0.52	0.55	0.45	0.44	0.51	0.70	0.72	0.58	0.53	0.62	0.85	0.87	0.80	0.74	0.86	1.16	1.16	1.23
18.0						0.23	0.28	0.46	0.52	0.33	0.30	0.34	0.49	0.52	0.41	0.40	0.47	0.65	0.68	0.54	0.49	0.56	0.79	0.82	0.74	0.68	0.79	1.10	1.11	1.13

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_S: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – INTERNAL SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0																														
3.5	5.18	5.18	5.18	5.18	14.11	7.77	7.77	7.77	7.77	18.74	4.93	4.93	4.93	4.93	28.35															
4.0	4.17	4.17	4.17	4.17	9.45	5.95	5.95	5.95	5.95	12.55	4.15	4.15	4.15	4.15	18.99															
4.5	3.43	3.43	3.43	3.43	6.64	4.70	4.70	4.70	4.70	8.81	3.54	3.54	3.54	3.54	13.34	6.06	6.06	6.06	6.06	18.10	9.01	9.01	9.01	9.01	23.12	4.20	4.20	4.20	4.20	25.98
5.0	2.79	2.79	2.79	2.79	4.84	3.80	3.80	3.80	3.80	6.42	3.06	3.06	3.06	3.06	9.72	5.15	5.15	5.15	5.15	13.19	7.30	7.30	7.30	7.30	16.85	3.69	3.69	3.69	3.69	18.94
5.5	2.31	2.31	2.31	2.31	3.63	3.14	3.14	3.14	3.14	4.83	2.67	2.67	2.67	2.67	7.30	4.42	4.42	4.42	4.42	9.91	6.03	6.03	6.03	6.03	12.66	3.26	3.26	3.26	3.26	14.23
6.0	1.94	1.94	1.94	1.94	2.80	2.64	2.64	2.64	2.64	3.72	2.34	2.34	2.34	2.34	5.62	3.83	3.83	3.83	3.83	7.63	5.07	5.07	5.07	5.07	9.75	2.91	2.91	2.91	2.91	10.96
6.5	1.65	1.65	1.65	1.65	2.20	2.25	2.25	2.25	2.25	2.92	2.07	2.07	2.07	2.07	4.42	3.35	3.35	3.35	3.35	6.00	4.32	4.32	4.32	4.32	7.67	2.61	2.61	2.61	2.61	8.62
7.0	1.42	1.42	1.42	1.42	1.76	1.94	1.94	1.94	1.94	2.35	1.84	1.84	1.84	1.84	3.54	2.89	2.89	2.89	2.89	4.81	3.72	3.72	3.72	3.72	6.14	2.35	2.35	2.35	2.35	6.90
7.5	1.24	1.24	1.24	1.24	1.45	1.69	1.69	1.69	1.69	1.92	1.65	1.65	1.65	1.65	2.88	2.52	2.52	2.52	2.52	3.91	3.24	3.24	3.24	3.24	4.99	2.13	2.13	2.13	2.13	5.61
8.0	1.09	1.09	1.09	1.09	1.21	1.48	1.48	1.48	1.48	1.59	1.48	1.48	1.48	1.48	2.37	2.21	2.21	2.21	2.21	3.22	2.85	2.85	2.85	2.85	4.11	1.94	1.94	1.94	1.94	4.62
8.5	0.96	0.96	0.96	0.96	1.02	1.31	1.31	1.31	1.31	1.33	1.34	1.34	1.34	1.34	1.97	1.96	1.96	1.96	1.96	2.68	2.52	2.52	2.52	2.52	3.43	1.77	1.77	1.77	1.77	3.85
9.0	0.86	0.86	0.86	0.86	0.87	1.17	1.17	1.17	1.17	1.13	1.22	1.22	1.22	1.22	1.66	1.75	1.75	1.75	1.75	2.26	2.25	2.25	2.25	2.25	2.89	1.62	1.62	1.62	1.62	3.24
9.5	0.77	0.77	0.77	0.77	0.74	1.05	1.05	1.05	1.05	0.96	1.11	1.11	1.11	1.11	1.41	1.57	1.57	1.57	1.57	1.93	2.02	2.02	2.02	2.02	2.47	1.49	1.49	1.49	1.49	2.76
10.0	0.69	0.69	0.69	0.69	0.64	0.95	0.95	0.95	0.95	0.83	1.01	1.01	1.01	1.01	1.22	1.41	1.41	1.41	1.41	1.67	1.82	1.82	1.82	1.82	2.12	1.38	1.38	1.38	1.38	2.36
10.5	0.63	0.63	0.63	0.63	0.55	0.86	0.86	0.86	0.86	0.72	0.93	0.93	0.93	0.93	1.06	1.28	1.28	1.28	1.28	1.46	1.65	1.65	1.65	1.65	1.84	1.27	1.27	1.27	1.27	2.04
11.0	0.57	0.57	0.57	0.57	0.48	0.78	0.78	0.78	0.78	0.63	0.85	0.85	0.85	0.85	0.93	1.17	1.17	1.17	1.17	1.28	1.50	1.50	1.50	1.50	1.61	1.18	1.18	1.18	1.18	1.77
11.5	0.52	0.52	0.52	0.52	0.42	0.72	0.72	0.72	0.72	0.55	0.78	0.78	0.78	0.78	0.82	1.07	1.07	1.07	1.07	1.13	1.38	1.38	1.38	1.38	1.41	1.10	1.10	1.10	1.10	1.55
12.0	0.48	0.48	0.48	0.48	0.37	0.66	0.66	0.66	0.66	0.48	0.71	0.71	0.71	0.71	0.73	0.98	0.98	0.98	0.98	1.00	1.26	1.26	1.26	1.26	1.25	1.02	1.02	1.02	1.02	1.37
12.5	0.44	0.44	0.44	0.44	0.33	0.60	0.60	0.60	0.60	0.43	0.66	0.66	0.66	0.66	0.65	0.90	0.90	0.90	0.90	0.89	1.16	1.16	1.16	1.16	1.11	0.95	0.95	0.95	0.95	1.21
13.0	0.41	0.41	0.41	0.41	0.29	0.56	0.56	0.56	0.56	0.38	0.61	0.61	0.61	0.61	0.58	0.84	0.84	0.84	0.84	0.80	1.08	1.08	1.08	1.08	0.99	0.89	0.89	0.89	0.89	1.08
13.5						0.51	0.50	0.52	0.52	0.34	0.56	0.56	0.56	0.56	0.52	0.77	0.77	0.77	0.77	0.71	1.00	1.00	1.00	1.00	0.88	0.83	0.83	0.83	0.83	0.97
14.0						0.46	0.46	0.48	0.48	0.31	0.52	0.52	0.52	0.52	0.47	0.72	0.72	0.72	0.72	0.64	0.93	0.93	0.93	0.93	0.79	0.78	0.78	0.78	0.78	0.88
14.5											0.48	0.48	0.49	0.49	0.43	0.67	0.67	0.67	0.67	0.58	0.86	0.86	0.86	0.86	0.71	0.74	0.74	0.74	0.74	0.79
15.0											0.44	0.44	0.46	0.46	0.39	0.63	0.63	0.63	0.63	0.52	0.81	0.81	0.81	0.81	0.65	0.69	0.69	0.69	0.69	0.72
15.5											0.41	0.40	0.42	0.43	0.35	0.59	0.58	0.59	0.59	0.48	0.76	0.75	0.76	0.76	0.59	0.65	0.65	0.65	0.65	0.66
16.0											0.37	0.37	0.39	0.40	0.32	0.54	0.53	0.55	0.55	0.43	0.69	0.69	0.71	0.71	0.53	0.61	0.61	0.62	0.62	0.60
16.5											0.35	0.34	0.36	0.38	0.30	0.50	0.49	0.52	0.52	0.40	0.64	0.63	0.67	0.67	0.49	0.56	0.56	0.58	0.58	0.55
17.0																0.46	0.45	0.48	0.49	0.36	0.58	0.58	0.62	0.63	0.45	0.52	0.52	0.54	0.55	0.51
17.5																0.43	0.42	0.45	0.46	0.33	0.54	0.52	0.57	0.59	0.41	0.48	0.48	0.51	0.52	0.47
18.0																0.39	0.38	0.41	0.43	0.31	0.49	0.48	0.53	0.56	0.38	0.45	0.44	0.47	0.49	0.43

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_S: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – INTERNAL SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0																														
3.5																														
4.0																														
4.5	6.13	6.13	6.13	6.13	31.56	9.68	9.68	9.68	9.68	40.46	5.63	5.63	5.63	5.63	50.18															
5.0	5.33	5.33	5.33	5.33	23.01	8.31	8.31	8.31	8.31	29.49	4.98	4.98	4.98	4.98	36.58															
5.5	4.68	4.68	4.68	4.68	17.29	7.21	7.21	7.21	7.21	22.16	4.44	4.44	4.44	4.44	27.48															
6.0	4.14	4.14	4.14	4.14	13.31	6.31	6.31	6.31	6.31	17.07	3.98	3.98	3.98	3.98	21.17	6.36	6.36	6.36	6.36	27.15	5.90	5.90	5.90	5.90	38.77					
6.5	3.68	3.68	3.68	3.68	10.47	5.56	5.56	5.56	5.56	13.42	3.60	3.60	3.60	3.60	16.65	5.70	5.70	5.70	5.70	21.35	5.35	5.35	5.35	5.35	30.50					
7.0	3.29	3.29	3.29	3.29	8.38	4.93	4.93	4.93	4.93	10.75	3.27	3.27	3.27	3.27	13.33	5.13	5.13	5.13	5.13	17.10	4.87	4.87	4.87	4.87	24.42	5.97	5.97	5.97	5.97	38.44
7.5	2.96	2.96	2.96	2.96	6.81	4.40	4.40	4.40	4.40	8.74	2.98	2.98	2.98	2.98	10.84	4.64	4.64	4.64	4.64	13.90	4.46	4.46	4.46	4.46	19.85	5.48	5.48	5.48	5.48	31.25
8.0	2.68	2.68	2.68	2.68	5.61	3.94	3.94	3.94	3.94	7.20	2.73	2.73	2.73	2.73	8.93	4.22	4.22	4.22	4.22	11.45	4.10	4.10	4.10	4.10	16.36	5.06	5.06	5.06	5.06	25.75
8.5	2.43	2.43	2.43	2.43	4.68	3.51	3.51	3.51	3.51	6.00	2.51	2.51	2.51	2.51	7.44	3.85	3.85	3.85	3.85	9.55	3.78	3.78	3.78	3.78	13.63	4.68	4.68	4.68	4.68	21.47
9.0	2.22	2.22	2.22	2.22	3.94	3.13	3.13	3.13	3.13	5.05	2.31	2.31	2.31	2.31	6.27	3.52	3.52	3.52	3.52	8.04	3.49	3.49	3.49	3.49	11.49	4.35	4.35	4.35	4.35	18.08
9.5	2.03	2.03	2.03	2.03	3.35	2.81	2.81	2.81	2.81	4.30	2.14	2.14	2.14	2.14	5.33	3.24	3.24	3.24	3.24	6.84	3.24	3.24	3.24	3.24	9.76	4.05	4.05	4.05	4.05	15.37
10.0	1.86	1.86	1.86	1.86	2.87	2.54	2.54	2.54	2.54	3.68	1.98	1.98	1.98	1.98	4.57	2.98	2.98	2.98	2.98	5.86	3.01	3.01	3.01	3.01	8.37	3.78	3.78	3.78	3.78	13.18
10.5	1.71	1.71	1.71	1.71	2.48	2.30	2.30	2.30	2.30	3.18	1.84	1.84	1.84	1.84	3.95	2.75	2.75	2.75	2.75	5.06	2.81	2.81	2.81	2.81	7.23	3.54	3.54	3.54	3.54	11.39
11.0	1.58	1.58	1.58	1.58	2.16	2.10	2.10	2.10	2.10	2.77	1.72	1.72	1.72	1.72	3.43	2.55	2.55	2.55	2.55	4.40	2.62	2.62	2.62	2.62	6.29	3.32	3.32	3.32	3.32	9.90
11.5	1.46	1.46	1.46	1.46	1.89	1.92	1.92	1.92	1.92	2.42	1.60	1.60	1.60	1.60	3.00	2.37	2.37	2.37	2.37	3.85	2.45	2.45	2.45	2.45	5.50	3.12	3.12	3.12	3.12	8.66
12.0	1.36	1.36	1.36	1.36	1.66	1.76	1.76	1.76	1.76	2.15	1.50	1.50	1.50	1.50	2.64	2.20	2.20	2.20	2.20	3.39	2.30	2.30	2.30	2.30	4.84	2.93	2.93	2.93	2.93	7.63
12.5	1.25	1.25	1.25	1.25	1.48	1.62	1.62	1.62	1.62	1.91	1.41	1.41	1.41	1.41	2.34	2.06	2.06	2.06	2.06	3.00	2.16	2.16	2.16	2.16	4.28	2.76	2.76	2.76	2.76	6.75
13.0	1.16	1.16	1.16	1.16	1.32	1.50	1.50	1.50	1.50	1.72	1.32	1.32	1.32	1.32	2.08	1.92	1.92	1.92	1.92	2.67	2.03	2.03	2.03	2.03	3.81	2.61	2.61	2.61	2.61	6.00
13.5	1.08	1.08	1.08	1.08	1.19	1.39	1.39	1.39	1.39	1.54	1.24	1.24	1.24	1.24	1.85	1.80	1.80	1.80	1.80	2.38	1.92	1.92	1.92	1.92	3.40	2.47	2.47	2.47	2.47	5.35
14.0	1.00	1.00	1.00	1.00	1.07	1.29	1.29	1.29	1.29	1.39	1.17	1.17	1.17	1.17	1.66	1.69	1.69	1.69	1.69	2.13	1.81	1.81	1.81	1.81	3.05	2.34	2.34	2.34	2.34	4.80
14.5	0.93	0.93	0.93	0.93	0.97	1.20	1.20	1.20	1.20	1.26	1.10	1.10	1.10	1.10	1.50	1.58	1.58	1.58	1.58	1.92	1.71	1.71	1.71	1.71	2.74	2.21	2.21	2.21	2.21	4.32
15.0	0.87	0.87	0.87	0.87	0.88	1.13	1.13	1.13	1.13	1.15	1.04	1.04	1.04	1.04	1.35	1.47	1.47	1.47	1.47	1.74	1.62	1.62	1.62	1.62	2.48	2.10	2.10	2.10	2.10	3.90
15.5	0.81	0.81	0.81	0.81	0.81	1.05	1.05	1.05	1.05	1.05	0.99	0.99	0.99	0.99	1.23	1.38	1.38	1.38	1.38	1.59	1.53	1.53	1.53	1.53	2.24	2.00	2.00	2.00	2.00	3.54
16.0	0.76	0.76	0.76	0.76	0.74	0.99	0.99	0.99	0.99	0.96	0.93	0.93	0.93	0.93	1.12	1.30	1.30	1.30	1.30	1.45	1.45	1.45	1.45	1.45	2.04	1.90	1.90	1.90	1.90	3.21
16.5	0.70	0.70	0.72	0.72	0.68	0.93	0.93	0.93	0.93	0.88	0.89	0.89	0.89	0.89	1.03	1.22	1.22	1.22	1.22	1.33	1.38	1.38	1.38	1.38	1.86	1.81	1.81	1.81	1.81	2.93
17.0	0.65	0.65	0.68	0.68	0.62	0.87	0.87	0.87	0.87	0.81	0.84	0.84	0.84	0.84	0.95	1.15	1.15	1.15	1.15	1.23	1.31	1.31	1.31	1.31	1.70	1.72	1.72	1.72	1.72	2.68
17.5	0.61	0.60	0.64	0.64	0.57	0.81	0.81	0.83	0.83	0.74	0.80	0.80	0.80	0.80	0.87	1.08	1.08	1.08	1.08	1.13	1.25	1.25	1.25	1.25	1.56	1.64	1.64	1.64	1.64	2.46
18.0	0.56	0.56	0.59	0.60	0.53	0.76	0.76	0.78	0.78	0.68	0.76	0.76	0.76	0.76	0.81	1.02	1.02	1.02	1.02	1.05	1.19	1.19	1.19	1.19	1.44	1.57	1.57	1.57	1.57	2.26

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_s: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – LAPPED END SPAN

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0	5.66	5.66	5.66	5.66	12.02	8.98	8.98	8.98	8.98	15.96	5.18	5.18	5.18	5.18	24.15															
3.5	4.45	4.45	4.45	4.45	7.57	6.62	6.62	6.62	6.62	10.05	4.28	4.28	4.28	4.28	15.21															
4.0	3.58	3.58	3.58	3.58	5.07	5.06	5.06	5.06	5.06	6.73	3.60	3.60	3.60	3.60	10.19	6.24	6.24	6.24	6.24	13.83	9.41	9.41	9.41	9.41	17.66	4.21	4.21	4.21	4.21	19.84
4.5	2.94	2.94	2.94	2.94	3.56	4.00	4.00	4.00	4.00	4.73	3.06	3.06	3.06	3.06	7.15	5.22	5.22	5.22	5.22	9.71	7.67	7.67	7.67	7.67	12.40	3.65	3.65	3.65	3.65	13.94
5.0	2.38	2.38	2.38	2.38	2.59	3.24	3.24	3.24	3.24	3.44	2.64	2.64	2.64	2.64	5.21	4.43	4.43	4.43	4.43	7.08	6.22	6.22	6.22	6.22	9.04	3.20	3.20	3.20	3.20	10.16
5.5	1.96	1.96	1.96	1.96	1.95	2.68	2.68	2.68	2.68	2.59	2.30	2.30	2.30	2.30	3.92	3.80	3.80	3.80	3.80	5.32	5.14	5.14	5.14	5.14	6.79	2.83	2.83	2.83	2.83	7.63
6.0	1.65	1.65	1.65	1.65	1.50	2.25	2.25	2.25	2.25	2.00	2.02	2.02	2.02	2.02	3.02	3.29	3.29	3.29	3.29	4.09	4.31	4.31	4.31	4.31	5.23	2.52	2.52	2.52	2.52	5.88
6.5	1.40	1.40	1.40	1.40	1.20	1.92	1.92	1.92	1.92	1.58	1.78	1.78	1.78	1.78	2.37	2.86	2.86	2.86	2.86	3.22	3.68	3.68	3.68	3.68	4.11	2.25	2.25	2.25	2.25	4.62
7.0	1.21	1.21	1.21	1.21	0.97	1.61	1.65	1.65	1.65	1.27	1.59	1.59	1.59	1.59	1.90	2.46	2.46	2.46	2.46	2.58	3.17	3.17	3.17	3.17	3.29	2.03	2.03	2.03	2.03	3.70
7.5	1.00	1.05	1.05	1.05	0.80	1.33	1.44	1.44	1.44	1.04	1.42	1.42	1.42	1.42	1.54	2.14	2.14	2.14	2.14	2.09	2.76	2.76	2.76	2.76	2.68	1.84	1.84	1.84	1.84	3.01
8.0	0.83	0.91	0.93	0.93	0.66	1.10	1.22	1.26	1.26	0.86	1.27	1.27	1.27	1.27	1.27	1.88	1.88	1.88	1.88	1.72	2.42	2.43	2.43	2.43	2.21	1.67	1.67	1.67	1.67	2.48
8.5	0.68	0.78	0.82	0.82	0.55	0.90	1.03	1.12	1.12	0.72	1.11	1.15	1.15	1.15	1.06	1.60	1.67	1.67	1.67	1.45	2.04	2.15	2.15	2.15	1.85	1.53	1.53	1.53	1.53	2.06
9.0	0.56	0.65	0.73	0.73	0.47	0.74	0.86	1.00	1.00	0.61	0.95	1.03	1.04	1.04	0.90	1.37	1.49	1.49	1.49	1.24	1.72	1.92	1.92	1.92	1.57	1.40	1.40	1.40	1.40	1.74
9.5	0.47	0.54	0.66	0.66	0.40	0.62	0.72	0.89	0.89	0.52	0.80	0.89	0.95	0.95	0.77	1.15	1.29	1.33	1.33	1.06	1.44	1.65	1.72	1.72	1.34	1.28	1.28	1.28	1.28	1.48
10.0	0.39	0.46	0.59	0.59	0.34	0.52	0.61	0.81	0.81	0.45	0.69	0.78	0.87	0.87	0.67	0.97	1.13	1.20	1.20	0.92	1.21	1.42	1.55	1.55	1.15	1.18	1.18	1.18	1.18	1.27
10.5	0.33	0.38	0.54	0.54	0.30	0.44	0.51	0.73	0.73	0.39	0.59	0.67	0.80	0.80	0.58	0.82	0.97	1.09	1.09	0.80	1.03	1.21	1.41	1.41	1.00	1.02	1.09	1.09	1.09	1.09
11.0						0.37	0.44	0.65	0.67	0.34	0.51	0.58	0.72	0.72	0.51	0.70	0.82	0.99	0.99	0.70	0.87	1.03	1.28	1.28	0.87	0.88	0.99	1.01	1.01	0.95
11.5						0.31	0.37	0.58	0.61	0.30	0.44	0.50	0.66	0.66	0.45	0.60	0.71	0.91	0.91	0.62	0.75	0.89	1.17	1.17	0.76	0.77	0.88	0.94	0.94	0.84
12.0											0.39	0.44	0.60	0.61	0.40	0.52	0.61	0.83	0.83	0.54	0.64	0.77	1.08	1.08	0.67	0.67	0.77	0.88	0.88	0.74
12.5											0.34	0.39	0.54	0.56	0.36	0.45	0.53	0.77	0.77	0.48	0.55	0.66	0.99	0.99	0.60	0.59	0.67	0.82	0.82	0.66
13.0											0.30	0.34	0.48	0.52	0.32	0.39	0.46	0.70	0.71	0.43	0.48	0.58	0.90	0.92	0.53	0.52	0.59	0.76	0.76	0.59
13.5											0.26	0.30	0.44	0.48	0.29	0.34	0.40	0.63	0.66	0.38	0.42	0.50	0.81	0.85	0.48	0.46	0.53	0.72	0.72	0.53
14.0																0.30	0.36	0.57	0.61	0.35	0.37	0.44	0.72	0.79	0.43	0.41	0.47	0.65	0.67	0.48
14.5																0.27	0.31	0.51	0.57	0.31	0.32	0.39	0.64	0.74	0.39	0.37	0.42	0.60	0.63	0.43
15.0																					0.28	0.34	0.57	0.69	0.35	0.33	0.38	0.54	0.59	0.39
15.5																					0.25	0.30	0.51	0.64	0.32	0.30	0.34	0.50	0.56	0.36
16.0																					0.22	0.27	0.46	0.60	0.29	0.27	0.31	0.45	0.53	0.33
16.5																										0.24	0.28	0.41	0.50	0.30
17.0																														
17.5																														
18.0																														

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_S: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – LAPPED END SPAN

