MATERIAL APPROVAL

Project : VISHAY SEMICONDUCTOR (M) SDN. BHD
To : PERUNDING SHANU SDN. BHD.
From : HX SOLUTIONS SDN BHD
Ref : PRM01/HX/M7956/C-005
Date : 12nd SEPTEMBER 2024

Item	Product Name	Product Model
1)	SUPPORT SYSTEM (STRUCT CHANNEL)	UMI

Attachment
Manufacturer : UMI CABLE SUPPORT SOLUTION
Supplier : SUN ENERGY SYSTEM (M) SDN. BHD
Supplier Tel No : 03-8723 9211

Submitted By : HX SOLUTIONS SDN BHD

Sign : .....

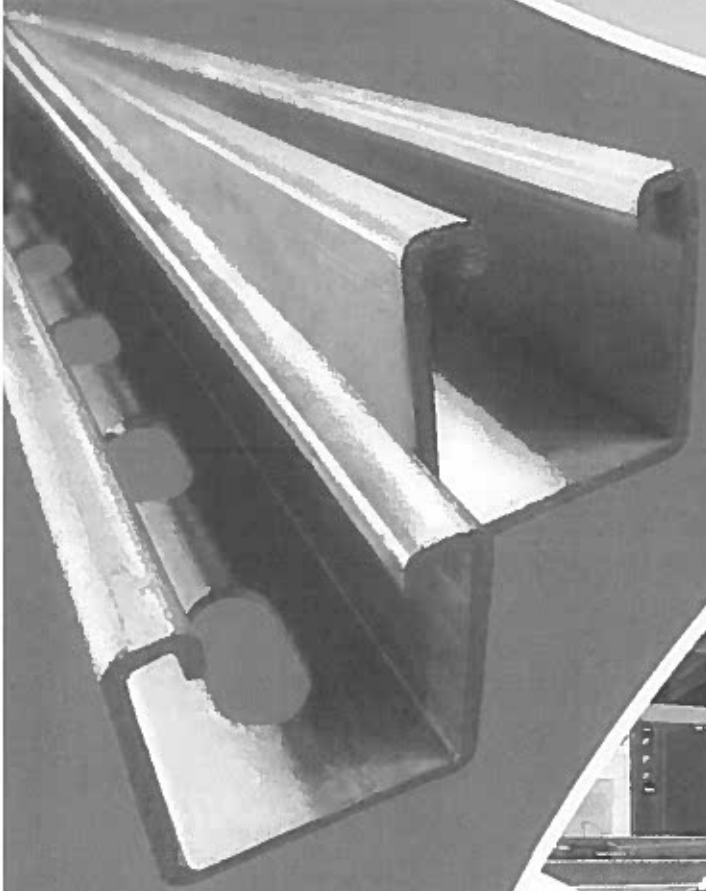
Name : HO CHAN HOONG

Approved		PERUNDING SHANU SDN. BHD.
Rejected		
Commented		Date :

