Evosteel Sdn. Bhd. 鷹鋼有限公司 (Company No. 751821-U)

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Evosteel Sdn. Bhd. 鷹鋼有限公司 (Company No. 751821-U)

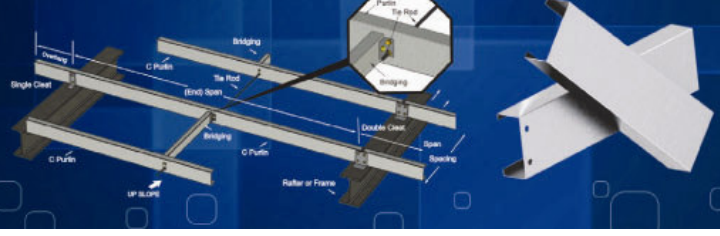
PURLIN

HIGH TENSILE C SECTIONS

SECTION PROPERTIES

IDENTIFICATION	SECTION DIMENSION D	F	L	t	MASS	AREA	SECOND MOMENT OF AREA I_{xx}	I_{yy}	SECOND MODULUS Z_x	Z_y	RADIUS OF GYRATION r_x	r_y	TORSIONAL CONSTANT J	C_w	CENTROID x
	mm	mm	mm	mm	kg/m	mm	10^3mm^4	10^3mm^4	10^3mm^3	10^3mm^3	mm	mm	mm^4	10^6mm^6	mm
TCP 07506	75	38	8	0.6	**0.80**	98	0.092	0.019	2.446	0.748	30.621	14.034	12	0.022	12.2
TCP 07507	75	38	8	0.7	**0.93**	114	0.106	0.022	2.832	0.862	30.564	13.978	19	0.025	12.2
TCP 07508	75	38	8	0.8	**1.06**	129	0.120	0.025	3.211	0.973	30.507	13.922	28	0.028	12.2
TCP 07510	75	38	8	1.0	**1.31**	160	0.148	0.031	3.952	1.186	30.393	13.809	53	0.034	12.2
TCP 07512	75	38	8	1.2	**1.57**	191	0.175	0.036	4.668	1.387	30.277	13.695	92	0.039	12.2
TCP 07516	75	38	8	1.6	**2.05**	250	0.226	0.045	6.027	1.756	30.045	13.467	214	0.049	12.1
TCP 10012	100	50	16	1.2	**2.15**	269	0.438	0.099	8.763	3.052	40.365	19.175	129	0.228	17.6
TCP 10016	100	50	16	1.6	**2.80**	355	0.571	0.127	11.420	3.931	40.142	18.957	303	0.290	17.6
TCP 10020	100	50	16	2.0	**3.45**	441	0.697	0.154	13.948	4.745	39.917	18.758	584	0.345	17.6
TCP 10025	100	50	16	2.5	**4.40**	548	0.847	0.184	16.931	5.674	39.634	18.496	1123	0.406	17.6
TCP 10030	100	50	16	3.0	**5.29**	636	0.986	0.211	19.719	6.507	39.348	18.231	1911	0.457	17.6
TCP 12512	125	50	16	1.2	**2.39**	299	0.734	0.107	11.737	3.128	49.537	18.891	143	0.356	15.9
TCP 12516	125	50	16	1.6	**3.10**	394	0.958	0.138	15.332	4.032	49.293	18.679	337	0.454	15.9
TCP 12520	125	50	16	2.0	**3.82**	491	1.173	0.166	18.772	4.870	49.047	18.467	651	0.542	15.9
TCP 12525	125	50	16	2.5	**4.89**	610	1.429	0.199	22.856	5.827	48.737	18.199	1253	0.640	15.9
TCP 12530	125	50	16	3.0	**5.90**	711	1.669	0.229	26.706	6.689	48.424	17.930	2136	0.723	15.8
TCP 15016	150	65	16	1.6	**3.85**	483	1.733	0.275	23.106	6.113	59.939	23.857	412	1.232	20.1
TCP 15020	150	65	16	2.0	**4.73**	601	2.130	0.334	28.400	7.430	59.697	23.635	797	1.485	20.1
TCP 15025	150	65	16	2.5	**5.89**	748	2.606	0.403	34.752	8.961	59.392	23.355	1539	1.771	20.0
TCP 15030	150	65	16	3.0	**7.35**	877	3.061	0.466	40.813	10.371	59.085	23.074	2631	2.026	20.0