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0																														
3.5																														
4.0	6.18	6.18	6.18	6.18	24.11	9.86	9.86	9.86	9.86	30.91	5.61	5.61	5.61	5.61	38.33															
4.5	5.31	5.31	5.31	5.31	16.93	8.36	8.36	8.36	8.36	21.71	4.89	4.89	4.89	4.89	26.92															
5.0	4.61	4.61	4.61	4.61	12.34	7.17	7.17	7.17	7.17	15.82	4.32	4.32	4.32	4.32	19.62															
5.5	4.04	4.04	4.04	4.04	9.27	6.21	6.21	6.21	6.21	11.89	3.85	3.85	3.85	3.85	14.74	6.19	6.19	6.19	6.19	18.91	5.69	5.69	5.69	5.69	27.01					
6.0	3.57	3.57	3.57	3.57	7.14	5.43	5.43	5.43	5.43	9.16	3.45	3.45	3.45	3.45	11.36	5.50	5.50	5.50	5.50	14.57	5.12	5.12	5.12	5.12	20.80					
6.5	3.17	3.17	3.17	3.17	5.62	4.78	4.78	4.78	4.78	7.20	3.12	3.12	3.12	3.12	8.93	4.92	4.92	4.92	4.92	11.46	4.64	4.64	4.64	4.64	16.36	5.66	5.66	5.66	5.66	25.76
7.0	2.84	2.84	2.84	2.84	4.50	4.23	4.23	4.23	4.23	5.76	2.83	2.83	2.83	2.83	7.15	4.43	4.43	4.43	4.43	9.17	4.22	4.22	4.22	4.22	13.10	5.18	5.18	5.18	5.18	20.62
7.5	2.55	2.55	2.55	2.55	3.65	3.77	3.77	3.77	3.77	4.69	2.58	2.58	2.58	2.58	5.81	4.00	4.00	4.00	4.00	7.46	3.86	3.86	3.86	3.86	10.65	4.76	4.76	4.76	4.76	16.76
8.0	2.30	2.30	2.30	2.30	3.01	3.38	3.38	3.38	3.38	3.86	2.36	2.36	2.36	2.36	4.79	3.64	3.64	3.64	3.64	6.14	3.55	3.55	3.55	3.55	8.77	4.39	4.39	4.39	4.39	13.81
8.5	2.09	2.09	2.09	2.09	2.51	2.99	2.99	2.99	2.99	3.22	2.17	2.17	2.17	2.17	3.99	3.31	3.31	3.31	3.31	5.12	3.27	3.27	3.27	3.27	7.31	4.06	4.06	4.06	4.06	11.51
9.0	1.90	1.90	1.90	1.90	2.11	2.65	2.67	2.67	2.67	2.71	2.00	2.00	2.00	2.00	3.36	3.03	3.03	3.03	3.03	4.31	3.02	3.02	3.02	3.02	6.16	3.77	3.77	3.77	3.77	9.70
9.5	1.71	1.74	1.74	1.74	1.80	2.30	2.39	2.39	2.39	2.30	1.85	1.85	1.85	1.85	2.86	2.78	2.78	2.78	2.78	3.67	2.80	2.80	2.80	2.80	5.24	3.51	3.51	3.51	3.51	8.25
10.0	1.48	1.60	1.60	1.60	1.54	2.00	2.16	2.16	2.16	1.97	1.71	1.71	1.71	1.71	2.45	2.56	2.56	2.56	2.56	3.14	2.60	2.60	2.60	2.60	4.49	3.27	3.27	3.27	3.27	7.07
10.5	1.28	1.42	1.47	1.47	1.33	1.73	1.92	1.96	1.96	1.72	1.59	1.59	1.59	1.59	2.12	2.37	2.37	2.37	2.37	2.71	2.42	2.42	2.42	2.42	3.88	3.06	3.06	3.06	3.06	6.11
11.0	1.11	1.25	1.36	1.36	1.16	1.49	1.69	1.79	1.79	1.51	1.48	1.48	1.48	1.48	1.84	2.15	2.19	2.19	2.19	2.36	2.26	2.26	2.26	2.26	3.37	2.87	2.87	2.87	2.87	5.31
11.5	0.97	1.10	1.25	1.25	1.03	1.28	1.49	1.63	1.63	1.33	1.38	1.38	1.38	1.38	1.61	1.91	2.03	2.03	2.03	2.06	2.12	2.12	2.12	2.12	2.95	2.69	2.69	2.69	2.69	4.65
12.0	0.85	0.97	1.16	1.16	0.91	1.11	1.31	1.50	1.50	1.18	1.25	1.29	1.29	1.29	1.42	1.68	1.86	1.89	1.89	1.82	1.98	1.98	1.98	1.98	2.60	2.53	2.53	2.53	2.53	4.09
12.5	0.75	0.85	1.07	1.07	0.81	0.96	1.14	1.38	1.38	1.06	1.10	1.21	1.21	1.21	1.25	1.48	1.67	1.76	1.76	1.61	1.78	1.86	1.86	1.86	2.30	2.38	2.38	2.38	2.38	3.62
13.0	0.66	0.75	0.99	0.99	0.73	0.84	1.00	1.28	1.28	0.95	0.97	1.12	1.13	1.13	1.11	1.31	1.50	1.65	1.65	1.43	1.58	1.75	1.75	1.75	2.04	2.19	2.25	2.25	2.25	3.22
13.5	0.59	0.67	0.90	0.92	0.65	0.74	0.88	1.18	1.18	0.85	0.87	1.00	1.07	1.07	1.00	1.17	1.34	1.54	1.54	1.29	1.41	1.62	1.65	1.65	1.82	1.95	2.13	2.13	2.13	2.87
14.0	0.52	0.60	0.82	0.85	0.59	0.65	0.77	1.10	1.10	0.77	0.77	0.89	1.00	1.00	0.90	1.04	1.20	1.44	1.44	1.16	1.25	1.45	1.56	1.56	1.63	1.74	2.01	2.01	2.01	2.57
14.5	0.46	0.53	0.75	0.79	0.53	0.57	0.68	1.01	1.03	0.69	0.69	0.80	0.95	0.95	0.81	0.94	1.07	1.34	1.34	1.06	1.12	1.30	1.47	1.47	1.47	1.56	1.81	1.91	1.91	2.32
15.0	0.41	0.48	0.68	0.74	0.49	0.51	0.61	0.93	0.96	0.63	0.62	0.71	0.89	0.89	0.74	0.84	0.97	1.26	1.26	0.96	1.01	1.17	1.39	1.39	1.33	1.40	1.62	1.81	1.81	2.09
15.5	0.36	0.43	0.63	0.69	0.44	0.45	0.54	0.85	0.90	0.57	0.56	0.64	0.85	0.85	0.67	0.76	0.87	1.17	1.18	0.87	0.91	1.05	1.32	1.32	1.21	1.26	1.46	1.72	1.72	1.90
16.0	0.32	0.38	0.57	0.65	0.40	0.40	0.48	0.77	0.84	0.52	0.51	0.58	0.80	0.80	0.62	0.69	0.79	1.08	1.10	0.80	0.82	0.95	1.25	1.25	1.11	1.14	1.32	1.63	1.63	1.72
16.5	0.29	0.34	0.52	0.61	0.37	0.36	0.43	0.71	0.79	0.47	0.46	0.53	0.74	0.76	0.57	0.62	0.72	0.99	1.04	0.73	0.75	0.86	1.19	1.19	1.01	1.04	1.20	1.55	1.55	1.57
17.0	0.26	0.31	0.47	0.58	0.34	0.32	0.39	0.64	0.74	0.43	0.42	0.48	0.68	0.72	0.52	0.55	0.65	0.92	0.98	0.68	0.68	0.78	1.11	1.13	0.93	0.94	1.09	1.48	1.48	1.44
17.5	0.23	0.28	0.43	0.54	0.31	0.29	0.35	0.58	0.70	0.40	0.38	0.44	0.63	0.68	0.48	0.50	0.60	0.85	0.92	0.62	0.62	0.71	1.03	1.07	0.86	0.86	0.99	1.41	1.41	1.32
18.0	0.21	0.25	0.40	0.51	0.29	0.26	0.31	0.53	0.66	0.37	0.35	0.40	0.59	0.65	0.44	0.45	0.54	0.79	0.87	0.57	0.57	0.65	0.95	1.02	0.79	0.79	0.91	1.33	1.35	1.22

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_S: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – LAPPED INTERNAL SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0																														
3.5																														
4.0	5.43	5.43	5.43	5.43	11.72	8.46	8.46	8.46	8.46	15.56	5.04	5.04	5.04	5.04	23.54															
4.5	4.51	4.51	4.51	4.51	8.23	6.68	6.68	6.68	6.68	10.93	4.35	4.35	4.35	4.35	16.53															
5.0	3.80	3.80	3.80	3.80	6.00	5.41	5.41	5.41	5.41	7.96	3.79	3.79	3.79	3.79	12.05	6.60	6.60	6.60	6.60	16.35	9.98	9.98	9.98	9.98	20.89	4.43	4.43	4.43	4.43	23.47
5.5	3.24	3.24	3.24	3.24	4.51	4.47	4.47	4.47	4.47	5.98	3.34	3.34	3.34	3.34	9.05	5.72	5.72	5.72	5.72	12.29	8.55	8.55	8.55	8.55	15.69	3.95	3.95	3.95	3.95	17.63
6.0	2.76	2.76	2.76	2.76	3.47	3.76	3.76	3.76	3.76	4.61	2.96	2.96	2.96	2.96	6.97	5.01	5.01	5.01	5.01	9.46	7.21	7.21	7.21	7.21	12.09	3.55	3.55	3.55	3.55	13.58
6.5	2.35	2.35	2.35	2.35	2.73	3.20	3.20	3.20	3.20	3.62	2.64	2.64	2.64	2.64	5.48	4.41	4.41	4.41	4.41	7.44	6.14	6.14	6.14	6.14	9.51	3.20	3.20	3.20	3.20	10.68
7.0	2.02	2.02	2.02	2.02	2.18	2.76	2.76	2.76	2.76	2.90	2.37	2.37	2.37	2.37	4.39	3.91	3.91	3.91	3.91	5.96	5.29	5.29	5.29	5.29	7.61	2.91	2.91	2.91	2.91	8.55
7.5	1.76	1.76	1.76	1.76	1.77	2.40	2.40	2.40	2.40	2.36	2.14	2.14	2.14	2.14	3.57	3.49	3.49	3.49	3.49	4.84	4.61	4.61	4.61	4.61	6.19	2.65	2.65	2.65	2.65	6.95
8.0	1.55	1.55	1.55	1.55	1.46	2.11	2.11	2.11	2.11	1.94	1.93	1.93	1.93	1.93	2.94	3.13	3.13	3.13	3.13	3.99	4.05	4.05	4.05	4.05	5.10	2.43	2.43	2.43	2.43	5.73
8.5	1.37	1.37	1.37	1.37	1.22	1.87	1.87	1.87	1.87	1.62	1.76	1.76	1.76	1.76	2.45	2.79	2.79	2.79	2.79	3.33	3.59	3.59	3.59	3.59	4.25	2.24	2.24	2.24	2.24	4.77
9.0	1.22	1.22	1.22	1.22	1.02	1.63	1.67	1.67	1.67	1.37	1.61	1.61	1.61	1.61	2.06	2.49	2.49	2.49	2.49	2.80	3.20	3.20	3.20	3.20	3.58	2.06	2.06	2.06	2.06	4.02
9.5	1.06	1.10	1.10	1.10	0.88	1.40	1.50	1.50	1.50	1.17	1.47	1.47	1.47	1.47	1.75	2.23	2.23	2.23	2.23	2.38	2.87	2.87	2.87	2.87	3.04	1.91	1.91	1.91	1.91	3.42
10.0	0.92	0.99	0.99	0.99	0.76	1.22	1.35	1.35	1.35	1.00	1.35	1.35	1.35	1.35	1.50	2.01	2.01	2.01	2.01	2.04	2.59	2.59	2.59	2.59	2.61	1.77	1.77	1.77	1.77	2.93
10.5	0.80	0.90	0.90	0.90	0.66	1.05	1.22	1.22	1.22	0.87	1.25	1.25	1.25	1.25	1.30	1.79	1.83	1.83	1.83	1.76	2.29	2.35	2.35	2.35	2.25	1.64	1.64	1.64	1.64	2.53
11.0	0.69	0.82	0.82	0.82	0.58	0.90	1.11	1.11	1.11	0.76	1.10	1.15	1.15	1.15	1.13	1.59	1.66	1.66	1.66	1.53	2.01	2.14	2.14	2.14	1.96	1.53	1.53	1.53	1.53	2.20
11.5	0.59	0.75	0.75	0.75	0.51	0.78	1.02	1.02	1.02	0.67	0.98	1.07	1.07	1.07	0.99	1.41	1.52	1.52	1.52	1.34	1.76	1.96	1.96	1.96	1.71	1.43	1.43	1.43	1.43	1.93
12.0	0.51	0.69	0.69	0.69	0.45	0.68	0.93	0.94	0.94	0.59	0.86	0.99	0.99	0.99	0.87	1.24	1.40	1.40	1.40	1.18	1.53	1.80	1.80	1.80	1.51	1.34	1.34	1.34	1.34	1.69
12.5	0.45	0.63	0.63	0.63	0.40	0.59	0.84	0.86	0.86	0.52	0.76	0.92	0.92	0.92	0.77	1.08	1.29	1.29	1.29	1.05	1.34	1.66	1.66	1.66	1.34	1.25	1.25	1.25	1.25	1.50
13.0	0.39	0.56	0.58	0.58	0.36	0.52	0.75	0.80	0.80	0.46	0.68	0.86	0.86	0.86	0.68	0.95	1.19	1.19	1.19	0.94	1.18	1.53	1.53	1.53	1.20	1.15	1.18	1.18	1.18	1.33
13.5	0.35	0.51	0.54	0.54	0.32	0.46	0.67	0.74	0.74	0.42	0.61	0.78	0.80	0.80	0.61	0.84	1.10	1.10	1.10	0.85	1.04	1.42	1.42	1.42	1.07	1.03	1.11	1.11	1.11	1.19
14.0	0.31	0.46	0.50	0.50	0.29	0.41	0.60	0.69	0.69	0.37	0.54	0.71	0.75	0.75	0.55	0.74	1.03	1.03	1.03	0.76	0.93	1.32	1.32	1.32	0.96	0.92	1.04	1.04	1.04	1.06
14.5						0.36	0.54	0.63	0.64	0.34	0.49	0.65	0.70	0.70	0.50	0.66	0.94	0.96	0.96	0.69	0.82	1.20	1.23	1.23	0.87	0.83	0.98	0.98	0.98	0.96
15.0						0.32	0.48	0.58	0.60	0.30	0.44	0.59	0.65	0.65	0.46	0.59	0.86	0.89	0.89	0.63	0.73	1.09	1.15	1.15	0.79	0.74	0.93	0.93	0.93	0.87
15.5											0.40	0.54	0.61	0.61	0.42	0.53	0.78	0.84	0.84	0.57	0.65	0.99	1.08	1.08	0.71	0.67	0.88	0.88	0.88	0.78
16.0											0.36	0.50	0.56	0.57	0.38	0.48	0.72	0.78	0.78	0.53	0.59	0.90	1.01	1.01	0.65	0.61	0.82	0.83	0.83	0.71
16.5											0.32	0.45	0.52	0.54	0.35	0.43	0.65	0.74	0.74	0.48	0.52	0.81	0.95	0.95	0.59	0.55	0.76	0.79	0.79	0.65
17.0											0.29	0.41	0.48	0.50	0.32	0.39	0.59	0.69	0.69	0.44	0.47	0.73	0.89	0.89	0.54	0.51	0.70	0.75	0.75	0.60
17.5											0.27	0.38	0.44	0.48	0.29	0.35	0.53	0.64	0.65	0.40	0.43	0.67	0.82	0.84	0.50	0.46	0.64	0.71	0.71	0.55
18.0																0.32	0.48	0.59	0.62	0.37	0.38	0.61	0.76	0.80	0.46	0.42	0.59	0.67	0.68	0.51

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_S: Load at a deflection of span/150.

2.3.7 DHS LOAD SPAN TABLES – LAPPED INTERNAL SPANS

Uniformly loaded bending capacities (kN/m) $f_b W_{bx}$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s	1B	2B	3B	FR	W_s
3.0																														
3.5																														
4.0																														
4.5																														
5.0																														
5.5	5.76	5.76	5.76	5.76	21.43	9.12	9.12	9.12	9.12	27.47	5.28	5.28	5.28	5.28	34.07															
6.0	5.14	5.14	5.14	5.14	16.50	8.05	8.05	8.05	8.05	21.16	4.77	4.77	4.77	4.77	26.24															
6.5	4.61	4.61	4.61	4.61	12.98	7.16	7.16	7.16	7.16	16.64	4.34	4.34	4.34	4.34	20.64															
7.0	4.16	4.16	4.16	4.16	10.39	6.40	6.40	6.40	6.40	13.32	3.96	3.96	3.96	3.96	16.52	6.37	6.37	6.37	6.37	21.19	5.86	5.86	5.86	5.86	30.26					
7.5	3.77	3.77	3.77	3.77	8.45	5.75	5.75	5.75	5.75	10.83	3.64	3.64	3.64	3.64	13.43	5.81	5.81	5.81	5.81	17.23	5.39	5.39	5.39	5.39	24.61					
8.0	3.43	3.43	3.43	3.43	6.96	5.19	5.19	5.19	5.19	8.92	3.35	3.35	3.35	3.35	11.07	5.31	5.31	5.31	5.31	14.20	4.98	4.98	4.98	4.98	20.27	6.07	6.07	6.07	6.07	31.92
8.5	3.14	3.14	3.14	3.14	5.80	4.71	4.71	4.71	4.71	7.44	3.10	3.10	3.10	3.10	9.23	4.88	4.88	4.88	4.88	11.83	4.62	4.62	4.62	4.62	16.90	5.64	5.64	5.64	5.64	26.61
9.0	2.88	2.88	2.88	2.88	4.89	4.29	4.29	4.29	4.29	6.27	2.87	2.87	2.87	2.87	7.77	4.49	4.49	4.49	4.49	9.97	4.29	4.29	4.29	4.29	14.24	5.27	5.27	5.27	5.27	22.41
9.5	2.65	2.65	2.65	2.65	4.15	3.92	3.92	3.92	3.92	5.33	2.67	2.67	2.67	2.67	6.61	4.15	4.15	4.15	4.15	8.48	4.00	4.00	4.00	4.00	12.10	4.93	4.93	4.93	4.93	19.06
10.0	2.44	2.44	2.44	2.44	3.56	3.60	3.60	3.60	3.60	4.57	2.49	2.49	2.49	2.49	5.66	3.85	3.85	3.85	3.85	7.27	3.74	3.74	3.74	3.74	10.38	4.62	4.62	4.62	4.62	16.34
10.5	2.26	2.26	2.26	2.26	3.08	3.27	3.27	3.27	3.27	3.94	2.33	2.33	2.33	2.33	4.89	3.57	3.57	3.57	3.57	6.28	3.50	3.50	3.50	3.50	8.96	4.34	4.34	4.34	4.34	14.11
11.0	2.10	2.10	2.10	2.10	2.67	2.98	2.98	2.98	2.98	3.43	2.18	2.18	2.18	2.18	4.25	3.33	3.33	3.33	3.33	5.46	3.29	3.29	3.29	3.29	7.80	4.09	4.09	4.09	4.09	12.27
11.5	1.95	1.95	1.95	1.95	2.34	2.69	2.73	2.73	2.73	3.00	2.05	2.05	2.05	2.05	3.72	3.10	3.10	3.10	3.10	4.78	3.09	3.09	3.09	3.09	6.82	3.86	3.86	3.86	3.86	10.74
12.0	1.79	1.82	1.82	1.82	2.06	2.41	2.51	2.51	2.51	2.64	1.92	1.92	1.92	1.92	3.28	2.90	2.90	2.90	2.90	4.20	2.91	2.91	2.91	2.91	6.00	3.65	3.65	3.65	3.65	9.45
12.5	1.61	1.70	1.70	1.70	1.82	2.16	2.31	2.31	2.31	2.34	1.81	1.81	1.81	1.81	2.90	2.72	2.72	2.72	2.72	3.72	2.75	2.75	2.75	2.75	5.31	3.45	3.45	3.45	3.45	8.36
13.0	1.44	1.59	1.59	1.59	1.62	1.93	2.13	2.13	2.13	2.08	1.71	1.71	1.71	1.71	2.58	2.55	2.55	2.55	2.55	3.30	2.60	2.60	2.60	2.60	4.72	3.27	3.27	3.27	3.27	7.43
13.5	1.29	1.49	1.49	1.49	1.44	1.73	1.98	1.98	1.98	1.85	1.61	1.61	1.61	1.61	2.30	2.40	2.40	2.40	2.40	2.95	2.46	2.46	2.46	2.46	4.22	3.11	3.11	3.11	3.11	6.64
14.0	1.15	1.40	1.40	1.40	1.29	1.54	1.84	1.84	1.84	1.66	1.52	1.52	1.52	1.52	2.06	2.20	2.26	2.26	2.26	2.65	2.33	2.33	2.33	2.33	3.78	2.95	2.95	2.95	2.95	5.95
14.5	1.04	1.31	1.31	1.31	1.17	1.37	1.71	1.71	1.71	1.49	1.44	1.44	1.44	1.44	1.85	2.00	2.13	2.13	2.13	2.38	2.21	2.21	2.21	2.21	3.40	2.81	2.81	2.81	2.81	5.36
15.0	0.94	1.22	1.24	1.24	1.05	1.22	1.60	1.60	1.60	1.35	1.36	1.37	1.37	1.37	1.68	1.81	2.01	2.01	2.01	2.15	2.10	2.10	2.10	2.10	3.07	2.68	2.68	2.68	2.68	4.84
15.5	0.85	1.12	1.16	1.16	0.95	1.10	1.50	1.50	1.50	1.23	1.23	1.30	1.30	1.30	1.52	1.64	1.90	1.90	1.90	1.95	1.98	2.00	2.00	2.00	2.78	2.55	2.55	2.55	2.55	4.38
16.0	0.77	1.03	1.09	1.09	0.87	0.99	1.39	1.41	1.41	1.12	1.12	1.23	1.23	1.23	1.38	1.49	1.80	1.80	1.80	1.77	1.79	1.90	1.90	1.90	2.53	2.44	2.44	2.44	2.44	3.99
16.5	0.70	0.95	1.02	1.02	0.80	0.89	1.28	1.32	1.32	1.03	1.02	1.17	1.17	1.17	1.26	1.36	1.71	1.71	1.71	1.61	1.63	1.81	1.81	1.81	2.31	2.26	2.33	2.33	2.33	3.63
17.0	0.64	0.88	0.96	0.96	0.73	0.81	1.18	1.25	1.25	0.95	0.93	1.12	1.12	1.12	1.15	1.24	1.62	1.62	1.62	1.48	1.49	1.73	1.73	1.73	2.11	2.06	2.23	2.23	2.23	3.32
17.5	0.59	0.81	0.91	0.91	0.67	0.73	1.09	1.18	1.18	0.87	0.85	1.07	1.07	1.07	1.05	1.14	1.50	1.54	1.54	1.35	1.37	1.65	1.65	1.65	1.93	1.88	2.13	2.13	2.13	3.04
18.0	0.53	0.75	0.85	0.86	0.62	0.66	1.01	1.11	1.11	0.81	0.78	1.02	1.02	1.02	0.97	1.05	1.40	1.46	1.46	1.24	1.25	1.58	1.58	1.58	1.78	1.73	2.04	2.04	2.04	2.80

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** W_s: Load at a deflection of span/150.

2.3.8 DHS LOAD SPAN TABLES – SINGLE SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0	65.4	76.4	77.0	77.1	247.9																									
3.5	57.3	70.8	71.5	71.6	182.1	80.2	99.4	100.5	100.6	227.3	73.2	85.4	86.2	86.2	397.2															
4.0	49.2	64.7	65.6	65.7	139.4	67.9	90.8	92.2	92.3	174.0	66.4	81.1	82.1	82.1	304.1	93.6	114.5	115.9	116.0	380.6	123.3	151.2	153.2	153.3	455.1	91.2	106.4	107.5	107.6	614.5
4.5	41.5	58.5	59.6	59.6	110.1	55.9	82.0	83.4	83.6	137.5	59.5	76.5	77.7	77.7	240.2	83.8	108.0	109.7	109.8	300.7	110.0	142.6	144.9	145.0	359.5	84.2	102.3	103.7	103.8	485.5
5.0	35.2	52.3	53.4	53.5	89.2	46.8	72.7	74.5	74.7	111.4	52.6	71.7	73.0	73.1	194.6	74.1	101.2	103.1	103.2	243.6	95.4	133.4	136.1	136.2	291.2	77.0	98.0	99.6	99.7	393.2
5.5	29.9	46.1	47.3	47.4	73.7	39.9	62.8	64.7	64.9	92.0	45.9	66.7	68.2	68.3	160.8	64.6	94.1	96.3	96.4	201.3	81.7	124.0	126.9	127.1	240.7	69.9	93.4	95.3	95.4	325.0
6.0	25.8	40.3	41.5	41.5	61.9	34.6	53.9	55.6	55.7	77.3	40.4	61.7	63.3	63.4	135.1	55.9	87.0	89.4	89.5	169.1	70.6	114.4	117.6	117.8	202.2	62.8	88.7	90.8	90.9	273.1
6.5	22.5	35.4	36.6	36.7	52.8	30.4	46.9	48.3	48.4	65.9	35.9	56.6	58.4	58.5	115.1	48.8	79.8	82.3	82.5	144.1	61.9	103.8	107.7	107.9	172.3	55.8	83.8	86.1	86.2	232.7
7.0	19.9	31.1	32.1	32.2	45.5	26.9	41.2	42.4	42.6	56.8	32.1	51.6	53.5	53.6	99.3	43.1	72.7	75.3	75.5	124.2	54.8	93.2	97.2	97.4	148.6	50.0	78.8	81.4	81.5	200.6
7.5	17.8	27.6	28.4	28.5	39.6	24.1	36.6	37.6	37.7	49.5	28.7	46.7	48.6	48.8	86.5	38.4	65.6	68.4	68.5	108.2	49.0	82.9	86.9	87.1	129.4	45.0	73.8	76.6	76.7	174.7
8.0						21.8	32.7	33.6	33.7	43.5	25.7	42.4	44.2	44.3	76.0	34.5	59.0	61.8	62.0	95.1	44.2	74.2	77.6	77.8	113.7	40.9	68.8	71.7	71.8	153.6
8.5											23.2	38.7	40.3	40.4	67.3	31.3	53.1	55.6	55.7	84.2	40.2	66.9	69.9	70.1	100.7	37.3	63.9	66.9	67.0	136.0
9.0											21.1	35.5	37.0	37.0	60.0	28.5	48.1	50.3	50.4	75.1	36.7	60.7	63.3	63.5	89.8	34.1	59.0	62.2	62.3	121.3
9.5											19.3	32.7	34.0	34.1	53.9	26.1	43.8	45.8	45.9	67.4	33.8	55.3	57.7	57.8	80.6	31.0	54.4	57.4	57.6	108.9
10.0											17.7	30.1	31.5	31.5	48.6	24.1	40.1	41.9	42.0	60.9	31.2	50.7	52.8	53.0	72.8	28.3	50.4	53.2	53.3	98.3
10.5																22.3	36.9	38.5	38.6	55.2	28.8	46.7	48.6	48.7	66.0	26.0	46.9	49.4	49.6	89.1
11.0																					26.5	43.2	44.8	45.0	60.1	24.0	43.7	46.1	46.2	81.2
11.5																					24.6	40.0	41.6	41.7	55.0	22.3	40.9	43.1	43.2	74.3
12.0																										20.7	38.4	40.4	40.5	68.2
12.5																										19.3	36.1	38.0	38.1	62.9
13.0																														
13.5																														
14.0																														
14.5																														
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1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – SINGLE SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0																														
3.5																														
4.0																														
4.5																														
5.0	95.9	122.2	124.3	124.4	453.6	126.3	161.7	164.5	164.6	543.6	114.7	137.8	139.9	139.9	775.1															
5.5	86.9	116.5	118.9	119.0	374.9	114.2	154.2	157.4	157.5	449.2	106.8	133.3	135.6	135.7	640.6															
6.0	78.0	110.6	113.3	113.4	315.0	102.2	146.3	149.9	150.1	377.5	98.7	128.5	131.2	131.3	538.3															
6.5	69.3	104.5	107.5	107.6	268.4	89.7	138.2	142.2	142.4	321.6	90.6	123.5	126.5	126.6	458.6	119.8	163.9	168.0	168.1	550.4										
7.0	61.9	98.3	101.5	101.7	231.4	78.8	130.0	134.3	134.5	277.3	82.7	118.3	121.6	121.8	395.4	109.2	157.0	161.5	161.7	474.5	112.4	162.9	179.0	179.2	692.3					
7.5	55.7	92.1	95.5	95.7	201.6	69.9	121.6	126.3	126.4	241.6	74.8	113.0	116.6	116.8	344.5	98.6	150.0	154.9	155.1	413.4	101.5	155.6	173.4	173.5	603.1	120.9	187.5	217.8	222.0	933.9
8.0	50.0	85.9	89.5	89.6	177.2	62.6	113.3	118.2	118.4	212.3	68.0	107.6	111.5	111.7	302.7	89.5	142.8	148.1	148.3	363.3	92.1	148.1	167.6	167.7	530.0	108.9	178.3	211.5	216.1	820.8
8.5	45.0	79.7	83.5	83.6	156.9	56.4	105.1	110.1	110.3	188.1	62.2	102.1	106.3	106.5	268.2	81.7	135.6	141.2	141.4	321.8	84.0	140.6	161.6	161.8	469.5	98.0	169.0	204.9	210.0	727.0
9.0	40.7	73.5	77.5	77.7	140.0	51.1	96.8	102.1	102.3	167.7	57.1	96.7	101.1	101.2	239.2	74.5	128.3	134.3	134.5	287.0	76.5	133.0	155.5	155.7	418.8	88.8	159.7	198.2	203.8	648.5
9.5	37.1	67.8	71.6	71.7	125.6	46.6	88.2	93.8	94.0	150.5	52.7	91.2	95.8	96.0	214.7	67.8	121.0	127.3	127.5	257.6	69.7	125.5	149.3	149.5	375.9	80.9	150.4	191.3	197.3	582.0
10.0	33.9	62.8	66.2	66.4	113.4	42.7	80.7	85.7	86.0	135.9	48.7	85.8	90.6	90.8	193.7	62.0	113.8	120.3	120.5	232.5	63.8	117.9	143.0	143.2	339.2	74.1	141.1	184.3	190.7	525.3
10.5	31.2	58.3	61.5	61.7	102.8	39.3	74.2	78.8	79.0	123.2	45.3	80.4	85.4	85.6	175.7	57.0	106.6	113.3	113.6	210.9	58.6	110.5	136.7	136.9	307.7	68.2	131.9	177.3	184.1	476.4
11.0	28.8	54.4	57.3	57.4	93.7	36.3	68.5	72.7	72.8	112.3	41.9	75.1	80.2	80.4	160.1	52.6	99.5	106.4	106.6	192.1	54.1	103.0	130.4	130.6	280.3	63.1	122.9	170.1	177.3	434.1
11.5	26.7	50.3	53.4	53.6	85.7	33.6	63.5	67.3	67.4	102.7	38.8	70.4	75.1	75.3	146.5	48.8	93.2	99.6	99.8	175.8	50.2	96.4	124.1	124.3	256.5	58.5	114.8	163.0	170.5	397.2
12.0	24.8	46.8	49.6	49.7	78.7	31.3	59.1	62.5	62.7	94.3	36.0	66.1	70.6	70.7	134.5	45.3	87.5	93.4	93.7	161.4	46.7	90.4	117.8	118.1	235.5	54.4	106.6	155.8	163.7	364.8
12.5	23.2	43.6	46.2	46.3	72.5	29.2	55.2	58.3	58.4	86.9	33.6	62.2	66.4	66.6	124.0	42.3	82.3	87.9	88.1	148.8	43.5	85.0	111.6	111.9	217.1	50.8	99.3	148.7	156.9	336.2
13.0	21.7	40.8	43.1	43.3	67.1	27.3	51.6	54.5	54.6	80.4	31.4	58.7	62.7	62.8	114.6	39.5	77.5	82.8	83.0	137.6	40.7	80.0	105.3	105.6	200.7	47.6	92.8	141.6	150.0	310.8
13.5						25.6	48.5	51.1	51.2	74.5	29.4	55.6	59.3	59.4	106.3	37.1	72.7	78.2	78.4	127.5	38.2	74.9	99.5	99.7	186.1	44.7	87.0	134.5	143.2	288.2
14.0						24.1	45.6	48.0	48.1	69.3	27.6	52.6	56.1	56.3	98.8	34.9	68.3	73.5	73.6	118.6	35.9	70.4	94.2	94.4	173.0	42.1	81.7	127.4	136.5	268.0
14.5											26.0	50.0	53.3	53.4	92.1	32.9	64.3	69.1	69.3	110.6	33.9	66.2	89.3	89.6	161.3	39.7	76.9	120.7	129.7	249.8
15.0											24.6	47.5	50.6	50.7	86.1	31.0	60.7	65.2	65.3	103.3	32.0	62.4	84.9	85.1	150.7	37.5	72.6	114.6	123.1	233.4
15.5											23.2	45.2	48.2	48.3	80.6	29.3	57.4	61.6	61.7	96.7	30.3	59.0	80.7	80.9	141.2	35.5	68.7	108.3	117.1	218.6
16.0																27.8	54.3	58.3	58.4	90.8	28.7	55.9	76.5	76.7	132.5	33.7	65.1	102.5	111.1	205.2
16.5																26.4	51.5	55.3	55.4	85.4	27.3	53.0	72.5	72.7	124.6	32.0	61.8	97.1	105.4	192.9
17.0																					25.9	50.4	68.8	69.0	117.3	30.5	58.7	92.3	100.0	181.7
17.5																					24.7	47.9	65.5	65.6	110.7	29.1	55.9	87.8	95.2	171.5
18.0																					23.6	45.7	62.4	62.5	104.7	27.7	53.3	83.6	90.6	162.1

