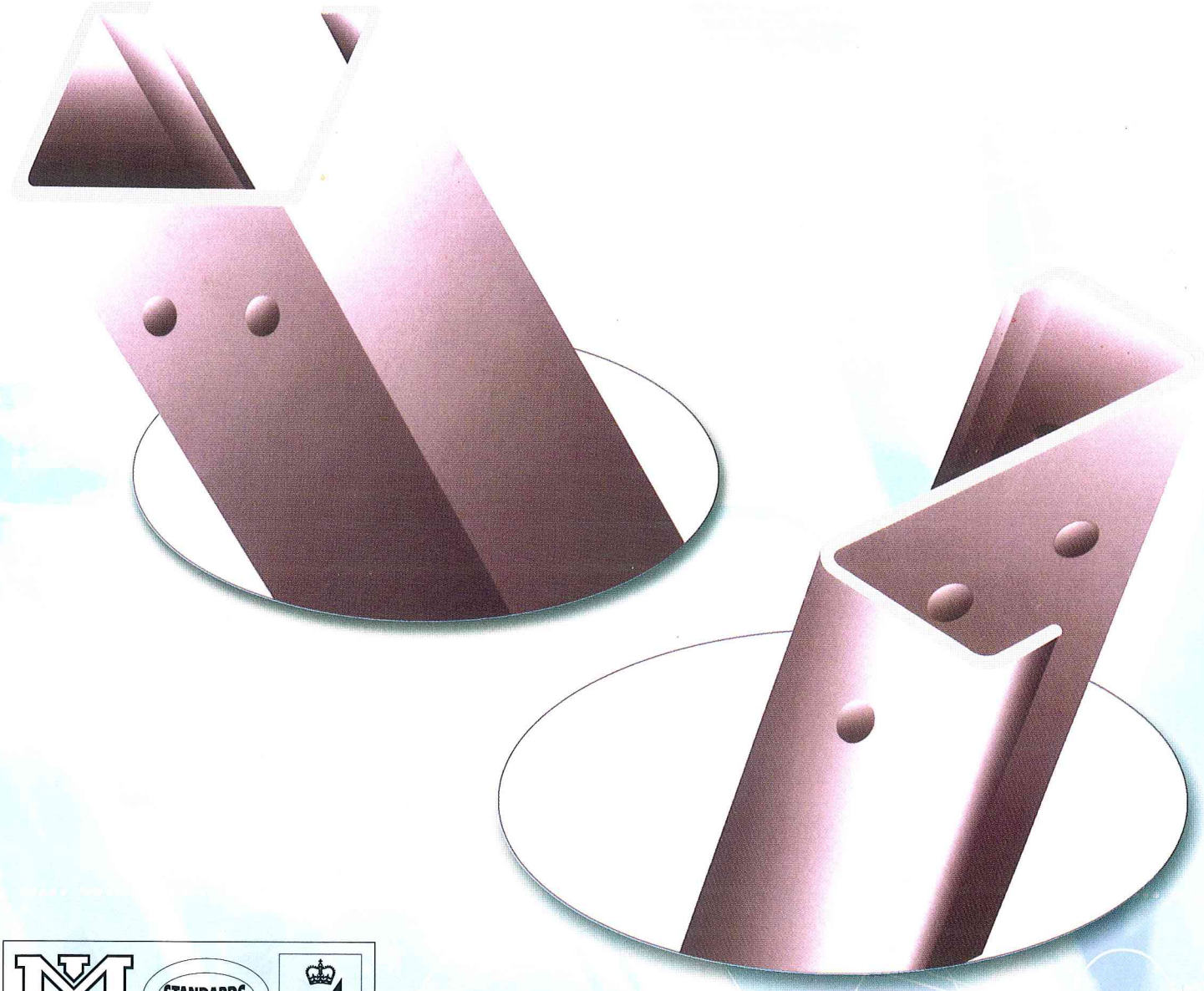
EONMETALL

Eonmetall
Your Quality Assurance



MOODY INTERNATIONAL
Rgn No: 131188A

STANDARDS MALAYSIA
ACCREDITED CERTIFICATION BODY
MS ISO/IEC GUIDE 62:1999
QS 10082001 CB 02

UKAS QUALITY MANAGEMENT
014
6295A

ISO 9001:2000 Certified

INTRODUCTION

EMC & EMZ Purlins are accurately cold-formed from imported quality high tensile zinc coated steel which meet all international standards. They served as secondary supports for a variety range of roofing and cladding materials including profiled metal sheeting, slate, composite panel and tiles all with or without insulation as required. Due to the light - weight & high strength of the base material (steel) together with the zinc-coated surface, this obviate any fabrication and painting at site. Therefore, the purlin are ready for immediate erection upon delivery. With the advantages of cut-to-length and with pre-punched holes, Eonmetall Purlins are versatile, economical and require minimal maintenance through out the life span of the building.

