



BOLTECH INTERNATIONAL

— Screw it let's do it.

Phone Number

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Office Address:

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ABOUT BOLTECHIN

Boltech International is a premier manufacturer and supplier of nonstandard anchor bolts, construction fasteners, and related fastening solutions. Based in the UAE, we pride ourselves on delivering high-quality products that meet stringent industry standards and customer requirements worldwide



Our Service

We manufacture and supply customized bolts and nuts designed to meet specific project needs, ensuring reliable performance and durability across various industries.



Our Aim

To provide components of impeccable standards by controlling all aspects of procurement, metallurgy, production, quality, and supply.



Our Support

Our dedicated customer service team provides comprehensive assistance throughout the ordering, packaging, and shipping process, ensuring timely delivery and complete satisfaction.



Product line

Our products are made to comply with the following standards and tailored to individual customer requirements:
ASTM, BS, DIN, AFNOR, UNI, ISO, EN, ASME

we pride ourselves on delivering high-quality products that meet stringent industry standards and customer



2 Sizes

- 1/4" UNC - 6" 8UN
- M06 - M100 ISO Metric Coarse.



1 Materials

- ASTM A193 – For high temperature applications.
- ASTM A320 – For low temperature applications.
- ASTM A453 – For high temperature applications.
- ASTM A540 – For special applications.
- ASTM A564 – For limited temperature applications and high corrosion resistance.
- ASTM A194 – For nuts.
- ASTM F3125 – For structural applications (A325, A490).

3 Pitch

- UNC, 8UN, UNF, BSW, ISO, GAS, API, BSPT, ACME, and other client-specified requirements.

4 Rolling Dies

- Boltech International holds a vast stock of thread rolling dies, allowing items to be produced to the tightest of tolerances, rapidly to meet our clients' demands



Cutting & chamfering

To meet client demands, Boltech International cold stamps, chamfers, and thread rolls smaller diameter items for both stock inventory and individual client specifications. Larger diameter bolts are thread rolled in bar form, then cut to size using fully computerized band saw machines, followed by stamping and chamfering to ensure precision and quality in every component.



Forging & Cold Drawing

Headed and specially formed items are manufactured using Boltech International's in-house range of advanced hot forging machinery.

Raw Material Verification

All incoming raw materials and semi-finished items at Boltech International undergo thorough inspection to ensure dimensional and physical accuracy. Beyond mechanical checks, we verify the integrity of the steel by analyzing its chemical properties in our state-of-the-art in-house laboratory. Additionally, mill certifications are rigorously reviewed to confirm conformity with relevant industry standards. Our stringent inspection process provides our clients with utmost confidence in the quality and integrity of the materials supplied by Boltech International.

Engineering

Threading of individual components is a highly skilled and complex operation that requires constant, strict controls throughout the entire process. The main methods of thread

forming are:

- Removal of Material
- Thread Cutting using Chaser Dies
- Screw Cutting on Centre Lathes
- Grinding
- Milling
- By Plastic Deformation Threads Rolling

Thread Rolling

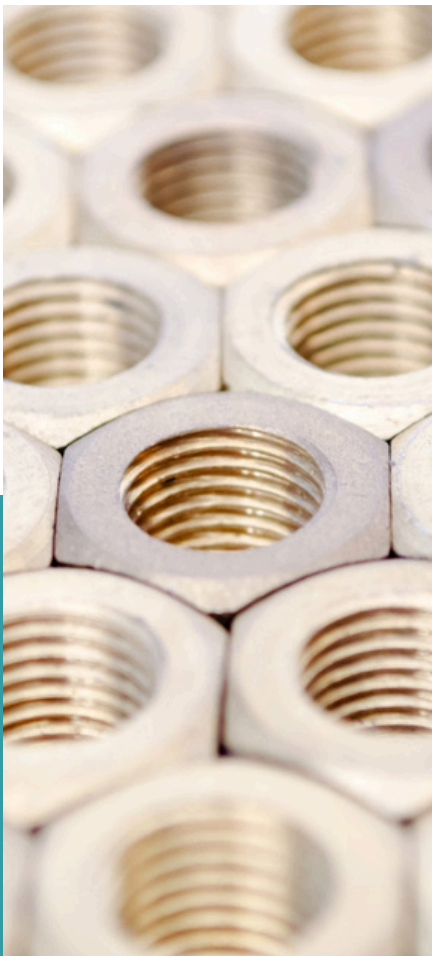
By this method, the component to be rolled is machined to the Pitch Diameter within very close tolerances. The component is then cold-rolled, forming the required thread configuration through plastic deformation.

Material with an Elongation in excess of 8% may be threaded by this method. Thread Rolling has the following advantages over the Removal of Material.

- Greater tensile and shear strength with a higher wear resistance.
- Higher accuracy of pitch.
- Bright surface finish.
- Higher resistance to jamming during assembly and thread fatigue.

In House Inspection

Regular thorough inspection is carried out on all items during the production process to ensure that all necessary standards are rigorously adhered to and the product is strictly in compliance to the standard against which it is manufactured and supplied.



Inspection Instrumentation and Gauges

All instrumentation and gauges used in our inspection procedures are regularly checked and calibrated by an independent, accredited authority.



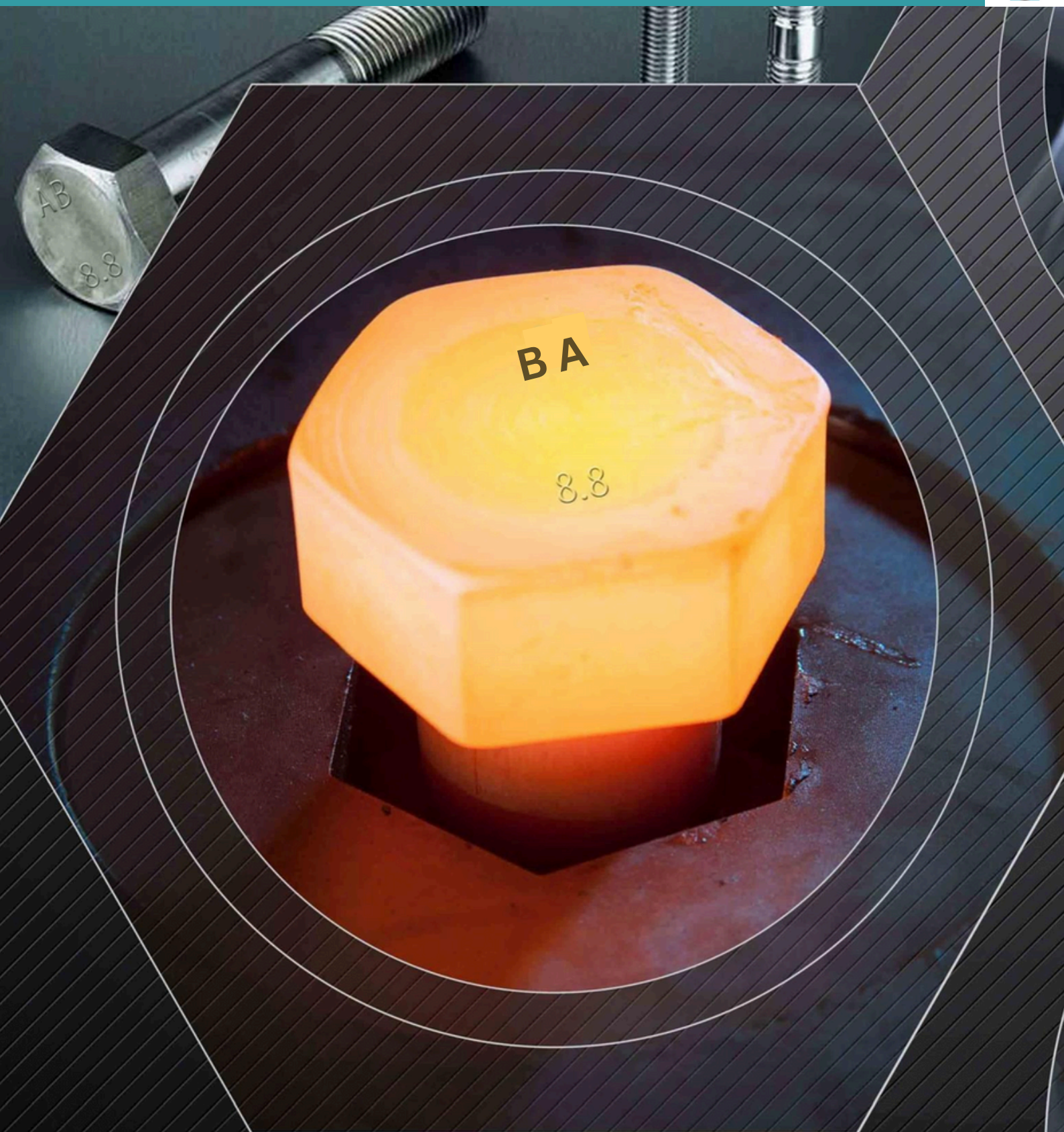
Test Certification

Boltech International operates a state-of-the-art in-house testing facility where comprehensive material verification is conducted. Test results are meticulously recorded in our fully computerized database, enabling rapid and precise issuance of full chemical and physical test certifications. Our valued clients are welcome to request additional testing and may also witness these tests firsthand at our facility.



BOLTECH
INTERNATIONAL





Stud Bolts, Anchor Bolts, Hex & Heavy Hex Bolts,
Threaded Bars, Nuts, Washers, U Bolts
and Special Fasteners Components

Our Products

Threaded Bars: 1/4" UNC to 6" 8UN, M06© to M100© Diameters.
DIN 975/976.

Nuts: 1/4" UNC to 6" 8UN, M06© to M100© Diameters.
Heavy Hex Nut ASME B18.2.2 / ASME B18.2.4.6M
Hex Nut-DIN 934, ISO 4032, BS 3692

Stud bolts: ASME B16.5, ASME B16.47, ASME B18.2.1
Engineering Studs. DIN2510L, ASME B18.31.2, ASME B18.31.1M.
Anchors Bolts. As per the Customer's specifications

"U" Bolts. Light and Heavy Pattern BS 3974.

"J" Bolts. As per the Customer's specifications
Bolts & Screw(Hex, Heavy, Square, T Bolts, Shoulder Bolts)
BS1768/9, DIN931/933, ASME B18.2.1, ASME B18.2.6M, ISO
4014/4017

(METRIC AND IMPERIAL).

Socket Head Cap Screws. DIN912, ANSI B18.3.

Lock Nuts. Self Locking Type.

Jam Nuts. DIN 439, ISO 4035.

Washers. ASTM F436, ASTM F436M, ASTM F959
BS 3410, BS 4320, DIN 125, DIN 127, DIN 434, ISO 7089, ISO
7091 etc.

Clamps-As per Customer Specification

Special Forgings as per Customer Specification



Coatings

- ASTM F1941 & ASTM F1941M
- ELECTRO ZINC: ASTM B633,
- PHOSPHATE : ASTM F1137,
- ZINC NICKEL :ASTM B841,
- HOT DIP GALVANIZING: ASTM A153 CL. C,
- ASTM F2329 ISO 1461,
- MECHANICAL GALVANIZING : ASTM B695
- CERAMIC COATING, TECTYL COATING
- PT.F.E.,CHROME, ENP.
- ZINC FLAKES COATING, ZIN/ALUMINUM
- TIN.,NICKEL
- CLIENT SPECIFIC REQUIREMENTS.



Threads

- UNC
- 8UN
- UNF
- WITH WORTH
- METRIC COARSE
- METRIC FINE
- ACME
- TRAPEZOIDAL







Material Grades

Carbon & Alloy Steels	Stainless Steel	Super (Nickel) Alloys & Duplex Steels	Non Ferrous
Mild Steel EN8, EN16 EN19, EN24, EN26 B5, B6 B7 & B7M Gr.36/55/105, Gr.90 S275, S355, S235 Gr.50A/B/C ST37-2, ST47-3, ST52-3 L7, L43, L7M BS 4882 B16A DUREHETE™ 900/950/1055 JETHETE™ X19 42CrMo, 24CrMo5 14NiCr18, 51CrV4 21CrMoV57 20CrMoVTiB4-10 Gr.8.8 / 10.9/12.9 16MnCr5 15NiCr13	303 / 304 / 304L (18-8 / A2) 316/316L(16-10/A4) A2 / A2L & A4 / A4L 50/70/80 321/310/347 422 410/416/420/431 B8/B8M/B8T B8X/B8MX/B8TX B8/B8M/B8T - Class 2 B8C B6 C3 - 80 17-4 PH FV520B™ Nitronic™ 50/60 904L	Monel™ 400 Monel™ K 500 Inconel™ 600/601/625/718 Incolony™ 800/800HT/825/925 Hastelloy™ B2/C41C22/C276 Ferralium™ 255 (UNS S32550) UNS S32760 /50 Zeron™ 100 254SMO™ UNS S31254 UNS S31803 A453 660 A, B, C & D NIMONIC™ 75/80A/90 Titanium Alloys Carpenter 20™ Tantalum™	Aluminium Bronze Aluminium Silicon Bronze Phosphor Bronze Manganese Bronze Brass Naval Brass Copper Cupro Nickel 70/30 Cupro Nickel 90/10 Hiduron™ 191 Marinel™ Aluminium Plastic Nylon PTFE



QMS, EMS & OHSAS

Boltech International is accredited with ISO 9001:2015, ISO 14001:2015, and OHSAS 18001:2007 certifications. We are one of the few fastener manufacturing companies equipped with a comprehensive state-of-the-art testing facility that covers both mechanical and chemical testing of fasteners. Our commitment to producing components of the highest quality is upheld through rigorous inspections carried out by our dedicated and experienced Quality Control Department, following the procedures outlined in our Quality and Procedures Manual. Only those products that pass all quality checks carry our unique "BI" identification mark. The professionalism and competence of our highly qualified staff ensure that all Boltech components conform to the required specifications.

Material Finishes

PTFE (Fluoropolymer Coating) - Whitford Worldwide

Xylan 1010 General-purpose coating for dry lubrication in high-speed and/or low-temperature environments. Typical applications: include rotary actuators, bearings, carburettors & garden tools.

Xylan 1014 improves abrasion resistance over Xylan 1010. Typical applications: hinge pins, piston casings, compressors, fasteners, etc.

Xylan 1052 Extreme pressure capability. Coating contains MoS₂/PTFE. Typical applications: bearings, valve springs, sealing rings, etc.

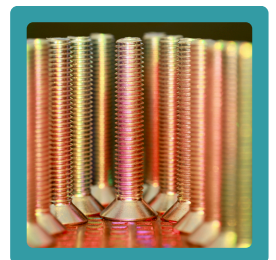
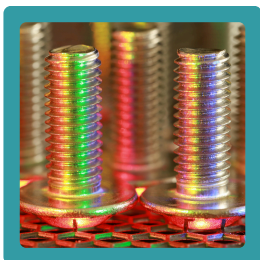
Xylan 1070 Stud Bolt coating used over phosphate or other pre-treatment to achieve up to 3,000 hrs. salt-spray. Typical application: threaded fasteners

Xylan 1424 Low-Friction coating with excellent corrosion resistance. Designated for fasteners, piston casings, compressors, etc.

Xylan 1514 Decorative coating with low friction properties. Good UV and abrasion resistance. Typical applications: cooling fans, light fittings, personal-care products.

Xylar-1 Aluminium "cermet" coating. Excellent chemical, corrosion and abrasion resistance at extreme temperatures. Ideal for aerospace and marine industry components.

Xylar-2 As Xylar-1, but higher film build possible. Typical applications: aerospace and marine industry components, automotive engine and exhaust parts.

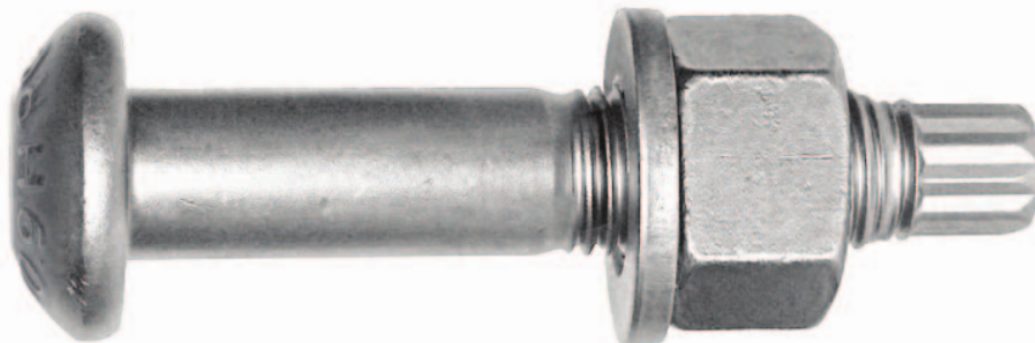




The lowest cost method of properly installing
high strength friction grip / preloaded bolts

Tension Control Bolts are supplied with an environmentally friendly coating





Technical

- Consistent tension
- Visual inspection
- Higher grade steel and increased pre-load facilitates the use of smaller diameter bolts
- TCBs can be used in Shear and Tension
- No bolt relaxation since no torsional shear is induced during tightening
- Does not loosen with vibration – no locknut required
- Greenkote® metal finish has a very hard surface and does not crack or flake
- Greenkote® metal finish accepts paint without any preparation

Cost saving

- Quick, safe and easy to install
- One man installation
- Reduced tool maintenance
- One tool can install several diameters
- Tools do not self destruct so last many years
- Greenkote® metal finish requires no further treatment which means less time at site

Safety

- Non-impacting electric shear wrenches
- No risk of HAVS (hand-arm vibration syndrome)
- Reduced operator fatigue
- No air compressors with dangerous pipes & cables
- Low on-site noise – under HSE minimum levels
- No heavy calibrated torque wrenches required
- Ultra-light weight wrenches of varying shapes & sizes
- No acid required to etch bolts prior to painting due to special Greenkote® metal finish

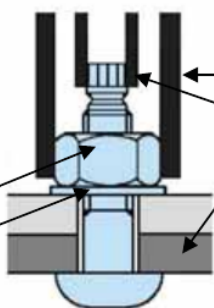
Installation procedure

Before installation



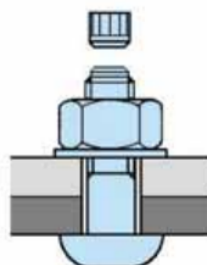
1
2
3
4
5

During installation



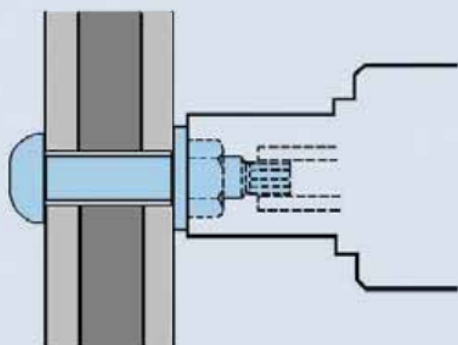
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8

After installation



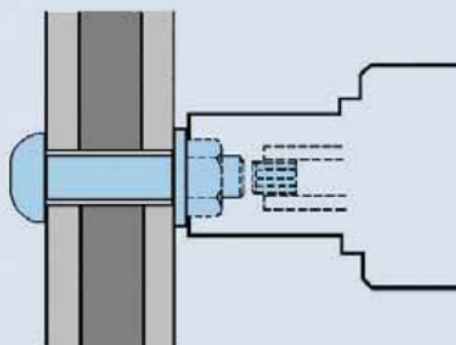
1 Spline
2 Break-neck
3 Thread
4 HRD Nut
5 Washer
6 Outer socket
7 Inner socket
8 Grip

1



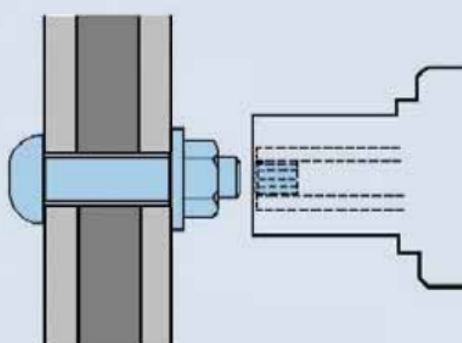
The inner socket of the shear wrench fits over the bolts spline while the outer socket fits over the nut.