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – END SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0	64.5	78.3	85.3	85.6	506.0	90.4	110.1	120.1	120.6	631.5	78.8	89.6	95.1	95.5	1103.3															
3.5	56.2	73.2	82.2	82.6	371.7	78.7	102.8	115.7	116.2	464.0	72.1	85.7	93.0	93.5	810.6	101.7	121.0	131.3	132.1	1014.6	134.0	159.8	173.6	174.7	1213.1	96.2	109.7	116.3	117.1	1638.0
4.0	48.0	67.7	78.7	79.2	284.6	66.0	94.9	110.7	111.5	355.2	65.1	81.5	90.7	91.3	620.6	91.8	115.1	128.0	129.0	776.8	120.8	151.9	169.2	170.6	928.8	89.2	105.8	114.3	115.3	1254.0
4.5	40.4	62.0	74.9	75.5	224.8	54.2	86.8	105.4	106.2	280.6	58.0	77.1	88.1	88.9	490.3	81.7	108.7	124.4	125.5	613.8	106.8	143.4	164.4	166.0	733.8	81.9	101.6	112.0	113.3	990.8
5.0	34.1	56.2	70.9	71.6	182.1	45.4	78.5	99.7	100.7	227.3	51.0	72.3	85.3	86.3	397.2	71.8	102.0	120.4	121.8	497.1	92.1	134.5	159.1	161.1	594.4	74.5	97.1	109.5	111.1	802.6
5.5	29.0	50.4	66.8	67.6	150.5	38.8	69.7	93.8	94.9	187.9	44.4	67.5	82.3	83.4	328.2	62.3	95.2	116.2	117.8	410.8	78.6	125.3	153.5	155.8	491.2	67.1	92.4	106.8	108.7	663.3
6.0	25.0	44.7	62.5	63.4	126.5	33.6	60.7	87.7	88.9	157.8	39.0	62.6	79.2	80.4	275.8	53.7	88.2	111.8	113.6	345.2	68.0	116.0	147.6	150.1	412.8	59.7	87.5	104.0	106.1	557.3
6.5	21.9	39.6	58.2	59.1	107.7	29.6	53.0	81.4	82.8	134.5	34.7	57.6	75.9	77.3	235.0	47.0	81.2	107.2	109.2	294.1	59.6	106.0	141.4	144.2	351.7	53.0	82.5	101.0	103.4	474.9
7.0	19.3	35.2	53.8	54.8	92.9	26.2	46.8	75.2	76.6	116.0	31.0	52.7	72.6	74.1	202.6	41.5	74.2	102.4	104.6	253.6	52.9	95.6	135.1	138.1	303.2	47.4	77.4	97.8	100.6	409.5
7.5	17.3	31.3	49.5	50.5	80.9	23.5	41.7	68.2	69.9	101.0	27.6	47.9	69.1	70.8	176.5	37.0	67.3	97.5	99.9	220.9	47.3	85.6	128.5	131.8	264.1	42.7	72.3	94.5	97.6	356.7
8.0	15.6	28.0	45.1	46.3	71.1	21.3	37.5	61.3	63.1	88.8	24.7	43.5	65.6	67.4	155.1	33.3	60.9	92.6	95.1	194.2	42.7	76.8	121.9	125.4	232.2	38.7	67.2	91.2	94.6	313.5
8.5	14.1	25.3	41.1	42.2	63.0	19.4	33.9	55.1	56.7	78.6	22.3	39.8	62.1	64.0	137.4	30.2	54.9	87.6	90.3	172.0	38.8	69.4	115.2	118.8	205.6	35.3	62.2	87.7	91.4	277.7
9.0	12.9	22.9	37.7	38.6	56.2	17.7	30.9	49.9	51.3	70.1	20.3	36.5	58.6	60.5	122.5	27.5	49.9	82.6	85.4	153.4	35.3	63.2	108.1	112.3	183.4	32.0	57.2	84.2	88.2	247.7
9.5	11.8	21.0	34.3	35.3	50.4	16.3	28.3	45.4	46.6	62.9	18.6	33.7	55.1	57.1	110.0	25.2	45.5	77.6	80.5	137.7	32.2	57.8	100.5	104.9	164.6	29.2	52.8	80.6	84.9	222.3
10.0	10.9	19.2	31.4	32.2	45.5	15.1	26.1	41.5	42.6	56.8	17.1	31.2	51.6	53.7	99.3	23.3	41.8	72.6	75.6	124.2	29.4	53.2	93.2	97.6	148.6	26.7	48.9	77.0	81.5	200.6
10.5						14.0	24.1	38.1	39.2	51.5	15.8	28.8	48.1	50.3	90.0	21.6	38.5	67.6	70.8	112.7	27.1	49.2	85.9	90.4	134.7	24.5	45.4	73.5	78.2	182.0
11.0						13.0	22.4	35.2	36.1	46.9	14.6	26.6	44.9	47.0	82.0	19.9	35.7	63.0	65.9	102.7	25.0	45.6	79.4	83.4	122.8	22.6	42.3	69.9	74.8	165.8
11.5											13.6	24.6	42.0	43.9	75.0	18.5	33.2	58.4	61.4	93.9	23.1	42.5	73.6	77.2	112.3	20.9	39.6	66.3	71.5	151.7
12.0											12.7	22.9	39.4	41.2	68.9	17.1	30.9	54.3	57.0	86.3	21.5	39.7	68.4	71.7	103.2	19.5	37.1	62.8	68.1	139.3
12.5											11.9	21.4	37.1	38.7	63.5	16.0	28.9	50.6	53.1	79.5	20.0	37.3	63.9	66.8	95.1	18.1	34.9	59.2	64.8	128.4
13.0											11.2	20.1	35.0	36.5	58.7	14.9	27.2	47.3	49.6	73.5	18.7	35.0	59.8	62.4	87.9	17.0	32.6	55.8	61.5	118.7
13.5																14.0	25.6	44.3	46.4	68.2	17.5	33.0	56.1	58.5	81.5	15.9	30.5	52.8	58.1	110.0
14.0																13.1	24.1	41.7	43.6	63.4	16.3	31.2	52.8	54.9	75.8	14.9	28.6	50.0	55.0	102.3
14.5																					15.2	29.6	49.7	51.7	70.6	14.1	26.9	47.4	52.2	95.4
15.0																					14.2	28.0	47.0	48.8	66.0	13.3	25.4	45.0	49.6	89.1
15.5																										12.6	24.0	42.9	47.3	83.5
16.0																										11.9	22.7	40.9	45.1	78.3
16.5																														
17.0																														
17.5																														
18.0																														

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – END SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0																														
3.5																														
4.0	111.1	131.8	142.4	143.7	1446.7	146.7	174.3	188.4	190.3	1733.4	127.7	144.8	153.1	154.6	2471.8															
4.5	102.0	126.6	139.5	141.2	1143.0	134.5	167.4	184.6	187.0	1369.6	120.0	140.5	150.9	152.8	1953.0															
5.0	92.7	121.0	136.4	138.5	925.8	122.0	159.9	180.5	183.4	1109.4	111.9	136.0	148.4	150.7	1581.9	148.2	180.2	196.8	199.9	1898.3	153.0	186.4	203.7	210.7	2769.4					
5.5	83.4	115.2	133.1	135.5	765.1	109.5	152.1	176.0	179.4	916.8	103.6	131.1	145.8	148.5	1307.4	137.2	173.8	193.2	196.9	1568.8	141.5	179.7	200.0	208.3	2288.8					
6.0	74.1	109.1	129.6	132.4	642.9	97.0	143.9	171.3	175.2	770.4	95.2	126.0	142.9	146.1	1098.5	126.0	167.0	189.4	193.8	1318.2	129.9	172.6	196.1	205.7	1923.2	155.8	208.5	237.5	254.0	2978.0
6.5	65.7	102.8	125.8	129.0	547.8	84.4	135.5	166.3	170.8	656.4	86.9	120.6	139.9	143.5	936.0	114.9	159.9	185.4	190.4	1123.2	118.3	165.2	191.8	203.0	1638.7	141.6	199.3	232.3	251.3	2537.5
7.0	58.7	96.4	121.9	125.5	472.3	74.2	127.0	161.1	166.1	566.0	78.6	115.1	136.7	140.8	807.1	103.7	152.6	181.1	186.8	968.5	106.8	157.5	187.4	200.0	1412.9	127.4	189.9	226.8	248.4	2187.9
7.5	52.6	90.0	117.8	121.8	411.5	65.8	118.4	155.6	161.2	493.0	71.0	109.5	133.3	137.9	703.0	93.6	145.1	176.7	183.0	843.7	96.3	149.7	182.7	196.9	1230.8	114.6	180.3	221.0	245.4	1905.9
8.0	47.0	83.6	113.6	118.0	361.6	58.9	109.8	150.0	156.2	433.3	64.6	103.8	129.8	134.9	617.9	84.9	137.5	172.0	179.0	741.5	87.3	141.8	177.9	193.7	1081.8	102.5	170.5	215.0	242.2	1675.1
8.5	42.3	77.3	109.3	114.0	320.3	53.1	101.3	144.2	150.9	383.8	59.0	98.1	126.2	131.8	547.3	77.4	129.8	167.2	174.9	656.8	79.5	133.8	172.8	190.3	958.2	92.3	160.7	208.8	238.8	1483.8
9.0	38.3	71.0	104.9	110.0	285.7	48.1	92.3	138.3	145.6	342.4	54.2	92.4	122.4	128.6	488.2	70.1	122.1	162.2	170.7	585.9	72.0	125.9	167.6	186.7	854.7	83.6	150.9	202.4	235.3	1323.5
9.5	34.9	65.5	100.4	105.9	256.4	43.9	84.0	132.3	140.1	307.3	49.9	86.7	118.6	125.2	438.2	63.8	114.5	157.2	166.3	525.8	65.6	117.9	162.3	183.1	767.1	76.2	141.1	195.8	231.6	1187.9
10.0	31.9	60.6	95.9	101.8	231.4	40.2	76.8	126.3	134.6	277.3	46.2	81.0	114.7	121.8	395.4	58.4	107.0	152.0	161.8	474.5	60.0	110.1	156.9	179.3	692.3	69.8	131.4	189.2	227.8	1072.1
10.5	29.4	56.2	91.4	97.6	209.9	37.0	70.6	120.3	129.0	251.5	42.8	75.4	110.8	118.4	358.7	53.7	99.4	146.7	157.2	430.4	55.2	102.3	151.4	175.4	627.9	64.3	122.0	182.4	223.9	972.4
11.0	27.1	52.1	86.9	93.4	191.2	34.2	65.2	114.2	123.4	229.2	39.4	70.4	106.8	114.8	326.8	49.5	92.8	141.4	152.5	392.2	51.0	95.4	145.9	171.3	572.2	59.4	113.4	175.6	219.8	886.0
11.5	25.1	48.2	82.4	89.2	175.0	31.7	60.3	108.2	117.7	209.7	36.5	65.9	102.7	111.2	299.0	45.9	86.8	136.0	147.7	358.8	47.3	89.2	140.3	167.3	523.5	55.1	105.0	168.7	215.7	810.6
12.0	23.4	44.7	78.0	84.9	160.7	29.5	56.1	102.2	112.1	192.6	33.9	61.9	98.7	107.6	274.6	42.7	81.4	130.6	142.9	329.5	44.0	83.6	134.7	163.1	480.8	51.3	97.5	161.7	211.4	744.5
12.5	21.8	41.7	73.5	80.8	148.1	27.5	52.3	96.1	106.5	177.5	31.6	58.2	94.7	104.0	253.1	39.8	76.2	125.2	138.1	303.7	41.0	78.4	129.1	158.9	443.1	47.9	90.9	154.8	207.1	686.1
13.0	20.4	38.9	69.3	76.6	136.9	25.7	48.9	89.7	100.9	164.1	29.5	54.9	90.6	100.3	234.0	37.3	71.2	119.8	133.2	280.8	38.4	73.2	123.5	154.6	409.6	44.9	85.0	147.9	202.6	634.3
13.5	19.1	36.5	65.4	72.4	127.0	24.1	45.8	84.0	95.1	152.1	27.7	51.9	86.6	96.6	217.0	34.9	66.7	114.5	128.3	260.4	36.0	68.6	117.9	150.3	379.8	42.1	79.7	141.1	198.1	588.2
14.0	18.0	34.3	61.9	68.6	118.0	22.7	43.1	78.8	89.2	141.5	26.0	49.1	82.7	93.0	201.7	32.8	62.6	109.2	123.4	242.1	33.9	64.4	112.4	145.9	353.2	39.7	74.8	134.3	193.5	546.9
14.5	16.9	32.3	58.7	65.0	110.0	21.4	40.6	74.2	83.9	131.9	24.5	46.6	78.6	89.3	188.1	31.0	58.9	103.7	118.6	225.7	31.9	60.6	106.8	141.5	329.3	37.4	70.5	127.4	188.9	509.9
15.0	16.0	30.4	55.7	61.8	102.8	20.2	38.3	69.9	79.1	123.2	23.1	44.3	74.8	85.7	175.7	29.2	55.6	98.6	113.7	210.9	30.2	57.2	101.5	137.1	307.7	35.4	66.6	120.9	184.2	476.4
15.5	15.1	28.8	52.8	58.8	96.3	19.1	36.2	66.1	74.8	115.4	21.9	41.9	71.3	82.1	164.6	27.6	52.5	93.9	108.9	197.5	28.6	54.1	96.6	132.7	288.1	33.5	63.0	115.0	179.5	446.2
16.0	14.3	27.2	50.0	56.0	90.4	18.1	34.3	62.6	70.8	108.3	20.7	39.6	68.0	78.4	154.4	26.2	49.8	89.5	104.0	185.3	27.1	51.2	92.1	128.3	270.4	31.8	59.7	108.9	174.8	418.7
16.5	13.6	25.8	47.4	53.3	85.0	17.1	32.6	59.3	67.1	101.8	19.7	37.5	65.0	75.0	145.2	24.9	47.2	85.5	99.3	174.3	25.7	48.6	87.9	123.9	254.3	30.2	56.6	103.2	170.0	393.7
17.0	12.9	24.6	45.0	50.6	80.0	16.3	31.0	56.4	63.7	95.9	18.7	35.6	62.2	71.7	136.8	23.7	44.8	81.7	95.0	164.2	24.5	46.2	84.0	119.5	239.5	28.8	53.9	98.0	165.3	370.9
17.5						15.5	29.5	53.6	60.6	90.5	17.8	33.9	59.5	68.7	129.1	22.5	42.7	78.2	91.0	154.9	23.3	43.9	80.4	115.1	226.0	27.4	51.3	93.2	160.5	350.0
18.0						14.7	28.1	51.1	57.7	85.6	17.0	32.3	57.1	65.9	122.0	21.5	40.7	74.5	87.2	146.4	22.2	41.9	76.5	110.8	213.6	26.2	48.9	88.8	155.7	330.8

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – INTERNAL SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0																														
3.5	58.5	75.7	83.5	88.3	728.6	81.9	106.3	117.4	124.3	909.4	73.9	87.5	93.3	97.2	1588.8															
4.0	50.6	70.7	80.3	86.4	557.8	70.0	99.2	112.9	121.7	696.3	67.2	83.8	91.0	96.0	1216.4															
4.5	42.9	65.4	76.9	84.3	440.7	58.0	91.8	108.1	118.7	550.1	60.4	79.7	88.5	94.7	961.1	85.1	112.5	124.8	133.6	1203.0	111.9	148.5	165.0	176.8	1438.3	84.2	103.9	112.0	118.1	1942.1
5.0	36.5	60.1	73.3	82.1	357.0	48.6	84.1	102.9	115.5	445.6	53.7	75.5	85.7	93.2	778.5	75.5	106.4	121.0	131.6	974.4	97.5	140.4	159.8	174.1	1165.0	77.0	99.9	109.5	116.9	1573.1
5.5	31.0	54.7	69.5	79.7	295.0	41.5	76.4	97.5	112.1	368.2	47.0	71.0	82.9	91.6	643.4	66.1	100.2	116.9	129.4	805.3	83.8	132.0	154.4	171.2	962.8	69.9	95.6	106.8	115.6	1300.1
6.0	26.8	49.3	65.5	77.1	247.9	35.9	68.0	91.9	108.5	309.4	41.3	66.5	79.8	89.9	540.6	57.4	93.7	112.6	127.0	676.7	72.5	123.4	148.6	168.0	809.0	62.8	91.1	104.0	114.2	1092.4
6.5	23.4	44.0	61.5	74.4	211.2	31.5	59.7	86.2	104.6	263.6	36.7	61.8	76.6	88.1	460.6	50.1	87.2	108.1	124.5	576.6	63.5	114.6	142.6	164.6	689.4	55.8	86.5	101.0	112.7	930.8
7.0	20.7	39.4	57.5	71.6	182.1	28.0	52.7	80.4	100.6	227.3	32.9	57.2	73.3	86.2	397.2	44.3	80.6	103.4	121.8	497.1	56.3	105.1	136.3	161.0	594.4	50.0	81.7	97.8	111.1	802.6
7.5	18.5	35.3	53.4	68.7	158.6	25.1	46.9	74.6	96.5	198.0	29.5	52.7	70.0	84.2	346.0	39.5	74.2	98.7	118.9	433.1	50.4	95.5	130.0	157.2	517.8	45.0	76.9	94.5	109.4	699.1
8.0	16.6	31.6	49.4	65.7	139.4	22.7	42.1	68.2	92.3	174.0	26.4	48.2	66.5	82.1	304.1	35.5	67.7	93.8	116.0	380.6	45.4	86.1	123.5	153.3	455.1	40.9	72.1	91.2	107.6	614.5
8.5	15.1	28.5	45.4	62.7	123.5	20.6	38.1	61.9	87.9	154.1	23.8	44.0	63.1	80.0	269.3	32.1	61.7	88.9	112.9	337.1	41.3	77.8	117.0	149.2	403.1	37.3	67.4	87.7	105.7	544.3
9.0	13.7	25.8	41.7	59.6	110.1	18.9	34.7	56.2	83.6	137.5	21.7	40.4	59.6	77.7	240.2	29.3	56.0	84.0	109.8	300.7	37.5	70.7	110.3	145.0	359.5	34.1	62.6	84.2	103.8	485.5
9.5	12.6	23.6	38.4	56.6	98.9	17.4	31.7	51.3	79.1	123.4	19.8	37.3	56.2	75.4	215.6	26.9	51.1	79.1	106.5	269.9	34.1	64.7	102.9	140.7	322.7	31.0	57.9	80.6	101.8	435.7
10.0	11.6	21.6	35.4	53.5	89.2	16.1	29.2	47.0	74.7	111.4	18.2	34.6	52.8	73.1	194.6	24.8	46.8	74.3	103.2	243.6	31.3	59.5	95.7	136.2	291.2	28.3	53.6	77.0	99.7	393.2
10.5	10.8	20.0	32.5	50.4	80.9	15.0	27.0	43.3	69.7	101.0	16.8	32.1	49.4	70.7	176.5	22.9	43.2	69.5	99.8	220.9	28.8	54.9	88.7	131.7	264.1	26.0	49.8	73.5	97.6	356.7
11.0	10.0	18.5	30.0	47.4	73.7	13.9	25.1	40.1	64.9	92.0	15.6	29.9	46.1	68.3	160.8	21.2	39.9	64.8	96.4	201.3	26.5	50.9	82.0	127.1	240.7	24.0	46.5	69.9	95.4	325.0
11.5	9.4	17.2	27.8	44.3	67.4	12.9	23.3	37.3	60.1	84.2	14.5	27.7	43.2	65.9	147.1	19.6	37.1	60.3	93.0	184.2	24.6	47.4	76.1	122.4	220.2	22.3	43.5	66.3	93.1	297.3
12.0	8.8	16.0	25.9	41.5	61.9	12.1	21.8	34.8	55.7	77.3	13.5	25.7	40.5	63.4	135.1	18.2	34.6	56.1	89.5	169.1	22.8	44.3	70.9	117.8	202.2	20.7	40.8	62.8	90.9	273.1
12.5	8.2	15.0	24.2	39.0	57.1	11.2	20.5	32.5	51.9	71.3	12.7	24.0	38.2	60.9	124.5	17.0	32.4	52.3	86.0	155.9	21.3	41.5	66.3	113.0	186.4	19.3	38.3	59.2	88.6	251.7
13.0	7.8	14.1	22.6	36.7	52.8	10.4	19.3	30.5	48.4	65.9	11.9	22.5	36.0	58.5	115.1	15.9	30.4	49.0	82.5	144.1	19.9	39.0	62.1	107.9	172.3	18.0	36.1	55.8	86.2	232.7
13.5						9.6	18.2	28.7	45.3	61.1	11.2	21.1	34.0	56.0	106.7	14.9	28.6	46.0	79.0	133.6	18.6	36.8	58.4	102.6	159.8	16.9	34.0	52.8	83.8	215.7
14.0						8.9	17.2	27.1	42.5	56.8	10.5	19.9	32.2	53.6	99.3	14.0	26.9	43.3	75.5	124.2	17.4	34.8	55.0	97.4	148.6	15.9	31.9	50.0	81.5	200.6
14.5											9.9	18.7	30.5	51.2	92.5	13.1	25.5	40.8	72.0	115.8	16.3	32.9	52.0	92.2	138.5	14.9	30.0	47.4	79.1	187.0
15.0											9.3	17.7	28.8	48.7	86.5	12.4	24.1	38.6	68.5	108.2	15.2	31.2	49.2	87.1	129.4	14.1	28.3	45.0	76.7	174.7
15.5											8.8	16.8	27.2	46.4	81.0	11.7	22.9	36.5	65.2	101.4	14.2	29.5	46.7	82.2	121.2	13.3	26.7	42.9	74.2	163.6
16.0											8.4	15.9	25.8	44.2	76.0	11.1	21.8	34.7	62.0	95.1	13.4	27.9	44.4	77.8	113.7	12.6	25.3	40.9	71.8	153.6
16.5											7.9	15.2	24.5	42.2	71.4	10.5	20.8	33.0	58.7	89.4	12.6	26.5	42.3	73.8	106.9	12.0	24.0	39.0	69.4	144.4
17.0																9.9	19.8	31.4	55.7	84.2	11.8	25.1	40.3	70.1	100.7	11.4	22.8	37.3	67.0	136.0
17.5																9.4	18.9	30.0	53.0	79.5	11.2	23.9	38.5	66.6	95.1	10.8	21.6	35.6	64.7	128.4
18.0																8.9	18.1	28.6	50.4	75.1	10.5	22.8	36.9	63.5	89.8	10.3	20.6	34.1	62.3	121.3