TCP 17516	175	65	16	1.6	**4.15**	523	2.476	0.288	28.294	6.215	68.844	23.492	446	1.720	18.6
TCP 17520	175	65	16	2.0	**5.10**	651	3.047	0.351	34.819	7.556	68.584	23.268	864	2.076	18.6
TCP 17525	175	65	16	2.5	**6.35**	810	3.734	0.423	42.672	9.117	68.258	22.985	1670	2.481	18.6
TCP 17530	175	65	16	3.0	**8.08**	952	4.392	0.491	50.194	10.555	67.928	22.701	2856	2.843	18.5
TCP 20016	200	75	16	1.6	**4.73**	595	3.697	0.426	36.966	7.873	78.860	26.770	507	3.244	20.9
TCP 20020	200	75	16	2.0	**5.82**	741	4.558	0.520	45.577	9.599	78.600	26.540	984	3.930	20.9
TCP 20025	200	75	16	2.5	**7.39**	923	5.599	0.630	55.993	11.626	78.270	26.250	1904	4.721	20.8
TCP 20030	200	75	16	3.0	**9.02**	1087	6.602	0.732	66.025	13.512	77.940	25.960	3261	5.439	20.8
TCP 22516	225	75	16	1.6	**5.28**	634	4.863	0.441	43.224	7.966	87.550	26.370	541	4.218	19.6
TCP 22520	225	75	16	2.0	**6.55**	788	6.000	0.538	53.334	9.715	87.280	26.140	1050	5.114	19.6
TCP 22525	225	75	16	2.5	**8.16**	976	7.378	0.652	65.585	11.769	86.930	25.840	2034	6.151	19.6
TCP 22530	225	75	16	3.0	**9.80**	1162	8.709	0.758	77.412	13.681	86.580	25.550	3486	7.096	19.6
TCP 25016	250	75	18	1.6	**5.42**	680	6.302	0.474	50.413	8.472	96.210	26.390	581	5.665	19.0
TCP 25020	250	75	18	2.0	**6.62**	845	7.782	0.579	62.255	10.340	95.930	26.160	1128	6.880	19.0
TCP 25025	250	75	18	2.5	**8.36**	1049	9.579	0.702	76.634	12.542	95.560	25.870	2185	8.290	19.0
TCP 25030	250	75	18	3.0	**10.37**	1249	11.318	0.818	90.546	14.597	95.200	25.590	3747	9.583	19.0
TCP 30020	300	96	18	2.0	**8.63**	1030	13.873	1.123	92.486	15.573	116.070	33.020	1373	18.769	23.9
TCP 30025	300	96	18	2.5	**10.84**	1279	17.125	1.370	114.165	18.988	115.720	32.720	2664	22.764	23.9
TCP 30030	300	96	18	3.0	**12.66**	1525	20.291	1.603	135.274	22.219	115.360	32.430	4374	26.494	23.9
TCP 35025	350	96	18	2.5	**12.45**	1404	24.660	1.428	140.919	19.259	132.540	31.890	2925	32.371	21.9
TCP 35030	350	96	18	3.0	**15.00**	1680	29.248	1.671	167.132	22.541	132.150	31.590	5024	37.714	21.9

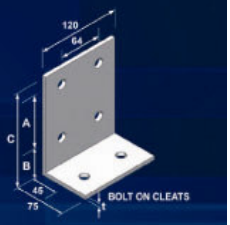
ALTERNATE BRIDGING AND TIE RODS

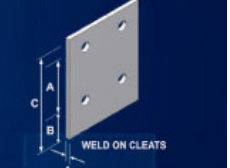


RECOMMENDED HOLING, CLEATS AND FASTENING DETAILS

Standard Evosteel C-sections are supplied with optional holes punched to order. Punched C-section can be supplied with H14, H16, H18 or elongated holes, with recommended cleat size as stated in table below.