2



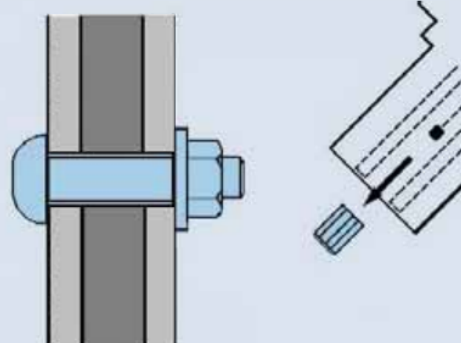
Press the trigger switch. The outer socket rotates clockwise and tightens the nut. When the correct preload is reached the outer socket stops rotating, the inner socket counter rotates and shears the spline off.

3



Stop the wrench and pull the outer socket off the nut. The spline is retained in the inner socket.

4



The wrench has a second trigger to eject the spline safely. The bolt is now properly installed with the correct tension.

TCB[®]

Products



Standard TCB[®] - used in a wide range of steelwork connections from bridge splice plates to beam-to-column connections, from stadia roof trusses to rail switches & crossings.



Smaller diameters used in the truck and trailer industry clearly demonstrate the anti vibration qualities of TCBs



TCB Stud[®] - Available in all diameters and produce the same performance characteristics as the standard TC Bolt. The left handed "head nut" allows the use of these studs in space saving compact joints.





TCB Shear Stud[®] - Ideal for repairing/strengthening old bridge decks involving steelwork which rely on pre-loaded bolts and a composite concrete deck requiring the need for shear studs. The TCB Shear Stud has dual performance.



Countersunk TCB[®] - Widely used in bridge decks and also column splices where space saving and/or aesthetics are critical.

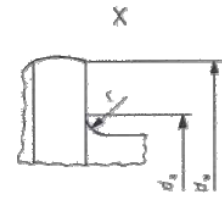


Weathering Grade TCB[®] - M24 & M30 TCBs are available in weathering grade steel which meets the specification detailed in EN 1090-2 section 5.6.6

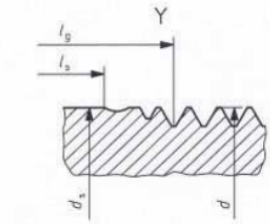


Specifications, mechanical properties and standards for bolts

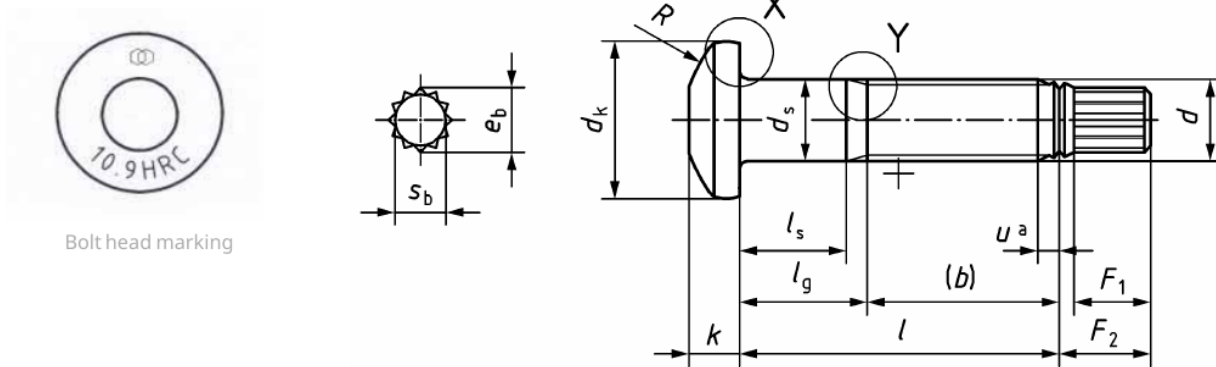
General requirements	EN 14399-1
Thread tolerance	6g
Thread standards	ISO261,ISO9652
Mechanical properties: property class	10.9
Mechanical properties: standard	EN ISO 898-1
Dimensions and tolerances	EN 14399-10
Product marking	EN 14399-10



Nominal Ø	Stress area mm ²	Proof load min kN	Ultimate load kN	Hardness Rockwell	
				min	max
M12	84.3	70	87.7	32	39
M16	157	130	163		
M20	245	203	255		
M22	303	252	315		
M24	353	293	367		
M27	459	381	477		
M30	561	466	583		
M36	817	678	850		



Dimensions of bolts^a



All dimensions in millimetres

Thread d		M12	M16	M20	M22	M24	M27	M30	M36
p ^b		1.75	2	2.5	2.5	3	3	3.5	4
b (ref)	c	30	38	46	50	54	60	66	78
	d	-	44	52	56	60	66	72	84
	e	-	-	65	69	73	79	85	97
d _a	max	15.2	19.2	24.4	26.4	28.4	32.4	35.4	42.4
d _s	max	12.7	16.7	20.84	22.84	24.84	27.84	30.84	37.00
	min	11.3	15.3	19.16	21.16	23.16	26.16	29.16	35.00
d _k	min	21	27	34	38.5	43	48	52	66
d _w	min	20	26	33	37	41	46	50	61
k	nom	8	10	13	14	15	17	19	23
	max	8.8	10.8	13.9	14.9	15.9	17.9	20.0	24.0
	min	7.2	9.2	12.1	13.1	14.1	16.1	18.0	22.0
r	min	1.2	1.2	1.5	1.5	1.5	2.0	2.0	2.0
R	nom	18	20	22	23	25	27	30	36
F ₁	min	11	13	15	15.5	16	19	21	25
F ₂	max	16	18	20	21	21.5	24	26	31
U ^a	Incomplete thread $u \leq 2p$								

a - the dimensions apply before coating

b - p is the pitch of thread

c - for lengths $l_{nom} \leq 125mm$

d - for lengths $125mm < l_{nom} \leq 200mm$

e - for lengths $l_{nom} > 200mm$

Note - $l_{g max} = l_{nom} - b$, $l_{s min} = l_{g max} - 5p$

Note - when $l_{s min}$ as calculated by the formula in f is less than 0.5d then its value shall be 0.5d and $l_{g max} = l_{s min} + 3p$

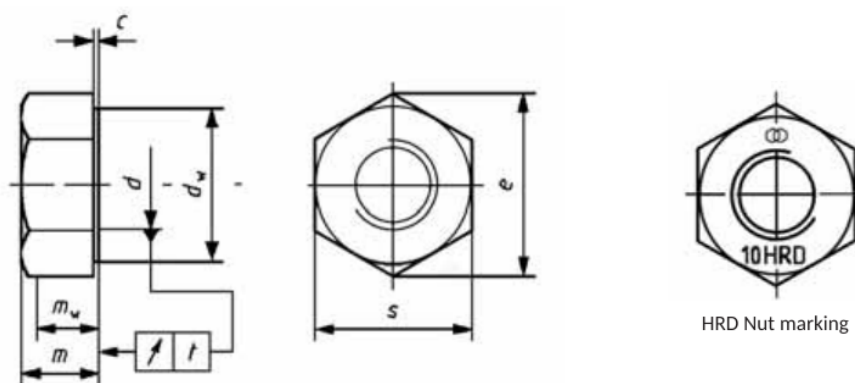
Specifications, mechanical properties and standards for nuts

General requirements	EN 14399-1
Thread tolerance	6H tapped oversized
Thread standards	ISO 261, ISO 965-2
Mechanical properties; property class	10
Mechanical properties; standard	EN ISO 898-2

Proof load value and hardness of nuts

Thread d	Nominal stress area of standard test mandrel mm ²	Proof load kN HRD ^a Nuts (nuts with height $m = 1 d$)	Vickers Hardness	
			Min	Max
M12	84.3	104.9	272	353
M16	157	195.5		
M20	245	305.0		
M22	303	377.2		
M24	353	439.5		
M27	459	571.5		
M30	561	698.4		
M36	817	1017.1		

^a – the proof load values are based on the stress under proof load of 1,245 MPa



HRD Nut marking

Dimensions of HRD nuts ^a

All dimensions in millimetres

Thread d		M12	M16	M20	M22	M24	M27	M30	M36
p^b		1.75	2	2.5	2.5	3	3	3.5	4
d_a	max	13	17.3	21.6	23.7	25.9	29.1	32.4	38.9
	min	12	16	20	22	24	27	30	36
d_w	max	^c							
	min	20.1	24.9	29.5	33.3	38.0	42.8	46.6	55.9
e	min	23.91	29.56	35.03	39.55	45.20	50.85	55.37	66.44
m	max	12.35	16.35	20.65	22.65	24.65	27.65	30.65	36.65
	min	11.65	15.65	19.35	21.35	23.35	26.35	29.35	35.35
m_w	min	9.32	12.52	15.48	17.08	18.68	21.08	23.48	28.28
c	max	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	min	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
s	max	22	27	32	36	41	46	50	60
	min	21.16	26.16	31	35	40	45	49	58.8
t		0.38	0.47	0.58	0.63	0.72	0.80	0.87	1.05

a – dimensions apply after Greenkote[®]

b – p is the pitch of thread

c – $d_{w \max} = s_{\text{actual}}$

Specifications, mechanical properties and standards for washers

General requirements	EN 14399-1
Mechanical properties; standard	EN 14399-6
Dimensions and tolerances	EN 14399-6

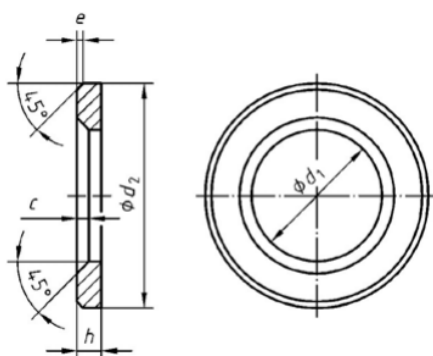
Nominal diameter	Vickers hardness (HV)	
	min	max
M16 to M36	300	370

Dimensions of washers ^a

All dimensions in millimetres

Nominal size		M12	M16	M20	M22	M24	M27	M30	M36
d_1	min	13	17	21	23	25	28	31	37
	max	13.27	17.27	21.33	23.33	25.33	28.52	31.62	37.62
d_2	min	25.48	31.38	39.38	43.38	47.38	49.00	54.80	64.80
	max	26	32	40	44	48	50	56	66
h	nom	3	4	4	4	4	5	5	6
	min	2.7	3.7	3.7	3.7	3.7	4.4	4.4	5.4
	max	3.3	4.3	4.3	4.3	4.3	5.6	5.6	6.6
e	nom=min	0.50	0.75	0.75	0.75	0.75	1.00	1.00	1.25
	max	1.0	1.5	1.5	1.5	1.5	2.0	2.0	2.5
c	min	1.6	1.6	2.0	2.0	2.0	2.5	2.5	2.5
	max	1.9	1.9	2.5	2.5	2.5	3.0	3.0	3.0

^a – dimensions apply before Greenkote®



Minimum specified preloads

Thread d	Nominal stress area of standard test mandrel A_s mm^2	F_r min $0.7 \times f_{ub} \times A_s$ ^a kN	F_r mean min $0.77 \times f_{ub} \times A_s$ ^a kN
		Minimum individual value of bolt force at spline shear when tested in accordance with EN 14399-2 & 10	Minimum mean value of bolt force at spline shear of 5 sets tested in accordance with EN 14399-2 & 10
M12	84.3	59.01	64.911
M16	157	109.9	120.89
M20	245	171.5	188.65
M22	303	212.1	233.31
M24	353	247.1	271.81
M27	459	321.3	353.43
M30	561	392.7	431.97
M36	817	571.9	629.09

^a f_{ub} is the nominal tensile strength of the bolt (R_m , nom)

Whilst this information is provided in good faith, no person from Tension Control Bolts Ltd shall be under any responsibility or liability in respect of errors or information that is found to be incorrect or for any reliance the user may place on it.

Protective Coating

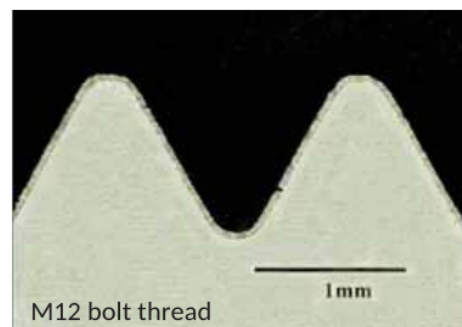
Greenkote® is an innovative diffusion coating incorporating the very latest technology. The patented process is a Thermo-Chemical Surface Modification (TCSM) which can be applied to various metals, alloys, sintered ferrous base materials, grey iron and cast iron. Unlike conventional coatings, Greenkote® is totally environmentally friendly and does not produce any solid, liquid or gaseous toxic wastes. The process is also free of chrome, cadmium, acids, cyanides and chlorides.



Standard of coating: PM-1 (minimum 25 µm)
Coating Composition: Zn-Al polymetallic composition

Advantages of Greenkote®:

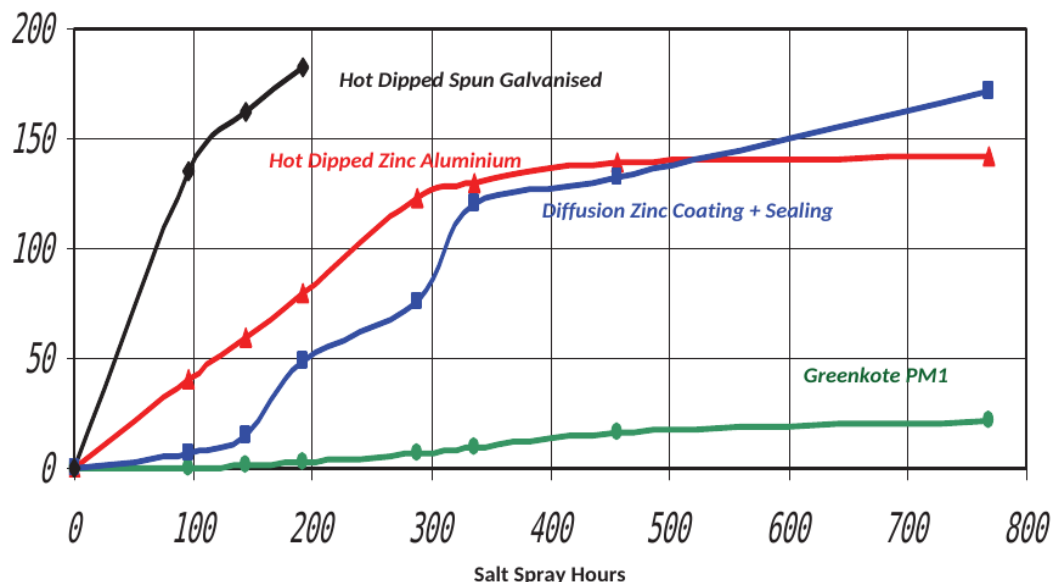
- Diffusion sacrificial corrosion resistance coating
- High degree of wear and abrasion resistance
- Salt spray resistance exceeds 1440 hours (C5 High)
- Long term corrosion protection up to 350°C (752°F)
- No hydrogen embrittlement
- Thickness uniformity ± 10% maximum
- Relatively low processing temperature
- Excellent preparation for painting, duplex coatings, adhesives and rubber mouldings*



*Excellent paint pull-off test results achieved with the following international paint manufacturers

International Paint Ltd Leigh's Paints	Ameron International Sigma Coatings	E. Wood Ltd Carboline Co
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ASTM B117 Salt Spray Test 1 - Coating Loss



Failure is reached when the area of substrate corrosion exceeds 5% of the total sample area.

Quality Assurance

Tension Control Bolts Ltd operates a quality management system in accordance with BS EN ISO 9001:2015

Other endorsements include;



Approved suppliers to:

ABB	Culham Engineering	Murphy Group
Alstom Power	EDF Energy	Samsung C&T
Alstom Transport	Galliford Try	Siemens Gamesa
Amec Foster Wheeler	Gammon Construction	Sir Robert McAlpine
Amey	Hsin Chong Construction Co., Ltd	Sisk Group
Babcock International Group	Interserve	Skanska
Balfour Beatty	Kier Group	Stobart Rail
BAM Nuttall	Lagerwey	Tekfen
Bechtel	Laing O'Rourke	Lagerwey
Bouygues	Mace	Vinci Constuction
Costain	Morgan Sindall	VolkerWessels UK

Specified by:

Aecom	Capita	Pell Frischmann
Arcadis	Cass Hayward	Royal Haskoning DHV
Arqiva	Cowi	SKM
Arup	Gifford	Tony Gee & Partners
ArcelorMittal	Halcrow	Scott Wilson Group
Atkins	Hyder Consulting	W A Fairhurst
Black & Veatch	Jacobs	Waterman Group
Blyth & Blyth	Mott Macdonald	WSP Global
Buro Happold	OSCS	WYG





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TDS - Unistrut Materials and Finishes

INTRODUCTION

Unistrut channels and fittings offer total flexibility in design and construction of assemblies for framing applications. Unistrut products are available in a range of materials and finishes. These finishes offer differing degrees of corrosion protection for use in a variety of environments. Where required, factory decorative finishes are available to order.

MATERIALS

Channels are cold rolled from 1.5mm and 2.5mm steel strip and are available in:

DF DEFENDER

HG HOT DIP GALVANISED

PG PRE-GALVANISED

PO PLAIN OILED

SS STAINLESS STEEL MARINE GRADE

ZP ELECTRO ZINC PLATED

Mild steel channels are rolled using material formed from BS EN 10025 with guaranteed yield 280N/mm² and minimum ultimate tensile strength of 370N/mm².