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – INTERNAL SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0																														
3.5																														
4.0																														
4.5	104.9	129.5	139.5	147.1	2240.4	138.3	171.2	184.6	194.7	2684.5	122.4	142.9	150.9	157.2	3827.9															
5.0	95.9	124.4	136.4	145.6	1814.7	126.3	164.5	180.5	192.8	2174.4	114.7	138.7	148.4	156.1	3100.6															
5.5	86.9	119.1	133.1	144.0	1499.7	114.2	157.3	176.0	190.7	1797.0	106.8	134.3	145.8	154.9	2562.5															
6.0	78.0	113.5	129.6	142.3	1260.2	102.2	149.8	171.3	188.4	1510.0	98.7	129.7	142.9	153.6	2153.2	130.6	171.9	189.4	203.6	2583.8	134.7	177.7	196.1	213.7	3769.5					
6.5	69.3	107.7	125.8	140.4	1073.8	89.7	142.1	166.3	185.9	1286.6	90.6	124.8	139.9	152.2	1834.6	119.8	165.4	185.4	201.8	2201.6	123.5	171.0	191.8	212.2	3211.9					
7.0	61.9-	101.8	121.9	138.4	925.8	78.8	134.2	161.1	183.3	1109.4	82.7	119.8	136.7	150.7	1581.9	109.2	158.7	181.1	199.8	1898.3	112.4	164.0	187.4	210.6	2769.4	134.3	197.9	226.8	258.8	4288.4
7.5	55.7	95.8	117.8	136.3	806.5	69.9	126.1	155.6	180.5	966.4	74.8	114.6	133.3	149.1	1378.0	98.6	151.8	176.7	197.8	1653.6	101.5	156.8	182.7	209.0	2412.4	120.9	189.0	221.0	257.1	3735.6
8.0	50.0	89.8	113.6	134.1	708.8	62.6	118.0	150.0	177.6	849.4	68.0	109.3	129.8	147.4	1211.1	89.5	144.8	172.0	195.6	1453.4	92.1	149.4	177.9	207.2	2120.3	108.9	179.9	215.0	255.4	3283.3
8.5	45.0	83.8	109.3	131.8	627.9	56.4	110.0	144.2	174.5	752.4	62.2	103.9	126.2	145.7	1072.8	81.7	137.6	167.2	193.2	1287.4	84.0	142.0	172.8	205.3	1878.2	98.0	170.7	208.8	253.6	2908.3
9.0	40.7	77.8	104.9	129.4	560.1	51.1	102.0	138.3	171.4	671.1	57.1	98.6	122.4	143.8	956.9	74.5	130.4	162.2	190.8	1148.3	76.5	134.5	167.6	203.3	1675.3	88.8	161.5	202.4	251.6	2594.2
9.5	37.1	71.9	100.4	126.9	502.6	46.6	93.6	132.3	168.1	602.3	52.7	93.2	118.6	141.9	858.9	67.8	123.2	157.2	188.3	1030.6	69.7	127.0	162.3	201.3	1503.6	80.9	152.3	195.8	249.6	2328.3
10.0	33.9	66.5	95.9	124.4	453.6	42.7	85.6	126.3	164.6	543.6	48.7	87.8	114.7	139.9	775.1	62.0	116.0	152.0	185.7	930.1	63.8	119.5	156.9	199.1	1357.0	74.1	143.1	189.2	247.5	2101.3
10.5	31.2	61.8	91.4	121.7	411.5	39.3	78.6	120.3	161.1	493.0	45.3	82.5	110.8	137.8	703.0	57.0	108.9	146.7	182.9	843.7	58.6	112.2	151.4	196.9	1230.8	68.2	134.0	182.4	245.3	1905.9
11.0	28.8	57.6	86.9	119.0	374.9	36.3	72.5	114.2	157.5	449.2	41.9	77.2	106.8	135.7	640.6	52.6	101.8	141.4	180.1	768.7	54.1	104.7	145.9	194.6	1121.5	63.1	124.9	175.6	243.0	1736.6
11.5	26.7	53.7	82.4	116.2	343.0	33.6	67.2	108.2	153.8	411.0	38.8	72.3	102.7	133.5	586.1	48.8	95.2	136.0	177.2	703.3	50.2	98.0	140.3	192.2	1026.1	58.5	116.7	168.7	240.7	1588.8
12.0	24.8	49.8	78.0	113.4	315.0	31.3	62.4	102.2	150.1	377.5	36.0	67.8	98.7	131.3	538.3	45.3	89.3	130.6	174.2	645.9	46.7	91.9	134.7	189.7	942.3	54.4	108.6	161.7	238.2	1459.2
12.5	23.2	46.4	73.5	110.5	290.3	29.2	58.2	96.1	146.2	347.9	33.6	63.9	94.7	128.9	496.1	42.3	84.0	125.2	171.2	595.3	43.5	86.4	129.1	187.2	868.4	50.8	101.2	154.8	235.7	1344.8
13.0	21.7	43.4	69.3	107.6	268.4	27.3	54.4	89.7	142.3	321.6	31.4	60.2	90.6	126.6	458.6	39.5	79.1	119.8	168.1	550.4	40.7	81.4	123.5	184.6	802.9	47.6	94.5	147.9	233.1	1243.3
13.5	20.3	40.6	65.4	104.6	248.9	25.6	51.0	84.0	138.4	298.2	29.4	57.0	86.6	124.2	425.3	37.1	74.3	114.5	164.9	510.3	38.2	76.3	117.9	181.9	744.5	44.7	88.6	141.1	230.4	1152.9
14.0	19.1	38.1	61.9	101.7	231.4	24.1	47.9	78.8	134.4	277.3	27.6	53.9	82.7	121.7	395.4	34.9	69.7	109.2	161.7	474.5	35.9	71.7	112.4	179.2	692.3	42.1	83.2	134.3	227.7	1072.1
14.5	18.0	35.9	58.7	98.7	215.7	22.7	45.1	74.2	130.4	258.5	26.0	51.2	78.6	119.3	368.6	32.9	65.6	103.7	158.4	442.4	33.9	67.4	106.8	176.4	645.4	39.7	78.4	127.4	224.9	999.4
15.0	17.0	33.8	55.7	95.7	201.6	21.4	42.6	69.9	126.4	241.6	24.6	48.6	74.8	116.7	344.5	31.0	61.9	98.6	155.0	413.4	32.0	63.6	101.5	173.5	603.1	37.5	74.0	120.9	222.0	933.9
15.5	16.1	32.0	52.8	92.6	188.8	20.3	40.3	66.1	122.4	226.2	23.2	46.3	71.3	114.2	322.6	29.3	58.5	93.9	151.7	387.1	30.3	60.1	96.6	170.7	564.8	35.5	69.9	115.0	219.1	874.6
16.0	15.2	30.3	50.0	89.6	177.2	19.2	38.1	62.6	118.4	212.3	22.0	44.1	68.0	111.6	302.7	27.8	55.3	89.5	148.3	363.3	28.7	56.9	92.1	167.7	530.0	33.7	66.3	108.9	216.1	820.8
16.5	14.4	28.7	47.4	86.6	166.6	18.2	36.2	59.3	114.3	199.6	20.9	41.8	65.0	109.1	284.7	26.4	52.5	85.5	144.8	341.6	27.3	54.0	87.9	164.8	498.4	32.0	62.9	103.2	213.1	771.8
17.0	13.7	27.3	45.0	83.6	156.9	17.3	34.4	56.4	110.3	188.1	19.8	39.7	62.2	106.5	268.2	25.1	49.9	81.7	141.4	321.8	25.9	51.3	84.0	161.8	469.5	30.5	59.8	98.0	210.0	727.0
17.5	13.1	26.0	42.8	80.6	148.1	16.4	32.7	53.6	106.3	177.5	18.9	37.7	59.5	103.8	253.1	23.9	47.5	78.2	137.9	303.7	24.7	48.8	80.4	158.7	443.1	29.1	56.9	93.2	206.9	686.1
18.0	12.4	24.8	40.7	77.7	140.0	15.7	31.2	51.1	102.3	167.7	18.0	35.9	57.1	101.2	239.2	22.8	45.2	74.5	134.4	287.0	23.6	46.5	76.5	155.7	418.8	27.7	54.3	88.8	203.7	648.5

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – LAPPED END SPAN

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0	64.7	78.4	85.8	86.1	536.2	90.7	110.2	120.8	121.3	669.2	78.9	89.6	95.3	95.8	1169.1															
3.5	56.5	73.3	82.8	83.2	393.9	79.1	102.9	116.6	117.2	491.7	72.2	85.8	93.2	94.0	858.9															
4.0	48.3	67.8	79.5	80.0	301.6	66.6	95.1	111.9	112.6	376.4	65.3	81.6	90.9	91.9	657.6	92.1	115.2	128.3	129.7	823.2	121.3	152.0	169.7	171.6	984.2	89.3	105.9	114.4	115.8	1328.9
4.5	40.7	62.1	75.9	76.5	238.3	54.8	87.0	106.7	107.7	297.4	58.2	77.1	88.4	89.6	519.6	82.1	108.8	124.8	126.5	650.4	107.5	143.6	164.9	167.3	777.6	82.0	101.7	112.1	113.9	1050.0
5.0	34.4	56.3	72.1	72.8	193.0	46.0	78.8	101.3	102.4	240.9	51.3	72.4	85.7	87.1	420.9	72.3	102.2	120.9	123.0	526.8	92.9	134.7	159.8	162.6	629.9	74.6	97.2	109.6	111.8	850.5
5.5	29.3	50.5	68.1	68.9	159.5	39.3	70.0	95.6	96.8	199.1	44.7	67.6	82.8	84.4	347.8	62.8	95.3	116.8	119.2	435.4	79.4	125.5	154.3	157.6	520.5	67.2	92.5	107.0	109.5	702.9
6.0	25.3	44.8	63.9	64.9	134.0	34.1	61.0	89.7	91.1	167.3	39.3	62.7	79.7	81.5	292.2	54.2	88.4	112.5	115.2	365.8	68.8	116.2	148.5	152.2	437.4	59.9	87.6	104.2	107.1	590.6
6.5	22.1	39.7	59.7	60.8	114.2	30.0	53.3	83.7	85.2	142.5	34.9	57.8	76.5	78.6	249.0	47.4	81.4	108.0	111.0	311.7	60.4	106.3	142.5	146.6	372.7	53.1	82.6	101.2	104.5	503.2
7.0	19.6	35.3	55.5	56.6	98.4	26.7	47.0	77.6	79.2	122.9	31.2	52.9	73.2	75.5	214.7	41.9	74.5	103.3	106.6	268.8	53.6	96.0	136.2	140.7	321.3	47.5	77.6	98.0	101.8	433.9
7.5	17.5	31.4	51.3	52.4	85.7	24.0	41.9	71.1	73.0	107.0	27.8	48.1	69.8	72.3	187.0	37.5	67.6	98.5	102.1	234.1	48.0	85.9	129.8	134.7	279.9	42.8	72.5	94.8	99.0	378.0
8.0	15.8	28.1	47.1	48.3	75.4	21.7	37.6	64.4	66.3	94.1	25.0	43.7	66.4	69.0	164.4	33.7	61.1	93.7	97.5	205.8	43.3	77.1	123.4	128.5	246.0	38.8	67.4	91.4	96.0	332.2
8.5	14.3	25.4	43.0	44.2	66.7	19.8	34.1	58.0	59.8	83.3	22.6	39.9	63.0	65.7	145.6	30.6	55.1	88.8	92.8	182.3	39.0	69.7	116.8	122.2	217.9	35.4	62.4	88.0	93.0	294.3
9.0	13.1	23.0	39.4	40.5	59.5	18.2	31.0	52.5	54.1	74.3	20.5	36.7	59.5	62.4	129.9	27.9	50.0	83.9	88.0	162.6	35.4	63.4	110.1	115.8	194.4	32.1	57.4	84.5	89.9	262.5
9.5	12.1	21.1	36.1	37.2	53.4	16.8	28.4	47.8	49.2	66.7	18.8	33.8	56.0	59.1	116.5	25.6	45.7	79.0	83.3	145.9	32.3	58.1	102.7	109.1	174.4	29.3	52.9	81.0	86.8	235.6
10.0	11.1	19.3	33.0	34.0	48.2	15.6	26.2	43.7	45.0	60.2	17.3	31.3	52.6	55.7	105.2	23.5	41.9	74.1	78.5	131.7	29.5	53.4	95.5	101.9	157.4	26.8	49.0	77.4	83.6	212.6
10.5	10.3	17.8	30.3	31.2	43.7	14.5	24.2	40.1	41.3	54.6	16.0	28.9	49.2	52.4	95.4	21.6	38.7	69.2	73.8	119.4	27.2	49.4	88.4	94.9	142.8	24.6	45.5	73.8	80.3	192.8
11.0						13.5	22.5	37.0	38.1	49.7	14.8	26.7	45.9	49.2	86.9	20.0	35.8	64.6	69.1	108.8	25.1	45.8	81.7	87.9	130.1	22.7	42.4	70.3	77.0	175.7
11.5						12.4	21.0	34.3	35.2	45.5	13.8	24.7	43.0	46.0	79.5	18.5	33.3	60.1	64.5	99.5	23.2	42.7	75.8	81.4	119.0	21.0	39.7	66.7	73.8	160.7
12.0											12.9	23.0	40.4	43.1	73.0	17.2	31.1	55.9	60.1	91.4	21.6	39.9	70.6	75.6	109.3	19.5	37.2	63.2	70.5	147.6
12.5											12.1	21.5	38.0	40.6	67.3	16.0	29.1	52.1	56.0	84.2	20.1	37.4	66.0	70.4	100.7	18.2	34.9	59.6	67.3	136.0
13.0											11.3	20.1	35.8	38.2	62.2	15.0	27.3	48.8	52.3	77.9	18.7	35.2	61.8	65.8	93.1	17.0	32.7	56.2	64.0	125.8
13.5											10.6	18.9	33.9	36.1	57.7	14.0	25.7	45.7	48.9	72.2	17.5	33.2	58.1	61.6	86.4	16.0	30.6	53.2	60.8	116.6
14.0																13.2	24.2	43.0	45.9	67.2	16.3	31.4	54.7	57.9	80.3	15.0	28.7	50.3	57.6	108.4
14.5																12.4	22.9	40.6	43.2	62.6	15.2	29.7	51.6	54.5	74.9	14.1	27.0	47.8	54.7	101.1
15.0																					14.2	28.1	48.8	51.4	69.9	13.3	25.5	45.4	52.0	94.5
15.5																					13.3	26.6	46.3	48.6	65.5	12.6	24.1	43.2	49.5	88.5
16.0																					12.5	25.2	43.9	46.0	61.5	11.9	22.8	41.2	47.2	83.0
16.5																										11.3	21.6	39.3	45.0	78.1
17.0																														
17.5																														
18.0																														

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

Dimond

2.3.8 DHS LOAD SPAN TABLES – LAPPED END SPAN

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0																														
3.5																														
4.0	111.3	131.9	142.5	144.3	1533.0	146.9	174.4	188.5	191.0	1836.9	127.8	144.8	153.2	155.1	2619.3															
4.5	102.2	126.7	139.7	141.9	1211.3	134.7	167.5	184.8	187.9	1451.4	120.1	140.6	151.0	153.3	2069.6															
5.0	92.9	121.1	136.6	139.3	981.1	122.2	160.1	180.7	184.5	1175.6	112.0	136.0	148.6	151.4	1676.3															
5.5	83.6	115.3	133.3	136.5	810.8	109.7	152.2	176.3	180.8	971.6	103.8	131.2	145.9	149.2	1385.4	137.4	173.9	193.4	197.9	1662.5	141.7	179.8	200.3	209.1	2425.4					
6.0	74.3	109.2	129.8	133.5	681.3	97.2	144.1	171.6	176.8	816.4	95.4	126.1	143.1	147.0	1164.1	126.2	167.1	189.7	194.9	1396.9	130.1	172.7	196.3	206.7	2038.0					
6.5	65.9	102.9	126.1	130.3	580.5	84.6	135.7	166.6	172.6	695.6	87.1	120.7	140.1	144.5	991.9	115.1	160.0	185.7	191.7	1190.3	118.6	165.3	192.1	204.1	1736.5	141.9	199.5	232.6	252.4	2688.9
7.0	58.9	96.6	122.2	127.0	500.5	74.4	127.2	161.4	168.1	599.8	78.9	115.3	136.9	141.9	855.2	104.0	152.7	181.4	188.3	1026.3	107.1	157.7	187.7	201.3	1497.3	127.7	190.1	227.2	249.7	2318.5
7.5	52.8	90.2	118.1	123.5	436.0	66.0	118.6	156.0	163.4	522.5	71.2	109.7	133.5	139.2	745.0	93.8	145.2	177.0	184.7	894.0	96.5	149.9	183.1	198.4	1304.3	114.9	180.5	221.4	246.8	2019.7
8.0	47.2	83.8	113.9	119.8	383.2	59.1	110.0	150.4	158.6	459.2	64.7	104.0	130.1	136.4	654.8	85.2	137.7	172.4	181.0	785.8	87.6	142.0	178.2	195.3	1146.3	102.8	170.8	215.5	243.7	1775.1
8.5	42.4	77.5	109.6	116.1	339.4	53.2	101.5	144.7	153.6	406.7	59.1	98.2	126.5	133.4	580.0	77.6	130.0	167.6	177.1	696.0	79.8	134.0	173.3	192.0	1015.4	92.5	161.0	209.3	240.5	1572.4
9.0	38.4	71.2	105.3	112.2	302.8	48.3	92.6	138.8	148.5	362.8	54.3	92.5	122.8	130.3	517.4	70.3	122.3	162.7	173.0	620.8	72.2	126.1	168.1	188.7	905.7	83.9	151.1	203.0	237.2	1402.5
9.5	35.0	65.6	100.8	108.3	271.7	44.0	84.2	132.9	143.2	325.6	50.1	86.8	119.0	127.1	464.3	64.0	114.7	157.6	168.8	557.2	65.8	118.2	162.8	185.2	812.9	76.5	141.4	196.5	233.7	1258.8
10.0	32.0	60.7	96.4	104.3	245.2	40.3	77.0	126.9	137.9	293.9	46.3	81.2	115.1	123.9	419.0	58.6	107.2	152.5	164.5	502.9	60.2	110.4	157.5	181.5	733.6	70.1	131.7	189.8	230.1	1136.0
10.5	29.5	56.4	91.9	100.2	222.4	37.1	70.8	120.9	132.5	266.5	42.9	75.6	111.2	120.6	380.1	53.8	99.7	147.3	160.1	456.1	55.4	102.6	152.0	177.8	665.4	64.5	122.3	183.1	226.4	1030.4
11.0	27.2	52.2	87.4	96.1	202.7	34.3	65.3	114.9	127.1	242.9	39.6	70.6	107.2	117.2	346.3	49.7	93.0	142.0	155.6	415.6	51.1	95.6	146.5	174.0	606.3	59.6	113.7	176.3	222.5	938.9
11.5	25.2	48.3	82.9	92.1	185.4	31.8	60.5	108.9	121.6	222.2	36.6	66.1	103.2	113.7	316.8	46.1	87.0	136.6	151.0	380.2	47.4	89.4	140.9	170.1	554.7	55.3	105.3	169.4	218.5	859.0
12.0	23.5	44.9	78.5	88.0	170.3	29.6	56.2	102.9	116.1	204.1	34.0	62.0	99.2	110.2	291.0	42.8	81.5	131.3	146.4	349.2	44.1	83.8	135.4	166.1	509.5	51.5	97.8	162.6	214.5	788.9
12.5	21.9	41.8	74.0	83.9	156.9	27.6	52.4	96.8	110.7	188.1	31.7	58.4	95.2	106.7	268.2	39.9	76.4	125.9	141.7	321.8	41.1	78.6	129.8	162.1	469.5	48.1	91.1	155.7	210.3	727.0
13.0	20.5	39.0	69.8	79.9	145.1	25.8	49.0	90.5	105.3	173.9	29.6	55.1	91.2	103.2	247.9	37.4	71.4	120.5	137.0	297.5	38.5	73.4	124.2	157.9	434.1	45.0	85.2	148.8	206.1	672.2
13.5	19.2	36.6	65.9	75.8	134.5	24.2	46.0	84.7	99.8	161.2	27.8	52.0	87.2	99.6	229.9	35.0	66.9	115.2	132.3	275.9	36.1	68.7	118.7	153.8	402.5	42.3	79.9	142.0	201.8	623.3
14.0	18.0	34.4	62.4	71.8	125.1	22.8	43.2	79.5	94.1	149.9	26.1	49.3	83.2	96.1	213.8	32.9	62.8	109.9	127.5	256.5	34.0	64.6	113.2	149.6	374.3	39.8	75.0	135.2	197.4	579.6
14.5	17.0	32.3	59.2	68.1	116.6	21.4	40.7	74.8	88.5	139.7	24.6	46.7	79.2	92.5	199.3	31.0	59.1	104.5	122.8	239.1	32.0	60.8	107.6	145.3	348.9	37.5	70.7	128.3	192.9	540.3
15.0	16.0	30.5	56.2	64.7	109.0	20.2	38.4	70.5	83.4	130.6	23.2	44.4	75.4	89.0	186.2	29.3	55.7	99.4	118.1	223.5	30.3	57.3	102.2	141.1	326.0	35.5	66.7	121.9	188.5	504.9
15.5	15.2	28.8	53.3	61.6	102.0	19.1	36.3	66.7	78.8	122.3	21.9	42.0	71.8	85.5	174.4	27.7	52.7	94.6	113.4	209.3	28.6	54.2	97.3	136.8	305.3	33.6	63.1	115.9	183.9	472.8
16.0	14.4	27.3	50.4	58.7	95.8	18.1	34.4	63.1	74.6	114.8	20.8	39.7	68.5	82.0	163.7	26.3	49.9	90.2	108.7	196.4	27.2	51.3	92.8	132.5	286.5	31.9	59.8	109.8	179.3	443.7
16.5	13.6	25.9	47.8	56.0	90.0	17.2	32.7	59.8	70.7	107.9	19.7	37.6	65.4	78.4	153.9	25.0	47.3	86.1	104.0	184.7	25.8	48.7	88.6	128.2	269.4	30.3	56.8	104.1	174.8	417.2
17.0	13.0	24.6	45.4	53.3	84.8	16.3	31.0	56.8	67.2	101.6	18.7	35.7	62.6	75.0	145.0	23.7	45.0	82.3	99.4	174.0	24.5	46.3	84.6	124.0	253.8	28.8	54.0	98.9	170.1	393.1
17.5	12.3	23.4	43.1	50.7	80.0	15.5	29.6	54.1	63.9	95.9	17.8	34.0	60.0	71.9	136.8	22.6	42.8	78.8	95.2	164.2	23.4	44.1	81.0	119.7	239.5	27.5	51.4	94.0	165.5	370.9
18.0	11.8	22.3	41.1	48.3	75.7	14.8	28.2	51.5	60.9	90.7	17.0	32.4	57.5	69.0	129.3	21.5	40.8	75.1	91.3	155.2	22.3	42.0	77.2	115.5	226.4	26.3	49.1	89.6	160.9	350.6