With its modern facility at Butterworth, Kedah, Eonmetall Industries is strongly committed to quality assurance in order to cater with your specific requirements.

EONMETALL YOUR QUALITY ASSURANCE

TOLERANCES

Length	: ±3mm
Flange width	: ±5mm
Depth	: ±1mm
Holes centres	: ±1.5mm

MATERIAL SPCIFICATION

Base Steel Thickness	:	1.6mm, 2.0mm and 2.5mm.
Steel Grade	:	High Tensile ASTM 446 Grade D.
Tensile Strength	:	450 MPa Minimum
Yield Stress	:	345 MPa Minimum
Zinc Coating	:	Minimum 275g/m^2 Coating Mass.

DESIGN PRINCIPLES

The safe load tables are calculated basing on BS 5950 Part 5-1987 with the following assumptions:

(a) Loads act parallel to the Y-axis of the Z-section.
(b) The members behave in accordance with simple theory of bending.
(c) All section properties are calculated on full section.
(d) Clause 5.2.2.2. of BS 5950 Part 5-1987 had been used to determine the maximum permissible stress.
(e) For INWARDS LOADING, it is assumed that continuous lateral restraint has been provided by the installed roof sheeting and the full maximum permissible stress (0.6 Fy) is used.
(f) All loading are uniformly distributed along the length of the number.
(g) Bending moments and deflections are determined from simple theory of bending.
(h) For LAPPED END and LAPPED INTERIOR LOADING the bending moment and deflection coefficients are based on values determines for multi-span with 3 to 8 spans and highest coefficients are taken.
(i) The I value of a lapped section is twice that of a single section.
(j) Allowable loads for maximum deflection for valus lower than $\frac{\text{Span}}{240}$ shall be modified as required.

Interpretations to the four tabulated loading cases :

(1) SIMPLY SUPPORTED - member is assumed to have pinpoints at supports.
(2) DOUBLE SPAN - member is continuous over two spans with pin-joint at supports.
(3) LAPPED END - member is the end span of multi-span system with structural lapping at every interior supports.
(4) LAPPED INTERIOR - member is the intermediate span of a multi-span system with structural lapping at every interior supports.

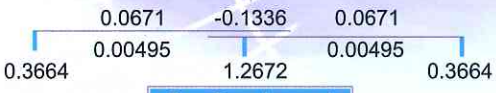
C SECTIONS PROPERTIES & DIMENSIONS

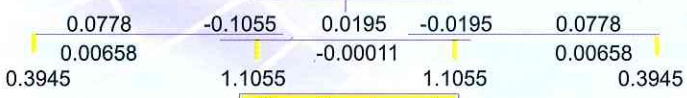
CATALOGUE NUMBER	DIMENSIONS					AREA OF SECTION	MASS PER UNIT LENGHT	2ND MOMENT OF AREA		SECTION MODULUS		RADIUS OF GYRATION		
	W	F_1	F_2	L	t			I_x	I_y	Z_x	Z_Y	r_x	r_y	C_y
	mm	mm	mm	mm	mm	mm^2	kg/m	10^6mm^4	10^6mm^4	10^3mm^3	10^3mm^3	mm	mm	mm
EMC1610	100	50	50	16	1.6	373	2.80	0.60	0.14	11.77	4.11	40.6	19.5	18.24
EMC2010	100	50	50	16	2.0	442	3.45	0.76	0.18	14.84	5.46	41.9	20.3	18.60
EMC2510	100	50	50	16	2.5	534	4.40	0.95	0.22	18.56	7.01	42.7	20.9	19.05
EMC1612	125	50	50	16	1.6	408	3.10	1.00	0.15	15.72	4.29	50.0	21.4	11.08
EMC2012	125	50	50	16	2.0	510	3.82	1.25	0.19	19.67	5.49	50.1	21.5	16.42
EMC2512	125	50	50	16	2.5	638	4.89	1.56	0.24	24.56	7.13	50.1	21.6	17.35
EMC1615	150	65	65	16	1.6	489	3.84	1.77	0.28	23.60	6.31	60.2	24.0	19.30
EMC2015	150	65	65	16	2.0	608	4.77	2.19	0.35	29.20	7.74	60.0	23.9	19.60
EMC2515	150	65	65	16	2.5	755	5.93	2.70	0.42	35.90	9.44	59.8	23.6	20.00
EMC1620	200	75	75	16	1.6	572	4.70	3.80	0.37	37.44	7.09	80.8	25.1	19.18
EMC2020	200	75	75	16	2.0	689	5.74	4.75	0.45	46.80	9.39	82.5	25.4	20.16
EMC2520	200	75	75	16	2.5	855	7.03	5.94	0.61	58.52	12.23	83.4	26.8	20.80
EMC2025	250	75	75	18	2.0	840	6.69	7.63	0.58	61.08	10.08	95.3	26.3	18.83
EMC2525	250	75	75	18	2.5	1050	8.34	9.52	0.73	76.18	12.85	95.2	26.4	18.85