SECTION DEPTH (mm)	A (mm)	B (mm)	C (mm)	t min (mm)
100	50	35	110	6
125	50	45	120	6
150	80	45	150	6
175	95	50	170	6
200	110	55	190	6
225	125	60	210	8
250	150	60	235	8
300	200	60	285	10

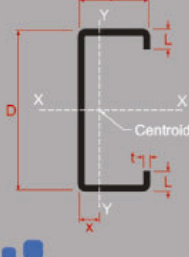




Evosteel - GALVANISED STEEL C SECTIONS

EVOSTEEL produces an extensive C sections depth range from 75mm to massive 350mm capable of impressive spans. C sections are accurately roll formed from high strength zinc coated steel to provide an efficient, lightweight and economical engineered structural profile.

The sections are crisp, clean and square and by any assessment are quality products. There is no need to tolerate rounded corners, inaccurate lengths, painting, or out of square sections any more. Insist on quality Evosteel C sections for your project as to minimize maintenance throughout the life span of the building.



SECTION CODE IDENTIFICATION

TCP 15020

COMPANY INITIAL | C PURLIN | SECTION DEPTH in mm | SECTION THICKNESS

TOLERANCES

Depth, D	:	± 1 mm
Flange Width, F	:	± 3 mm
Length	:	± 3 mm
Thickness, t	:	± 8%
Holes Centres	:	± 1.5 mm
Lips, L	:	± 3 mm

MATERIAL SPECIFICATION

Base Material Thickness :
0.6 ~ 1.0mm, 1.2mm, 1.6mm, 2.0mm, 2.5mm, 3.0mm

Steel Grade :
JIS 3302 : SGC 440 or SGC 570 (thk <1.2mm)

Yield Stress :
400 Mpa minimum or 550 Mpa minimum

Coating Mass (g/m^2) :
Z12 ~ Z27 (120 ~ 275)

Evosteel

QUICK SELECTION TABLE FOR SIMPLE SPAN PURLINS

Span (mm)	Row of Restraint (Sag-rod / Bridging)	Spacing (mm)	Height (m)		
			≤ 5	≤ 10	≤ 15
3500	Nil	1200	TCP 10012	TCP 10016	TCP 10020
		1500	TCP 10016	TCP 10020	TCP 12516
		1800	TCP 12516	TCP 12516	TCP 12520
		2100	TCP 12516	TCP 12520	TCP 15016
		2400	TCP 12520	TCP 12520	TCP 15016
4000	Nil	1200	TCP 12516	TCP 12520	TCP 15016
		1500	TCP 12520	TCP 12520	TCP 15016
		1800	TCP 15016	TCP 15016	TCP 15016
		2100	TCP 15016	TCP 15016	TCP 15020
		2400	TCP 15016	TCP 15016	TCP 15020
5000	1 row	1200	TCP 10016	TCP 10016	TCP 10020
		1500	TCP 12516	TCP 12516	TCP 12520
		1800	TCP 12516	TCP 12520	TCP 15016
		2100	TCP 12520	TCP 15016	TCP 15016
		2400	TCP 15016	TCP 15016	TCP 15016
6000	1 row	1200	TCP 15016	TCP 15016	TCP 15016
		1500	TCP 15016	TCP 15016	TCP 15020
		1800	TCP 15016	TCP 15016	TCP 15020
		2100	TCP 15020	TCP 15020	TCP 20016
		2400	TCP 15020	TCP 20016	TCP 20016
7000	1 row	1200	TCP 15020	TCP 15020	TCP 20016
		1500	TCP 15020	TCP 20016	TCP 20016
		1800	TCP 20016	TCP 20016	TCP 20020
		2100	TCP 20016	TCP 20020	TCP 20025
		2400	TCP 20020	TCP 20020	TCP 20025
8000	2 rows	1200	TCP 20016	TCP 20016	TCP 20016
		1500	TCP 20016	TCP 20016	TCP 20016
		1800	TCP 20016	TCP 20016	TCP 20020
		2100	TCP 20016	TCP 20016	TCP 20020
		2400	TCP 20020	TCP 20020	TCP 20020
9000	2 rows	1200	TCP 20016	TCP 20016	TCP 20016
		1500	TCP 20016	TCP 20016	TCP 20020
		1800	TCP 20020	TCP 20020	TCP 20025
		2100	TCP 20025	TCP 20025	TCP 25020
		2400	TCP 20025	TCP 20025	TCP 25025
10000	2 rows	1200	TCP 20020	TCP 20020	TCP 20025
		1500	TCP 20025	TCP 20025	TCP 25020
		1800	TCP 25020	TCP 25020	TCP 25025
		2100	TCP 25025	TCP 25025	TCP 30020
		2400	TCP 25025	TCP 25025	TCP 30020
11000	2 rows	1200	TCP 20025	TCP 20025	TCP 25025
		1500	TCP 25025	TCP 25025	TCP 30020
		1800	TCP 30020	TCP 30020	TCP 30020
		2100	TCP 30020	TCP 30020	TCP 30020
		2400	TCP 30020	TCP 30020	TCP 30025
12000	3 rows	1200	TCP 25020	TCP 25020	TCP 25020
		1500	TCP 25025	TCP 25025	TCP 25025
		1800	TCP 30020	TCP 30020	TCP 30020
		2100	TCP 30020	TCP 30020	TCP 30025
		2400	TCP 30020	TCP 30025	TCP 30025