Stainless steel channels are rolled using material formed from BS EN 10088-2 grade 1.4404 (Grade 316L).

Unistrut fittings are pressed from hot rolled, pickled and oiled mild steel plate, or strip steel mainly from grade S315MC OR grade S275 mild steel.

Stainless Steel fittings are available to EN10088-2 grade 1.4404 (Grade 316L).

FINISHES

Defender

Our superior finish. You can find all benefits on pages 4 and 5.

Hot -Dip Galvanised

Channels are Hot-Dip Galvanised in accordance with BS EN ISO1461:2009 and chromate passivated.

The minimum average Zinc Coating is as follows:

Cold Rolled From 1.5mm Steel – 55 microns
 3.0mm Steel – 55 microns

Fittings spun galvanised – 45 microns

Pre-Galvanised

Pre-Galvanising is to BS EN 10326 2004 (Coating Z275).

Special coatings and material grades are available on request

Stainless Steel

- Stainless Steel 1.4404 (316L)
- Cleaned (Pickled & Passivated)

Applying a pickling process to stainless steel results in a clean product and it also removes any heat discolouration that has occurred in the welding process.

PVC Coating

PVC coating is a thick coating with good anti-corrosion properties. It gives a generally good chemical resistance to most acidic and alkaline materials. It is not suitable for use with most solvent-based contaminants. PVC coating is suitable for application over Hot-Dip Galvanised Steel.

Zinc Electroplated

Channel nuts and bolts are zinc electroplated.

RANGE

Channels are available in plain or slotted in multiple channel combinations and all 2.5mm channels have serrated lips. Slots, 14mm wide x 28mm long or 11mm wide x 25mm long, are provided at 50mm nominal centres. Combination channels manufactured from Pre-Galvanised Steel are spot welded, whilst Hot-Dip Galvanised channels are continuously seam welded or spot welded as appropriate.

LENGTH

Standard channel lengths are 3m or 6m. Cut channel lengths can be supplied.

WEIGHTS & DIMENSIONS

Weights published in this catalogue for all materials are approximate shipping weights. All dimensions are subject to commercial tolerance variations.

TORQUE

The torque figures stated in this catalogue are based on using a properly calibrated torque wrench with a clean, dry (non-lubricated) Unistrut fitting, bolt and nut. A lubricated bolt or nut can cause extremely high tension in the connection and may lead to bolt failure. It must be noted that the accuracy of commercial torque wrenches varies widely and it is the responsibility of the installer to ensure that proper bolt torque has been achieved.

PERFORMANCE

It should not be assumed that the performance of a Stainless Steel product is similar to that of its mild steel counterpart. Consult your local Technical Sales Manager for further information.

FITTING APPLICATION

All part drawings illustrate only one application of each fitting. In most cases, many other applications are possible. Load values are based on use of a PNP12 Unistrut nut and M12 bolt unless specified otherwise.

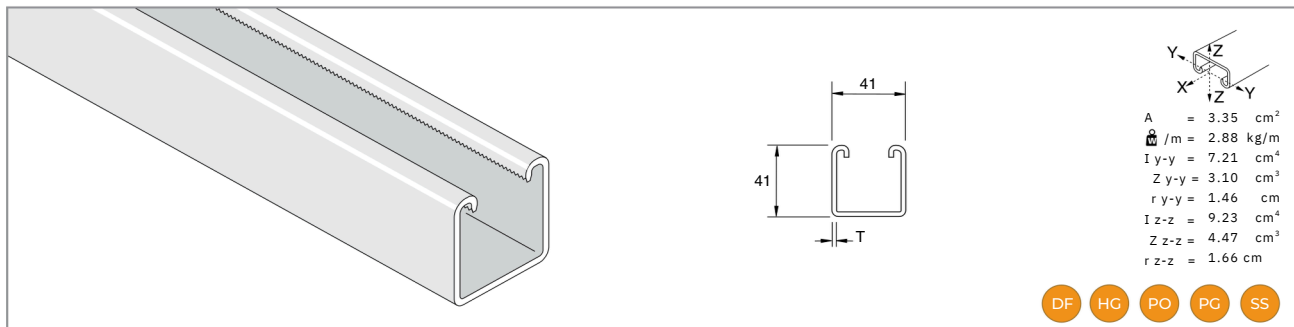
While effort has been made to ensure the accuracy of the information contained in this catalogue at the time of publication, we cannot accept responsibility for inaccuracies resulting from undetected errors or omissions.

E & O.E. Unistrut Limited has a policy of continuous product development and reserve the right to change specifications without prior notice.

STANDARDS

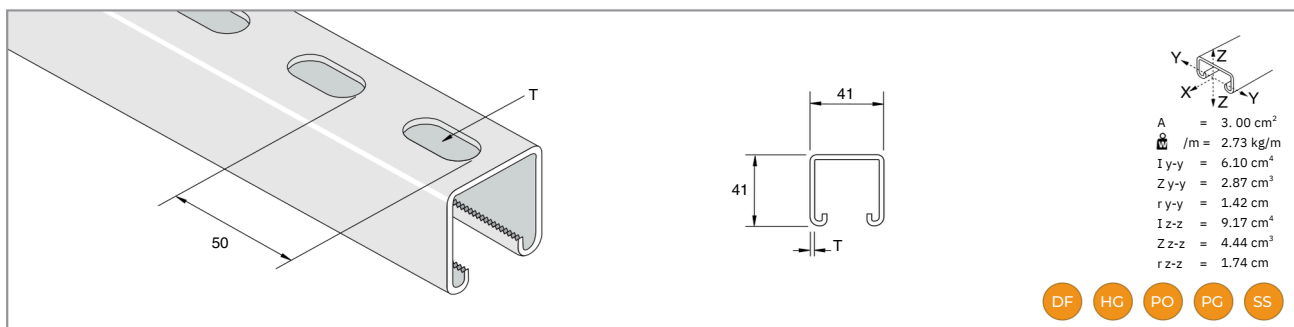
The standard requires that products are stamped with BS EN 6946:1988 and also the name of the manufacturer. We at Unistrut show that the standard is achieved by rolling the channel with the part number along with the full name of the Standard BS EN 6946:1988, and also our own Unistrut branding.

Unistrut 41x41



L(mm)	F		$\sigma = 175 \text{ N/mm}^2$		F (kN)	F (kN)	F (kN)
	Fmax(kN)	fmax(mm)	f	fmax(mm)			
250	17.354	0.23	-	-	-	-	16.608
500	8.672	0.95	-	-	-	-	16.187
750	5.778	2.15	-	-	-	5.602	15.245
1000	4.336	3.82	-	-	-	3.149	13.685
1250	3.463	5.97	-	-	-	2.011	12.086
1500	2.884	8.60	2.521	1.393	10.722		
1750	2.472	11.70	1.844	1.020	9.575		
2000	2.168	15.29	1.413	0.785	8.623		
2250	1.923	19.35	1.118	0.618	7.819		
2500	1.727	23.89	0.903	0.500	7.112		
2750	1.570	28.91	0.746	0.412	6.504*		
3000	1.442	34.40	0.628	0.343	5.995*		

*180 ≤ kL/r < 250



L(mm)	F		$\sigma = 175 \text{ N/mm}^2$		F (kN)	F (kN)	F (kN)
	Fmax(kN)	fmax(mm)	f	fmax(mm)			
250	16.069	0.27	-	-	-	-	16.283
500	8.034	1.05	-	-	-	-	16.039
750	5.356	2.35	-	-	-	4.738	15.274
1000	4.012	4.18	-	-	-	2.659	13.626
1250	3.208	6.54	3.071	1.707	11.880		
1500	2.678	9.41	2.129	1.177	10.418		
1750	2.296	12.81	1.560	0.863	9.231		
2000	2.001	16.73	1.197	0.657	8.270		
2250	1.785	21.18	0.942	0.520	7.465		
2500	1.599	26.15	0.765	0.422	6.779		
2750	1.452	31.64	0.628	0.343	6.190*		
3000	1.334	37.65	0.530	0.294	5.670*		

*180 ≤ kL/r < 250

PROFILES AND CLADDING DIVISION



BOLTECHIN GROUP OF COMPANIES

Seven Eagles International Trading L.L.C., U.A.E.

Being one of the world's most geographically diversified steel importers and stockiest, the company has successfully established a laudable position among its customers and become a go to name for all kinds of steel requirements, be it in construction, oil field industries, fabricators or even traders for that matter.

Delta Steel Industries FZC

WATER HEATER AND COOLER MANUFACTURING DIVISION

Established in the year 2010, to cater to the booming Libyan construction sector, this division manufactures and exports water heaters, coolers and chillers.

COIL AND PLATE SERVICE DIVISION

This one of a kind manufacturing facility with a max coil load of 30 T, it was established as a part of BOLTECHIN's expansion plan. This unit boasts of imported machinery that is capable of handling thickness in the range of 4-18 mm and 200 mm wide.

BOLTECHIN Steel Processing Industry

This is unit of BOLTECHIN Group at U.A.E has 2 major divisions with 2 plants in Ajman & Dubai :

CABLE MANAGEMENT SYSTEMS DIVISION

Equipped with modern technology and infrastructure this division manufactures the below products that are supplied to various power plants, electricity boards, engineering organizations, etc.

- Cable Trays / Ladders
- Trunkings & accessories
- Perforated sheets

PROFILES & CLADDING DIVISION

This division's production capacity has increased manifold in the recent past and manufactures the following

- Insulated composite profiled panels
- Drywall metal profiles (studs/tracks/furring channels, hat channels)
- Profiled cladding sheets
- Sandwich Panels
- GI lintels
- Purlins

BOLTECHIN Water Heaters & Coolers

This manufacturing unit Located in Al-Quoz Industrial Area is equipped with state-of-the-art facilities and is run by a dedicated team of skilled experts with sound technological knowledge.

The unit manufactures a wide range of products which include

- Water heater
- Water Chillers
- Water dispensers
- Water coolers
- Heat Pumps

BOLTECHIN Hospitals Pvt. Ltd.

Dana hospitals would be the first multi-specialty private hospital in the capital city of Rajasthan. With a vision to make world-class medical care available to the common man, Dr. B.S.BOLTECHIN is aiming to establish state-of-the-art infrastructure to accomplish his goal. The hospital will serve patients from other nations as well through strategic tie ups with various CSR organizations.

BOLTECHIN Steels Pvt. Ltd.

An outstanding manufacturing facility spread over an area of 35000 sq.m is equipped with Hi-Tech Contemporary Machinery. A unit of 200 skilled personnel manufactures high quality

- ERW pipe tubes (Electric resistance welded pipes, tubes, hollow sections)
- Scaffolding & formwork systems
- BOLTECHIN Steels is the proud supplier to leading contractors & infrastructure development

Apika Enterprises, India

Apika Enterprises is a manufacturing facility and an Import -Export house headquartered in Jaipur, India. Employing over 50 skilled personnel, the unit manufactures steel utensils on a mass scale. With trading offices at New Delhi and Mumbai, India, it endeavors to serve the B2C market. It also deals with import and export of plant machinery and other hardware products for the domestic and overseas market.



Sandwich Panels

Sandwich Panels are used majorly in facades , partition wall ceilings, architectural claddings , Container constructions, machine coverings, warehouses, power plants and other industrial and commercial places. The panels are also used in cold rooms and food industry construction. Sandwich Panels consists of two outer metal sheets (steel , aluminum or other) with stabilizing core of insulation sandwiched between them. The outer surface of the sheets can be flat, corrugated or any specific design. Insulating material can be Polyurethane, Polyisocyanurate, Rock Wool or EPS (Expanded Polystyrene). These panels are manufactured inside BOLTECHIN Factory in U.A.E by injecting Polyurethane. Highly sophisticated sandwich panel press and foaming machine are employed to meet any requirements.



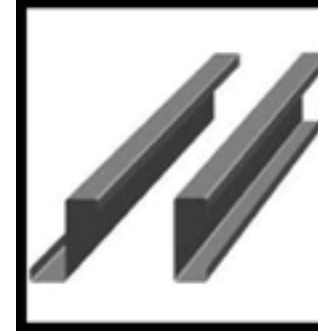
Corrugated Roofing Sheets

Sheets of hot dipped galvanized steel or aluminum are rolled in roll forming machines to produce a linear corrugated pattern and are cut to required length. Then they are fixed on purlins by means of self tapping screws. Different pitch and depth corrugation patterns can be made as per order.



Decking Sheets

Decking sheets are used as steel roof deck and floor deck. Floor decking sheets are manufactured by rolling machines using galvanized steel of thickness 0.70mm -1.50 mm. Floor decking sheet sticks very strongly into the concrete with strong rib and hence provide very strong structural platform. Roof Decking sheets provide excellent structural platform without need of purlin and framing underneath. Roof decking sheets can withstand various types of loads. Greater span are available up to 3.0 meters.



Z & C Purlins

BOLTECHIN Z & C purlins are manufactured by automatic Purlin rolling machines in its facility at Ajman , U.A.E .Roofing sheets are fixed on purlins using screws. The range of purlins manufactured by BOLTECHIN varies in depth from 100mm to 450mm and thickness up to 3.0 mm thereby allowing purlins to cater to much larger spans of up to 12.0 meters.



Flashing & Trims

All flashings are manufactured from same material as wall and roof panels. Maximum length of flashings can be up to 3000mm. Flashing and trims along with accessories can be used for wide variety of panels, shingles and tiles.



BOLTECHIN Accessories

BOLTECHIN Accessories like cladding screws , Aluminium Pop Rivets , Butyl Strips , Purlin Tape , Screw Cap , Silicon sealants etc are also provided as per customer requirements.

Highlights of BOLTECHIN Insulated Sandwich Panels

BOLTECHIN Sandwich Panels are manufactured in automatic sandwich panel press with Polyurethane foam injection .Combination of wide variety of facing materials, surface patterns and insulations offer the customers a wide choice of panels to choose from.

Surface Finish Types	Top & Bottom Sheet Material Types	Insulation Types
Plain	Pre Painted Aluminum	Polyurethane (PUR)
Corrugated	Mill Finish Aluminum	Polyisocyanurate (PIR)
	Pre Painted Galvanized Steel	Mineral Wool / Rockwool
	Mill Finish Galvanized Steel	Expanded Polystyrene (EPS)
	Pre Painted AluZinc	
	Mill Finish AluZinc	

Specification of Top & Bottom Profile Sheet Material	
Aluminum	Grade A3105 H 16 in mill finish or prepainted
Galvanized Iron sheets (GI)	ASTM A653 or other equivalent standards like JIS 3302 , EN 10326 /10327 , IS 277 with Zinc Coating G60 -180gms/m2 or G90 - 275 gms/m2
Galvanized Iron sheets (GI)	ASTM A792 with Coating AZ60-AZ180

Combinations of Top Skin and Liner	
Top Skin	Liner
GI Mill Finish	GI Mill Finish
GI Polyester Coated	GI Polyester Coated
GI PVDF Coated	GI PVDF Coated
Aluminum Mill Finish	Aluminum Mill Finish
Aluminum Polyester Coated	Aluminum Polyester Coated
Aluminum PVDF Coated	Aluminum PVDF Coated
Alu-Zinc alloy coated steel mill finish	Alu-Zinc alloy coated steel mill finish
Alu Zinc alloy coated steel PVDF coated	Alu Zinc alloy coated steel PVDF coated
	Aluminum Foil 0.05mm thick

Insulation Specifications

Thermal Conductivity Value

Amount of heat (W) passing through a material having surface of 1 M2 and thickness 1 M in order to rise temperature by 1oC . Units are W/m K

K value (Insulation Value)

Thermal conductivity divided by thickness of the material [W / m2 K]

U value (Total Insulation Value)

Also known as Overall Heat Transfer Coefficient. It is determined by the insulation value of the various materials forming the panel . [W / m2 K] , KCal/m2 h oC , BTU/ F t2 h oF

On Continuous System	Density	K value
Polyurethane (PUR)	35-40 Kg/m3	0.022 w/m ²K
Polyisocyanurate (PIR)	40-45 kg/m3	0.022 w/m ²K
Mineral Wool / Rockwool	80-150 kg/m3	0.04 w/m ²K
Expanded Polystyrene (EPS)	16-24 kg/m3	0.035 w/m ²K
Please Note Lower the K value , better is insulation capability		

1. Polyurethane Properties

A Mechanical Characteristic of Foam

Density	35-40Kg/m3 (as per BSEN 1602: 1997)
Tensile Stress	150 kpa (as per BSEN 1608: 1997)
Compression Resistance	100 kpa (as per ASTM C165 : 2000)
Shear Resistance	150 kpa (as per ASTM 271/ 271M)
Fire Property	B2/ B3 as per DIN 4102-1

B Insulation Capacity

K Value - Thermal Conductivity	0.022 W/ mK
Tolerance	+ /- 0.002

C Water Absorption of the foam after 24 hours: 1.0 % of Volume

D Closed Cell content > 94%

E Overall Heat Transfer Coefficient (U) varies with the thickness of the panel

Polyurethane Panel U Value Chart				
Core Thickness in mm				
Overall Heat Transfer Coefficient “ U “ Value	40	50	75	100
W / M2 oC	0.525	0.420	0.290	0.210
KCAL / M2 h oC	0.451	0.361	0.247	0.181
BTU / F t2 h oF	0.092	0.074	0.050	0.037

2. Poly isocyanurate (PIR) Foam Properties

A Mechanical Properties

Density	40-45 Kg/m3 (as per BSEN 1602: 1997)
Tensile Stress	Greater than100 kpa (as per BSEN 1608: 1997)
Compression Resistance	Greater than 100 kpa (as per ASTM C165 : 2000)
Shear Resistance	>100 kpa (as per ASTM 271/ 271M)
Fire Property	Class 1 with less spread & smoke development, as per ASTM E84

B Overall Heat Transfer Coefficient “ U ‘ Value - W/m2 K

Thickness In mm	35	40	50	60	75	100
Overall Heat Transfer Coefficient “ U “	0.67	0.60	0.47	0.40	0.31	0.24

3. Mineral Wool Features - For Fire Rated Panels

A Mechanical Properties

Density	80-120 Kg/m3
Thermal Conducting	>0.042 W/nk (Average)
Compression Resistance	> 70 Kpa (as per ASTM C165 : 2000)
Fire Property	> 750 oC melting point Al as per DIN 4102-1

B Insulation Capacity

Thickness of mineral Wool (mm)	50	80	100
U Value (W / m2 K)	0.76	0.47	0.37

K value - 0.042 W /mK

Please Note Overall Heat Transfer Coefficient “ U “ varies with thickness of the panel