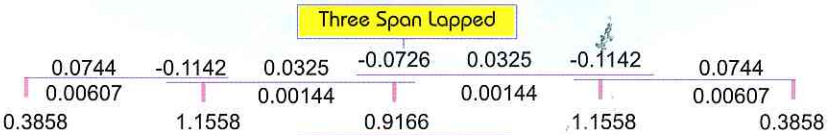
Zed SECTIONS PROPERTIES & DIMENSIONS

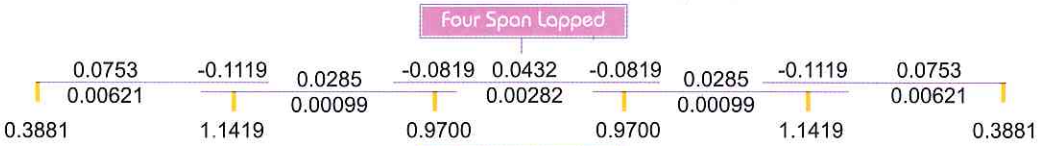
CATALOGUE NUMBER	DIMENSIONS					AREA OF SECTION	MASS PER UNIT LENGHT	2ND MOMENT OF AREA		SECTION MODULUS		RADIUS OF GYRATION		11 AXIS	12 AXIS	ANGLE
	W	F_1	F_2	L	t			I_x	I_y	Z_x	Z_Y	r_x	r_y	11	12	
	mm	mm	mm	mm	mm	mm^2	kg/m	10^6mm^4	10^6mm^4	10^3mm^3	10^3mm^3	mm	mm	10^6mm^4	10^6mm^4	DEG
EMZ1610	102	57	51	16	1.6	373	2.80	0.62	0.25	12.16	4.94	40.8	25.8	0.70	0.16	24.5
EMZ2010	102	57	51	16	2.0	442	3.45	0.77	0.31	15.14	6.22	41.8	26.5	0.98	0.19	24.4
EMZ2510	102	57	51	16	2.5	534	4.40	0.96	0.38	18.84	7.60	42.4	26.6	1.11	0.23	24.3
EMZ1612	127	57	51	16	1.6	408	3.10	1.03	0.261	16.18	5.20	50.1	25.3	1.04	0.243	22.9
EMZ2012	127	57	51	16	2.0	510	3.82	1.28	0.38	20.16	7.60	51.1	27.3	1.30	0.351	22.7
EMZ2512	127	57	51	16	2.5	638	4.89	1.60	0.47	25.20	9.45	52.2	27.5	1.63	0.434	22.6
EMZ1615	152	66	60	16	1.6	489	3.84	1.77	0.28	23.60	6.31	60.2	24.0	2.04	0.28	22.9
EMZ2015	152	66	60	16	2.0	608	4.77	2.19	0.35	29.20	7.74	60.0	23.9	2.51	0.34	22.7
EMZ2515	152	66	60	16	2.5	755	5.93	2.70	0.42	35.90	9.44	59.8	23.6	3.06	0.46	22.6
EMZ1620	203	74	67	16	1.6	572	4.70	3.86	0.64	38.10	9.52	82.6	33.5	4.15	0.35	15.9
EMZ2020	203	74	67	16	2.0	689	5.74	4.85	0.81	47.80	12.20	84.1	34.4	5.16	0.50	15.0
EMZ2520	203	74	67	16	2.5	855	7.03	6.05	1.021	59.60	15.40	85.1	34.9	6.40	0.68	14.2