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – LAPPED INTERNAL SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0																														
3.5																														
4.0	51.1	70.8	80.1	87.4	605.3	70.9	99.5	112.6	123.0	755.5	67.5	83.8	90.7	96.6	1319.9															
4.5	43.4	65.6	76.6	85.5	478.2	59.0	92.1	107.7	120.4	596.9	60.8	79.8	88.2	95.4	1042.8															
5.0	37.1	60.3	73.0	83.5	387.4	49.5	84.5	102.5	117.5	483.5	54.1	75.5	85.4	94.1	844.7	76.2	106.6	120.5	132.9	1057.3	98.7	140.6	159.2	175.8	1264.2	77.3	99.7	108.9	117.6	1706.9
5.5	31.5	54.9	69.1	81.3	320.1	42.3	76.9	97.1	114.5	399.6	47.5	71.1	82.4	92.7	698.1	66.8	100.3	116.3	130.9	873.8	85.1	132.2	153.6	173.2	1044.7	70.1	95.4	106.1	116.5	1410.7
6.0	27.2	49.6	65.2	79.0	269.0	36.7	68.7	91.5	111.2	335.7	41.8	66.5	79.3	91.2	586.6	58.2	93.9	111.9	128.8	734.2	73.7	123.7	147.8	170.4	877.9	63.0	90.9	103.2	115.2	1185.3
6.5	23.8	44.4	61.2	76.6	229.2	32.3	60.5	85.8	107.7	286.1	37.1	62.0	76.1	89.6	499.8	50.9	87.4	107.4	126.5	625.6	64.7	115.0	141.7	167.3	748.0	56.1	86.2	100.1	113.9	1010.0
7.0	21.1	39.7	57.1	74.0	197.6	28.7	53.4	80.0	104.1	246.7	33.2	57.4	72.8	87.9	430.9	45.0	80.9	102.7	124.1	539.4	57.4	105.7	135.4	164.1	645.0	50.2	81.5	96.8	112.5	870.8
7.5	18.9	35.7	53.1	71.4	172.1	25.8	47.6	74.2	100.3	214.9	29.9	52.8	69.4	86.1	375.4	40.1	74.5	97.9	121.6	469.9	51.4	96.2	129.0	160.7	561.8	45.2	76.7	93.4	110.9	758.6
8.0	17.0	31.9	49.1	68.6	151.3	23.4	42.8	67.8	96.4	188.8	26.8	48.3	65.9	84.2	329.9	36.1	68.1	93.0	118.9	413.0	46.1	86.9	122.5	157.2	493.8	41.0	71.8	89.9	109.3	666.7
8.5	15.4	28.8	45.1	65.9	134.0	21.3	38.8	61.6	92.5	167.3	24.2	44.2	62.4	82.2	292.2	32.8	62.2	88.1	116.1	365.8	41.5	78.6	115.9	153.5	437.4	37.4	67.0	86.4	107.7	590.6
9.0	14.1	26.2	41.4	63.0	119.5	19.6	35.4	55.9	88.4	149.2	22.0	40.6	58.9	80.2	260.7	29.9	56.4	83.1	113.3	326.3	37.7	71.5	109.1	149.7	390.1	34.3	62.3	82.8	105.9	526.8
9.5	13.0	23.9	38.2	60.2	107.3	18.1	32.4	51.1	84.3	133.9	20.1	37.5	55.5	78.1	234.0	27.3	51.5	78.2	110.3	292.9	34.3	65.5	101.8	145.7	350.1	31.2	57.6	79.1	104.1	472.8
10.0	12.0	22.0	35.1	57.3	96.8	16.8	29.9	47.0	80.2	120.8	18.5	34.8	52.1	76.0	211.1	25.0	47.3	73.4	107.3	264.3	31.4	60.3	94.6	141.7	316.0	28.5	53.3	75.4	102.3	426.7
10.5	11.1	20.3	32.3	54.4	87.8	15.6	27.7	43.4	76.0	109.6	17.1	32.3	48.6	73.8	191.5	23.0	43.6	68.5	104.2	239.7	28.9	55.7	87.6	137.5	286.6	26.2	49.5	71.7	100.3	387.0
11.0	10.4	18.8	29.9	51.5	80.0	14.6	25.7	40.2	71.5	99.9	15.9	30.1	45.4	71.6	174.5	21.3	40.4	64.0	101.1	218.4	26.7	51.8	81.1	133.3	261.1	24.2	46.2	68.1	98.3	352.6
11.5	9.7	17.5	27.7	48.7	73.2	13.3	24.0	37.4	66.9	91.4	14.8	27.9	42.5	69.3	159.6	19.7	37.6	59.5	97.9	199.8	24.7	48.3	75.4	129.0	238.9	22.4	43.2	64.4	96.3	322.6
12.0	9.1	16.4	25.8	45.8	67.2	12.2	22.5	34.9	62.3	83.9	13.8	26.0	40.0	67.0	146.6	18.3	35.1	55.4	94.6	183.5	23.0	45.1	70.3	124.7	219.4	20.8	40.5	60.9	94.2	296.3
12.5	8.6	15.3	24.1	43.0	61.9	11.3	21.2	32.7	58.0	77.3	12.8	24.3	37.6	64.7	135.1	17.1	32.8	51.7	91.4	169.1	21.4	42.3	65.8	120.3	202.2	19.4	38.1	57.2	92.1	273.1
13.0	8.1	14.4	22.6	40.5	57.3	10.4	19.9	30.8	54.2	71.5	12.0	22.7	35.5	62.4	124.9	16.0	30.8	48.4	88.1	156.4	20.0	39.6	61.7	115.9	187.0	18.1	35.9	54.0	90.0	252.5
13.5	7.7	13.6	21.3	38.2	53.1	9.7	18.8	29.0	50.7	66.3	11.3	21.3	33.6	60.1	115.8	15.0	29.0	45.5	84.8	145.0	18.7	37.1	58.1	111.5	173.4	17.0	33.7	51.0	87.8	234.1
14.0	7.3	12.8	20.0	36.0	49.4	9.0	17.9	27.4	47.6	61.6	10.6	20.1	31.8	57.8	107.7	14.0	27.4	42.8	81.5	134.8	17.5	34.9	54.8	106.4	161.2	16.0	31.7	48.3	85.6	217.7
14.5						8.4	17.0	25.9	44.7	57.4	10.0	19.0	30.1	55.5	100.4	13.2	25.9	40.4	78.2	125.7	16.4	32.8	51.8	101.5	150.3	15.0	29.8	45.8	83.3	202.9
15.0						7.8	16.1	24.6	42.2	53.7	9.4	18.0	28.4	53.2	93.8	12.5	24.6	38.3	75.0	117.4	15.3	31.0	49.2	96.6	140.4	14.2	28.1	43.5	81.1	189.6
15.5											8.9	17.0	26.9	51.0	87.9	11.8	23.3	36.3	71.7	110.0	14.3	29.3	46.6	91.8	131.5	13.4	26.5	41.4	78.9	177.6
16.0											8.4	16.2	25.5	48.7	82.4	11.1	22.1	34.5	68.4	103.2	13.4	27.7	44.1	86.9	123.4	12.7	25.1	39.5	76.6	166.6
16.5											8.0	15.4	24.2	46.5	77.5	10.5	21.0	32.8	65.3	97.0	12.6	26.3	41.8	82.4	116.0	12.1	23.8	37.7	74.3	156.7
17.0											7.6	14.7	23.0	44.5	73.0	10.0	19.9	31.3	62.3	91.4	11.9	25.0	39.8	78.2	109.3	11.5	22.6	36.0	72.1	147.6
17.5											7.2	14.0	22.0	42.6	68.9	9.5	18.9	29.9	59.2	86.3	11.2	23.8	37.8	74.4	103.2	10.9	21.5	34.4	69.8	139.3
18.0																8.9	18.0	28.6	56.4	81.5	10.6	22.6	36.1	70.9	97.5	10.4	20.5	32.8	67.6	131.7

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.8 DHS LOAD SPAN TABLES – LAPPED INTERNAL SPANS

Axial compression capacities (kN) f_cN_c

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20				
	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex	1B	2B	3B	FR	ØcNex
3.0																														
3.5																														
4.0																														
4.5																														
5.0																														
5.5	87.2	118.8	132.2	145.1	1627.3	114.6	157.0	174.9	192.1	1949.9	107.0	134.1	145.1	155.7	2780.4															
6.0	78.3	113.2	128.6	143.6	1367.4	102.6	149.5	170.0	190.1	1638.5	99.0	129.5	142.1	154.5	2336.3															
6.5	69.6	107.4	124.7	141.9	1165.1	90.2	141.7	164.8	187.9	1396.1	91.0	124.6	138.9	153.3	1990.7															
7.0	62.2	101.4	120.6	140.2	1004.6	79.2	133.7	159.3	185.6	1203.8	83.0	119.5	135.6	152.0	1716.5	109.6	158.3	179.8	201.5	2059.8	112.9	163.6	185.9	212.0	3005.0					
7.5	56.0	95.4	116.4	138.3	875.1	70.3	125.6	153.7	183.1	1048.6	75.1	114.3	132.1	150.6	1495.2	99.1	151.4	175.1	199.7	1794.3	101.9	156.3	181.1	210.5	2617.7					
8.0	50.2	89.4	112.0	136.3	769.1	62.9	117.5	147.9	180.5	921.6	68.3	109.0	128.5	149.1	1314.2	89.9	144.3	170.3	197.7	1577.0	92.5	148.9	176.1	208.9	2300.7	109.5	179.3	212.8	257.1	3562.6
8.5	45.2	83.4	107.6	134.3	681.3	56.7	109.4	141.9	177.8	816.4	62.4	103.6	124.7	147.5	1164.1	82.1	137.1	165.3	195.7	1396.9	84.4	141.5	170.8	207.3	2038.0	98.5	170.1	206.3	255.5	3155.8
9.0	40.9	77.4	103.1	132.1	607.7	51.4	101.4	135.9	174.9	728.2	57.3	98.2	120.9	145.9	1038.3	74.9	129.9	160.2	193.5	1246.0	77.0	133.9	165.5	205.5	1817.8	89.3	160.8	199.7	253.8	2814.9
9.5	37.3	71.4	98.5	129.9	545.4	46.8	93.0	129.8	171.9	653.5	52.9	92.8	116.9	144.2	931.9	68.1	122.7	154.9	191.2	1118.3	70.1	126.4	160.0	203.7	1631.5	81.4	151.6	193.0	252.0	2526.3
10.0	34.1	66.1	93.9	127.5	492.2	42.9	85.0	123.6	168.8	589.8	49.0	87.4	112.9	142.4	841.1	62.4	115.5	149.6	188.9	1009.3	64.1	118.9	154.5	201.8	1472.4	74.5	142.3	186.1	250.1	2280.0
10.5	31.4	61.4	89.3	125.1	446.5	39.5	78.1	117.4	165.7	535.0	45.5	82.1	108.9	140.5	762.9	57.3	108.3	144.2	186.4	915.4	58.9	111.5	148.8	199.8	1335.5	68.6	133.2	179.2	248.2	2068.0
11.0	29.0	57.2	84.7	122.7	406.8	36.5	72.0	111.2	162.4	487.4	42.1	76.7	104.8	138.6	695.1	52.9	101.1	138.7	183.9	834.1	54.4	104.1	143.1	197.7	1216.9	63.4	124.1	172.1	246.1	1884.3
11.5	26.8	53.3	80.1	120.1	372.2	33.8	66.7	105.0	159.0	446.0	39.0	71.8	100.6	136.6	635.9	49.0	94.6	133.2	181.3	763.1	50.4	97.4	137.4	195.5	1113.4	58.8	116.0	165.1	244.0	1724.0
12.0	25.0	49.5	75.6	117.6	341.8	31.5	62.0	98.9	155.6	409.6	36.2	67.4	96.5	134.6	584.0	45.6	88.8	127.7	178.6	700.9	46.9	91.3	131.6	193.3	1022.5	54.7	107.8	158.0	241.8	1583.3
12.5	23.3	46.1	71.1	114.9	315.0	29.4	57.8	92.4	152.1	377.5	33.8	63.5	92.4	132.5	538.3	42.5	83.5	122.2	175.9	645.9	43.8	85.8	125.9	191.0	942.3	51.1	100.5	150.9	239.6	1459.2
13.0	21.8	43.1	67.0	112.2	291.2	27.5	54.0	86.3	148.5	349.0	31.6	59.9	88.3	130.4	497.6	39.8	78.7	116.7	173.0	597.2	40.9	80.9	120.2	188.7	871.2	47.8	93.9	143.9	237.2	1349.1
13.5	20.4	40.3	63.3	109.5	270.1	25.8	50.6	80.8	144.9	323.6	29.6	56.6	84.2	128.2	461.5	37.3	73.8	111.2	170.2	553.8	38.4	75.8	114.5	186.3	807.9	44.9	88.0	136.9	234.8	1251.0
14.0	19.2	37.9	59.9	106.8	251.1	24.2	47.6	75.8	141.3	300.9	27.8	53.6	80.1	125.9	429.1	35.0	69.2	105.7	167.2	514.9	36.1	71.2	108.8	183.8	751.2	42.3	82.7	129.8	232.4	1163.3
14.5	18.1	35.6	56.7	104.0	234.1	22.8	44.8	71.3	137.6	280.5	26.2	50.9	76.1	123.7	400.0	33.0	65.1	100.3	164.2	480.0	34.1	67.0	103.2	181.3	700.3	39.9	77.8	123.1	229.9	1084.4
15.0	17.1	33.6	53.8	101.2	218.7	21.5	42.3	67.3	133.8	262.1	24.7	48.3	72.4	121.4	373.8	31.2	61.4	95.4	161.2	448.5	32.2	63.2	98.1	178.7	654.4	37.7	73.4	116.9	227.3	1013.3
15.5	16.1	31.8	50.8	98.4	204.9	20.4	40.0	63.6	130.1	245.5	23.3	46.0	68.9	119.0	350.0	29.5	58.1	90.8	158.1	420.1	30.4	59.7	93.4	176.1	612.8	35.7	69.5	110.7	224.7	949.0
16.0	15.3	30.1	48.1	95.6	192.2	19.3	37.9	60.2	126.3	230.4	22.1	43.8	65.8	116.7	328.5	28.0	55.0	86.6	155.0	394.2	28.9	56.5	89.0	173.5	575.1	33.9	65.8	104.7	222.0	890.6
16.5	14.5	28.5	45.6	92.8	180.8	18.3	35.9	57.1	122.5	216.6	21.0	41.5	62.8	114.3	308.9	26.5	52.1	82.6	151.8	370.7	27.4	53.6	85.0	170.8	540.8	32.2	62.5	99.3	219.2	837.4
17.0	13.8	27.1	43.2	89.9	170.3	17.4	34.2	54.2	118.8	204.1	19.9	39.4	60.1	111.9	291.0	25.2	49.5	79.0	148.6	349.2	26.1	51.0	81.2	168.0	509.5	30.6	59.4	94.3	216.4	788.9
17.5	13.1	25.8	41.1	87.1	160.7	16.5	32.5	51.6	115.0	192.6	19.0	37.5	57.6	109.5	274.6	24.0	47.1	75.2	145.4	329.5	24.8	48.5	77.3	165.2	480.8	29.2	56.6	89.7	213.6	744.5
18.0	12.5	24.6	39.2	84.3	151.9	15.8	31.0	49.2	111.2	182.0	18.1	35.7	55.2	107.0	259.5	22.9	44.9	71.6	142.2	311.5	23.7	46.2	73.6	162.4	454.4	27.9	53.9	85.5	210.7	703.7

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. **2.** FR: Load Capacity for fully restrained compression flange. **3.** f_cN_{ex}: Elastic buckling capacity about the x-x axis.

2.3.9 DESIGN OF BRACING SYSTEMS

2.3.9.1 INTRODUCTION

Dimond Fastbrace is the preferred bracing system for use with the DHS system for members up to and including DHS 300/18. Continuous bolted channel bracing must be used for DHS 350/18 and DHS 400/20, and it may be used on all other sizes.

We do not recommend the use of brace channel and alternating sag rods as the load capacities for DHS purlins provided in Sections 2.3.7 and 2.3.8 will not necessarily be achieved.

Specific design of the bracing system is required where bracing is used to support additional loads (other than providing rotational and lateral restraint to the purlins), for example sprinkler pipes or ducting. For further advice contact Dimond on 0800 ROOFSPEC.

All purlin configurations outlined in this manual require a minimum of one bracing line per bay to achieve the published loads in the load/span tables. Any variation from use of Dimond bracing or its location may result in lower load capacities and/or greater deflections (as purlins may twist out of plane).

Use of Dimond bracing and its compatibility with the load capacities provided in Sections 2.3.7 and 2.3.8 is subject to the following:

1. The Purlins/Girts are bolted to cleats, and lapped members are connected as detailed in Section 2.3.14.
2. The brace length does not exceed 3.20m. For longer lengths, specific design is required as per Section 2.3.9.2. Shortest available fast brace length is 250mm.

2.3.9.2 METHOD FOR BRACE DESIGN CHECK

The bending moment on each brace channel is determined by:

M^* = 0.75 $f_b w_{bx} l_b m$ if roofing or cladding attachment provides sufficient restraint to the outside flange

or M^* = 1.5 $f_b w_{bx} l_b m$ if there is no additional restraint to the outside flange.

Where $f_b w_{bx}$ = Uniformly loaded bending capacities from DHS load span tables

$l_b = l \times h$ where l = purlin span, h = contributing length factor from below

m = distance from shear centre to mid plane of DHS purlin web from below.

M^* must not exceed the brace member capacity M_b given below.

Contributing length factor (h)

Span Type	No. of Brace Lines		
	1	2	3
Single	0.50	0.31	0.25
End	0.50	0.31	0.25
Internal	0.50	0.31	0.25
End Lapped	0.475	0.295	0.24
Internal Lapped	0.45	0.28	0.23

Dimension (m)

DHS Member	*m* (mm)
150/12	33.2
150/15	32.9
200/12	36.3
200/15	35.9
200/18	35.6
250/13	38.3
250/15	38.1
250/18	37.8
300/15	42.8
300/18	42.6
350/18	41.6
400/20	40.1

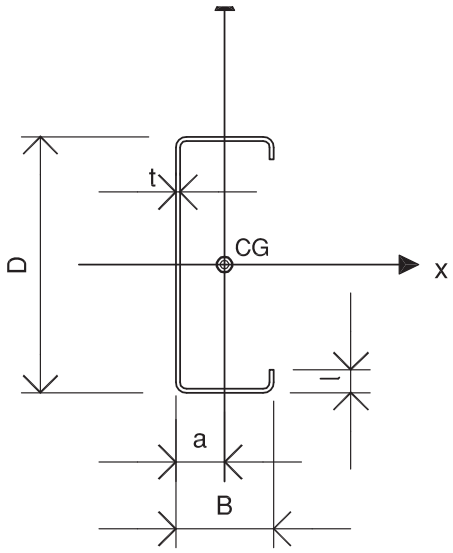
Bracing member moment capacity (M_b)

Maximum Brace Length (m)	less than or equal to 3.2	3.4	3.6	3.8	4.0
M_b (kNm)	0.50	0.48	0.45	0.41	0.38

Notes:

1. For brace lengths less than 3.2m, the brace capacity is limited by cleat connection rather than the brace channel.
2. The moment capacities given above do not apply where additional loads are connected eccentrically to the web of the brace channel. We do not recommend connecting additional loads to the flanges or lips of the brace channel.

2.3.9.3 BRACING CHANNEL SECTION PROPERTIES



Tabulated properties are based on full unreduced sections.

CODE	D x B mm	t mm	Mass kg/m	Weight kN/m	Area mm²	l mm	A mm	I_x (10^6 mm^4)	I_y (10^6 mm^4)	Z_x (10^3 mm^3)	COLUMN PROPERTIES	
											J (mm^4)	I_w (10^9 mm^6)
DB 89 / 12	89 x 34	1.15	1.52	0.015	186.3	6	9.17	0.223	0.024	5.002	84.13	0.040

Note: Mass assumes a total coated weight for the zinc coating of 450 g/m²

2.3.10 DESIGN OF CONNECTION SYSTEMS

The following table sets out the bolt connection capacity for the different steel thicknesses used with DHS Purlins when checked for end tearing and bearing. Bolt shear capacities are also included for grade 4.6 and grade 8.8 bolts.

Details of single bolt connection capacities for DHS Purlins and Girts

Bolt dia. (mm)	Failure mode	Steel capacity (kN) for varying steel thicknesses (mm)					Bolt shear fV_{fn} (kN)	
		1.15	1.25	1.45	1.75	1.95	grade 4.6	grade 8.8
12	Tearing fV_f	13.6	14.8	17.2	19.2	21.3		
	Bearing fV_b	12.9	14.0	16.3	18.1	20.2	15.1	31.4
16	Tearing fV_f	13.6	14.8	17.2	19.2	21.3		
	Bearing fV_b	17.2	18.7	21.7	24.2	27.0	28.6	59.3
20	Tearing fV_f	13.6	14.8	17.2	19.2	21.3		
	Bearing fV_b	21.5	23.4	27.1	30.2	33.7	44.6	92.6

Notes:

1. All capacities are in accordance with AS/NZS 4600:1996.
2. Bolts are assumed to comply to AS1111 or AS1252.
3. All connections are assumed to have one washer under each of the bolt head and the nut (or the portal cleat acting as one of the washers).
4. Calculation of tearing capacity assumes a 38mm edge distance.
5. The maximum structural ductility factor used for seismic loads must be less than 1.25.

2.3.11 DESIGN EXAMPLES

2.3.11.1 EXAMPLE: PURLINS, SINGLE AND LAPPED

Loadings

Dead Load, G = 0.12 kPa Live Load, Q = 0.25 kPa Snow Load, S_u = 0.50 kPa
Outward Limit State Wind Loads, W_u = – 0.95 kPa and W_s = – 0.66 kPa
Inward Wind Loading is not significant for this roof.

Building Constraints

Portal Spacing, L_P = 7.5m Rafter Length, L_R = 16.0m (distance from eaves purlin to ridge purlin)
Roof Pitch = 10 degrees Roofing Profile = BB900 x 0.55mm BMT

Critical Design Load Combinations for the Ultimate Limit State (from AS/NZS 1170)

i)	$W^*_{ULS}\downarrow$	=	1.2G + 1.5Q	=	(1.2 x 0.12) + (1.5 x 0.25)	=	0.52 kPa
ii)	$W^*_{ULS}\downarrow$	=	1.2G + S_u + c_cQ	=	1.2 x 0.12 + 0.50 + (0.0 x 0.25)	=	0.64 kPa
iii)	$W^*_{ULS}\uparrow$	=	0.9G + W_u	=	(0.9 x 0.12) + (– 0.95)	=	– 0.84 kPa

Critical Design Load Combinations for the Serviceability Limit State

i)	$W^*_{SLS}\downarrow$	=	L_P/300 under G & c_1Q	=	(0.12 + 0.0 x 0.25) x 300/150	=	0.24 kPa
ii)	$W^*_{SLS}\uparrow$	=	L_P/150 under W_s	=	– 0.66	=	– 0.66 kPa

For i) we have converted the load by a factor of 300/150 in order to compare the load directly with W_s in the DHS load span tables as these are based on span/150.

Optimise Roofing Profile Spans

In this case we have a restricted access roof where the point load requirement limits the intermediate span of the BB900 x 0.55mm BMT profile to 3.0m. End spanning capability of the roofing is reduced to 2.1m, i.e. 70% of the intermediate span. Generally these spans will not 'fit' the rafter length exactly, hence the requirement to optimise.

The optimised roofing profile intermediate span is based on the rafter length and the number of purlins, N_P (assuming at least four) and is given by the term: $L_{RI} = L_{RT} / [N_P - 1.6]$

Try 6 Purlins,	L_{RI} = 16.0/(6 – 1.6)	=	3.64m	No good
Try 8 Purlins,	L_{RI} = 16.0/(8 – 1.6)	=	2.50m	Not controlling
Try 7 Purlins,	L_{RI} = 16.0/(7 – 1.6)	=	2.96m	Intermediate spans and 2.07m edge spans

From this, 7 purlins are required and the purlin spacings may be rationalised to 2.9m intermediate spans and 2.0m spans at the sheet ends.

Continued on next page

2.3.11.1 EXAMPLE: PURLINS, SINGLE AND LAPPED *continued*

1. Single Span Purlin Design

Assuming the top flange of the DHS purlin is restrained by screw-fastened roof sheeting. (If the top flange is not fully restrained then use the load capacity for the 1, 2 or 3 brace case as appropriate to check both uplift and gravity combinations.)

Try DHS 250/18 Purlin

Check design capacities (using those given in the single span DHS load span tables): $W^*_{ULS} \leq f_b W_{bx}$

$W^*_{ULS}\downarrow$	=	2.9 x 0.64	=	1.86 kN/m	< FR, 3.01 kN/m	∴ O.K.
$W^*_{ULS}\uparrow$	=	2.9 x – 0.84	=	– 2.44 kN/m	< 2 Braces, 3.01 kN/m	∴ O.K.

Check deflections

$W^*_{SLS}\uparrow$	=	2.9 x – 0.66	=	–1.91 kN/m	< W_s, 1.94 kN/m	∴ O.K.

Therefore use DHS 250/18 purlins at 2.9m intermediate spacings and 2.0m at sheet ends, with 2 rows of Fastbrace (or standard bolted DB89/12 braces) brace channels per bay.

2. Lapped Span Purlin Design

a) End Bays

Try DHS 200/18 Purlin

Check design capacities (using those given in the lapped end span DHS load span tables):

$W^*_{ULS} \leq f_b W_{bx}$

$W^*_{ULS}\downarrow$	=	2.9 x 0.64	=	1.86 kN/m	< FR, 2.76 kN/m	∴ O.K.
$W^*_{ULS}\uparrow$	=	2.9 x – 0.84	=	– 2.44 kN/m	< 1 Brace, 2.76 kN/m	∴ O.K.

Check deflections

$W^*_{SLS}\uparrow$	=	2.9 x 0.66	=	–1.91 kN/m	< W_s, 2.68 kN/m	∴ O.K.

b) Internal Bays

Try DHS 200/15 Purlin

Check design capacities (using those given in the lapped internal span DHS load span tables):

$W^*_{ULS} \leq f_b W_{bx}$

$W^*_{ULS}\downarrow$	=	2.9 x 0.64	=	1.86 kN/m	< FR, 3.49 kN/m	∴ O.K.
$W^*_{ULS}\uparrow$	=	2.9 x – 0.84	=	– 2.44 kN/m	< 1 Brace, 3.49 kN/m	∴ O.K.

Check deflections

$W^*_{SLS}\uparrow$	=	2.9 x 0.66	=	–1.91 kN/m	< W_s, 4.84 kN/m	∴ O.K.

Therefore use,

End Bays: DHS 200/18 purlins at 2.9m intermediate spacings and 2.0m at sheet ends, with 1 row of Fastbrace (or standard bolted DB89/12 braces) brace channels per bay.

Internal Bays: DHS 200/15 as per the end bay purlin spacings and bracing layout.

In the calculation of wall elements, optimisation follows the same logic as illustrated for roofing with the exception that foot traffic limitations do not apply, leaving the spanning ability of the cladding dependent on face loads caused by wind.

2.3.11.2 DEFLECTION CHARACTERISTICS

a) The W_s loading for a DHS 250/18 purlin on a 9.0m single span is 1.13 kN/m. It is desired to limit the DHS purlin deflection to span/200.

Therefore the serviceable load in the DHS purlin at a deflection of span/200 is expressed as:

$$\frac{1.13 \text{ x } 150}{200} = 0.85 \text{ kN/m}$$

b) The design Linear Load for deflection of a DHS 250/18 on a 9.0m single span has been calculated as 0.94 kN/m.

The relative deflection is shown as, $\frac{0.94 \text{ x span}}{1.13 \text{ x } 150} = \frac{\text{span}}{180}$

The actual deflection is then, $\frac{\text{span}}{180} = \frac{9000 \text{ mm}}{180} = 50\text{mm}$

2.3.11.3 COMBINED BENDING AND COMPRESSION

There are three equations governing the design for combined bending and compression. Assuming there is no minor axis component for flexure, where $N^*/\phi_c N_c \leq 0.15$.