C Fire Properties

Fire Resistance	> 750 o C melting point as per DIN 4102
Calorific Value	<2.0 MJ/ Kg according to EN 13501
Combustibility	A1 as per EN 13501 Non combustible as per BS 476 : Part 4
Flame Spread Index	0
Smoke Development Index	0

D Fire Test Comparison

DIN 4102-1 fire test		
Building Material Class		Designation
Class A	A1 (Mineral Wool Fire Rated Panels)	Non-combustible materials
	A2	
Class B	B1	Not easily flammable
	B2 (PU Panel)	Flammable
	B3 (PU Panel)	Easily flammable

Surface Coating Specifications

Various options are available for surface coating of panels .Standard surface coating specifications are :-

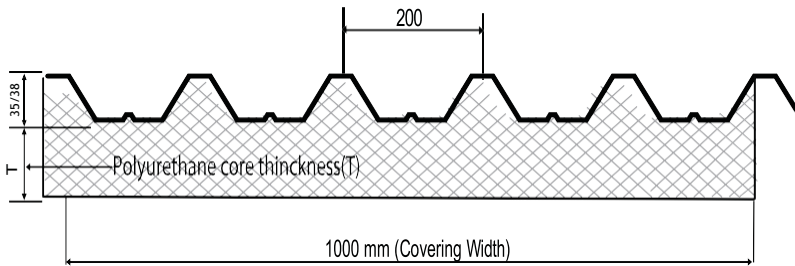
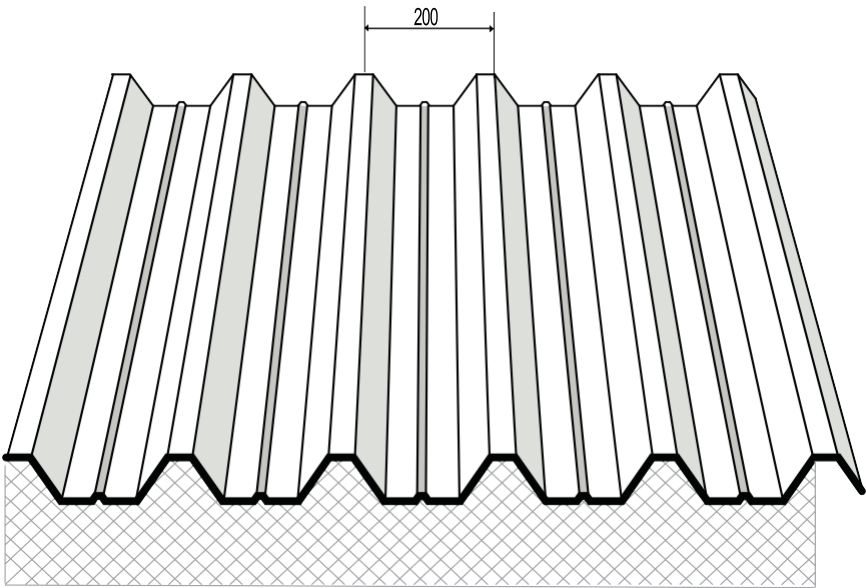
Metallic Top Skin and the liner material (other than Aluminium Coil) can be supplied with surface coating as follows :-

Surface is painted with baked regular modified enamel polyester(RMP), with 5 micron primer and 20 micron coat on the weathering side and 5/7 micron primer on the reverse.

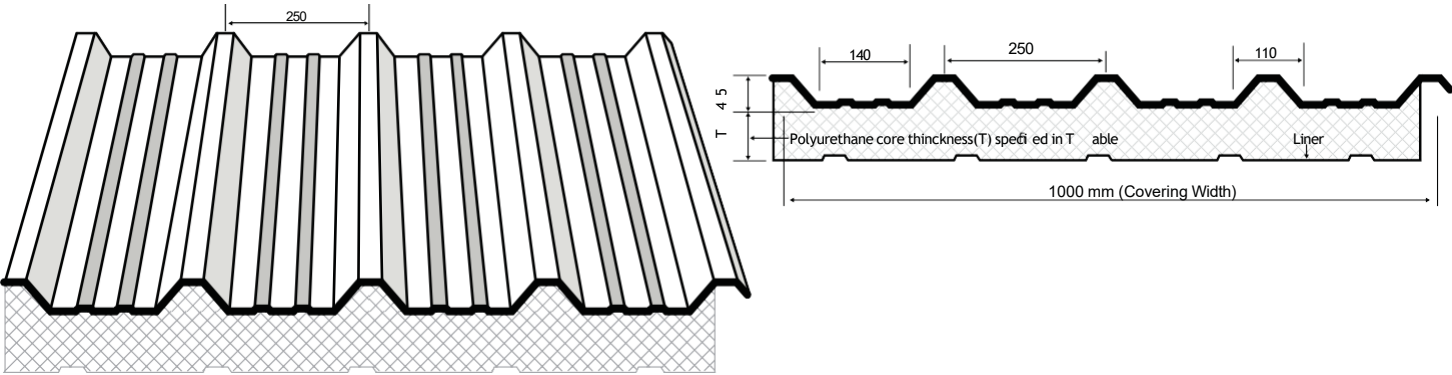
Please Note PVDF , Silicon , Modified Polyester ,Plastisol , ARS shall be applied on request

Types of BOLTECHIN Insulated Sandwich Panels

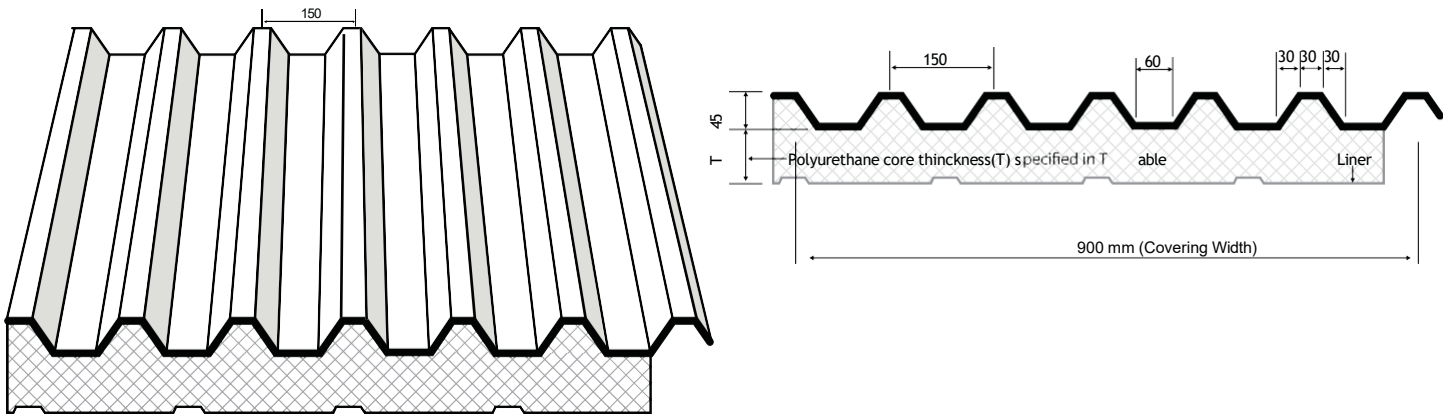
DCP 35 / 200



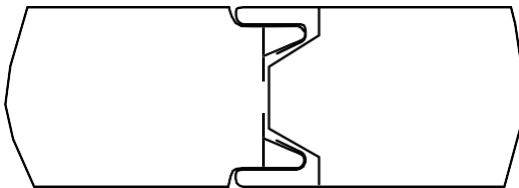
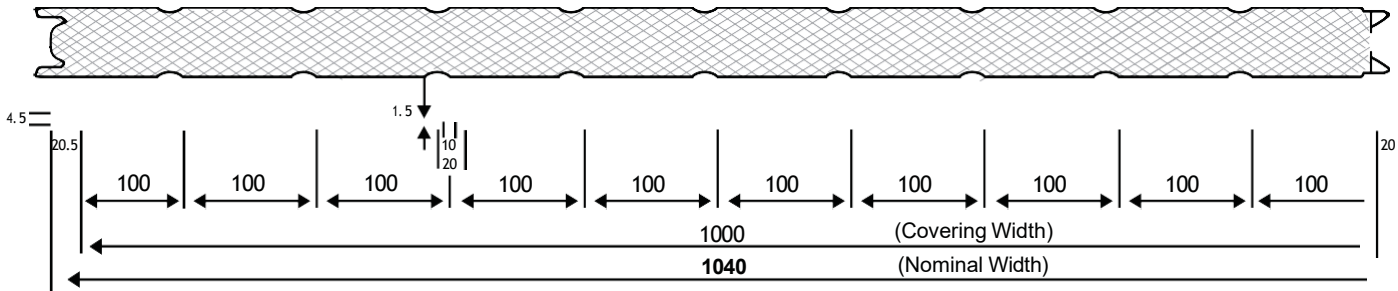
DCP 45 / 250



DCP 45 / 150



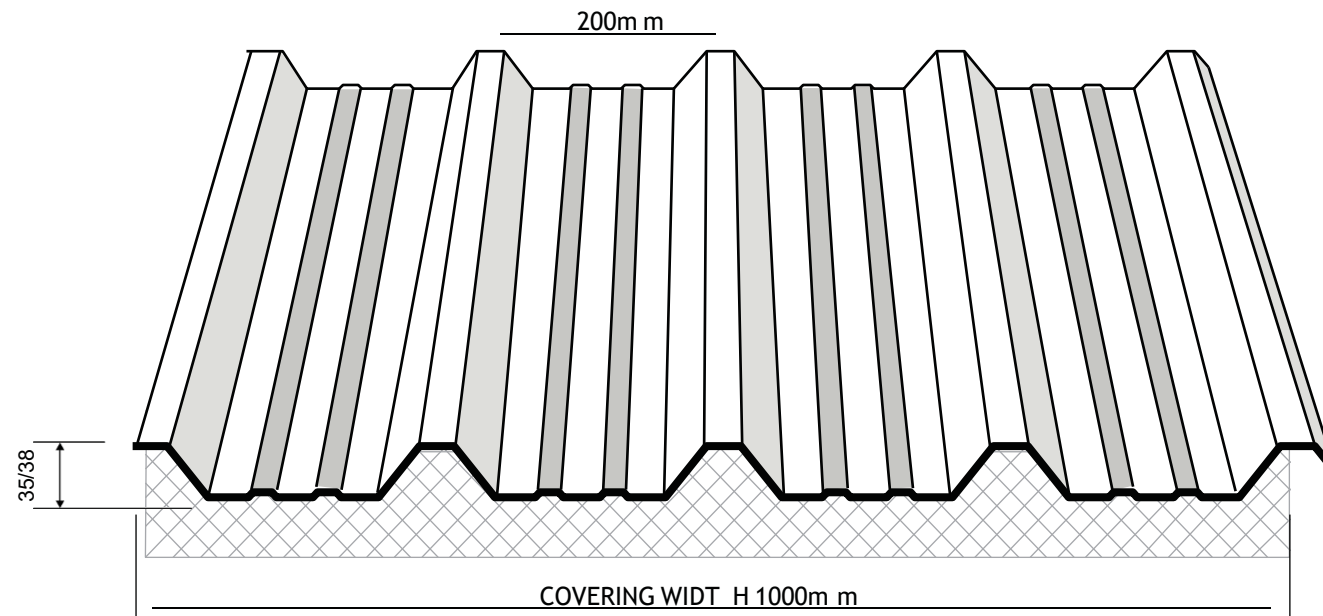
BOLTECHIN Flat Panel



Tounge and Groove Joint

SANDWCH PANELS

DCP 35(38)/200 Sandwich Panel



Roof and Wall Panel

Specification Details

Top Skin Sheet / Liner Sheet			Insulation	Surface Coating	
Aluminium	GI	Alu Zinc	Polyurethane Injected Foam (PUR)	Top	Liner
0.5mm - 0.9mm thickness , A3105 H16 for mill finish , H46 for prepainted	ASTM A653 or other equivalent standards like JIS 3302, EN 10326 /10327, IS 277either Zinc Coating G60 -180gms/m ² or G90 - 275 gms/ {y}2	ASTM A792 with Coating AZ60 - AZ180	PIR , Mineral Wool , EPS on request	Top Coat of RMP (Regular Modified Polyester) of 20 microns over 5 micron of nominal epoxy primer which acts as Corrosion inhibitor PVDF Silicon, Modified Polyester, Plastisol, ARS shall be applied on request.	Backing coat with matching color to top coat of 5-7 microns with epoxy primer of 5 micron PVDF Silicon, Modified Polyester, Plastisol, ARS shall be applied on request.

Polyurethane Panel U Value Chart

Core Thickness in mm	40	50	75	100
Overall Heat Transfer Coefficient "U " Value				
W / M2 K	0.525	0.420	0.290	0.210
KCAL / M2 h K	0.451	0.361	0.247	0.181
BTU / F t2 h oF	0.092	0.074	0.050	0.037

Section Properties and Load Chart

A Aluminium Skin Sheet - 0.7 mm external, 0.5 mm internal

Section Properties (For 1 meter of coverage width)

Panel Core Thickness (in mm)	Area 1 x cm 4	Top in Compression		Bottom in Compression	
		Z Top cm ³	Moment Top Kn	Z Bottom cm ³	Moment Bottom Kn
50	38	11	1.31	22	2.58
75	99	23	2.66	31	3.53
100	198	38	4.37	42	4.79

Load Chart (KN / M2)

Panel Core thickness (in mm)	Number of Spans Nos	Span in meters								
		1	1.5	2	2.5	3	3.5	4	4.5	5
50	Single	10.48	4.66	2.63	1.69	1.17	0.86	0.66	0.53	0.43
	Multi	14.48	4.29	1.82	0.94	0.55	0.35	0.24	0.17	0.13
75	Single	21.29	9.47	5.33	3.41	2.37	1.75	1.34	1.06	0.86
	Multi	37.87	11.23	4.74	2.43	1.41	0.87	0.60	0.43	0.31
100	Single	34.93	15.53	8.74	5.60	3.89	2.85	2.19	1.73	1.41
	Multi	76.07	22.25	9.52	4.88	2.83	1.78	1.78	0.84	0.62

B GI Skin Sheet - 0.5 mm external , 0.5 mm internal

Section Properties (For 1 meter of coverage width)

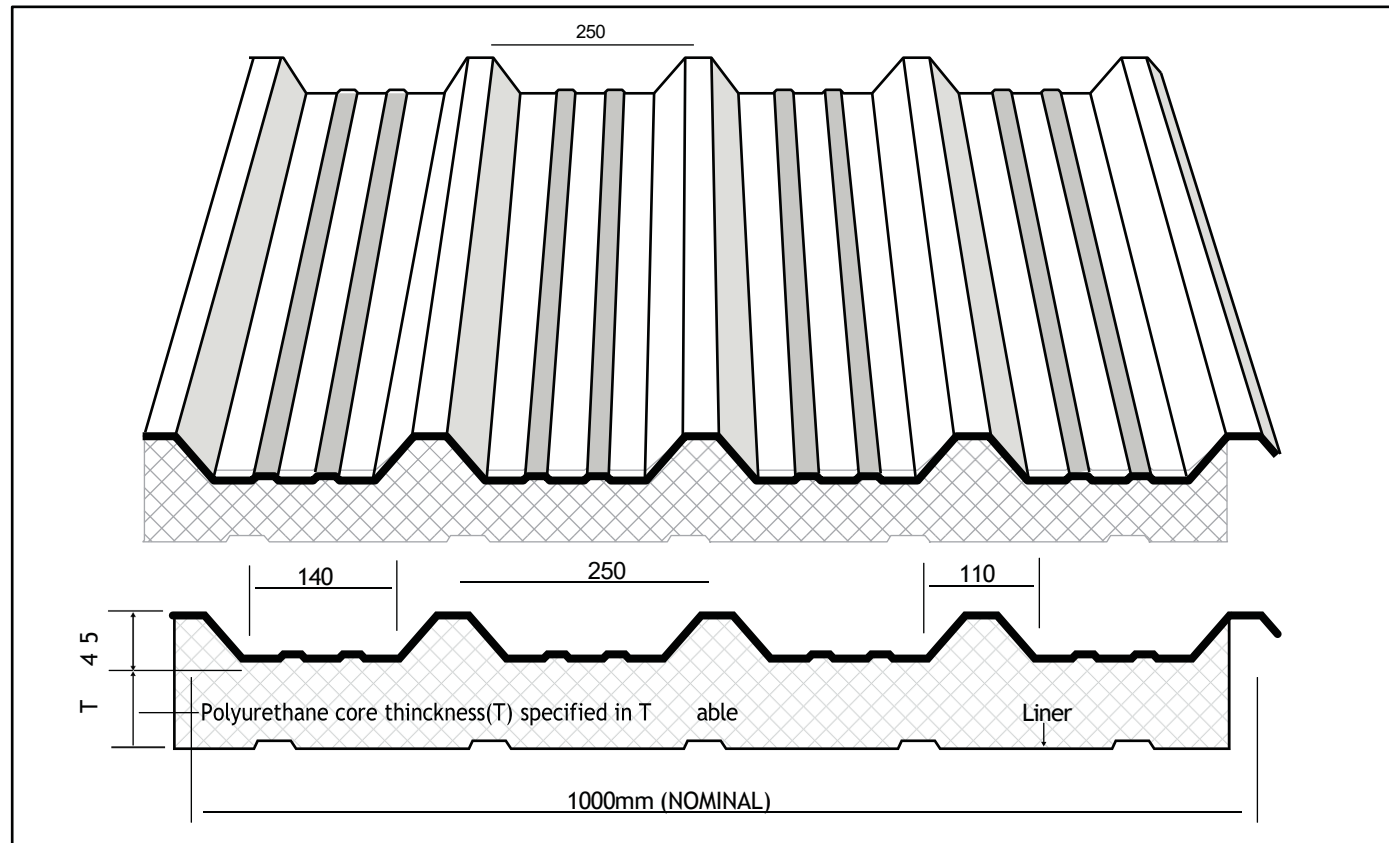
Panel Core Thickness (in mm)	Area 1 x cm 4	Top in Compression		Bottom in Compression	
		Z Top cm ³	Moment Top Kn	Z Bottom cm ³	Moment Bottom Kn
50	31	9	1.46	21	3.53
75	84	18	3.01	30	5.05
100	170	29	4.91	41	6.96

Load Chart (KN / M2)

Panel Core Thickness (in mm)	Number of Spans Nos	Span in meters								
		1	1.5	2	2.5	3	3.5	4	4.5	5
50	Single	11.71	5.21	2.93	1.88	1.31	0.96	0.74	0.59	0.48
	Multi	34.28	10.17	4.29	2.20	1.28	0.81	0.55	0.39	0.28
75	Single	24.11	10.72	6.04	3.87	2.69	1.98	1.52	1.20	0.97
	Multi	92.86	27.82	11.74	6.02	3.49	2.20	1.48	1.04	0.76
100	Single	39.33	17.48	9.84	6.30	4.38	3.22	2.47	1.95	1.58
	Multi	191.02	56.60	23.89	12.23	7.08	4.46	2.99	2.11	1.54

SANDWCH PANELS

DCP 45/250 Sandwich Panel



Roof and Wall Panel

Specification Details

Top Skin Sheet / Liner Sheet			Insulation	Surface Coating	
Aluminium	GI	Alu Zinc	Polyurethane Injected Foam (PUR)	Top	Liner
0.5mm - 0.9mm thickness , A3105 H16 for mill finish , H46 for prepainted	ASTM A653 or other equivalent standards like JIS 3302, EN 10326 / I 0327, IS 277 either Zinc Coating G60 -180gms/m ² or G90 - 275 gms/ m	ASTM A792 with Coating AZ60 - AZ180	PIR , Mineral Wool , EPS on request	Top Coat of RMP (Regular Modified Polyester) of 20 microns over 5 micron of nominal epoxy primer which acts as Corrosion inhibitor PVDF Silicon, Modified Polyester, Plastisol, ARS shall be applied on request.	Backing coat with matching color to top coat of 5-7 microns with epoxy primer of 5 micron PVDF Silicon, Modified Polyester, Plastisol, ARS shall be applied on request.