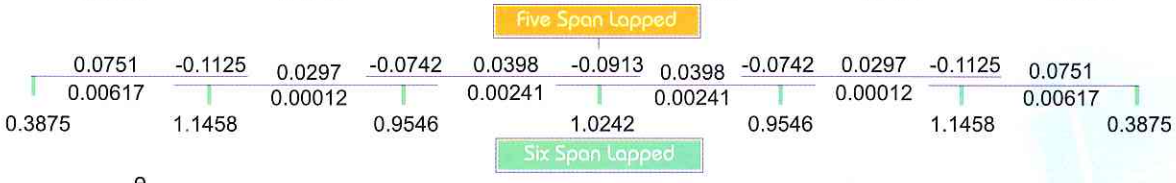
COEFFICIENTS FOR UNIFORMLY LOADED











A	= Lapped Lenght	=	10% of Span
B	= Reaction	=	$a w \ell$ N
C	= Moment	=	$b w \ell^2$ Nmm
D	= Deflection	=	$c w \ell^4 / EI$ 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 Nmm^2
- I = Moment Of Inertia Of Section (mm^4)

SELECTION TABLE FOR PURLINS

C Purlin

		Height (m)		
		3	6	10
Span (mm)	Spacing (mm)	EMC/EMZ	EMC/EMZ	EMC/EMZ
3500	1200	1610	1610	1610
	1800	1610	1610	1610
	2400	1610	1610	1610
4000	1200	1610	1610	1610
	1800	1610	1610	1610
	2400	2010	2010	2010
5000	1200	2010	2010	2010
	1800	1615	1615	1615
	2400	1615	1615	1615
6000	1200	1615	1615	1615
	1800	1615	2015	2015
	2400	2515	2515	2515
7000	1200	2515	2515	2515
	1800	1620	1620	1620
	2400	2020	2020	2020
8000	1200	2020	2020	2020
	1800	2020	2020	2520
	2400	2520	2520	2520

* Note: For any span more than 8m, structural lapping is recommended.

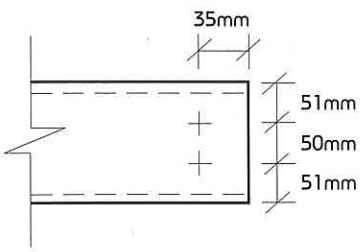
Basic design wind speed	= 25.0 m/s
Imposed load	= 0.250 kN/m^2
Dead load-Metal Roofing	= 0.04kN/m^2
Purlin	= 0.04kN/m^2
Building	= Class B
Ground roughness	= 2
Span	= c/c of Trusses
Spacing	= c/c of Purlins
Critical pressure coefficient for pitch roof	= 1.4 (uplift)
Max Roof pitch	= 30°

C Purlin

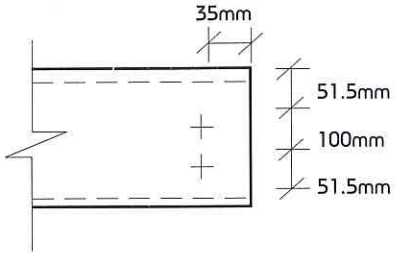
Selection		Height (m)		
Span (mm)	Spacing (mm)	3	6	10
9000	1200	2015	2015	2015
	1800	2020	2020	2520
	2400	2020	2020	2020
10000	1200	2020	2020	2020
	1800	2020	2020	2020
	2400	2020	2020	2020
11000	1200	2520	2520	2520
	1800	2520	2520	2520
	2400	2520	2520	2520
12000	1200	2520	2520	2520
	1800	2520	2520	2520

* Note: Recommended lapping length is 10% of Span.