Using the purlin example, option 2 for a DHS 200/18 on a 7.5m lapped end span with 1 brace, the DHS purlin is required to resist a 4.0 kN axial load (resulting from wind on the end wall) in addition to the $W^*_{ULS}\uparrow$ load combination. The remaining axial capacity is checked given the known flexural loads:

W_x^* = 2.44 kN/m (Design uniformly distributed bending load; $W^*_{ULS}\uparrow$)

$\phi_b W_{bx}$ = 2.76 kN/m (Uniformly loaded bending capacity from load span tables)

N^* = 4 kN (Design axial compressive load as calculated)

$\phi_c N_c$ = 48.08 kN (Axial compression capacity from loan/span tables)

Solving for N^*,

$$N^* = \left(1 - \frac{W_x^*}{\phi_b W_{bx}}\right) \phi_c N_c \qquad \text{(solving equation 1 in section 2.3.3)}$$

$$= \left(1 - \frac{2.44}{2.76}\right) .48.08 = 5.57 \text{ kN} > 4.0 \text{ kN} \therefore \text{O.K.}$$

Check $N^*/\phi_c N_c \leq 0.15$ for the above formula to remain valid: 5.57/48.08 = 0.12 $\therefore$ O.K.

If the above formula is not valid, i.e. $N^*/\phi_c N_c > 0.15$, then N^* needs to be solved to satisfy whichever of the following equations gives the lowest N^* value.

$$\frac{N^*}{\acute{Y}_c N_c} + \frac{C_{mx} W_x^*}{\acute{Y}_b W_{bx} \mathring{U}_{nx}} \leq 1.0 \qquad \text{(solving equation 2 in section 2.3.3)}$$

$$N^* = \left(1 - \frac{W_x^*}{\phi_b W_{bx}}\right) \phi_c N_s \qquad \text{(solving equation 3 in section 2.3.3)}$$

2.3.11.4 EXAMPLE: BOLT SIZING

Taking the previous purlin example option 1 where we have a single span DHS 250/18 purlin spaced at 2.9m apart, with 2 rows of bracing.

Critical load combination (ULS) = 0.84 kPa

This converts to design shear force at the supports, V^* = 0.84 x 2.9 x 7.5/2 = 9.14 kN per end connection.

As there are 2 bolts at each end V^* = 9.14/2 = 4.57 kN per bolt.

From the connection capacities given in Section 2.3.10 for 1.75m thickness.

Try 12mm diameter bolts

End tearing	fV_f	=	19.2 kN per bolt
Bearing	fV_b	=	18.1 kN per bolt
Bolt shear	fV_{fn}	=	15.1 per grade 4.6 bolt > 4.57 ∴ O.K.

2.3.11.5 EXAMPLE: SPECIFIC BRACE DESIGN

Consider a design case with purlin span 10m.
Ultimate uplift design load 1 kPa.
Desired purlin spacing 3.6m on internal spans.

Proposed purlin design
DHS 300/18 on internal lapped spans. 1 row bracing using Fastbrace.
Design load = 1 kPa x 3.6m = 3.6 kN/m
This is less than $f_b w_{bx}$ = 3.85 kN/m from DHS load span tables. ∴ O.K.

Check brace capacity.
From Section 2.3.9.2.
Bending moment on the brace channel.
M^* = 0.75 $f_b w_{bx}$ l_b m, assuming screw fixings of the roof sheets will restrain the top flange, where $f_b w_{bx}$ is the purlin capacity. (Note: The designer may choose to use the design load instead of $f_b w_{bx}$, although it is recommended that brace strength is designed to match the purlin capacity.)

In this example, use $f_b w_{bx}$ = 3.85 kN/m.
l_b = 10 x 0.5m (contributing length factor table)
m = 42.6mm (distance from shear centre to mid plane table)
Therefore, M^* = 0.75 x 3.85 x 5 x 0.0426
= 0.61 kNm
Brace member moment capacity
M_b= 0.45 kN/m < 0.61 kN/m (bracing member moment capacity table)
Therefore, either reduce purlin spacing or use 2 rows bracing.

Check for 2 rows bracing
l_b = 10 x 0.31 (contributing length factor table)
M^* = 0.75 x 3.85 x 3.1 x 0.0426 = 0.38 kN/m < 0.45 kNm. ∴ O.K.

2.3.12 OPTIMISATION

Introduction
Dimond offers a roofing/purlin optimisation service for engineers and specifiers. Given the site variables and design constraints relating to a building, the most cost effective Dimond roofing/purlin combination can be generated.

This service may be used in the conceptual design phase to assist your forward planning and/or at the detailed design phase as you finalise the design. For further information fill out the Optimisation Form in this section or visit our website www.dimond.co.nz and view under the Architects and Specifiers section.

Terms of Use
It is intended that the design engineer check, detail and make amendments as necessary in order to approve the design for construction and to ensure compliance with the relevant codes of practice in relation to building.

Benefits
The roofing/purlin optimisation service has the following benefits:

- Allows a cross-check on design from a reliable, trusted source.
- Provides the most structurally efficient and economical roofing/purlin solution.
- Helps finalise purlin sizes and roof selection early in the design process.
- Reduces risk of unforeseen design issues later in the project, for example step detailing for roof lengths greater than 25m.
- Enables timely coordination of the material availability for the project minimising time delays and programming issues.

2.3.12.1 OPTIMISATION SERVICE FAX FORM

To: Dimond,

Attention: **ROOFING/PURLIN OPTIMISATION SERVICE**

From: ..... (Design Engineer)

Company: .....

Telephone: ..... Facsimile: .....

Job Name/Location: .....

Code Variables to AS/NZS 1170

Terrain Category: ..... Internal Pressure Coefficients: .....

Wind Region: ..... Dead Load: .....

Elevation (above sea level): ..... Live Load: .....

Misc. Code Multipliers: ..... Snow Load: .....

Purlin Deflection Limit and Loading Regime: .....

Geometry

Building Type: Gable ☐ Monoslope ☐ Other (sketch) ☐ Bay Centre Options: .....

Overall Dimensions ..... Preferred Purlin Centres Max:..... Min:.....

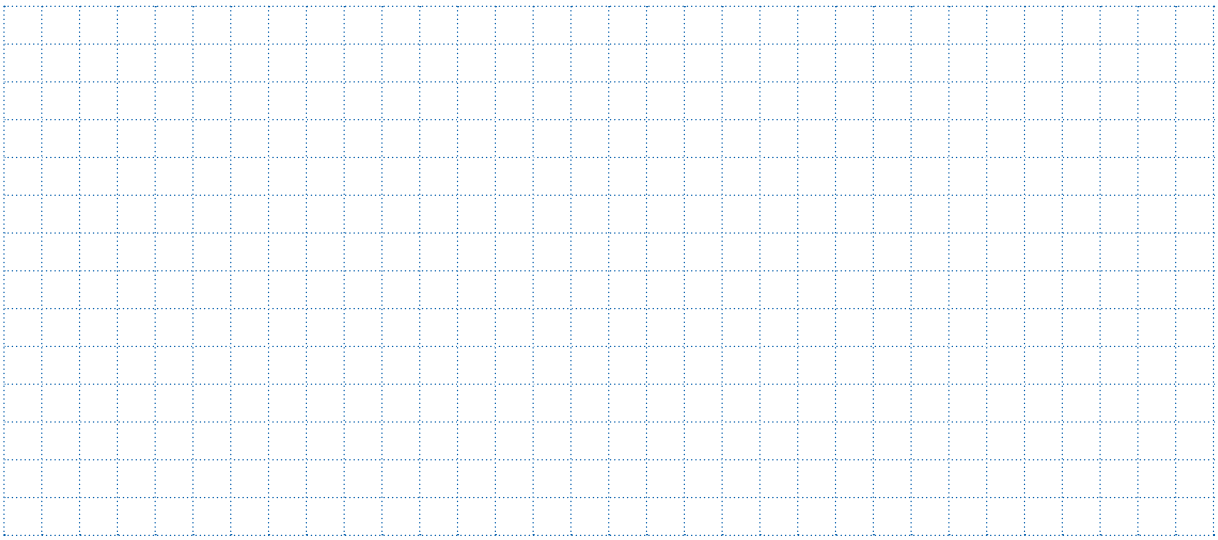
Roof Pitch: ..... Purlin Size Limitation: .....

Ridge Height: ..... Roofing Profile Options: .....

Foot Traffic Requirements for Roofing

Service Category	Description	(please tick)
1. Unrestricted-access roof	Expect regular foot traffic to access the roof for maintenance work and able to walk anywhere on the roof. No congregation of foot traffic expected.	☐
2. Restricted-access roof	Expect occasional foot traffic educated to walk only on the purlin lines, in the profile pans, or carefully across two profile ribs. Walkways installed where regular traffic is expected, and "Restricted Access" signs placed at access points.	☐

Sketches and Comments



2.3.13 DHS MATERIAL SPECIFICATION

Dimond Hi-Span Purlins are manufactured by roll forming galvanised steel coil produced to AS 1397:2001.

		Base Metal Thickness, BMT (mm)	Steel Grade	Yield Strength, f_y (MPa)	Standard Zinc Weight, Z (g/m^2)
DHS Purlins and Girts		< 1.5	G500	500	Z 275
		> 1.5	G450	450	Z 275
Tolerances	Depth	+/– 2mm			
	Width	+/– 2mm			
	Hole Centres	+/– 1.5mm			
	Length	+/– 6mm			
	Web/Flange Angle	89-93 degrees			

Z 450 zinc weight coil can be supplied with order lead times of up 12 weeks. Please discuss with Dimond on 0800 775 777.

2.3.14 SHORT FORM SPECIFICATION – DHS PURLINS AND GIRTS

The purlin system will be Dimond DHS **(1)**, manufactured from G450-G500 grade steel with a **(2)** g/m^2 galvanised zinc weight.

The sizes, lengths, span configuration and lap lengths (where required) are as detailed on the drawings.

All hole sizes, hole shapes and positions are as shown on the drawings.

The bracing system is to be **(3)**. The bracing channel size is 89mm x 1.2 thick galvanised with a **(2)** galvanised zinc weight.

All bolts to be **(4)** grade, **(5)** diameter, **(6)** finish.

Choose from

(1) 150/12, 150/15, 200/12, 200/15, 200/18, 250/13, 250/15, 250/18, 300/15, 300/18, 350/18, 400/20

(2) Z 275 or Z 450

(3) Fastbrace or bolted channel bracing

(4) 4.6 or 8.8

(5) 12mm or 16mm

(6) Electro galvanised or hot dip galvanised.

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.

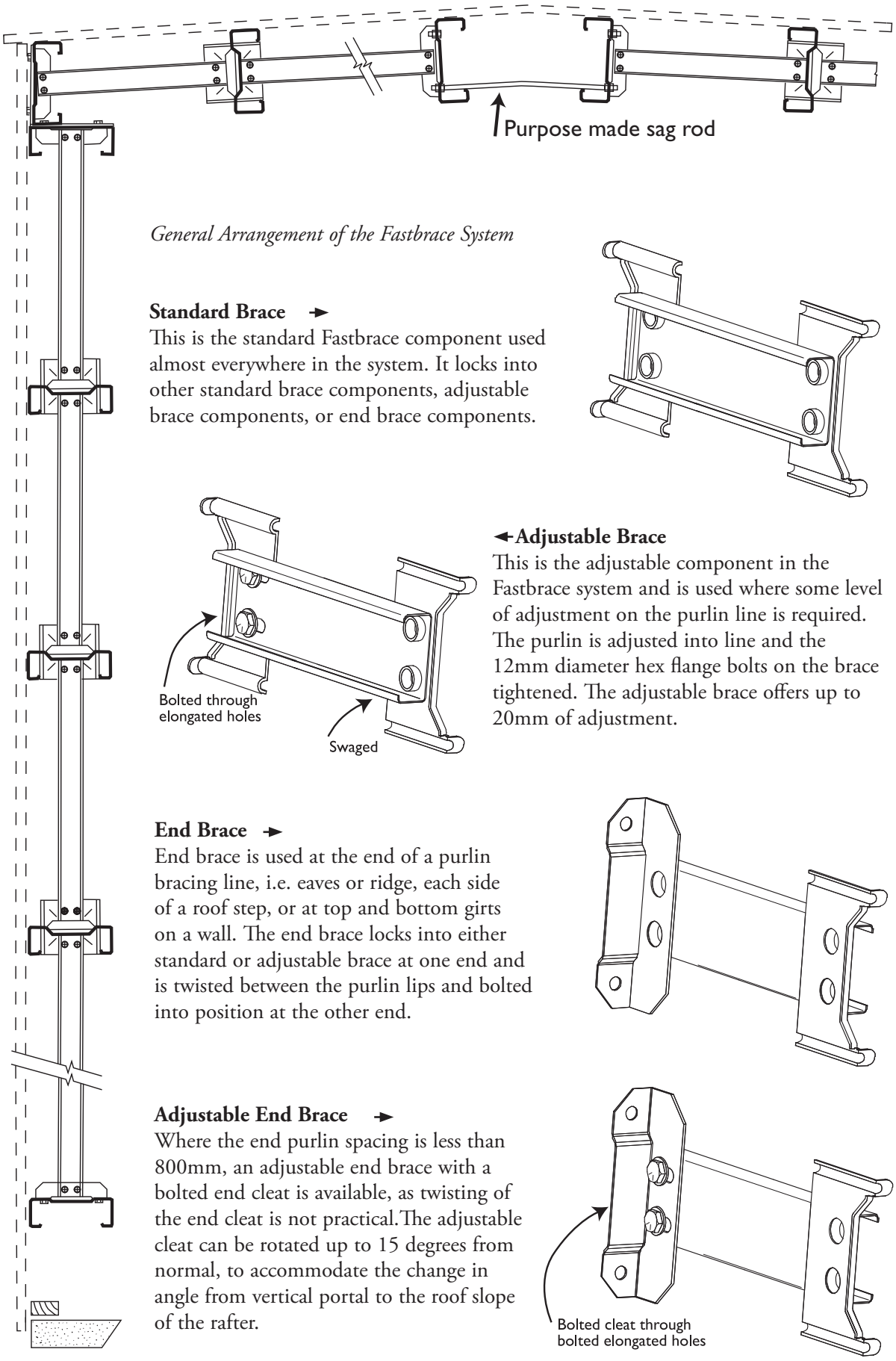
Handling and Storage
The Fastbrace system is delivered to site, usually strapped together, marked in bundles for installing in the same area of the roof structure. Refer to Section 2.6.2 Handling and Storage.

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	450
End cleats	2.00	G250	250	450

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.

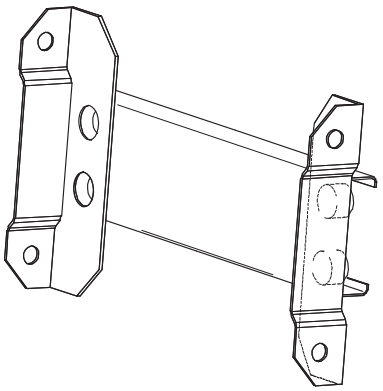
Maintenance
Must be carried out in accordance with Section 2.1.6 Maintenance.

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.

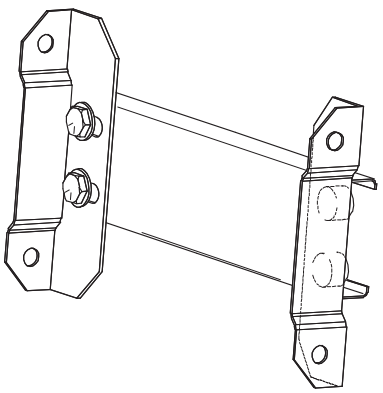
For the material specifications of the bracing refer to Section 2.3.15.1.

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 H3.1 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.

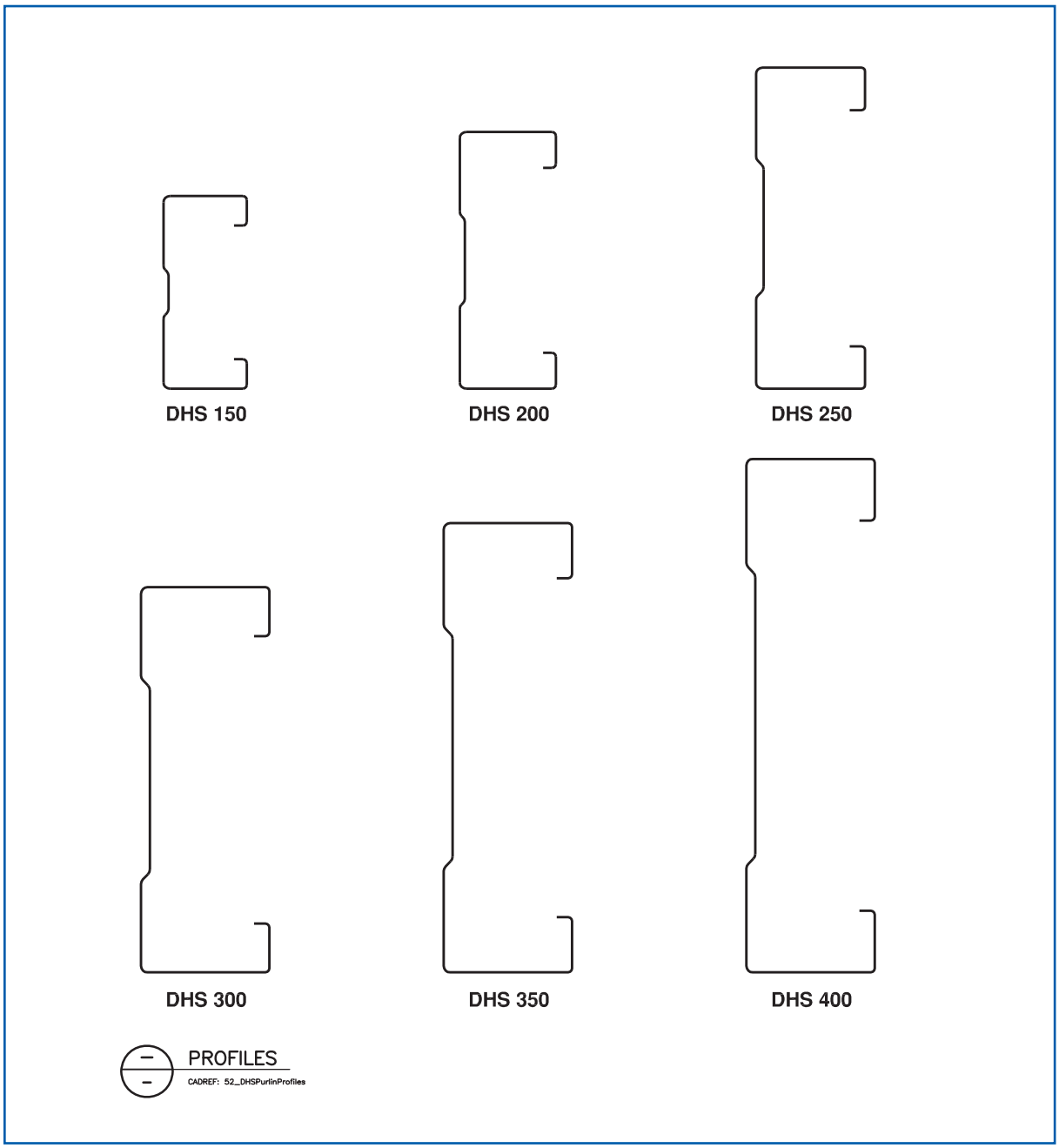
2.3.16 DHS CAD DETAILS

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



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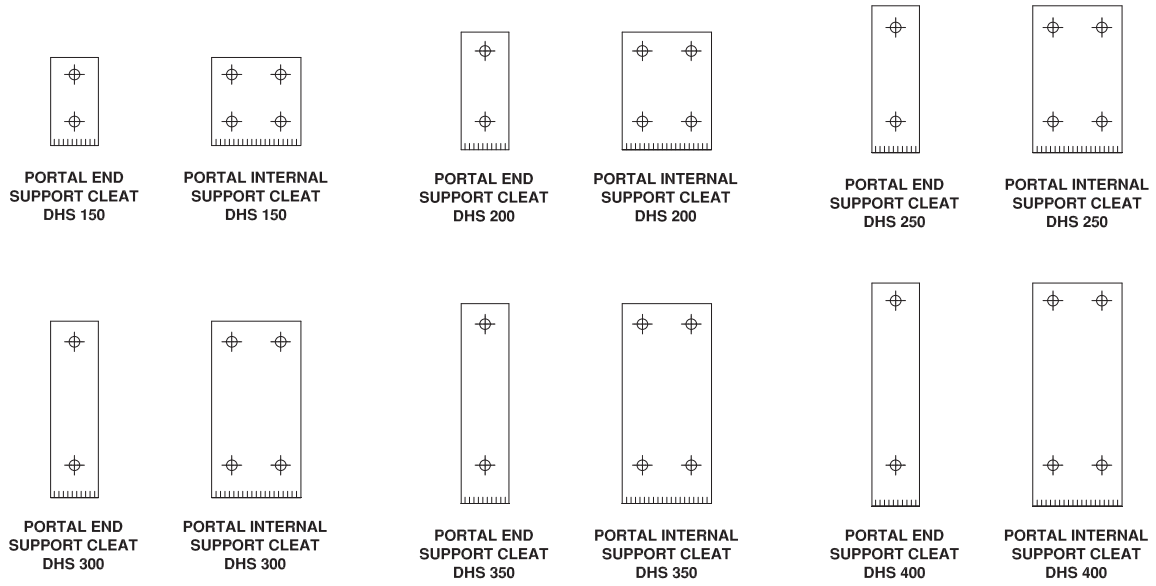
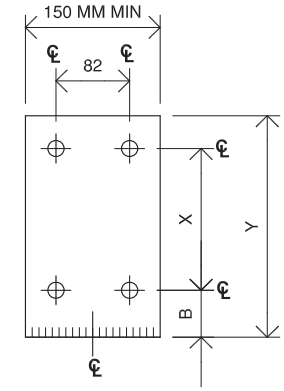
2.3.16 DHS CAD DETAILS *continued*

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

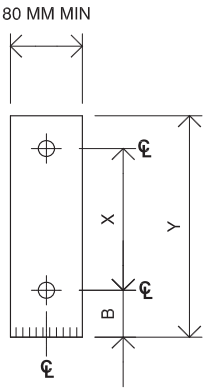


PORTAL CLEATS

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

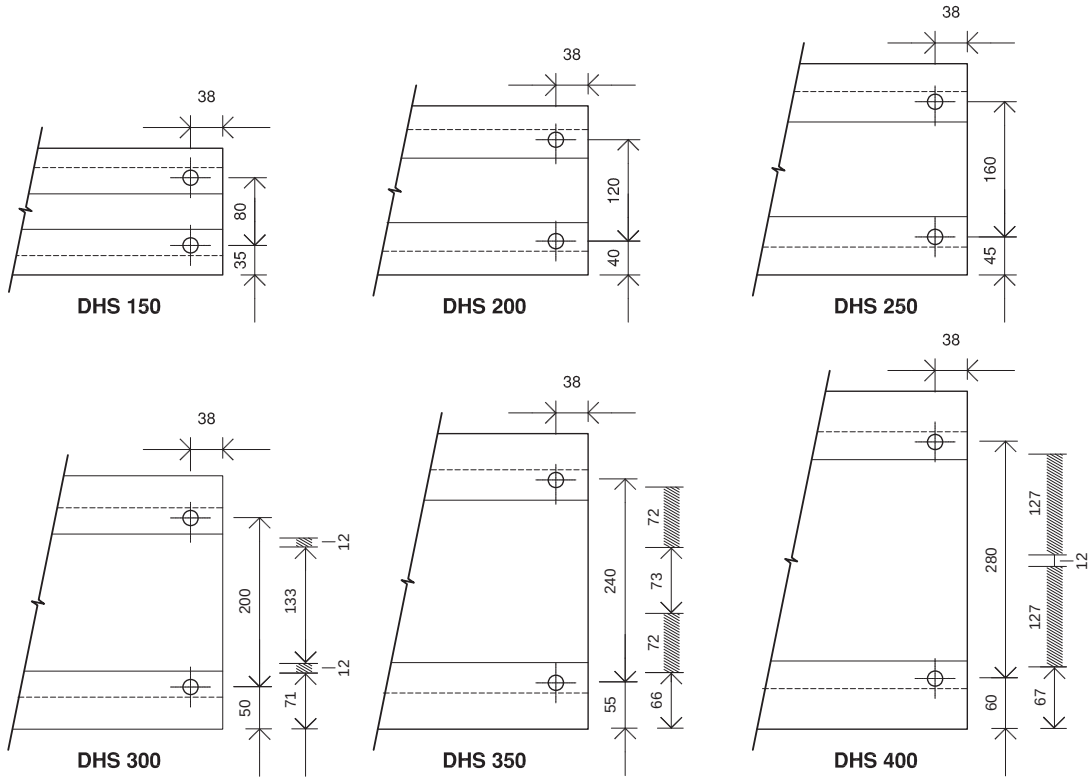
CADREF: 61_DHSCleatDimensions

Not to scale.

Continued on next page

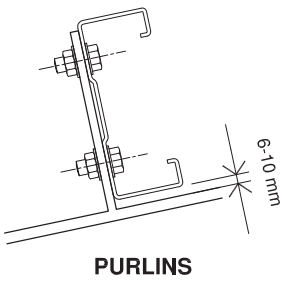
2.3.16 DHS CAD DETAILS *continued*

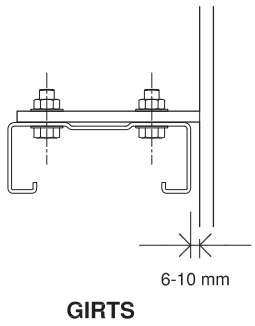
2.3.16.3 HOLE LOCATIONS

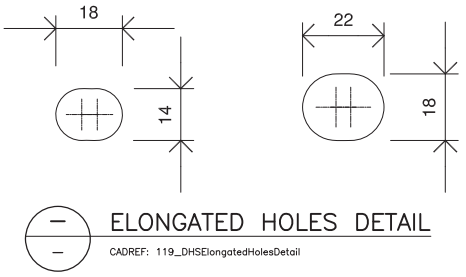


STANDARD HOLE LOCATIONS
CADREF: 62_DHSStandardHoleLocations

Note: Holes cannot be punched in the areas shown as ▨ in the diagram above.







ELONGATED HOLES DETAIL
CADREF: 119_DHSElongatedHolesDetail

FASTENING TO CLEATS
CADREF: 64_DHSFasteningtoCleats

HOLE SIZES FOR DHS PURLINS & GIRTS

BOLT TYPE	HOLE DIMENSIONS	
	ROUND	ELONGATED
M12	14mm DIAMETER	14mm x 18 mm
M16	18mm DIAMETER	18mm x 22mm

ALL HOLES WILL BE ROUND UNLESS OTHERWISE REQUESTED.