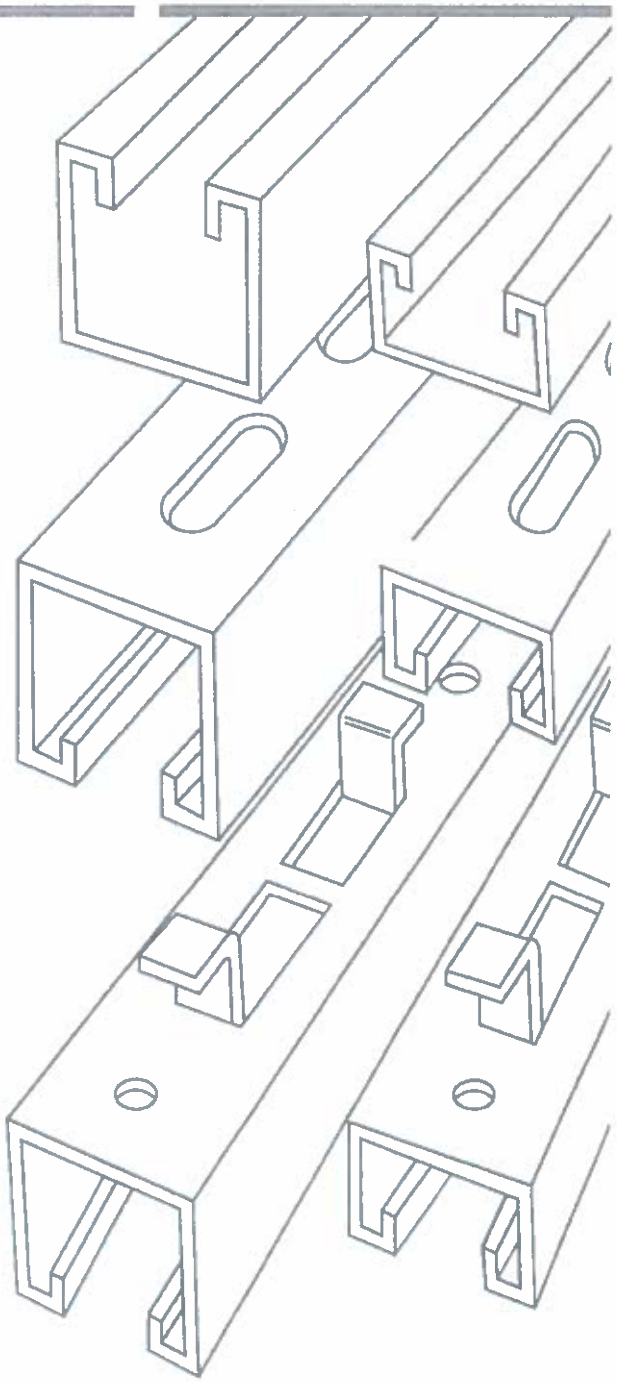
Comments :-

METAL FRAMING SYSTEM

SUPPORT SYSTEM & ACCESSORIES



MATERIALS & FINISHES



Materials

Struct Channel
Struct Channel are steel strips from 1.6mm to 2.5mm, they are also available in Mild Steel, Pre-Galvanised. (G.I)

Mild Steel Channels are rolled using material formed by: JIS G3141 SPCC-SD equivalent to BS DIN EN 10130 and the minimum yield stress for our channel system is Y_S=260N/mm² .

Pre-Galvanized Channels are rolled using material formed by: JIS G3302 equivalent to BS EN 10326 and the minimum yield stress for our channel system is Y_S=260N/mm² .

Struct Channel fitting comply with BS1449Part1:1983 or BS4360:1972 and are manufactured from hot-rolled, pickled and oiled steel plates, strip or coil. They have a minimum yield stress of 170N/mm² as specified in BS6946:1988.

All fittings are manufactured from 6mm thick material unless specified otherwise.**Struct Channel fitting** can also be obtained in stainless steel.

Struct Channel Nuts are made from high quality steel bar.

Finishes

Hot-Dip Galvanised
Hot-dip galvanizing is a process where completely manufactured or roll-formed steel is chemically cleaned of all contaminants and then dipped in molten zinc. This will allow a coating consisting of iron/zinc-alloys which are usually over-coated with a layer of relatively pure zinc.

All hot-dip galvanizing is applied in accordance with ASTM A123:1989/BS EN ISO 1461:1999(E) which supersedes BS729:1971. The zinc coating thickness varies from 45µm (up to 2mm thick material for bolts and nuts) to 55µm (for at least 5mm thick material).

Pre-Galvanised (G.I)
Sheet metal (steel strip) is hot-dip galvanized in a continuous process which yields an even zinc coated sheet with a bright smooth metallic finish. Materials such as stell is galvanized prior to the manufacturing (roll-forming or press operations) of channels or fittings. All "pre-galvanized" steel used is in accordance with BS2989:1982 and usually grade Z275. Pre-Galvanised Hot Dipped Zinc Coated Steel Sheet JIS G3302.

Special Coating
Special Coating are also available upon request for all the channels and fittings: Epoxy Coated, Polyester Powder Coated and Thermoplastic Coated.