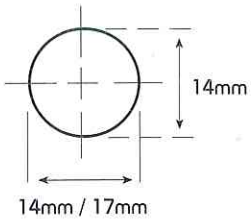
HOLE AND CLEATS DETAIL



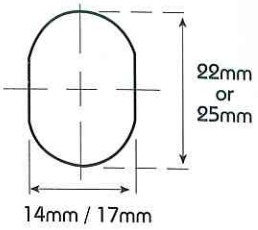
C & Z 150 Series



C & Z 200 Series



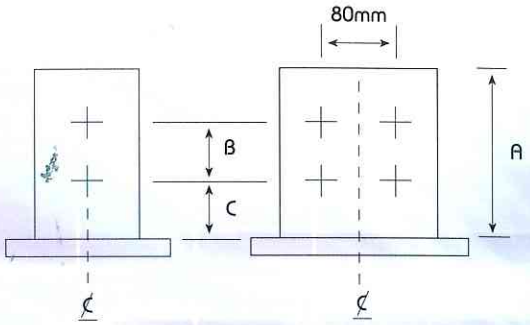
Eonmetall Standard Round Punched Hole



Eonmetall Standard Elonggated Punched Hole

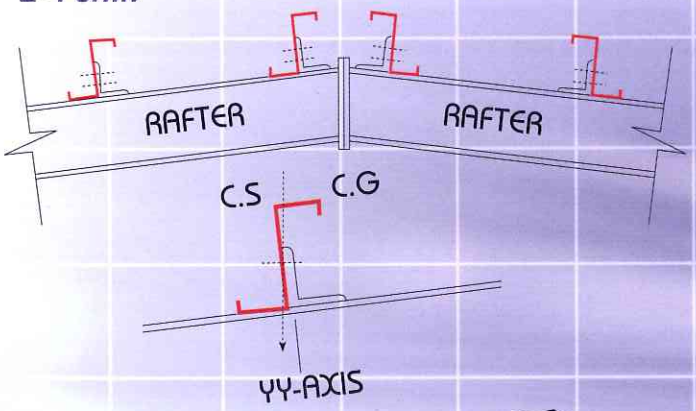
C & Z Purlin Size	Recommended Angle Cleat Size in mm		
	A	B	C
150 Series	127	50	51
200 Series	195	100	51