Polyurethane Panel U Value Chart

Core Thickness in mm	40	50	75	100
Overall Heat Transfer Coefficient "U" Value				
W / M2 K	0.525	0.420	0.290	0.210
KCAL / M2 h K	0.451	0.361	0.247	0.181
BTU / F t2 h oF	0.092	0.074	0.050	0.037

Section Properties and Load Chart

A Aluminium Skin Sheet - 0.7 mm external, 0.5 mm internal

Section Properties (For 1 meter of coverage width)

Panel Core Thickness (in mm)	Area 1 x cm 4	Top in Compression		Bottom in Compression	
		Z Top cm ³	Moment Top Kn	Z Bottom cm ³	Moment Bottom Kn
50	35	9	1.08	28	3.28
75	85	18	2.09	30	3.52
100	174	31	3.56	40	4.62

Load Chart (KN / M2)

Panel Core Thickness (in mm)	Number of Spans Nos	Span in meters								
		1	1.5	2	2.5	3	3.5	4	4.5	5
50	Single	8.64	3.85	2.17	1.39	0.97	0.71	0.55	0.44	0.36
	Multi	13.53	4.01	1.70	0.87	0.51	0.33	0.22	0.16	0.12
75	Single	16.72	7.43	4.19	2.68	1.87	1.36	1.05	0.83	0.68
	Multi	32.72	9.70	4.10	2.10	1.22	0.77	0.52	0.37	0.27
100	Single	28.46	12.66	7.12	4.56	3.17	2.33	1.79	1.42	1.15
	Multi	66.87	19.82	8.37	4.29	2.49	1.57	1.05	0.74	0.54

B GI Skin Sheet - 0.5 mm external , 0.5 mm internal

Section Properties (For 1 meter of coverage width)

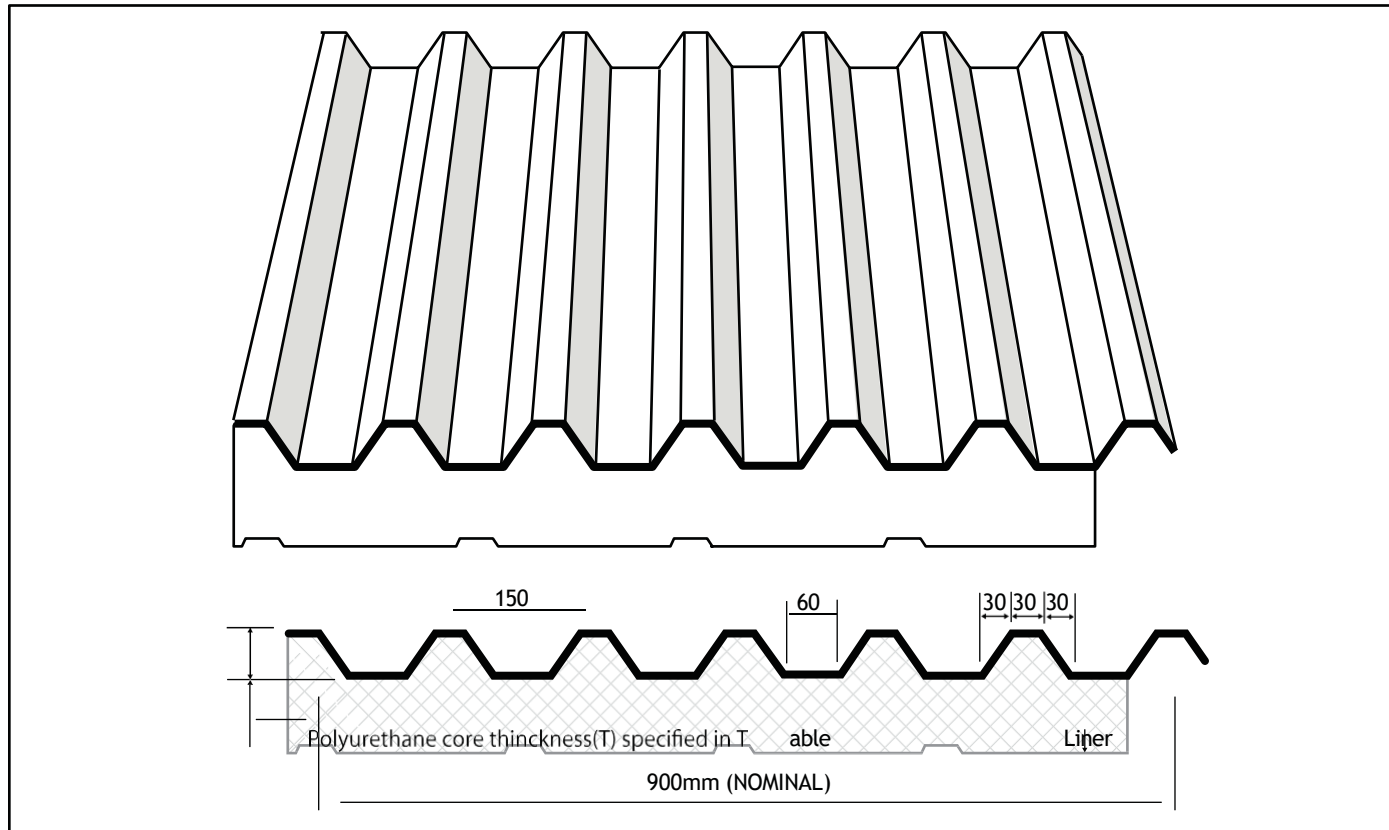
Panel Core Thickness (in mm)	Area 1 x cm 4	Top in Compression		Bottom in Compression	
		Z Top cm ³	Moment Top Kn	Z Bottom cm ³	Moment Bottom Kn
50	27	7	1.17	25	4.26
75	71	14	2.37	29	4.93
100	148	24	4.05	39	6.63

Load Chart (KN / M2)

Panel Core Thickness (in mm)	Number of Spans Nos	Span in meters								
		1	1.5	2	2.5	3	3.5	4	4.5	5
50	Single	9.40	4.18	2.36	1.51	1.05	0.78	0.60	0.47	0.39
	Multi	30.49	9.04	3.82	1.96	1.14	0.72	0.49	0.34	0.25
75	Single	18.95	8.43	4.75	3.04	2.11	1.56	1.19	0.95	0.77
	Multi	79.52	23.57	9.95	5.10	2.95	1.86	1.25	0.88	0.65
100	Single	32.38	14.40	8.10	5.19	3.61	2.65	2.03	1.61	1.30
	Multi	166.61	49.37	20.83	10.67	6.18	3.90	2.61	1.84	1.34

SANDWCH PANELS

DCP 45/150 Sandwich Panel



Roof and Wall Panel

Specification Details

Top Sheet	Sheet	Sheet		Surface Coating	
		Alu Zinc		Top	Liner
0.5mm - 0.9mm thickness , A3105 H16 for mill finish , H46 for prepainted	ASTM A653 or other equivalent standards like JIS 3302, EN 10326 /10327, IS 277 either Zinc Coating G60 -180gms/m ² or G90 - 275 gms/m ²	ASTM A792 with Coating AZ60 - AZ180	Polyurethane Injected Foam (PUR) PIR , Mineral Wool , EPS on request	Top Coat of RMP (Regular Modified Polyester) of 20 microns over 5 micron of nominal epoxy primer which acts as Corrosion inhibitor PVDF Silicon, Modified Polyester, Plastisol, ARS shall be applied on request.	Backing coat with matching color to top coat of 5-7 microns with epoxy primer of 5 micron PVDF Silicon, Modified Polyester, Plastisol, ARS shall be applied on request.

Polyurethane Panel U Value Chart

Core Thickness in mm	40	50	75	100
Overall Heat Transfer Coefficient "U " Value				
W / M2 oC	0.525	0.420	0.290	0.210
KCAL / M2 h oC	0.451	0.361	0.247	0.181
BTU / F t2 h oF	0.092	0.074	0.050	0.037

Section Properties and Load Chart

A Aluminium Skin Sheet - 0.7 mm external, 0.5 mm internal

Section Properties (For 1 meter of coverage width)

Panel Core Thickness (in mm)	Area 1 x cm 4	Top in Compression		Bottom in Compression	
		Z Top cm ³	Moment Top Kn	Z Bottom cm ³	Moment Bottom Kn
50	48	14	1.66	29	3.38
75	109	26	2.96	34	3.87
100	210	41	4.71	43	4.99

Load Chart (KN / M2)

Panel Core Thickness (in mm)	Number of Spans Nos	Span in meters								
		1	1.5	2	2.5	3	3.5	4	4.5	5
50	Single	13.28	5.91	3.33	2.13	1.48	1.09	0.84	0.67	0.54
	Multi	18.54	5.50	2.33	1.20	0.70	0.44	0.30	0.21	0.16
75	Single	23.71	10.54	5.94	3.80	2.64	1.94	1.49	1.18	0.96
	Multi	41.89	12.42	5.25	2.69	1.56	0.99	0.66	0.47	0.35
100	Single	37.73	16.71	9.44	6.04	4.20	3.09	2.37	1.87	1.52
	Multi	80.68	23.91	10.09	5.17	3.07	2.37	1.27	0.93	0.66

B GI Skin Sheet - 0.7 mm external , 0.5 mm internal

Section Properties (For 1 meter of coverage width)

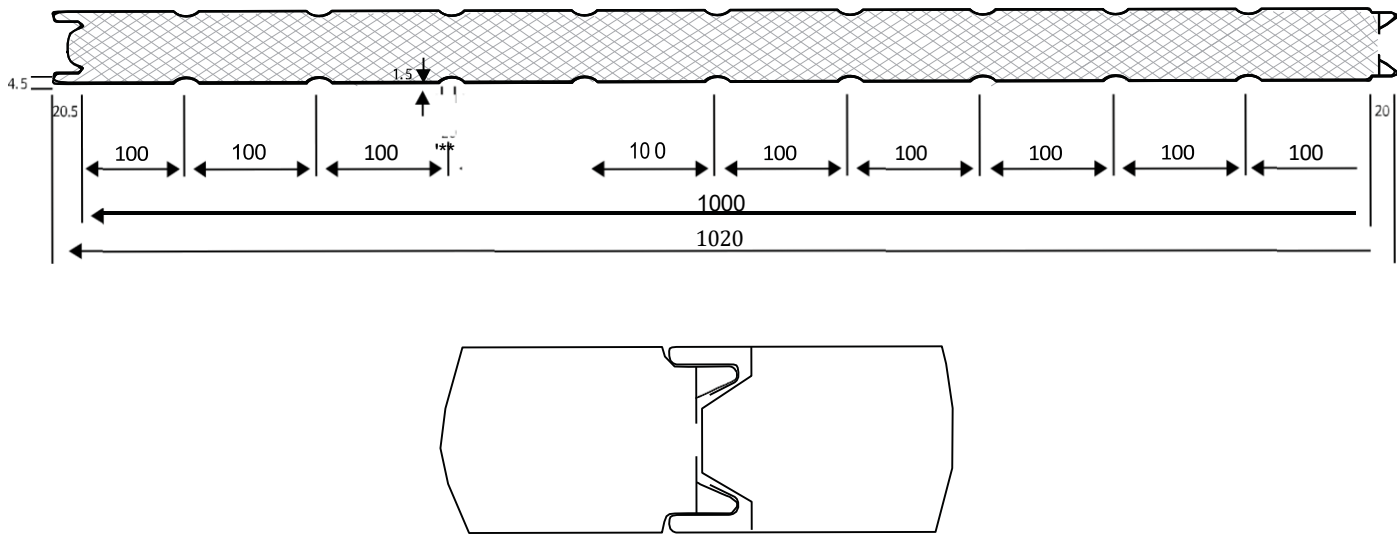
Panel Core Thickness (in mm)	Area 1 x cm 4	Top in Compression		Bottom in Compression	
		Z Top cm ³	Moment Top Kn	Z Bottom cm ³	Moment Bottom Kn
50	37	10	1.76	26	4.25
75	90	19	3.26	32	5.40
100	178	31	5.23	42	7.13

Load Chart (KN / M2)

Panel Core Thickness (in mm)	Number of Spans Nos	Span in meters								
		1	1.5	2	2.5	3	3.5	4	4.5	5
50	Single	14.11	6.28	3.54	2.27	1.58	1.16	0.89	0.71	0.57
	Multi	41.87	12.41	5.24	2.69	1.56	0.99	0.66	0.47	0.34
75	Single	26.10	11.61	6.53	4.18	2.91	2.14	1.64	1.30	1.05
	Multi	109.10	29.96	12.65	6.48	3.75	2.37	1.59	1.12	0.82
100	Single	44.82	18.59	40.46	6.70	4.66	3.42	2.62	2.07	1.68
	Multi	199.87	59.23	24.99	12.80	7.41	4.67	3.13	2.2	1.61

SANDWCH PANELS

DFP Flat Sandwich Panel



General Feature

A

Mechanical Characteristic of the foam
(At overall density of 35-37 kg/m³)

Tensile stress 150 kpa

Compression resistance 100 kpa

Sheer Resistance 100 kpa

Fire Property B2/ B3 as per DIN 4102-1

B

Insulation Capacity

K value (Thermal Conductivity of PU)
0.022W/mK

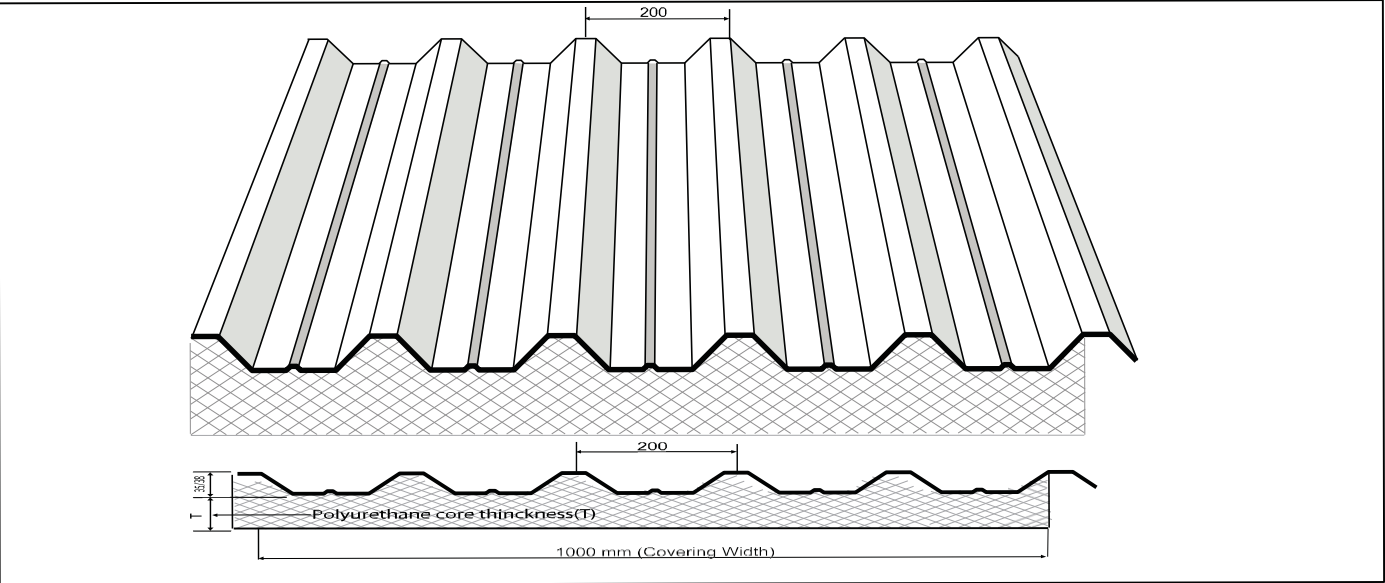
Tolerance
+/- 0.002

Water abosorption of the foam
After 24 hours 1% of volume

PU Thickness	w/m 3
25mm	0.76
35mm	0.54
50mm	0.38
75mm	0.29
100mm	0.19

SANDWCH PANELS

Rockwool 35/200 Panels



(t) Panel Thickness s(mm)	I x (cm ⁴) for 1m width	z top for 1m width cm ³	z bottom for 1m width cm ³	Moment kN m Top	Moment kN m Bottom
50	39	12	26	1.27	2.87
80	102	24	34	2.66	3.80
100	193	37	42	4.14	4.76

Based on 0.7mm external and 0.50mm internal Aluminium Skin

(t) Panel Thickness s(mm)	1.0m		1.5m		2.0m		2.5m		3.0m		3.5m		4.0m		4.5m		5.0m	
	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
50	10.08	14.55	4.49	4.32	2.53	1.83	1.62	0.94	1.13	0.55	0.83	0.35	0.64	0.24	0.51	0.17	0.41	0.13
80	21.25	39.01	8.86	9.45	5.32	4.88	3.41	2.50	2.36	1.45	1.74	0.91	1.34	0.61	1.05	0.43	0.86	0.31
100	33.05	73.57	14.69	21.81	8.27	9.20	5.30	4.72	3.68	2.73	2.71	1.73	2.07	1.16	1.64	0.82	1.33	0.60

fy Al 170 N/mm² permissible span - deflection ratio = 100

(t) Panel Thickness s(mm)	I x (cm ⁴) for 1m width	z top for 1m width cm ³	z bottom for 1m width cm ³	Moment kN m Top	Moment kN m Bottom
50	39	9	24	1.40	3.83
80	86	18.2	33	3.01	9.39
100	165	29	42	4.68	6.88