Note: Please refer design principle of above selection table before make selection.

BENDING MOMENT COEFFICIENTS

COEFFICIENTS FOR UNIFORMLY LOADED SECTIONS

SIMPLE SPAN				0.1250 0.01302						
				0.5000		0.5000				
DOUBLE SPAN			0.070 0.00541		- 0.1250 0.01302		0.070 0.00541			
		0.3750		1.250		0.3750				
TWO SPAN LAPPED			0.0671 0.00495		-0.1336 0.01302		0.0671 0.00495			
		0.3664		1.2672		0.3664				
THREE SPAN		0.0778 0.00658		-0.1055 0.01302	0.0195 -0.00011	-0.1055 0.01302		0.0778 0.00658		
	0.3945		1.1055		-0.00011		1.1055		0.3945	
FOUR SPAN		0.0744 0.00607	- 0.1142 0.01302	0.0325 0.00144	- 0.0726 0.01302	0.0325 0.00144	- 0.1142 0.01302	0.0744 0.00607		
	0.3858		1.1558		0.9166		1.1558		0.3858	
FIVE SPAN		0.0753 0.00621	-0.1119 0.01302	0.0286 0.00099	-0.0819 0.01302	0.0432 0.00282	-0.0819 0.01302	0.0286 0.00099	-0.1119 0.01302	0.0753 0.00621
0.3881		1.1419		0.9700		0.9700		1.1419		0.3881
SIX SPAN	0.0751 0.00617	-0.1125 0.01302	0.0297 0.00112	-0.0742 0.01302	0.0398 0.00241	-0.0913 0.01302	0.0398 0.00241	-0.0742 0.01302	0.0297 0.00112	-0.1125 0.01302	0.0751 0.00617
0.3875		1.1458		0.9546		1.0242		0.9546		1.1458	0.3875

A = Lapped Length = 10% Of Span

R = Reaction = awL N

M = Moment = bwL^2 Nmm

D = Deflection = $\frac{cwL^4}{EI}$ mm

Where

a = Reaction Coefficient

b = Bending Moment Coefficient

c = Deflection Coefficient

w = Uniformly Distributed Load (N/mm)

L = Span (mm)

E = Modulus Of Elasticity = 2×10^5 N/mm^2

I = Moment Of Inertia Of Section (mm^4)

DESIGN PRINCIPLE FOR PURLIN SELECTION TABLE

THE PURLIN SELECTION TABLE ARE COMPLIED TO BS 5950 : PART 5 : 1998
- CODE OF PRACTICE FOR DESIGN OF COLD FORMED THIN GAUGE SECTIONS