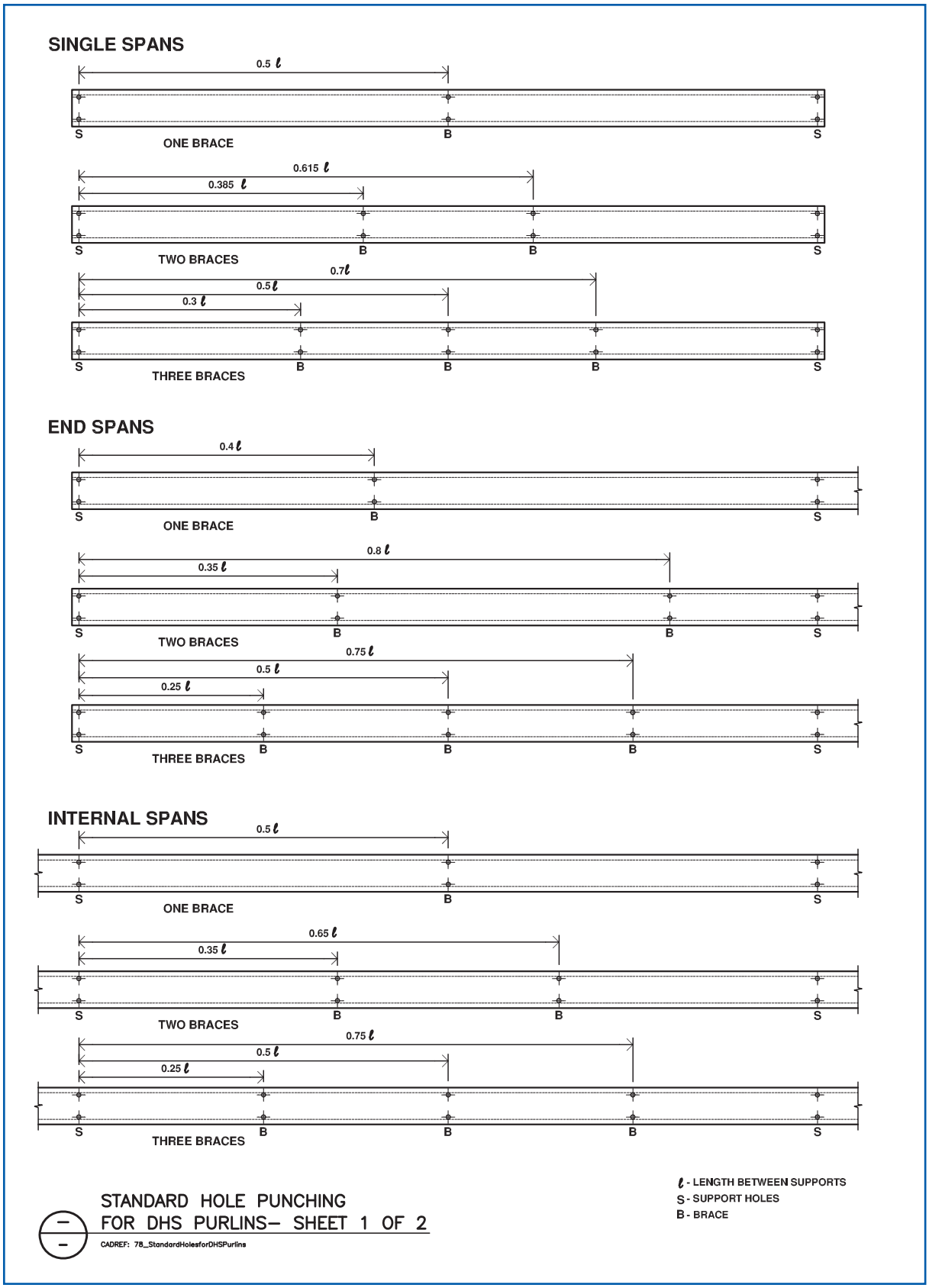
Not to scale.

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



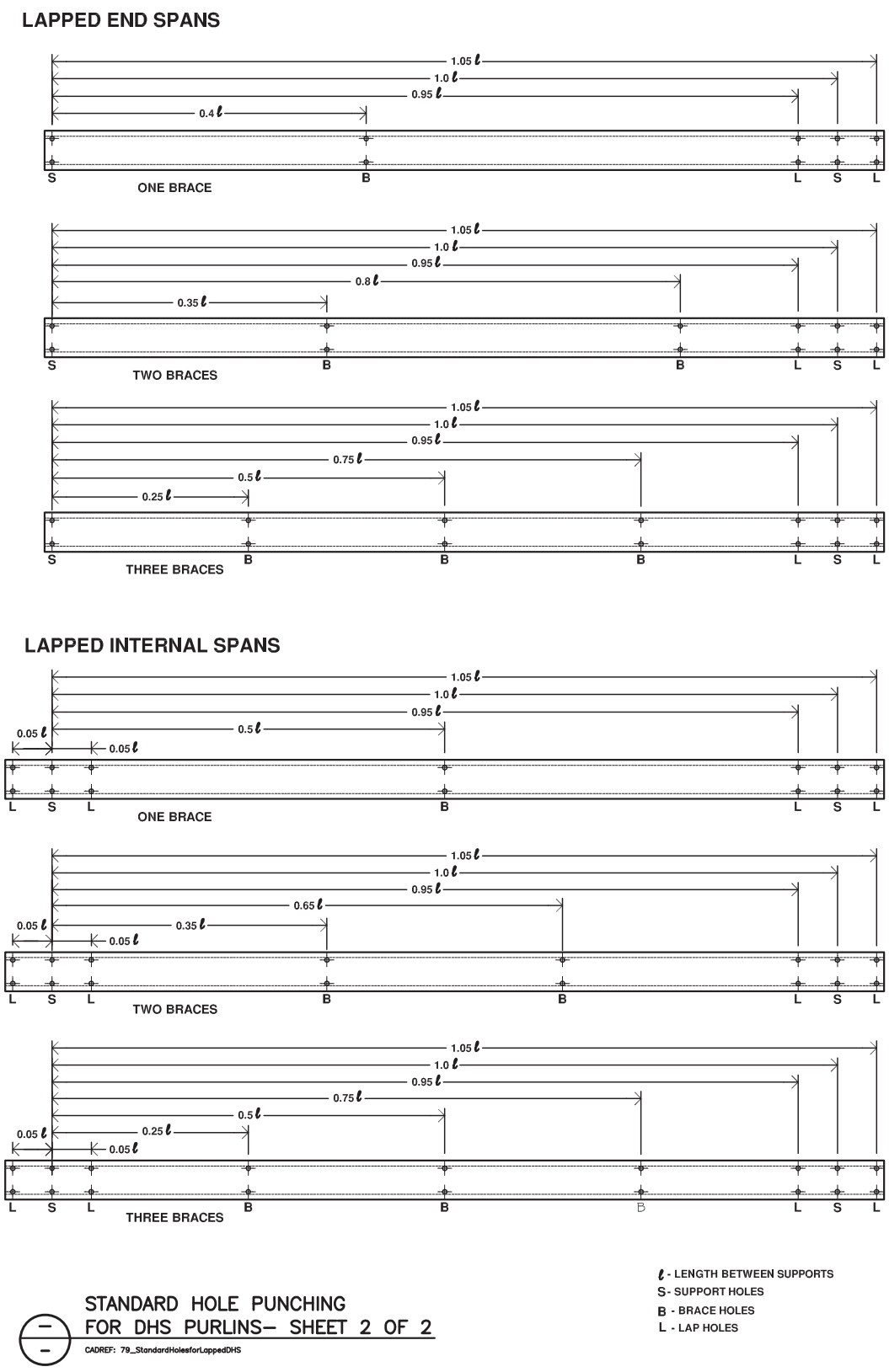
Not to scale.

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



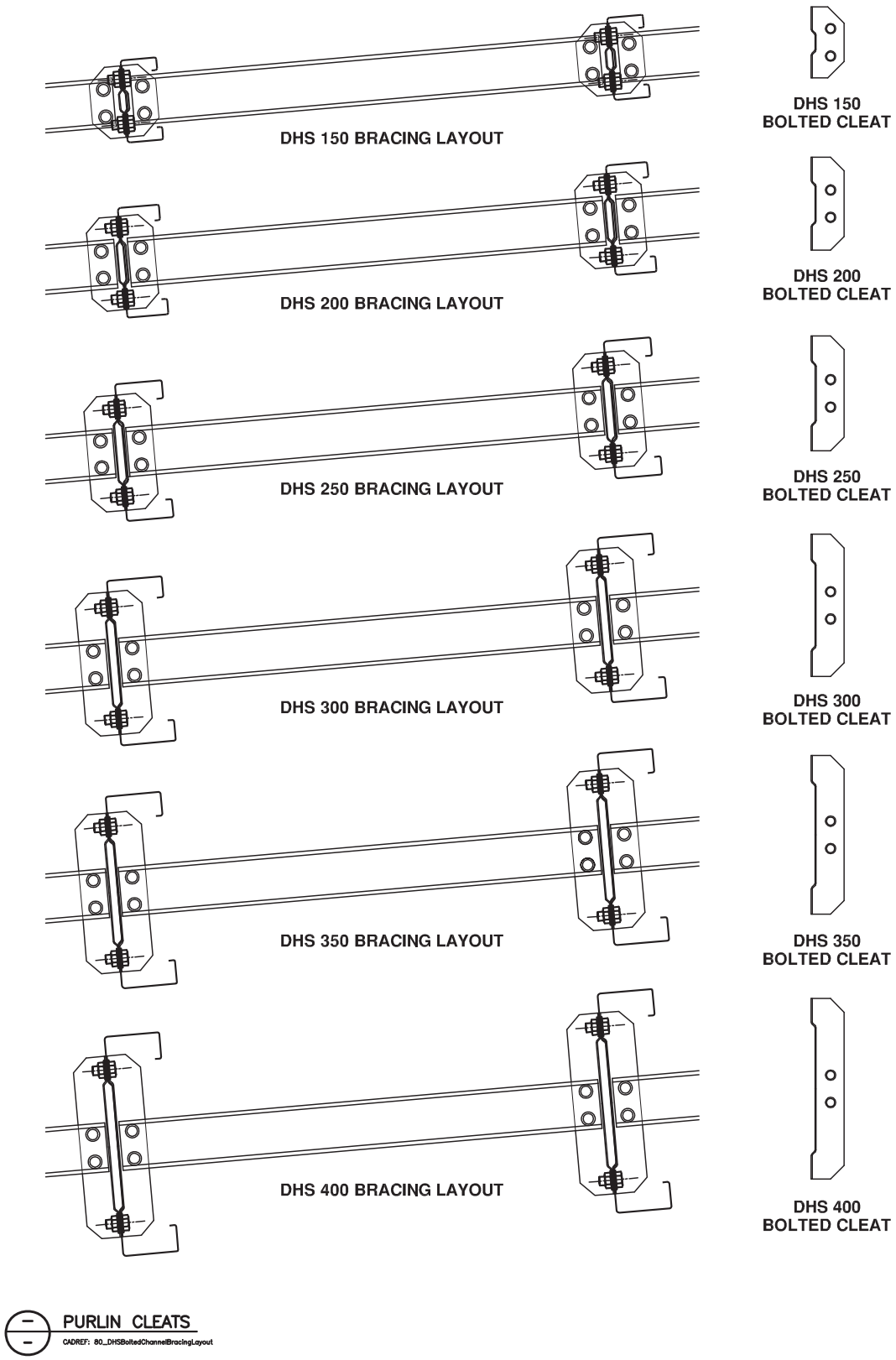
Not to scale.

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

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

2.3.16.6 BOLTED CHANNEL BRACING LAYOUT



Not to scale.

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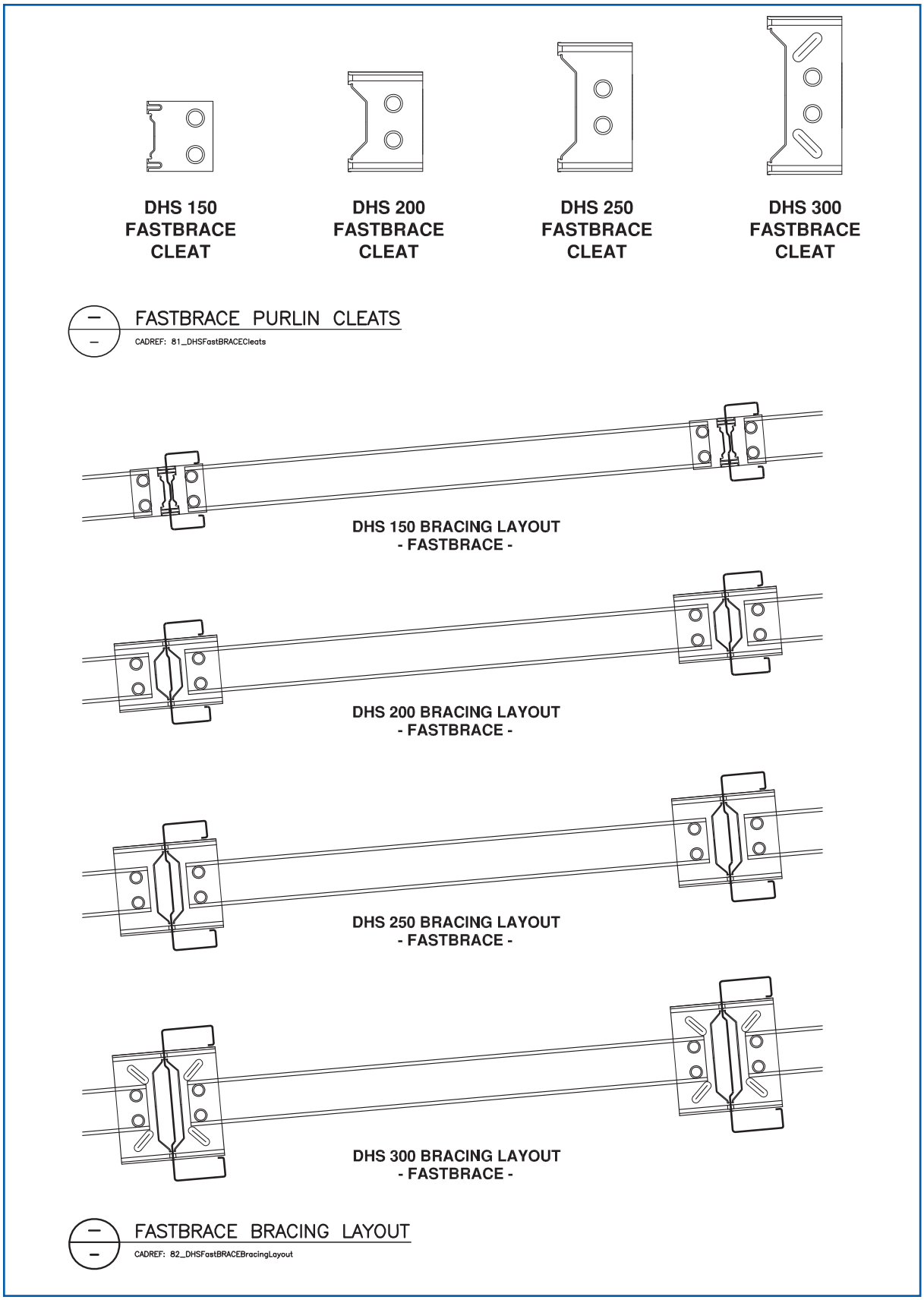
2.3.16 DHS CAD DETAILS *continued*

2.3.16.7 FASTBRACE CLEATS AND BRACING LAYOUT



Not to scale.

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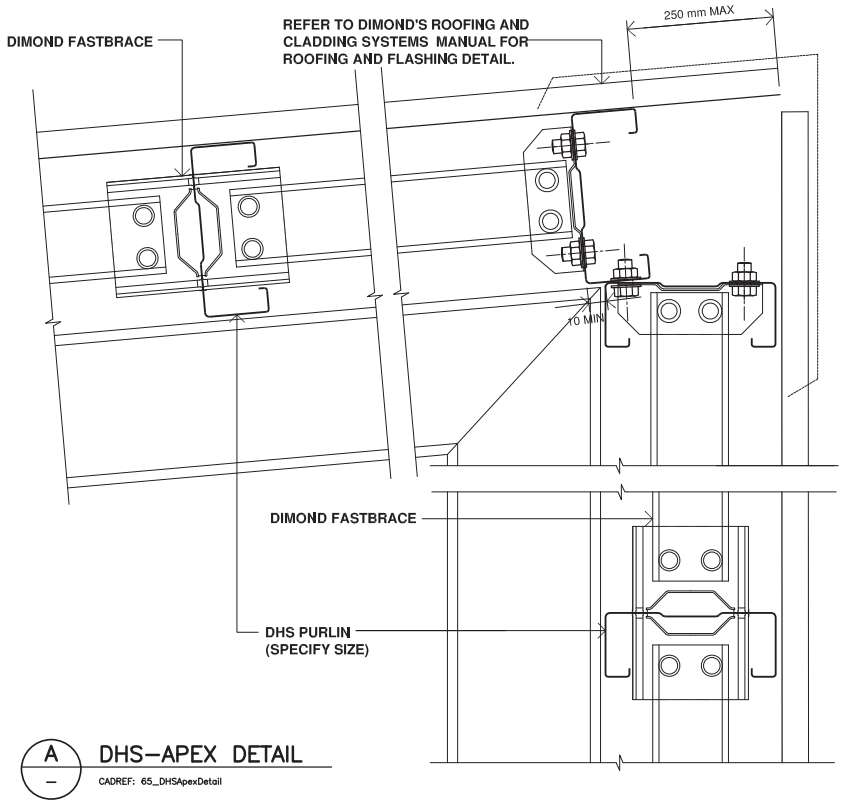
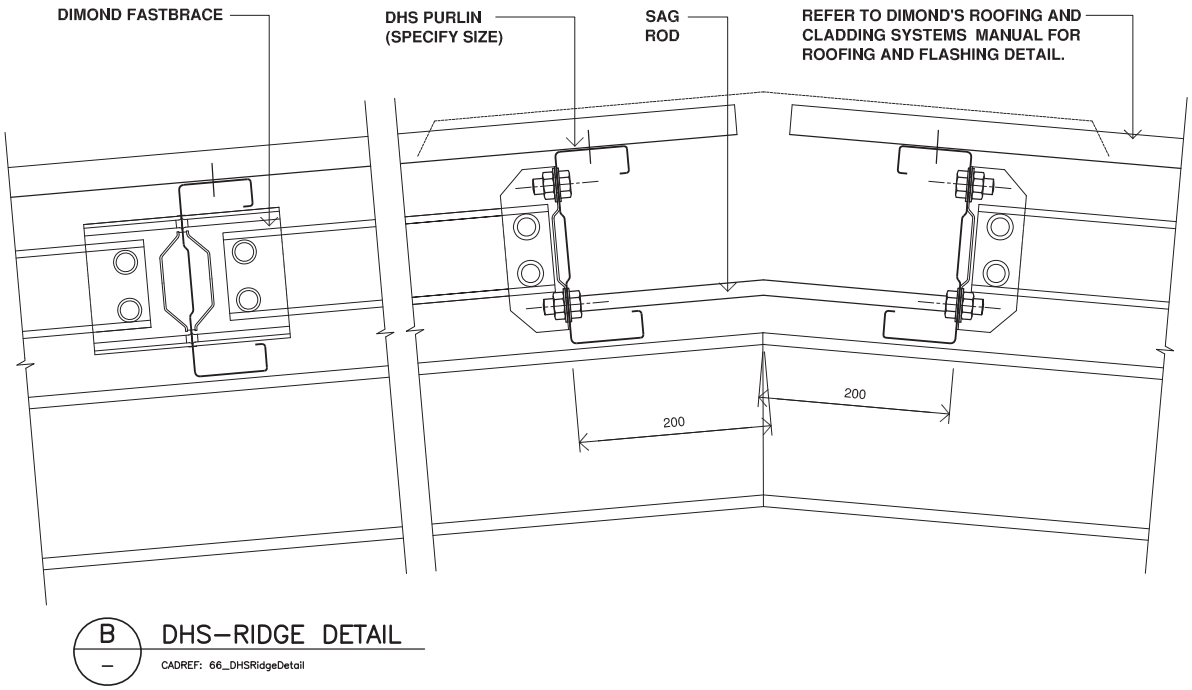
2.3.16 DHS CAD DETAILS *continued*

2.3.16.8 APEX & RIDGE DETAILS





Not to scale.

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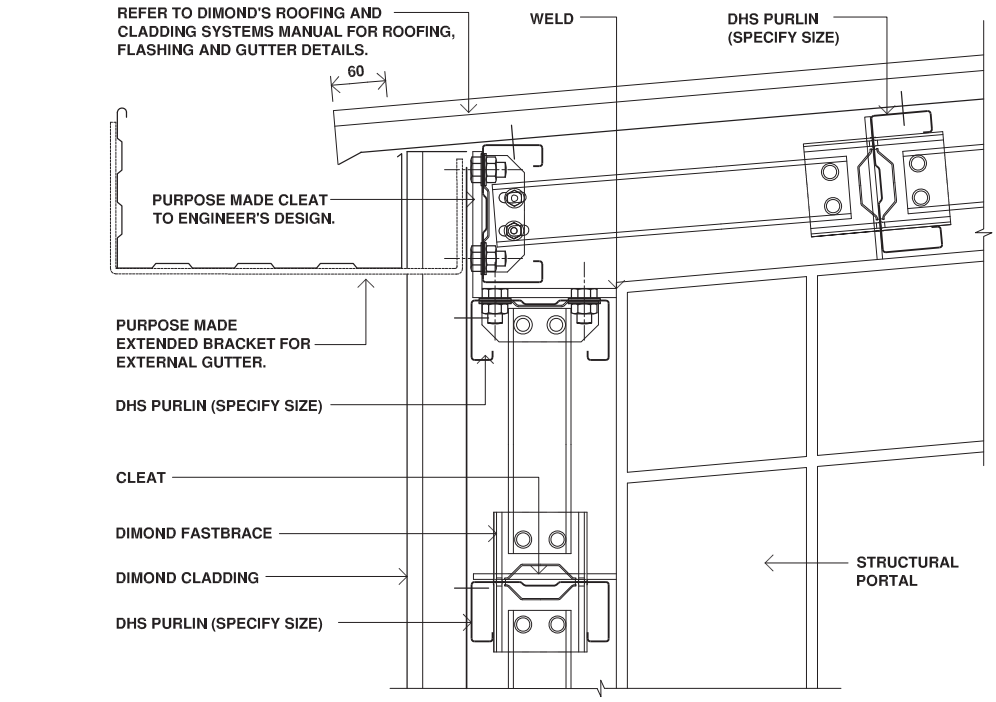
2.3.16 DHS CAD DETAILS *continued*

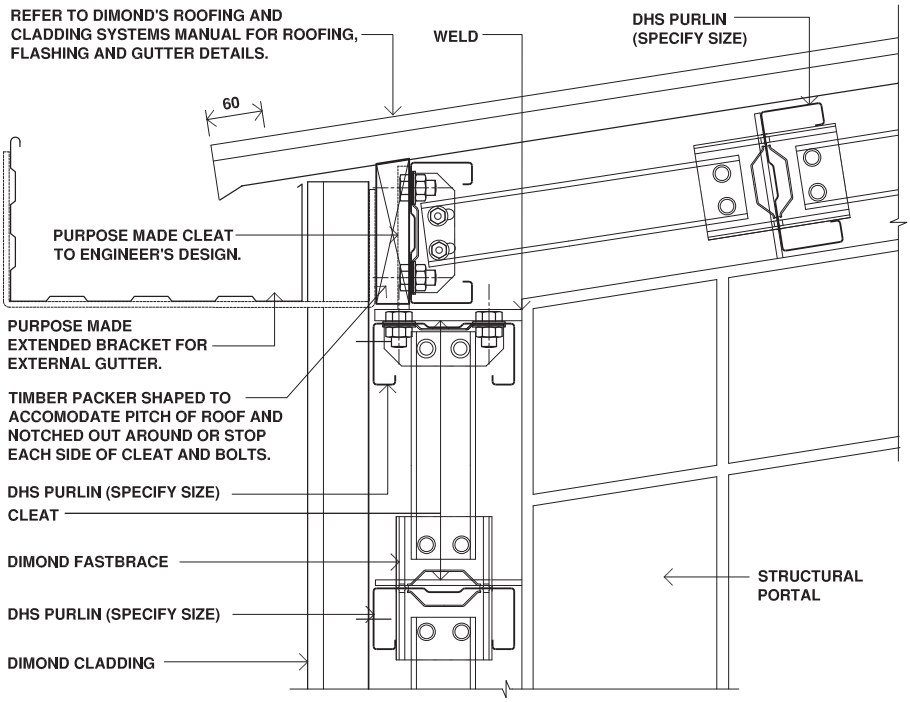
2.3.16.9 DHS EAVES DETAILS



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

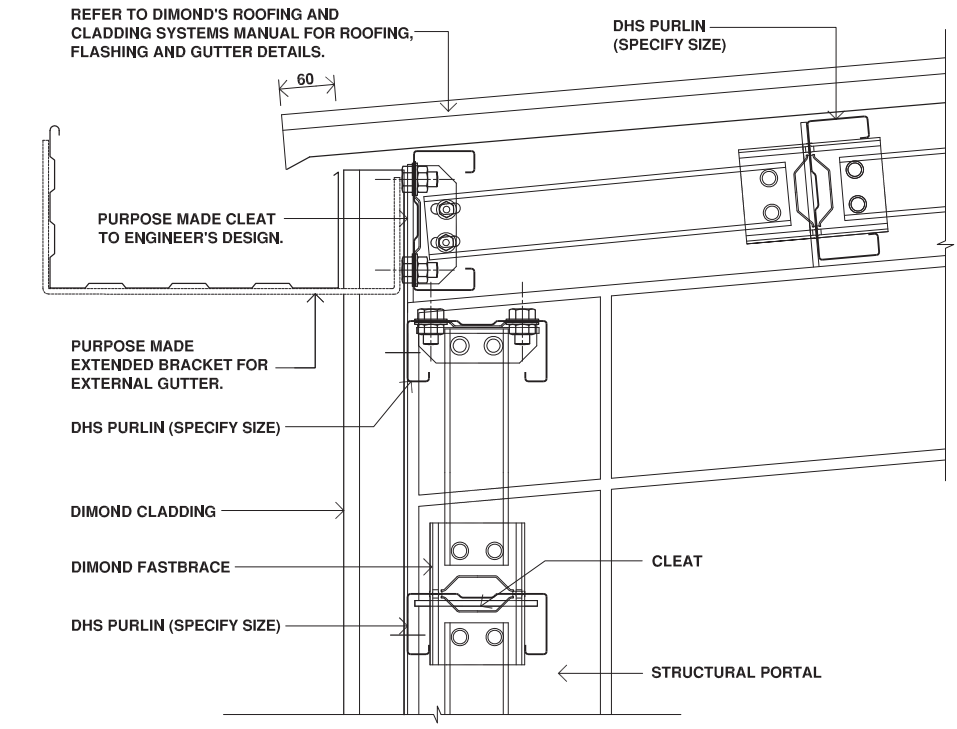
NOTES:
- THIS DETAIL TO BE USED ONLY FOR ROOF WITH A PITCH OF MORE THAN 5°.
- THIS DETAIL SHOWS GIRTS OUTSIDE PORTAL. FOR DETAIL SHOWING GIRTS BETWEEN PORTAL LEGS PLEASE REFER TO DETAIL F.