1. Min. 8mm thickess is recommended for angle cleats.
2. All dimensions are not to scale.

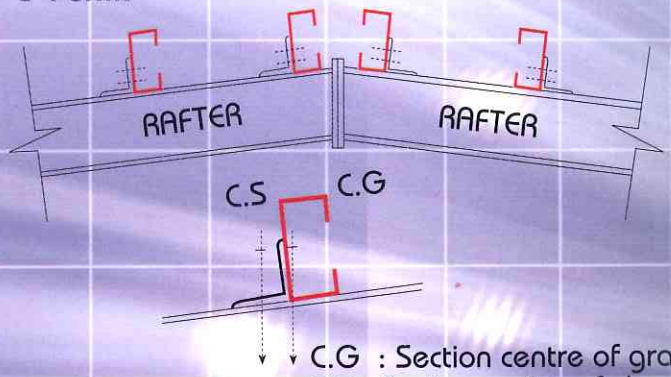


PURLIN-RAFTER CONNECTION DETAILS

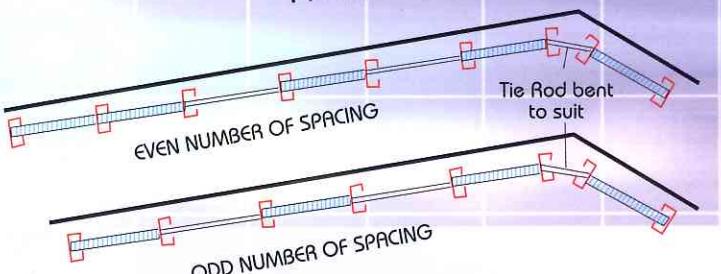
Z- Purlin



C- Purlin

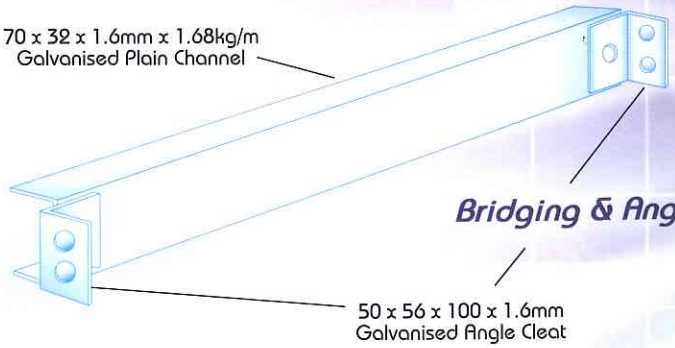


C.G : Section centre of gravity
C.S : Section centre of shear

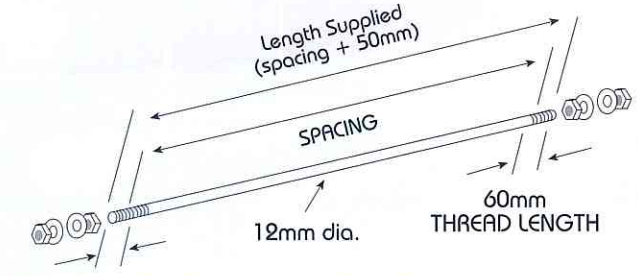


Bridging and tie Rod Arrangement

Purlins are normally braced by alternating bridging members and tie rods.



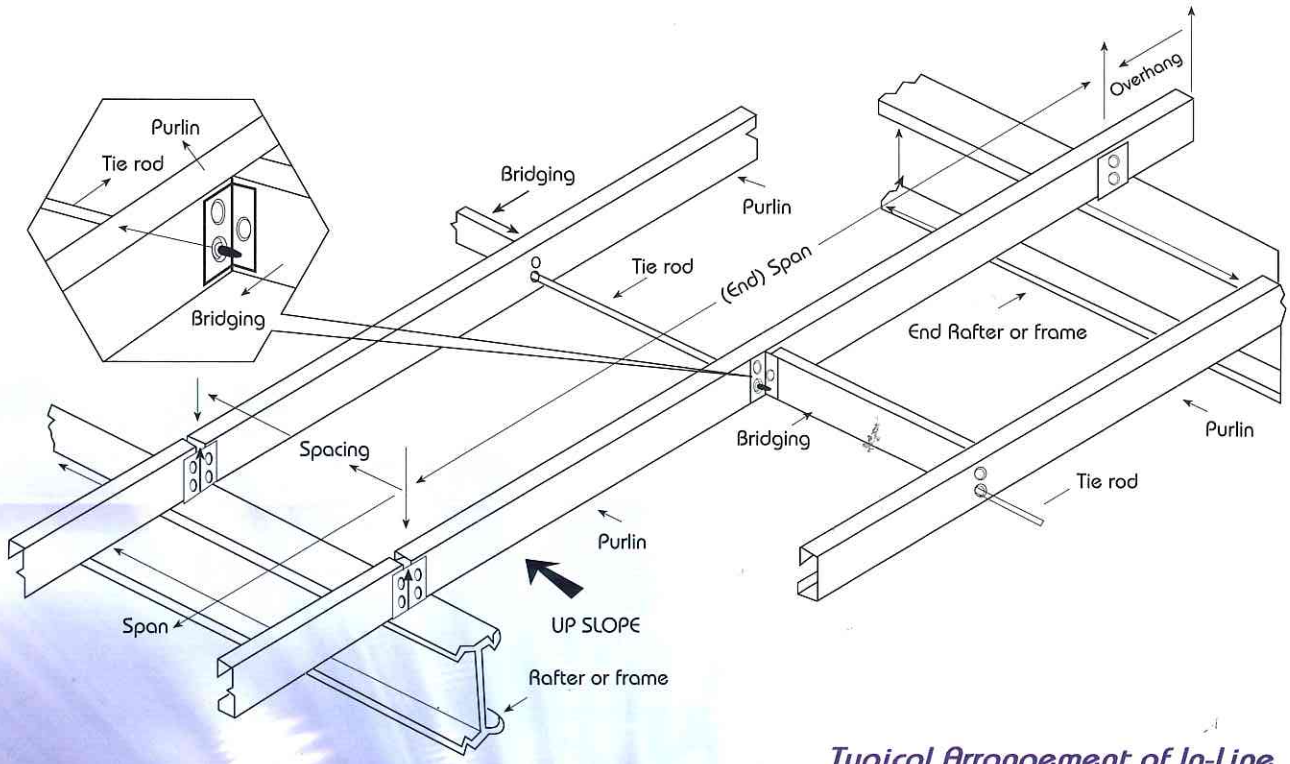
Bridging & Angle



Tie Rod

Girts are supported only by tie rods, which also act as braces for outward (wind-suction) loads.

PURLIN BRIDGING SYSTEM



Typical Arrangement of In-Line

EONMETALL INDUSTRIES SDN. BHD. (207322-V)

A member of Eonmetall Group Berhad

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Dealer's Chop: