Dimond Structural™

CLASS 1

Product Information and Technical Statement

Dimond Hi-Span (DHS) Purlin System

Supplier

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Place of Manufacture

Aotearoa New Zealand

Structural Systems Manual

https://www.dimondstructural.co.nz/structural-design-manual#purlins

Product Description

1.1 The Dimond Hi-Span Purlin System (DHS Purlins) is a galvanised steel sheet that is roll-formed into a modified Cee shape with formed swages used in conjunction with Fastbrace and/or Bolted Brace Channel bracing as structural support to roofing and wall cladding.

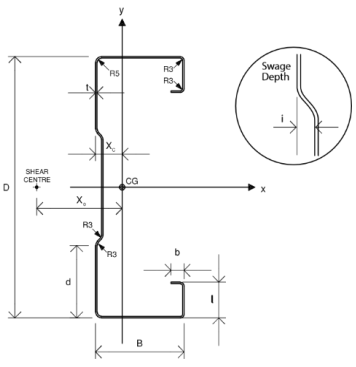
1.2 The system includes DHS Purlins, Fastbrace/Bolted Brace Channels and Components (refer Structural Systems Manual Section 2.3.8).

1.3 DHS Purlins are available in 1.15mm, 1.25mm, 1.45mm, 1.75mm and 1.95mm base metal thickness (BMT).

1.4 DHS Purlins are manufactured from Steel Grade G450 and G500 galvanised coil in Z275, i.e. 275g/m² total zinc coating weight. Z450 (450g/m² total zinc coating weight) requires a three-month lead time from date of order, subject to availability.
Fastbrace and Bolted Brace Channels are manufactured from Steel Grade G250 (Brace Channel component 1.15mm BMT; End Cleat components 2.0mm BMT), in Z450 zinc coating.

1.5 Refer to table and diagram below for section sizes and shape:

DHS Section	Depth D (mm)	Depth B (mm)	Thickness t (mm)	Mass (kg/m)	Weight (kN/m)	d (mm)	Swage Depth i (mm)	b (mm)	l (mm)	X_c (mm)	Xo (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



Scope of Use

2.1 DHS Purlins are intended for use as structural support to profile metal roofing and wall cladding. DHS Purlins provide for bolted connections to structural framework, suitable for use on spans and spacings within the limitations of the Structural Systems Manual, and typically used for commercial warehouse building applications where large spans are required.

2.2 Use of DHS Purlins must be within the limitations on environment and use given in the Structural Systems Manual Section 2.1.

Compliance With The New Zealand Building Code

3.1 Past history of use of the DHS Purlin System, product testing and analysis of DHS Purlins by the University of Sydney indicate that provided the system design, installation, use and maintenance is in line with the guidelines of the Structural Systems Manual and the standards referenced therein, and provided the steel components remain dry and free from contamination, DHS Purlin Systems can reasonably be expected to meet or contribute to meeting the following performance criteria outlined in the New Zealand Building Code:

- **B1 Structure**: Performance clauses B1.3.1, B1.3.2, B1.3.3 (a) (b) (f) (g) (h), B1.3.4 (b) (d). AS/NZS 4600:1996 used as a basis for design tables in the Structural Systems Manual Section 2.3.4, refer to Design Instructions 5.1-5.4.
- **B2 Durability**: Performance clause B2.3.1(a). Refer to Durability & Maintenance Requirements 4.1-4.4.
- **F2 Hazardous Building Materials**: Performance clause F2.3.1.

3.2 Relevant Standards:

AS/NZS 1170	Structural Design Actions
AS/NZS 1365	Tolerances for Flat-rolled Steel Products
AS/NZS 4600:1996	Cold-formed Steel Structures
AS 1397	Continuous Hot-dip Metallic Coated Steel Sheet and Strip - Coatings of Zinc and Zinc Alloyed with Aluminium and Magnesium
SNZ TS 3404:2018	Durability Requirements for Steel Structures and Components

3.3 Where products used with DHS Purlins are manufactured by other suppliers, compliance to the New Zealand Building Code is required to be sought from that product's manufacturer.

Durability & Maintenance Requirements

4.1 Use of DHS Purlins is limited to dry and non-corrosive environments, unless further suitable protection of the surfaces is provided. It is the responsibility of the structural engineer to assess the durability requirements and specify accordingly.

4.2 DHS Purlins may require additional protection from suitable protective coatings applied in-situ if exposure to moisture, marine deposits, or chemicals is expected.

4.3 DHS Purlins require maintenance to ensure the surfaces remain in sound condition and moisture contamination is prevented. This requires surfaces to be kept clean and free from defects that could give rise to material degradation over time.

4.4 Refer to appropriate sections of the Structural Systems Manual:

Structural Systems Manual	Section Number
Environments and Limitations on Use	2.1.3
Durability	2.1.5
Maintenance	2.1.6

Design Instructions

5.1 DHS Purlins are intended to be designed by suitably qualified structural engineers experienced in the design of structural building systems, to provide PS1 certification.

5.2 It is critical to product performance that the materials selected, the loads applied, spans, spacings, purlin bracing type and layout are designed within the appropriate loads in AS/NZS 1170, load-span performance in AS/NZS 4600 and limitations published in the Structural Systems Manual and the following standards referenced therein.

5.3 The information within the Structural Systems Manual is only applicable to DHS Purlins. It cannot be assumed to apply to similar products from other manufacturers.

5.4 Refer to appropriate sections of the Structural Systems Manual:

Structural Systems Manual	Section Number
Design Basis	2.3.1
Design Considerations	2.3.2
Section Properties	2.3.3
Load Span Tables	2.3.4

Installation and Construction Instructions

6.1 Installation of DHS Purlins is generally carried out by experienced steel fabricators and riggers who are familiar with installation of DHS Purlins. DHS Purlins are not intended to be installed by builders, handymen, homeowners etc. without appropriate experience.

6.2 Before commencing a project using DHS Purlins, the installer and builder must refer to the appropriate sections of the Structural Systems Manual, ensuring relevant information (e.g. any limitations on use) is available to the end user. Failure to observe this information may result in a significant reduction in product performance. Dimond accepts no liability whatsoever for products that are used otherwise than in accordance with these recommendations.

6.3 Installation including safety considerations, handling and storage, general fixing and workmanship and bracing system installation is to be carried out in accordance with the Structural Systems Manual Section 2.5.

6.4 Consideration of the expected loads during construction that are relevant to the specific design project must be given at the design stage to ensure construction can proceed in a safe manner, and contractors are aware of any constraints.

6.5 Refer to the appropriate sections of the Structural Systems Manual:

Structural Systems Manual	Section Number
Installation	2.5
Components	2.3.8
General Construction Details	2.3.9

Warnings & Bans

Not subject to a warning or ban under section 26 of the Building Act 2004.

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