Plain (Mill Finish) Steel (Black)
Struct Channel and fittings are untreated and retain an oiled surface from the rolling or pressing process. Alternative steel grades and surface finishes are available upon request, but may be subject to minimum order quantities. Hot rolled steel P&O, JIS G3131 SPHC.

A world of support
for keeping production
efficiency

Pre-Galvanized Steel (PG)

Pre-galvanized steel (JIS G3302 SGHC/SGCC or BS EN 10142)

Pre-galvanized steel is produced by running the steel sheet though a bath of molten zinc in a continuous process. The thickness of the zinc coating is less than that of hot dip galvanized products. This zinc coating is also interrupted at edges where the material is cut or punched. Some zinc is pushed over the cut edges during the cutting process to offer some protection. Products made from pre-galvanized materials are suitable for indoor use.

Electro Galvanized Steel (EG)

Electro galvanized steel (JIS G3313 SECC)

This is process whereby the steel is passed continuously through a series of plating cells where zinc is deposited onto the steel surface through the electrolysis process. The protective zinc coat thus obtained is relatively thinner than the material obtained by hot dip galvanizing. The finished products are usually recommended for indoor application in dry areas.

Epoxy Powder Coated (EPC)

Powder coating is a process whereby the powdered resin and the steel product are electro statically charged with opposing potential. The powder is sprayed onto the product and an even coat is formed. The coated product is then passed through an oven for baking to produce a glossy and hard finish. This coat can provide corrosion resistance against atmospheric moisture but not against more aggressive enviroment. It is recommended for indoor applications.

Powder coating can be applied to products with the following finish:

Mild steel mill finish
Hot dip galvanized finish
Pre-galvanized steel finish
Electro galvanized steel finish

Hot Dip Galvanized After Fabrication (HDG)

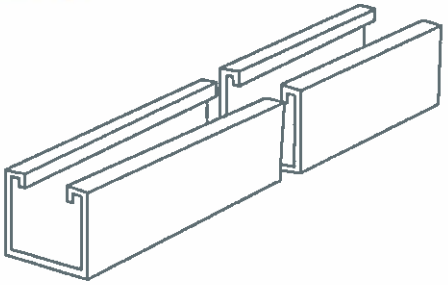
The most common selection for outdoor application is hot dip galvanized. After the cutting, bending and welding operation, the completed product goes through a series of treatment to remove grease and rust before being immersed completely into a bath of molten zinc. This complete immersion allows the zinc to bond onto every exposed surface of the product thereby affording exceptional protection. Depending on the environment, protection can last for many years.

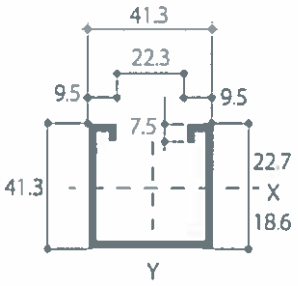
Zinc Thickness Measurement After Hot Dip Galvanized

Article and its Thickness	Local Coating Thickness (min) µm	Mean Coating Thickness (min) µm
Steel ≥ 6mm	70	85
Steel ≥ 3mm to < 6mm	55	70
Steel ≥ 1.5mm to < 3mm	45	55
Steel < 1.5mm	35	45
Castings ≥ 6mm	70	80
Castings < 6mm	60	70