Not to scale.

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

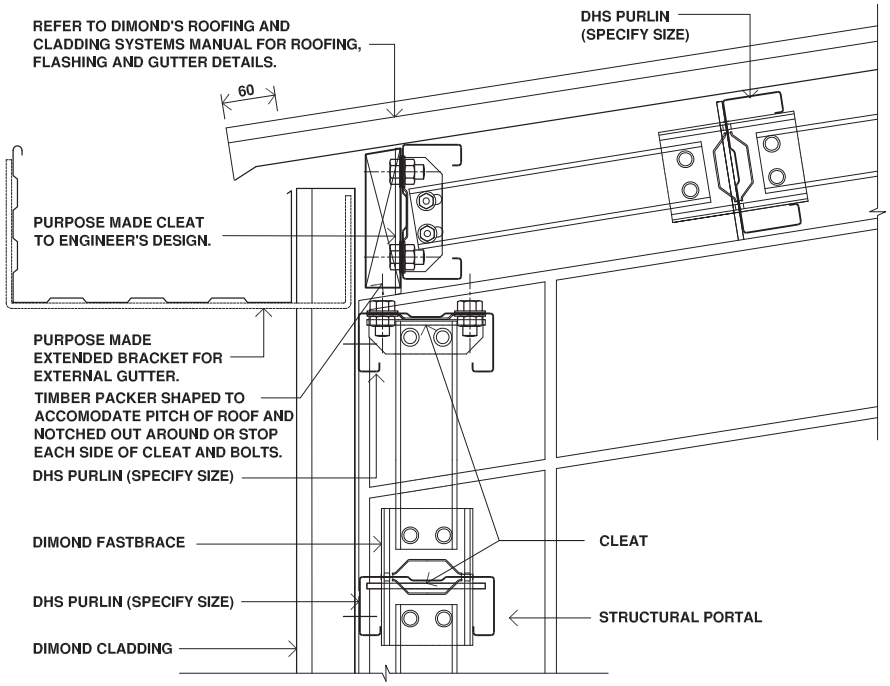
2.3.16.10 DHS EAVES DETAILS 2



E – DHS EAVES– DETAIL FOR ROOF PITCH UP TO 5°

CADREF: 69_DHSEavesAlternateDetail1a

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



F – DHS EAVES– DETAIL FOR ROOF PITCH OVER 5°

CADREF: 70_DHSEavesAlternateDetail2a

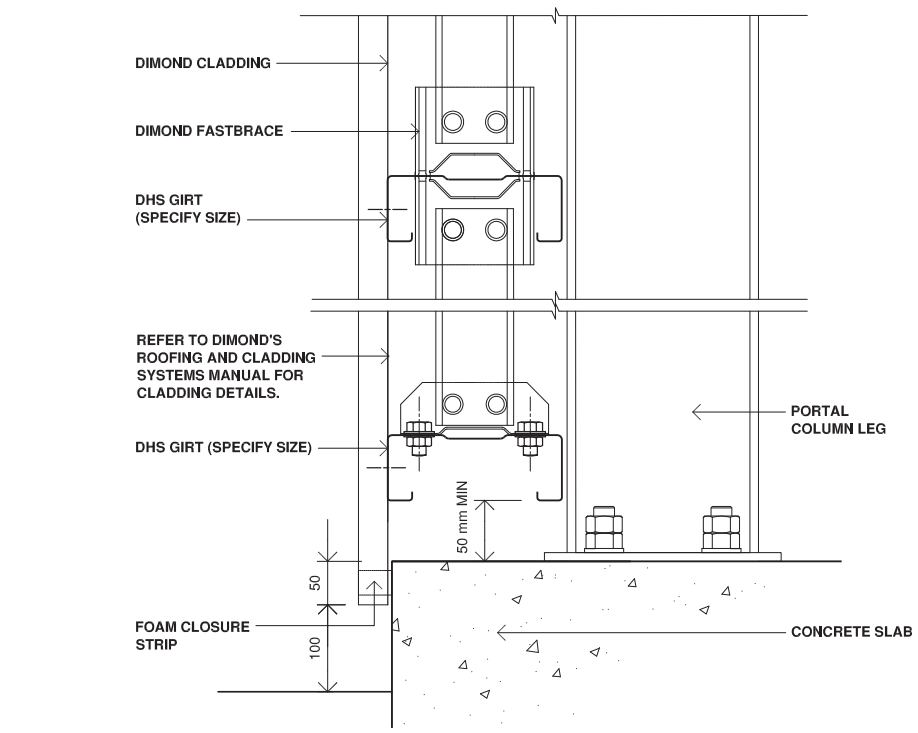
NOTES:
- THIS DETAIL TO BE USED ONLY FOR ROOF WITH A PITCH OF MORE THAN 5°.
- THIS DETAIL SHOWS GIRTS BETWEEN PORTAL LEGS. FOR DETAIL SHOWING GIRTS OUTSIDE PORTAL PLEASE REFER TO DETAIL D.

Not to scale.

Continued on next page

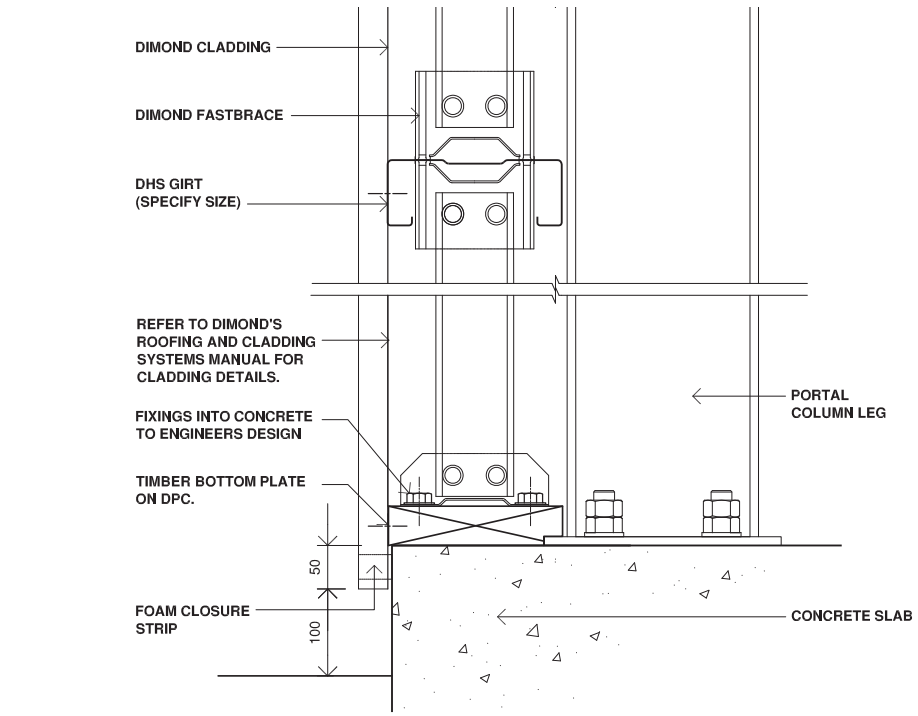
2.3.16 DHS CAD DETAILS *continued*

2.3.16.11 FLOOR TO WALL DETAIL



G – NON LINED WALL TO FLOOR JUNCTION – OPTION 1

CADREF: 71_DHSFloortoWallDetail_option 1



H – NON LINED WALL TO FLOOR JUNCTION – OPTION 2

CADREF: 71b_DHSFloortoWallDetail_option 2

Not to scale.

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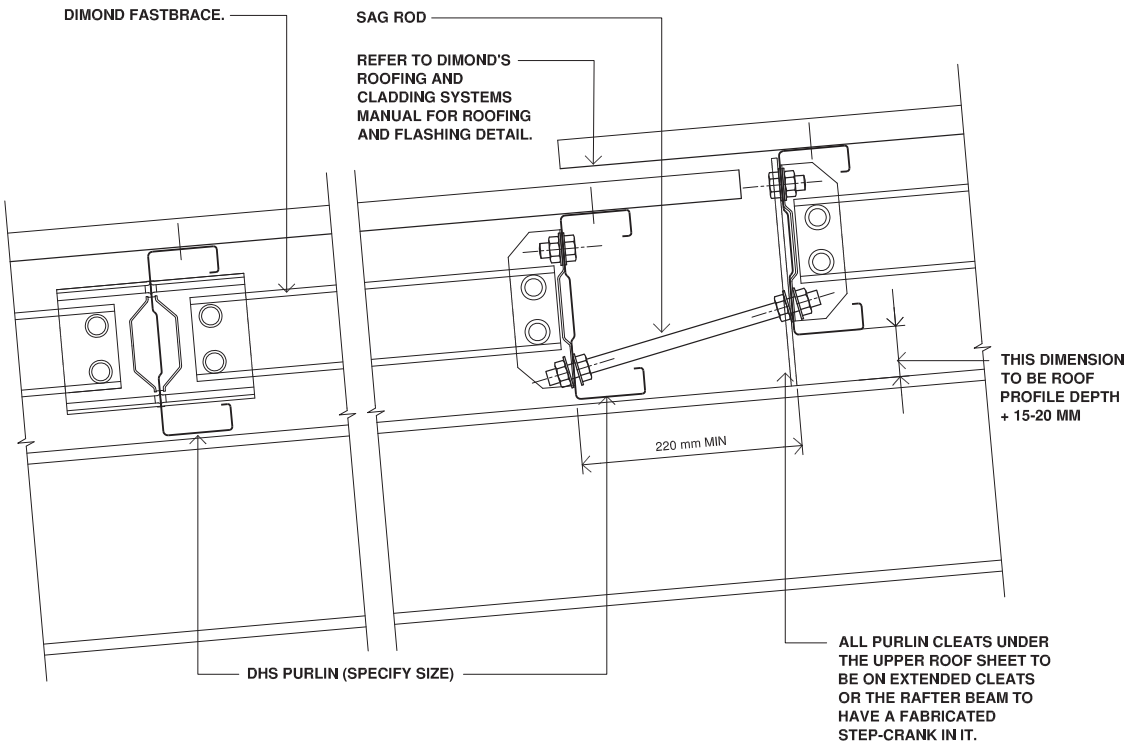
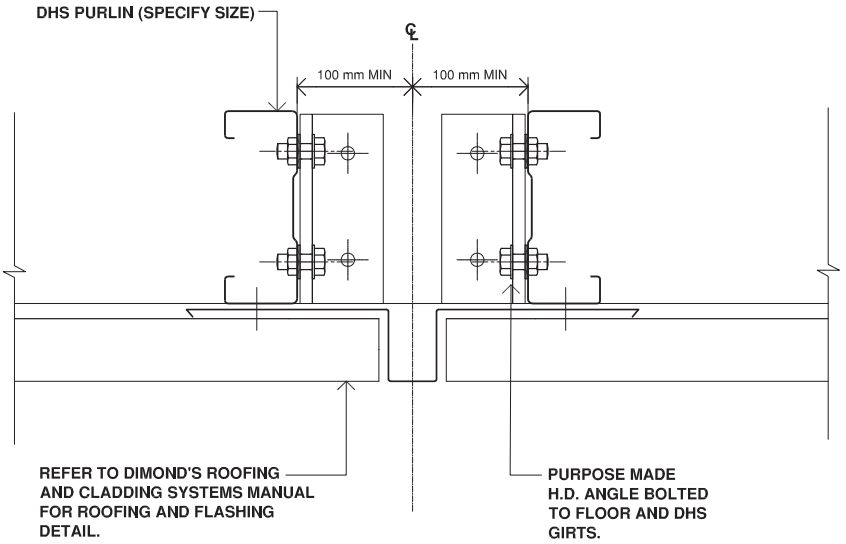
2.3.16 DHS CAD DETAILS *continued*

2.3.16.12 ROOF STEP DETAIL AND HORIZONTAL CLADDING DETAIL



I – DHS–STEP IN ROOFING

CADREF: 73_DHSRoofStepDetail



J – VERTICAL GIRT LAYOUT FOR HORIZONTAL CLADDING– PLAN DETAIL AT FLOOR LEVEL

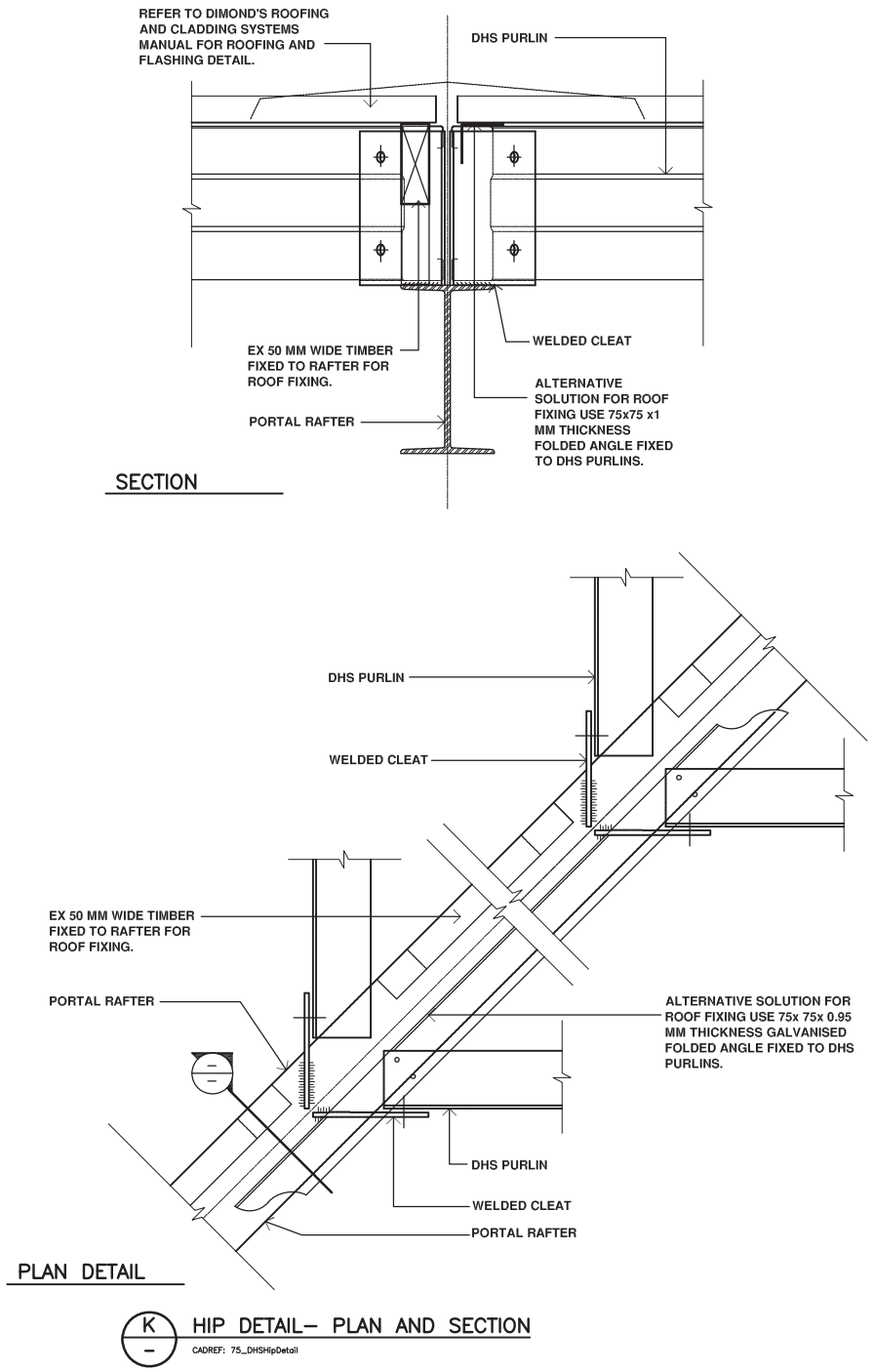
CADREF: 74_DHSHorizontalCladdingDetail

Not to scale.

Continued on next page

2.3.16 DHS CAD DETAILS *continued*

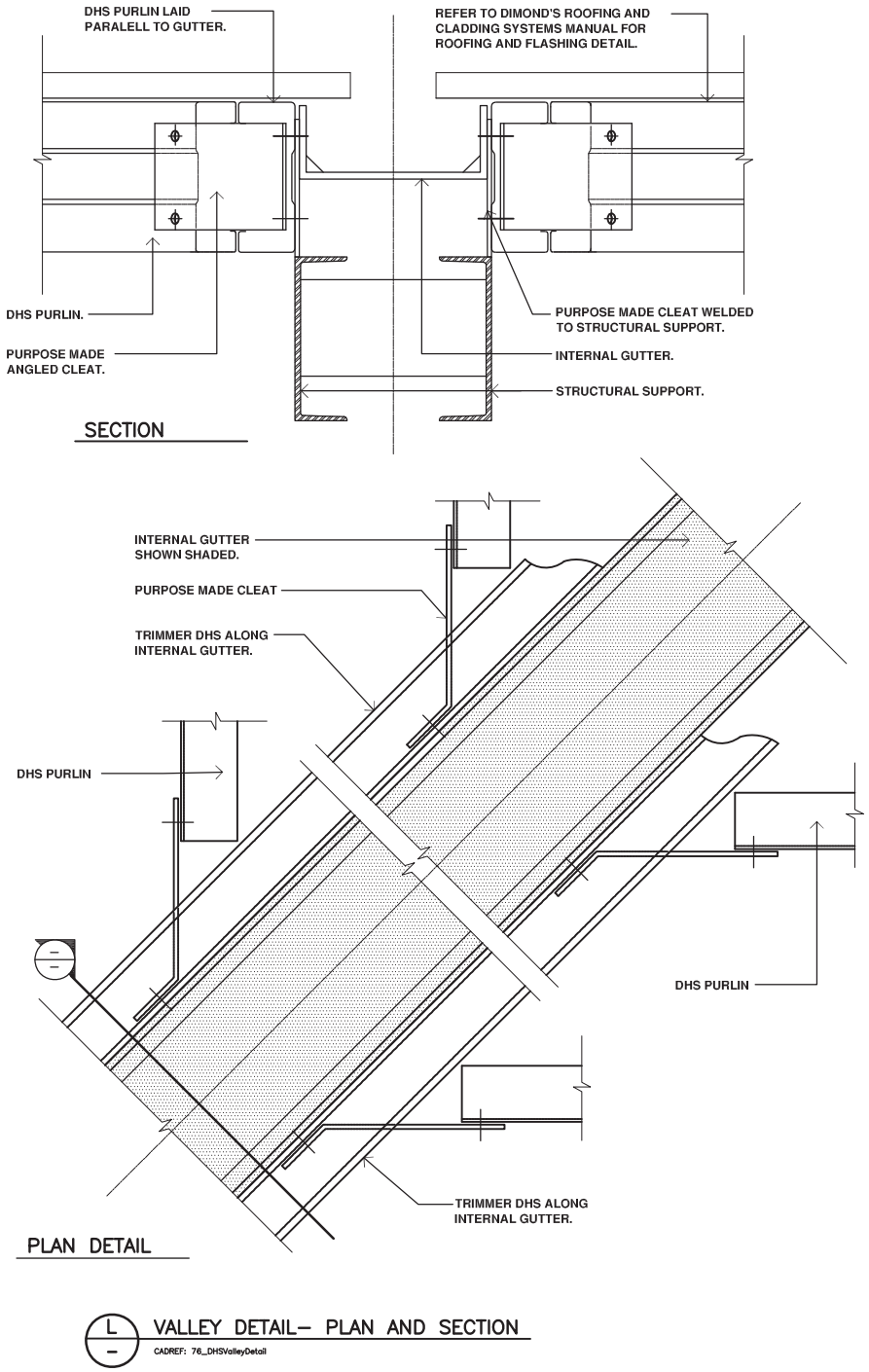
2.3.16.13 HIP DETAIL



Not to scale.

2.3.16 DHS CAD DETAILS *continued*

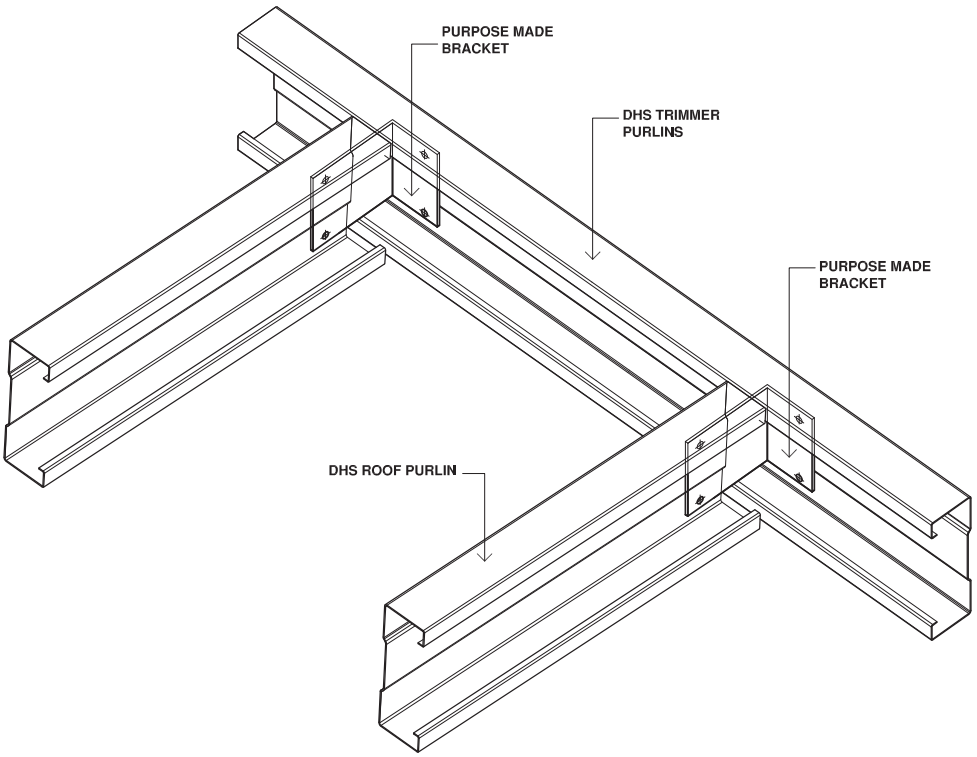
2.3.16.14 VALLEY DETAIL



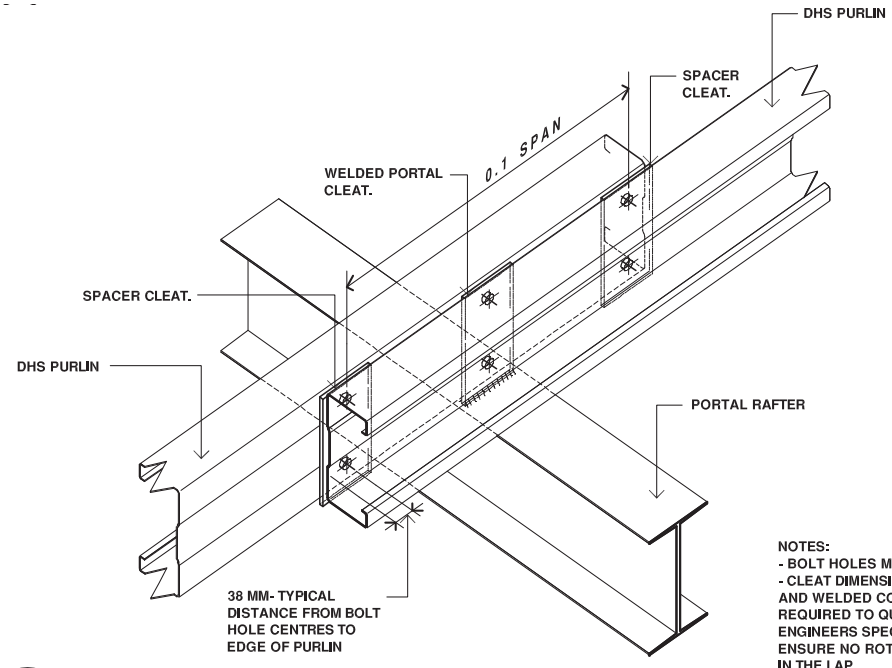
Not to scale.

2.3.16 DHS CAD DETAILS *continued*

2.3.16.15 TRIMMER DETAIL AND LAPPED SPAN DETAIL



M – EAVES DETAIL
CADREF: 77_DHSTrimmerDetail



NOTES:
- BOLT HOLES MUST BE ROUND
- CLEAT DIMENSIONS, BOLTS AND WELDED CONNECTION REQUIRED TO QUALIFIED ENGINEERS SPECIFIC DESIGN TO ENSURE NO ROTATION OCCURS IN THE LAP.

* AS A GUIDE: M16 BOLTS WILL BE SUITABLE IN MOST CASES.

N – DHS LAPPED SPAN PORTAL DETAIL
CAD REF: DHS\LAP

Not to scale.