A) DESIGN LOADING

i) Basic Design Wind Speed 33.5m/s
- Building Class B
- Ground Roughness 3
- h/w < 2 (h is the height to building eaves and w is the lesser of building horizontal dimension)

ii) Dead Load (Metal Roofing) --> 0.05 kN/m^2 + Purlin Selfweight

iii) Imposed Load / Live Load --> 0.25 kN/m^2

iv) The most severe inward loading combination 1.4DL + 1.6LL

v) The most severe outward loading combination 1.0DL + 1.4WL

B) ROOF PITCH

The Purlin Selection Table is applicable for roof pitch ≤ 30°

C) SUPPORT CONDITION

The Purlin is simply supported with pinned joints over supports

D) DESIGN STRENGTH, Py

The design strength Py for purlin shall be taken as the minimum yield strength of 400 N/mm^2

E) DEFLECTION LIMITS

The deflection limits under serviceability loads shall not exceed the followings :

i) Span / 150 under loads combination 1.0DL + 1.0LL

ii) Span / 180 under unfactored imposed loads 1.0LL

TO: Evosteel Sdn. Bhd. 鷹鋼有限公司 (Company No. 751021-U)

C PURLIN DETAILING SHEET

FAX : 04 - 5523 087

PROJECT :	PAGE NO. :
	DATE OF ORDER :
	DATE REQUIRED :
CUSTOMER :	PURCHASE ORDER NO :

☐ VERTICAL ORIENTATION A = mm ☐ HORIZONTAL ORIENTATION B = mm

HOLE PUNCHING	○ 14	○ 16	○ 18	○ 14x18	○ 18x22	○ 14	○ 16	○ 18	○ 14x18	○ 18x22
PLEASE TICK	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

FOR ELONGATED HOLE PLEASE SPECIFY IF OTHERS

PLEASE TICK ☐ HORIZONTAL ☐ VERTICAL

PURLIN TYPE : TCP

OVERALL LENGTH : mm

QUANTITY : pcs

HOLE LOCATION ←→ Distance from left end to hole center (unit : mm)

Hole	1	2	3	4	5	6	7	8

Customer authorise signature & Company Stamp

Name :

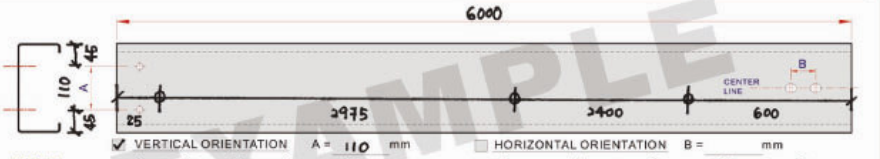
Date :

TO: Evosteel Sdn. Bhd. 鷹鋼有限公司 (Company No. 751021-U)

C PURLIN DETAILING SHEET

FAX : 04 - 5523 087

PROJECT : EXAMPLE	PAGE NO. : 1 OF 1
	DATE OF ORDER : 09 SEP 2009
	DATE REQUIRED : 18 SEP 2009
CUSTOMER : EXAMPLE	PURCHASE ORDER NO : 8888



☑ VERTICAL ORIENTATION A = 110 mm ☐ HORIZONTAL ORIENTATION B = mm

HOLE PUNCHING	○ 14	○ 16	○ 18	○ 14x18	○ 18x22	○ 14	○ 16	○ 18	○ 14x18	○ 18x22
PLEASE TICK	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐

FOR ELONGATED HOLE PLEASE SPECIFY IF OTHERS

PLEASE TICK ☑ HORIZONTAL ☐ VERTICAL

PURLIN TYPE : TCP 20020

OVERALL LENGTH : 6000 mm

QUANTITY : 100 pcs

HOLE LOCATION ←→ Distance from left end to hole center (unit : mm)

Hole	1	2	3	4	5	6	7	8
Φ 14x18	25	3000	5400					

Customer authorise signature & Company Stamp

Name : EXAMPLE

Date : 09 SEP 2009

EXAMPLE