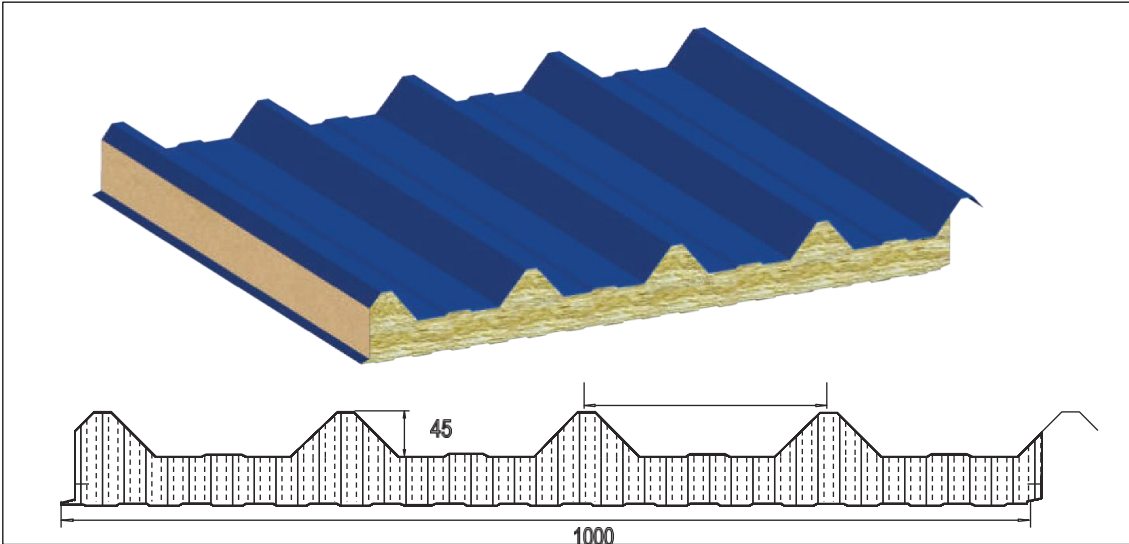
Based on 0.7mm external and 0.50mm internal GIskin

(t) Panel Thickness s(mm)	1.0m		1.5m		2.0m		2.5m		3.0m		3.5m		4.0m		4.5m		5.0m	
	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
50	11.13	33.79	4.95	10.02	2.79	4.23	1.79	2.17	1.25	1.26	0.92	0.80	0.71	0.54	0.56	0.37	0.45	0.28
80	24.09	95.99	10.71	28.44	6.03	12.01	3.86	6.15	2.68	3.56	1.97	2.26	1.51	1.20	1.20	1.06	0.96	0.77
100	37.37	184.33	16.62	54.62	9.35	23.05	5.99	11.81	4.16	6.84	3.06	4.31	2.35	2.89	1.86	2.03	1.50	1.48

Permissible span-deflection ratio = 100

SANDWICH PANELS

Rockwool 45/250 Panels



Applications

Roof, Walls & Partitions

Specification

- Cover width : 1000 mm + 2 mm
- Panel facings : Steel, GI, Aluminium or Aluzinc
- External weather sheet : Polyester, PVF2, Platisol & ARS
- Internal liner sheet : Polyester
- Insulation core : Mineral Wool
- Fire performance : According to fire classificc
- External weather sheet gauge : From 0.5 mm to 1 mm
- Internal liner sheet gauge : 0.4 mm / 0.7 mm

Advantages:

- Fire Classification A1 (As per ASTM)
- Water repellent
- Excellent thermal insulation
- Chemically inert
- Non-combustible core
- Foam, CFC, HCFC, free
- NRC can be achieved 0.7 as per ASTM C 423

DATA SHEET

(t) Panel Core Thickness (mm)	I x (cm ⁴) for 1 m width	z top for 1 m width	z bottom for 1 m width cm ³	Moment kN m Top	Moment kN m Bottom
50	48	14	29	1.66	3.38
75	109	26	34	2.96	3.87
100	210	41	43	4.71	4.99

based on 0.7 mm external and 0.5 mm internal Aluminium skin

Assumes bond with insulation ensures that lateral sliding of sheets does not occur & insulation does not have significant

(t) Panel Core Thick-ness (mm)	Allowable Uniform Loads kN/m ²																	
	1.0 m		1.5 m		2.0m		2.5m		3.0m		3.5m		4.0m		4.5m		5.0m	
	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
50	13.27	18.53	5.90	5.49	3.32	2.32	2.12	1.19	1.47	0.69	1.08	0.43	0.83	0.29	0.66	0.20	0.53	0.15
75	23.70	41.88	10.53	12.41	5.93	5.24	3.79	2.68	2.63	1.55	1.93	0.98	1.48	0.65	1.17	0.46	0.95	0.34
100	37.72	80.67	16.76	23.90	9.43	10.08	6.03	5.16	4.19	2.99	3.08	1.88	2.36	1.26	1.86	0.89	1.51	0.65

f_y Al 170 N/mm² permissible span - deflection ratio = 100

(t) Panel Thickness (mm)	I x (cm ⁴) for 1 m width		z top for 1 m width cm ³		z bottom for 1 m width cm ³		Moment kN m Top		Moment kN m Bottom	
50	37		10		26		1.76		4.45	
75	90		19		32		3.26		5.40	
100	178		31		42		5.23		7.13	

Based on 0.7 mm external and 0.5 mm internal GI skin

Assumes bond with insulation ensures that lateral sliding of sheets does not occur & insulation does not have significant compression

(t) Panel Thick-ness (mm)	Allowable Uniform Loads kN/m ²																	
	1.0 m		1.5 m		2.0 m		2.5 m		3.0 m		3.5 m		4.0 m		4.5 m		5.0 m	
	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
50	14.10	41.86	6.27	12.40	3.53	5.23	2.26	2.68	1.57	1.55	1.15	0.98	0.88	0.65	0.70	0.46	0.56	0.33
75	26.09	109.09	11.60	29.95	6.52	12.64	4.17	6.47	2.90	3.74	2.13	2.36	1.63	1.58	1.29	1.11	1.04	0.81
100	41.81	199.86	18.58	59.22	10.45	24.98	6.69	12.79	4.65	7.40	3.41	4.66	2.61	3.12	2.06	2.19	1.67	1.60

Permissible span-deflection ratio = 100

f_y GI 250 N/mm²

t = Thickness S = Strength D = Deflection

CORRUGATED FENCING SHEET

BOLTECHIN Steel fabricates Steel fencing and aluminum fencing panels in various metal finishes and materials . Steel fence panels in GI , HDG , Powder coated form are available . Fencing corrugated sheets can be of any color as per customers requirements :- White(RAL 9002) , blue(RAL 5012) , Red , Grey(RAL 7031) or any other RAL Color .

BOLTECHIN fencing is manufactured with corrugated profiled steel sheets which are prepainted(as per Color Shade RAL 9002,RAL 5012,RAL 7031 or as per customer requirements).The thickness of these corrugated can be varied from 0.40mm – 0.90mm as per client specifications.

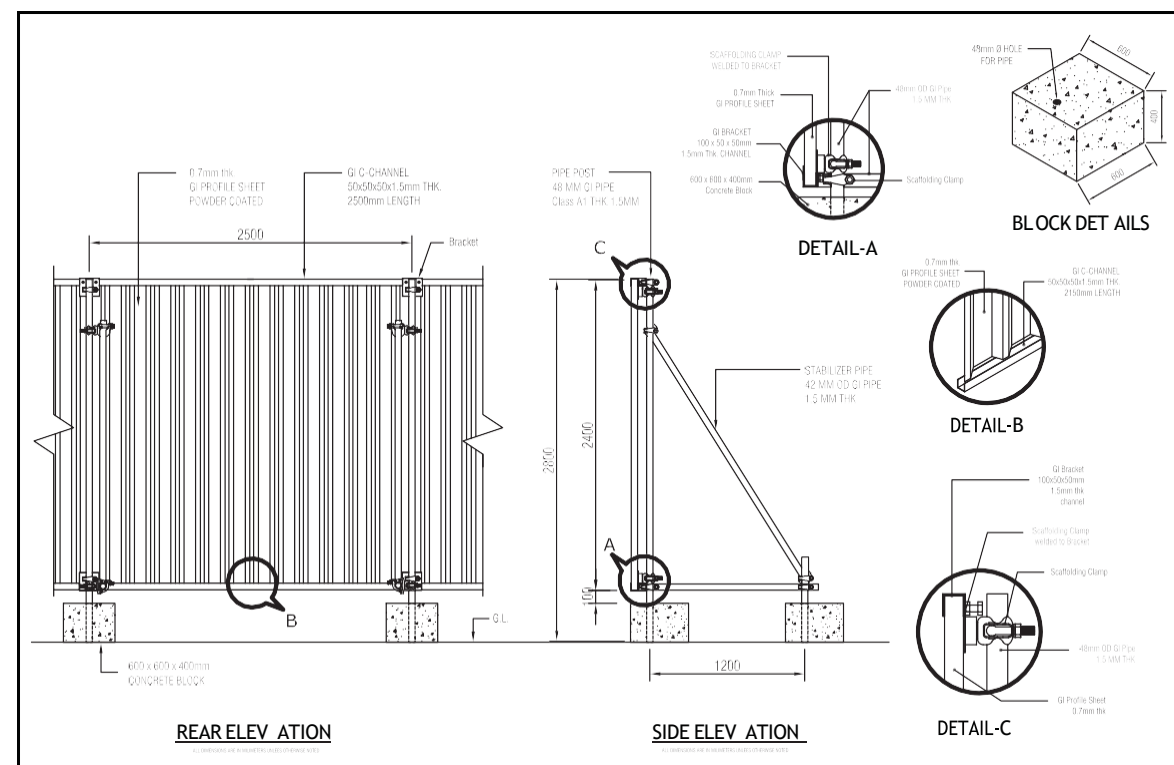
There are two kinds of fencing provided by BOLTECHIN STEEL :-

1) **CONTINUOUS CORRUGATED FENCING** - in which the corrugated steel sheets are overlapped such that there is no gap in the fence and it is a continuous stretch of fencing with no gap in the middle or at the bottom. Such fence is usually back-stayed at regular intervals of 2.5 mtrs with heavy duty galvanized ERW pipes.

2) **DISCONTINUOUS CORRUGATED FENCING** - in which panel boards of 2mtr x 2 mtr are fixed on concrete blocks at every 2 mtr intervals and are back-stayed at the junction.

Detailed drawings are submitted to clients for prior approval before fabrication.

1. CONTINUOUS CORRUGATED FENCING

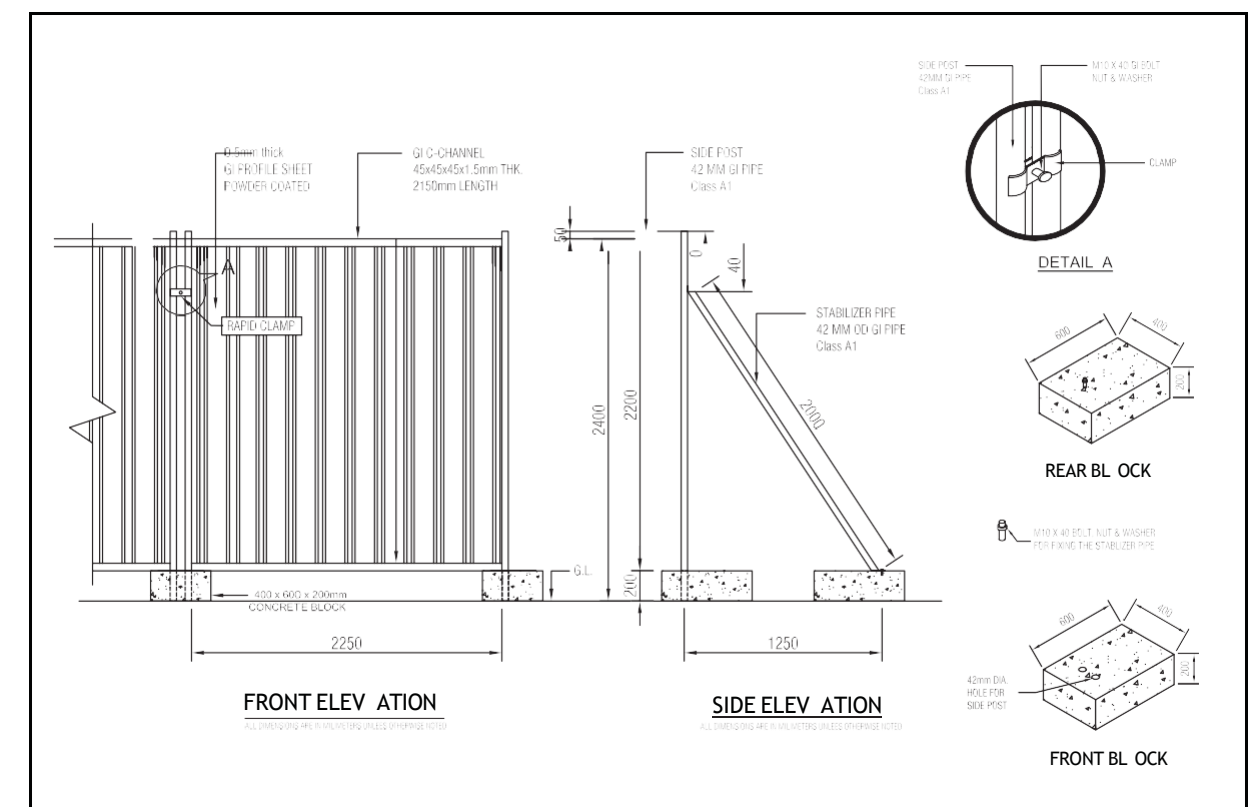


Specifications

1. Overlapped Sheets with no gap
2. Sheets are supported every 2.5 meters with heavy galvanized ERW Pipes



1. DISCONTINUOUS CORRUGATED FENCING



Specifications

1. Concrete blocks are used at every 2.0 meters interval
2. Panel boards 2.0 * 2.0 meters are used



BOLTECHIN SINGLE SKIN PROFILE SHEETS

BOLTECHIN profiled sheets offer architects and designers a range of choices for roof and wall cladding such as internal linings, external cladding and for industrial and commercial buildings. Designed to facilitate high static characteristic with reduced weight, these sheets guarantee the optimization of the structure's realisation costs while providing safe working platforms.

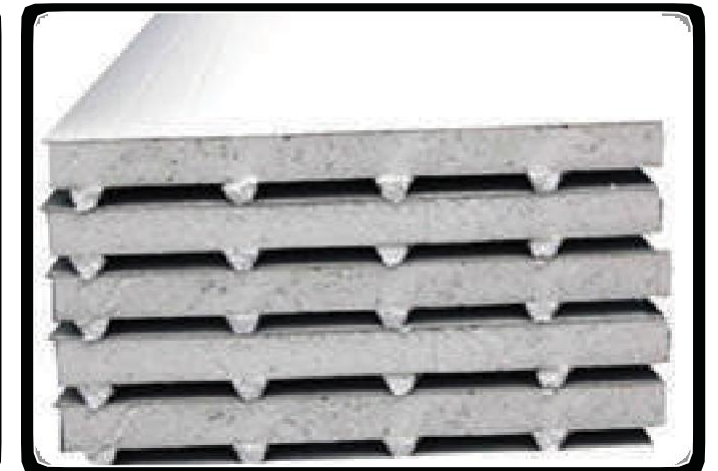
The main advantages of profiled sheets are that:

- They are inexpensive
- Allows rapid and rational execution
- Minimum labour required for execution
- Easy to dismantle for building transformations
- Made to site measurement thus eliminating wastage and installation complications
- e Modifications or extensions can be done at any time

BOLTECHIN supplies profiled sheets based on chosen customer parameters such as weight, strength, durability, surface finish and color. Our dedicated staffs offer the best possible advice for your profiled sheet requirement.

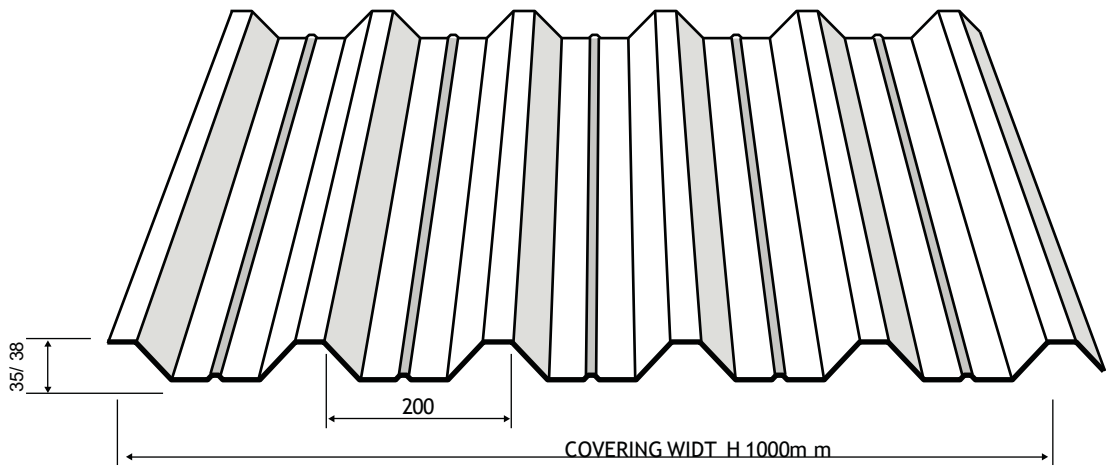


BOLTECHIN FACTORY GALLERY



SINGLE SKIN SHEETS

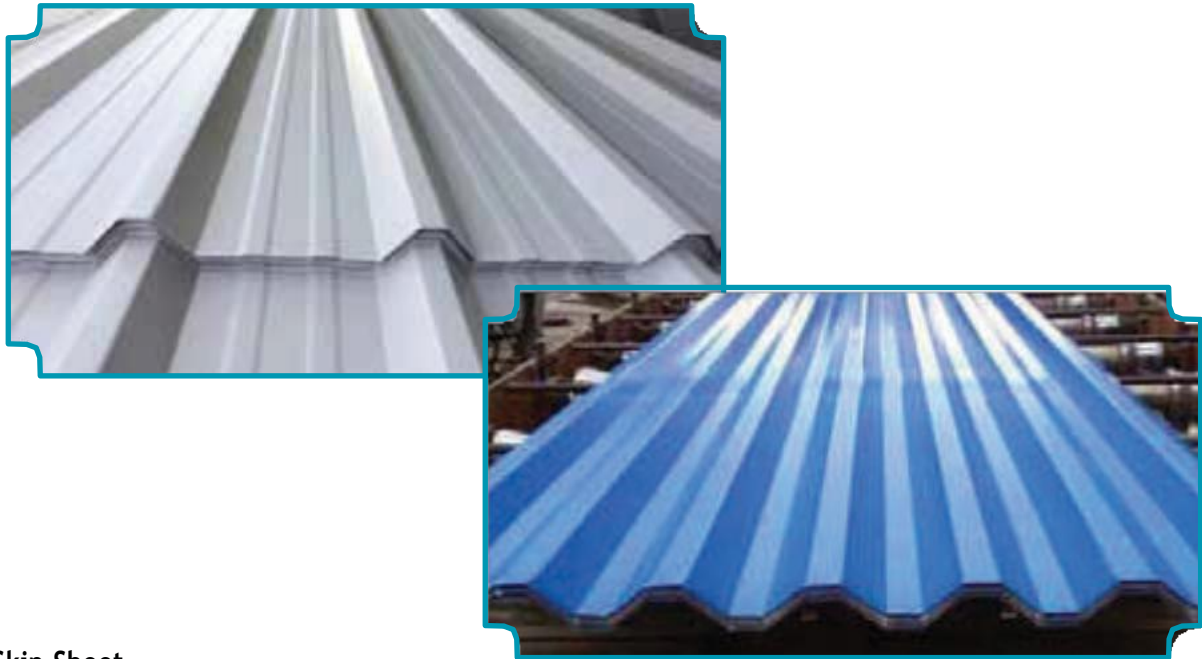
DSS 35(38)/200
Single Skin Sheets



A Aluminium Skin Sheet

Section Properties (For 1 meter of coverage width)						
Thickness(t) (in mm)	Area mm ²	Inertia mm ⁴	Top in Compression		Bottom in Compression	
			Z Top mm ³	Moment Top KN m	Z Bottom mm ³	Moment Bottom KN m
0.5	574	107847	4770	0.55	8366	0.97
0.6	689	129418	5712	0.66	10001	1.15
0.7	804	150992	6649	0.77	11623	1.34
0.8	919	172568	7582	0.87	13253	1.53
0.9	1034	194149	8512	0.98	14831	1.71
1	1148	215734	9438	1.09	16417	1.89