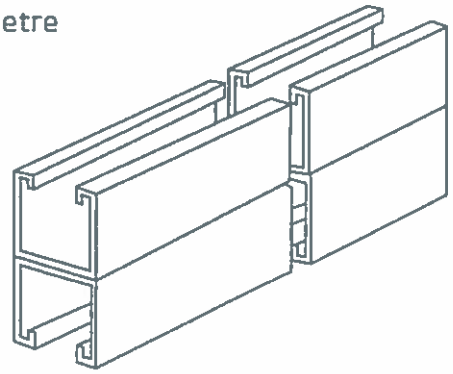
STRUCT CHANNEL SERIES

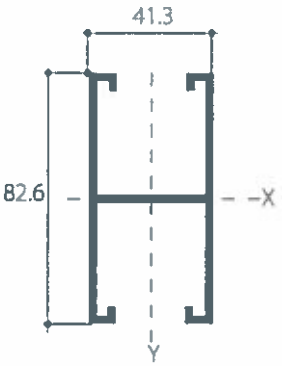
UM 41x41
Weight: 2.7kg per metre



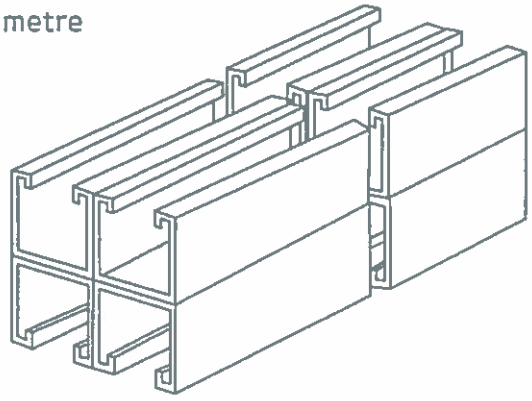


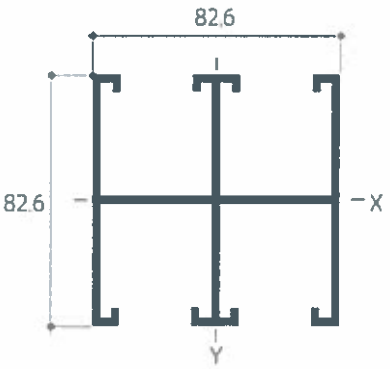
UM 41x82
Weight: 5.5kg per metre





UM 82x82
Weight: 11kg per metre





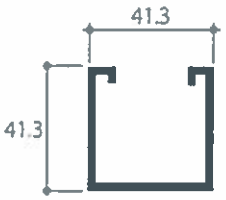
Elements of Section

Channel Description	Thickness	Area of section	Weight Steel	Axis X - X			Axis Y - Y		
				I 10^3	z 10^3	r	I 10^3	z 10^3	r
	mm	mm²	kg/m	mm4	mm³	mm	mm4	mm³	mm
UM 41X41	2.50	335.6	2.75	72.13	3.13	14.66	91.77	4.44	16.54
UM 41X82	2.50	671.2	5.52	367.95	8.91	23.41	183.54	8.88	16.54
UM 82X82	2.50	1342.4	11.02	838.98	19.38	25.00	1055.76	24.38	28.04

* KL exceeds 200
r

I = Moment of Inertia Z = Section Modulus r = Radius of Gyration

UM 41x41 CHANNEL



Beam Loading Data UM 41x41

Simply supported beam - Span	Safe total working load on beams			
	load applied as UDL for stress - cum - stability criteria	load applied as concentrated load for stress - cum - stability criteria	load applied as UDL for deflection criteria - Span / 200	load applied as concentrated load for deflection criteria - Span / 200
mm	kg	kg	kg	kg
250	1409	704	1409	704
500	704	352	704	352
750	470	235	470	235
1000	352	176	352	176
1250	282	141	282	141
1500	235	117	235	117
1750	201	101	181	101
2000	176	88	138	87
2250	157	78	109	68
2500	141	70	89	55
2750	128	64	73	46
3000	117	59	62	38

Column Loading Data UM 41x41

Unbraced Column height	Safe total working load on column applied at the centriod of the section			Safe total working load on column applied at the slot of the section
	k = 0.80	k = 1.00	k = 1.20	
mm	kg	kg	kg	kg
250	4713	4663	4609	1353
500	4493	4364	4223	1326
750	4223	3988	3726	1289
1000	3904	3535	3117	1238
1250	3535	3005	2392	1166
1500	3117	2392	1863	1061
1750	2624	1938	1496	961
2000	2192	1605	1226	871
2250	1863	1352	1006	791
2500	1605	1152	823*	718
2750	1397	971	687*	643
3000	1226	823	584*	575

* $\frac{KL}{r}$ exceeds 200

L = Moment of Inertia

Z = Section Modulus

r = Radius of Gyration