Load Chart (KN / M ²)											
Panel Core Thickness (in mm)	Weight Kg/m ²	Number of Spans	Purlin Spacing in mm								
			1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
0.5	1.61	Single	2.91	1.49	0.87	0.55	0.37	0.26	0.20	0.17	0.16
		Multi	5.46	2.81	1.63	1.03	0.69	0.49	0.36	0.33	0.32
0.6	1.93	Single	3.49	1.79	1.04	0.66	0.44	0.32	0.23	0.20	0.19
		Multi	6.55	3.37	1.95	1.23	0.83	0.59	0.43	0.40	0.39
0.7	2.25	Single	4.07	2.09	1.21	0.77	0.52	0.37	0.27	0.24	0.23
		Multi	7.64	3.93	2.28	1.44	0.97	0.68	0.50	0.47	0.46
0.8	2.58	Single	4.65	2.38	1.38	0.88	0.59	0.42	0.31	0.28	0.27
		Multi	8.72	4.49	2.60	1.64	1.10	0.78	0.57	0.54	0.53
0.9	2.9	Single	5.23	2.68	1.56	0.98	0.66	0.47	0.34	0.31	0.30
		Multi	9.82	5.05	2.93	1.85	1.24	0.87	0.64	0.61	0.60
1	3.22	Single	5.81	2.98	1.73	1.09	0.73	0.52	0.38	0.35	0.34
		Multi	11	5.61	3.25	2.05	1.38	0.97	0.71	0.68	0.67



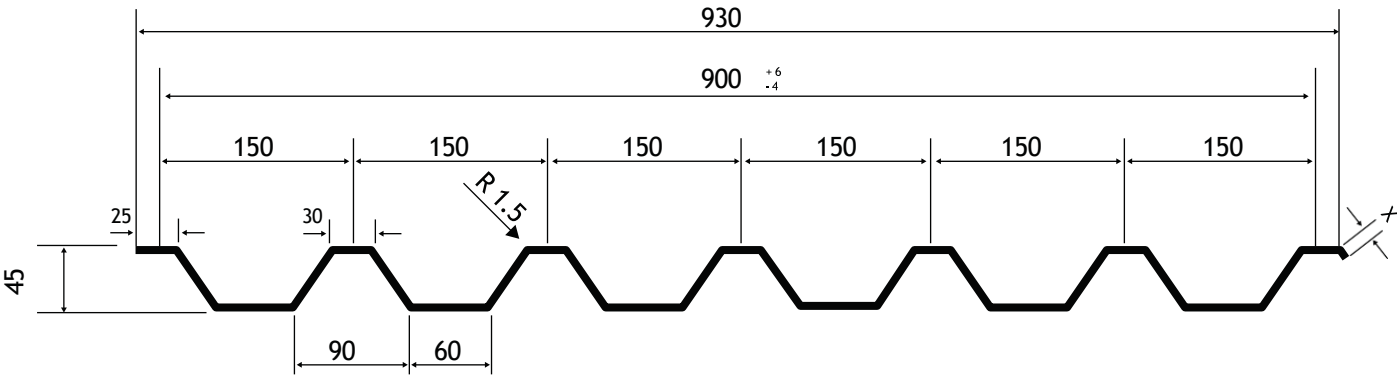
B Steel Skin Sheet

Section Properties (For 1 meter of coverage width)						
Thickness(t) (in mm)	Area mm ²	Inertia mm ⁴	Top in Compression		Bottom in Compression	
			Z Top mm ³	Moment Top KN m	Z Bottom mm ³	Moment Bottom KN m
0.5	574	107847	4770	0.81	8366	1.42
0.6	689	129418	5712	0.97	10001	1.70
0.7	804	150992	6649	1.13	11623	1.97
0.8	919	172568	7582	1.29	13253	2.24
0.9	1034	194149	8512	1.44	14831	2.52
1	1148	215734	9438	1.60	16417	2.79

Load Chart (KN / M ²)											
Panel Core Thickness (in mm)	Weight Kg/m ²	Number of Spans	Purlin Spacing in mm								
			1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
0.5	4.67	Single	6.82	4.36	2.53	1.59	1.07	0.76	0.55	0.45	0.34
		Multi	8.53	5.46	3.80	2.79	2.01	1.42	1.04	0.94	0.85
0.6	5.60	Single	8.17	5.23	3.03	1.91	1.28	0.90	0.66	0.56	0.46
		Multi	10.21	6.54	4.54	3.34	2.41	1.70	1.24	1.14	1
0.7	6.54	Single	9.51	6.09	3.53	2.23	1.50	1.05	1.77	0.67	0.55
		Multi	11.89	7.61	5.29	3.89	2.81	1.98	1.45	1.35	1.2
0.8	7.47	Single	10.84	6.94	4.04	2.54	1.71	1.20	0.88	0.78	0.69
		Multi	13.56	8.68	6.03	4.43	3.21	2.26	1.65	1.55	1.44
0.9	8.40	Single	12.17	7.79	4.54	2.86	1.92	1.35	0.99	0.89	0.8
		Multi	15.22	9.74	6.77	4.97	3.61	2.54	1.86	1.76	1.65
1	9.34	Single	13.49	8.64	5.04	3.18	2.13	1.50	1.10	1	0.8
		Multi	16.87	10.80	7.50	5.51	4.01	2.82	2.06	1.94	1.8

SINGLE SKIN SHEETS

DSS 45/150 Single Skin Sheets



A Aluminium Skin Sheet

Section Properties (For 1 meter of coverage width)						
Thickness(t) (in mm)	Area mm ²	Inertia mm ⁴	Top in Compression		Bottom in Compression	
			Z Top mm ³	Moment Top KN m	Z Bottom mm ³	Moment Bottom KN m
0.5	643	197063	7947	0.92	9519	1.10
0.6	792	236467	9730	1.12	11103	1.28
0.7	900	275869	11306	1.30	12952	1.49
0.8	1029	315272	12832	1.48	1480	1.71
0.9	1157	354676	14505	1.67	16537	1.91
1	1286	394115	16085	1.86	17333	2.11

Load Chart (KN / M ²)											
Panel Core Thickness (in mm)	Weight Kg/m ²	Number of Spans	Purlin Spacing in mm								
			1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
0.5	1.83	Single	5.31	2.18	1.06	0.57	0.34	0.22	0.15	0.13	0.12
		Multi	9.40	5.13	2.97	1.87	1.26	0.89	0.65	0.63	0.62
0.6	2.20	Single	6.37	2.61	1.27	0.69	0.41	0.26	0.17	0.15	0.14
		Multi	11.50	6.15	3.56	2.25	1.51	1.06	0.78	0.76	0.75
0.7	2.27	Single	7.43	3.05	1.47	0.80	0.47	0.30	0.20	0.18	0.17
		Multi	13.36	7.17	4.15	2.62	1.76	1.24	0.91	0.89	0.88
0.8	2.93	Single	8.48	3.48	1.68	0.91	0.54	0.34	0.23	0.21	0.20
		Multi	15.17	8.20	4.75	2.90	2.01	1.41	1.03	1.01	1
0.9	3.30	Single	9.54	3.92	1.89	1.03	0.61	0.38	0.25	0.23	0.22
		Multi	17.14	9.22	5.34	3.36	2.26	1.59	1.16	1.14	1.13
1	3.67	Single	10.60	4.35	2.10	1.14	0.67	0.42	0.28	0.26	0.25
		Multi	19.01	10.24	5.93	3.74	2.51	1.76	1.29	1.27	1.26



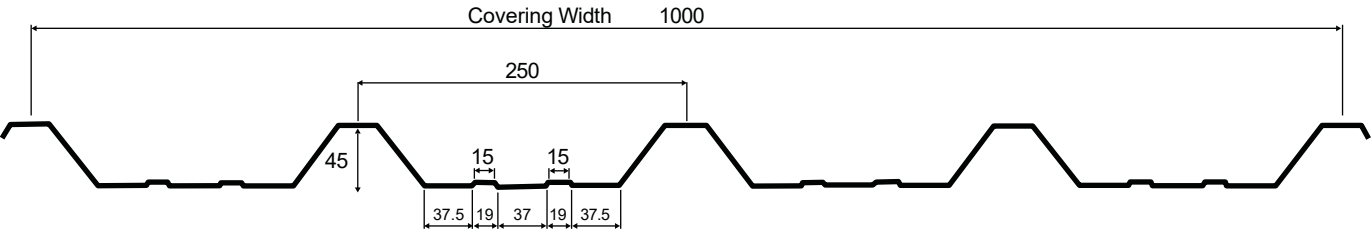
B Steel Skin Sheet

Section Properties (For 1 meter of coverage width)						
Thickness(t) (in mm)	Area mm ²	Inertia mm ⁴	Top in Compression		Bottom in Compression	
			Z Top mm ³	Moment Top KN m	Z Bottom mm ³	Moment Bottom KN m
0.5	643	197063	7947	1.35	9519	1.61
0.6	792	236467	9730	1.65	11103	1.88
0.7	900	275869	11306	1.92	12952	2.20
0.8	1029	315272	12832	2.18	1480	2.52
0.9	1157	354676	14505	2.46	16537	2.81
1	1286	394115	16085	2.73	17333	3.11

Load Chart (KN / M ²)											
Panel Core Thickness (in mm)	Weight Kg/m ²	Number of Spans	Purlin Spacing in mm								
			1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
0.5	5.32	Single	11.36	7.27	4.61	2.90	1.95	1.37	1	0.98	0.97
		Multi	14.21	9.10	6.32	4.64	3.56	2.58	1.88	1.85	1.84
0.6	6.38	Single	13.91	8.90	5.53	3.48	2.34	1.64	1.20	1	0.99
		Multi	17.40	11.13	7.73	5.68	4.35	3.09	2.26	2.22	2.21
0.7	7.44	Single	16.16	10.33	6.44	4.06	2.72	1.92	1.40	1.38	1.37
		Multi	20.21	12.94	8.99	6.60	5.06	3.61	2.63	2.60	2.59
0.8	8.51	Single	18.34	11.74	7.36	4.64	3.11	2.19	1.60	1.54	1.53
		Multi	22.94	14.68	10.20	7.49	5.74	4.12	3.01	2.99	2.98
0.9	9.57	Single	20.73	13.27	8.28	5.22	3.50	2.46	1.80	1.78	1.77
		Multi	25.93	16.59	11.52	8.47	6.49	4.63	3.38	3.36	3.35
1	10.64	Single	22.98	14.71	9.20	5.80	3.89	2.73	2	1.80	1.79
		Multi	28.75	18.40	12.78	9.39	7.19	5.15	3.76	3.74	3.73

SINGLE SKIN SHEETS

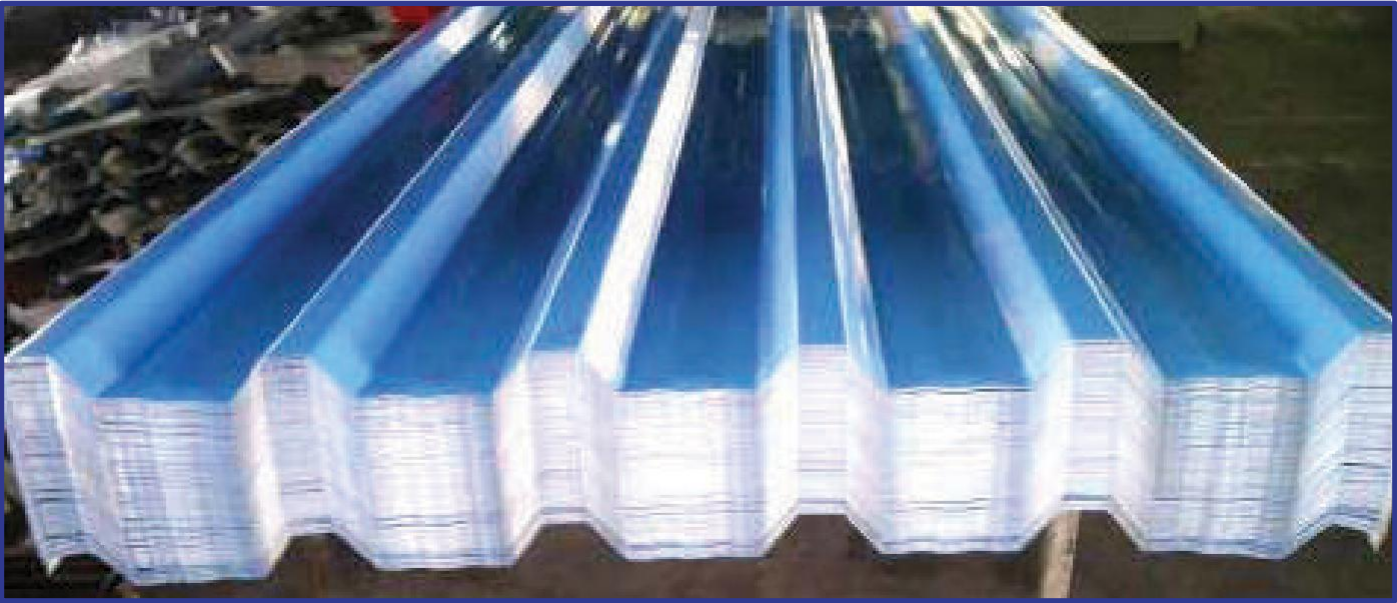
DSS 45/250 Single Skin Sheets



A Aluminium Skin Sheet

Section Properties (For 1 meter of coverage width)						
Thickness(t) (in mm)	Area mm ²	Inertia mm ⁴	Top in Compression		Bottom in Compression	
			Z Top mm ³	Moment Top KN m	Z Bottom mm ³	Moment Bottom KN m
0.5	591	166039	5524	0.64	10753	1.24
0.6	709	199241	6615	0.76	12869	1.48
0.7	827	232444	7705	0.89	14965	1.73
0.8	945	256548	8791	1.01	17048	1.97
0.9	1063	298854	9874	1.14	19117	2.21
1	1181	332062	10953	1.26	21174	2.44

Load Chart (KN / M ²)											
Panel Core Thickness (in mm)	Weight Kg/m ²	Number of Spans	Purlin Spacing in mtr								
			1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
0.5	1.61	Single	4.47	1.84	0.89	0.49	0.29	0.18	0.12	0.09	0.08
		Multi	6.53	4.19	2.50	1.58	1.06	0.75	0.55	0.52	0.51
0.6	1.93	Single	5.37	2.20	1.07	0.58	0.34	0.22	0.15	0.12	0.11
		Multi	7.82	5.01	3	1.89	1.27	0.90	0.66	0.63	0.60
0.7	2.25	Single	6.26	2.57	1.24	0.68	0.40	0.25	0.17	0.12	0.11
		Multi	9.11	5.83	3.50	2.21	1.48	1.04	0.76	0.71	0.70
0.8	2.51	Single	7.15	2.93	1.42	0.77	0.46	0.29	0.19	0.14	0.20
		Multi	10.39	6.65	4	2.52	1.69	1.19	0.87	0.82	0.80
0.9	2.89	Single	8.04	3.30	1.60	0.87	0.51	0.32	0.22	0.17	0.16
		Multi	11.67	7.47	4.50	2.84	1.90	1.34	0.98	0.95	0.94
1	3.21	Single	8.94	3.67	1.77	0.96	0.57	0.36	0.24	0.21	0.20
		Multi	12.95	8.29	5	3.15	2.11	1.49	1.09	1.06	1.05

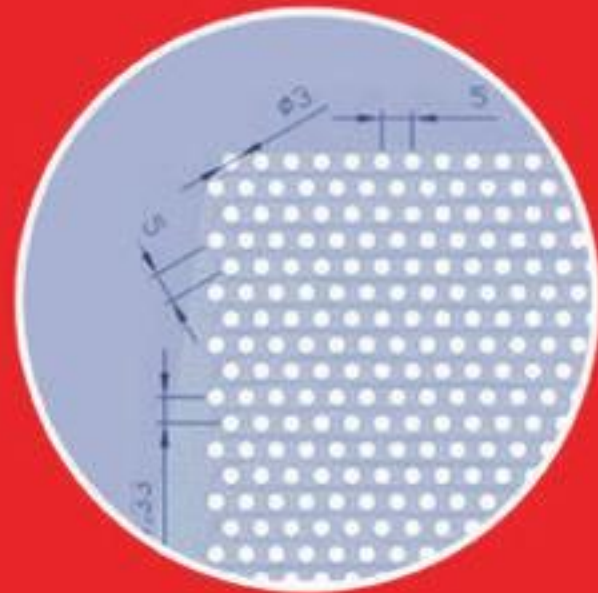


B Steel Skin Sheet

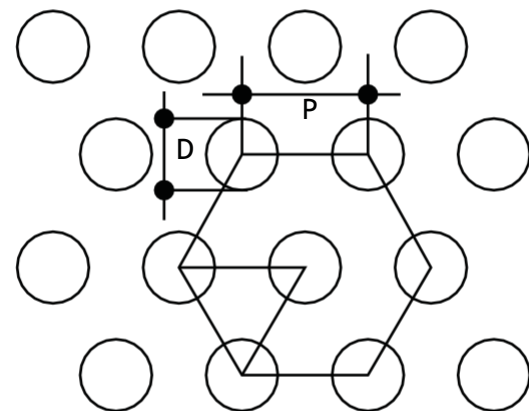
Section Properties (For 1 meter of coverage width)						
Thickness(t) (in mm)	Area mm ²	Inertia mm ⁴	Top in Compression		Bottom in Compression	
			Z Top mm ³	Moment Top KN m	Z Bottom mm ³	Moment Bottom KN m
0.5	591	166039	5524	0.94	10753	1.82
0.6	709	199241	6615	1.12	12869	2.18
0.7	827	232444	7705	1.31	14965	2.54
0.8	945	256548	8791	1.49	17048	2.89
0.9	1063	298854	9874	1.68	19117	3.24
1	1181	332062	10953	1.86	21174	3.59

Load Chart (KN / M ²)											
Panel Core Thickness (in mm)	Weight Kg/m ²	Number of Spans	Purlin Spacing in mm								
			1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
0.5	4.67	Single	7.9	5.06	3.52	2.45	1.64	1.16	0.85	0.76	0.69
		Multi	9.88	6.33	4.40	3.23	2.48	1.96	1.59	1.4	1.2
0.6	5.60	Single	9.46	6.06	4.21	2.94	1.97	1.39	1.01	0.98	0.88
		Multi	11.83	7.57	5.26	3.89	2.96	2.33	1.90	1.3	1.12
0.7	6.54	Single	1.07	7.05	4.90	3.42	2.30	1.62	1.18	1.01	0.99
		Multi	13.78	8.82	6.13	4.50	3.45	2.73	2.21	2.11	2.01
0.8	7.47	Single	12.57	8.05	5.59	3.91	2.62	1.85	1.35	1.23	1.13
		Multi	15.72	10.06	6.99	5.14	3.94	3.11	2.52	2.43	2.33
0.9	8.40	Single	14.12	9.04	6.28	4.40	2.95	2.08	1.52	1.43	1.33
		Multi	17.65	11.30	7.85	5.77	4.42	3.49	2.83	2.7	2.6
1	9.34	Single	15.65	10.02	6.96	4.89	3.28	2.30	1.68	1.59	1.44
		Multi	19.58	12.53	8.70	6.40	4.90	3.87	3.14	3.03	2.97

PERFORATED SHEETS

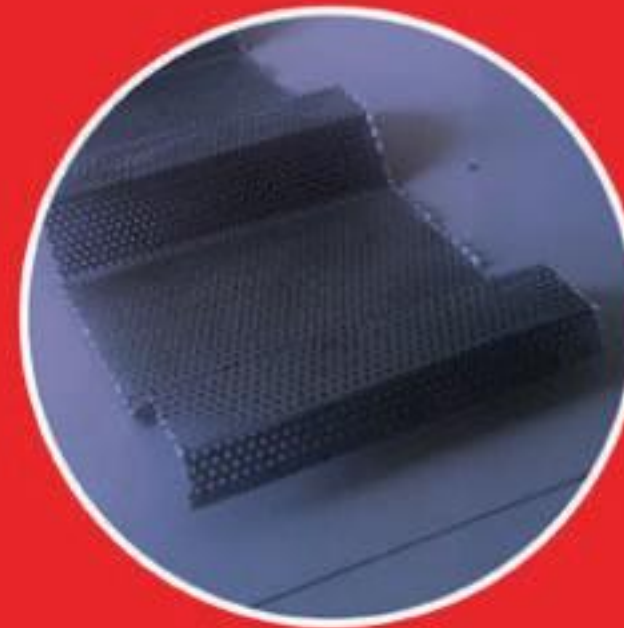
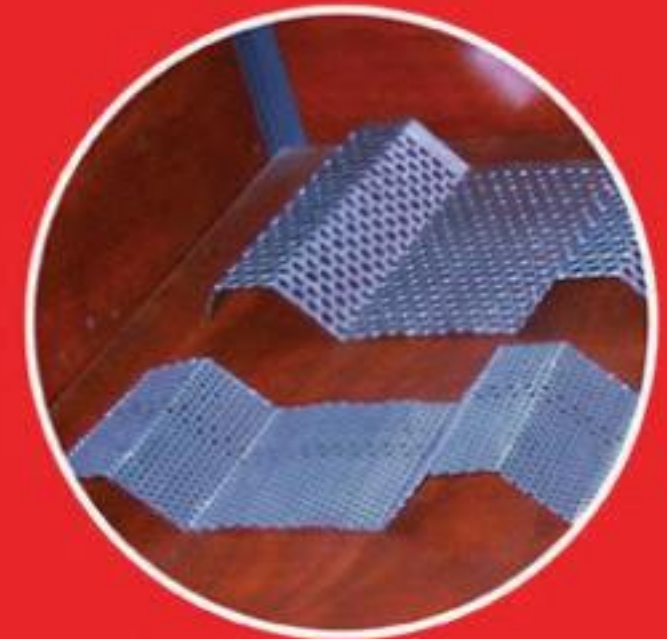
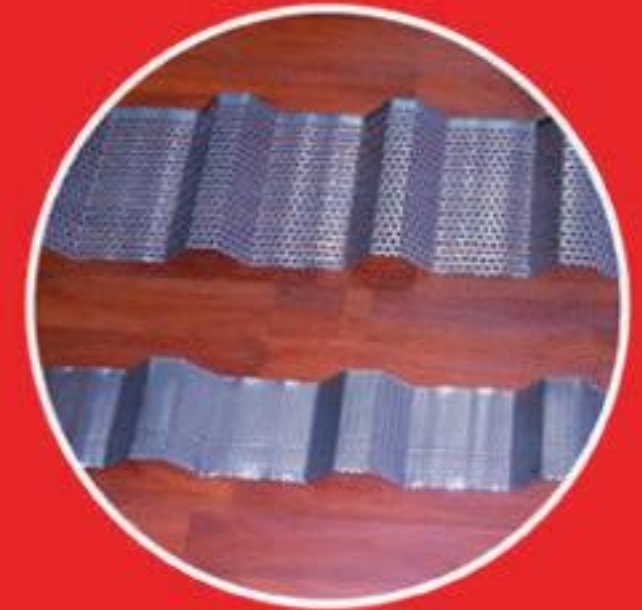


**BOLTECHIN
STANDARD
PERFORATION**



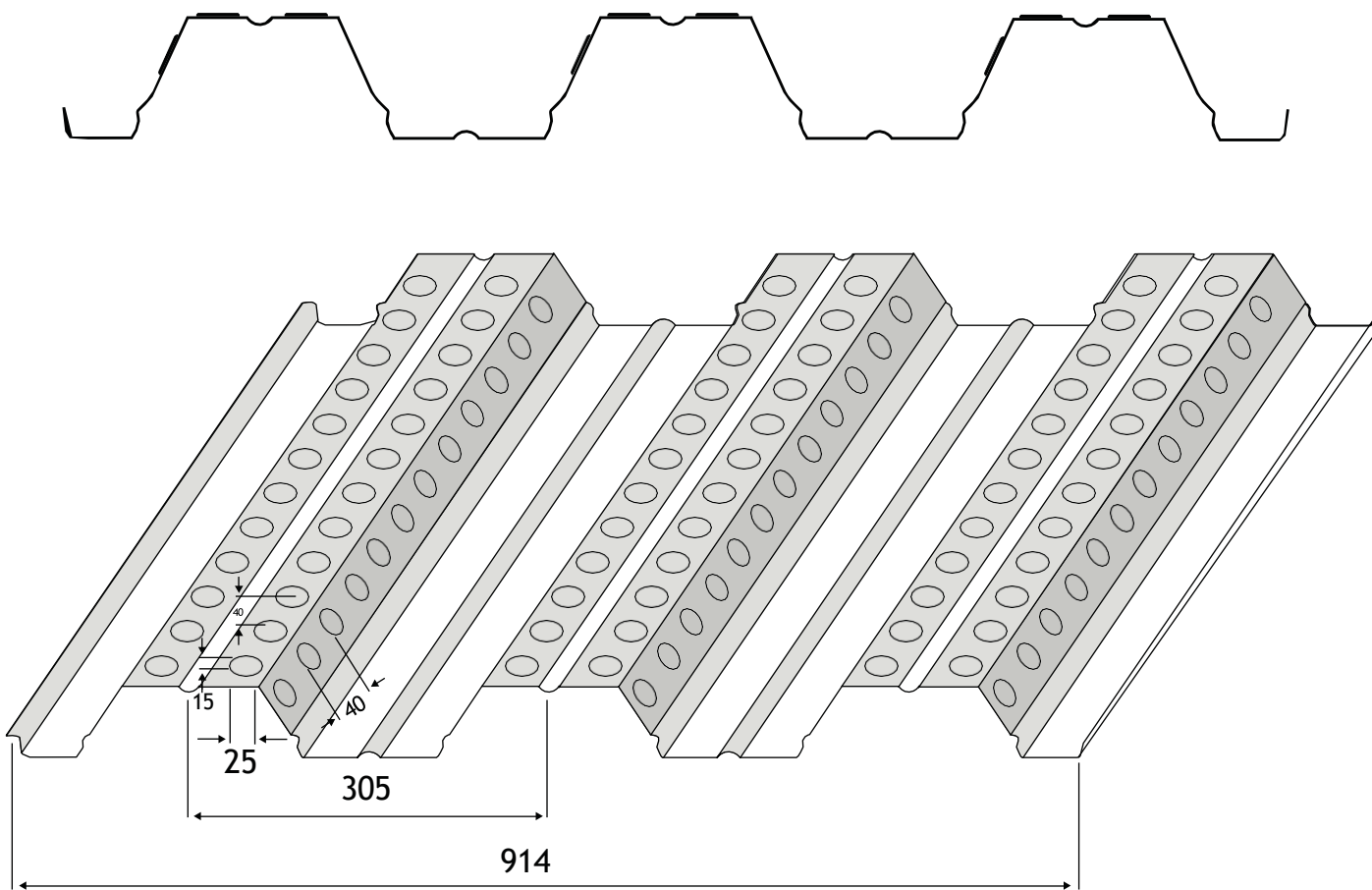
BOLTECHIN OFFERS

- 3mm hole and 5mm Pitch
- 7mm hole and 20mm Pitch



DECKING SHEETS

DSD 75/305 Decking Sheets



Material Specification

- A** Galvanized and Color Coated Steel of thickness 0.7mm to 1.5mm conforming to EN 10147 Fe 350 Z27/ ASTM A653 GD 350 G 90.
- B** Hot dip galvanized with G90 or Z27 coating
- C** Yield Strength 350 N/mm²
- D** Painting is baked regular modified polyester with 5 micron primer and 20 micron coat on the weathering side and 5/7 micron primer on the reverse - PVDF , Silicon , Modified Polyester , Plastisol and ARS coating on request is applicable

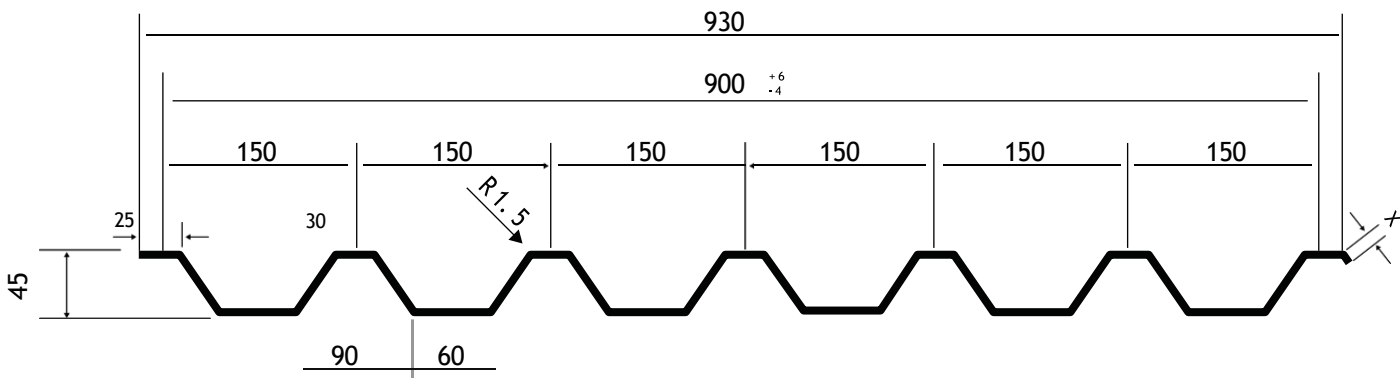
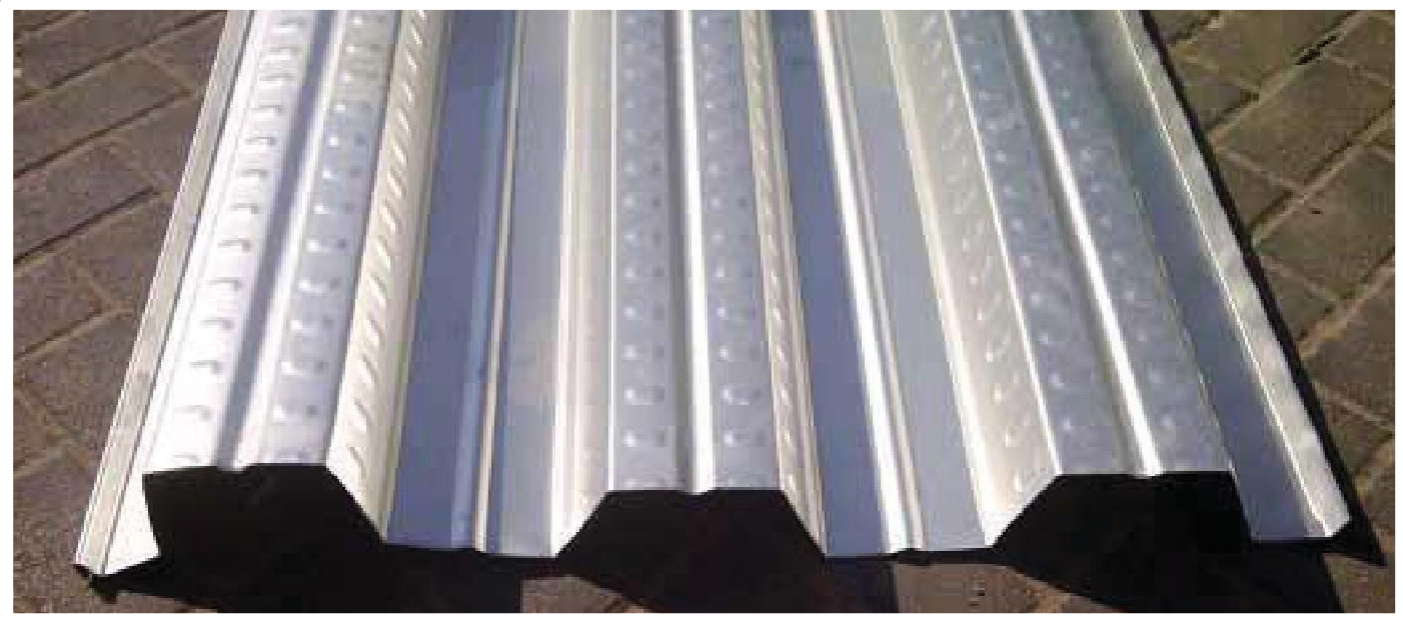
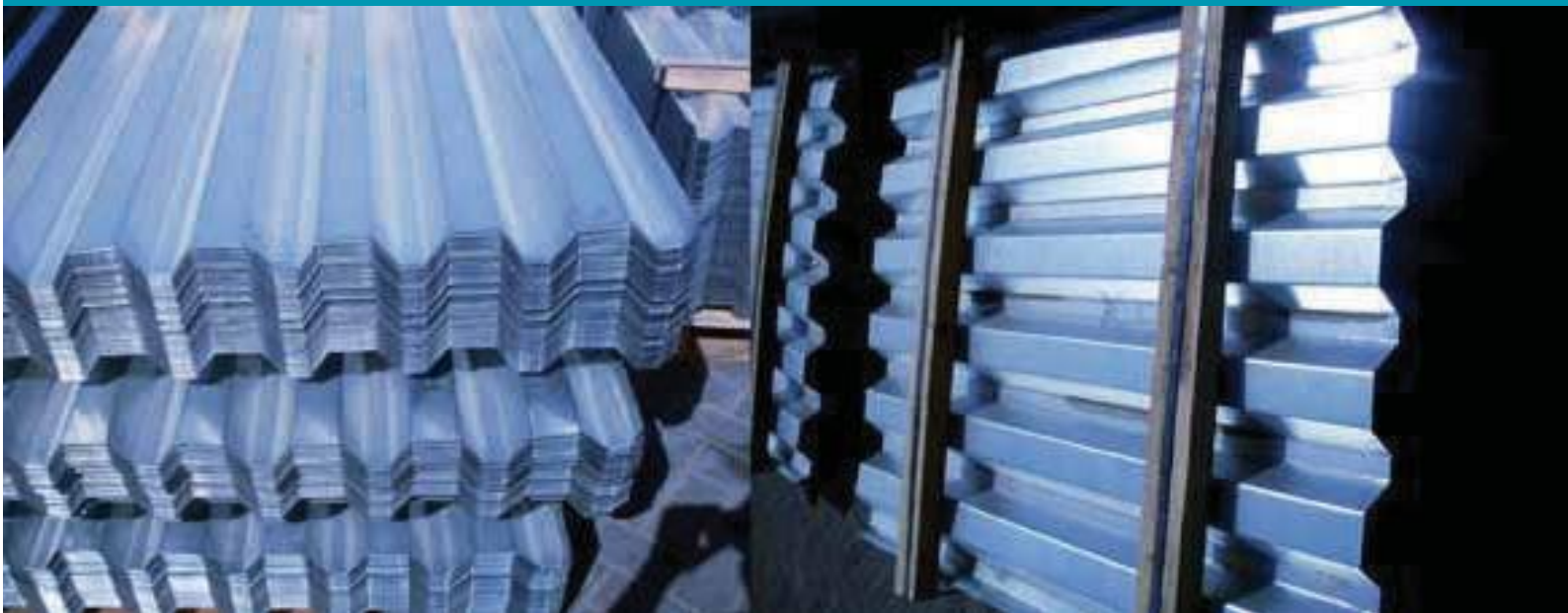
SECTION PROPERTIES (per meter of coverage width)

Thickness	Weight	Area	For 1mm with units mm-kg		
(mm)	Kg/m ²	cm ²	Ix cm ⁴	Sx Top cm ³	Sx Bottom cm ³
0.70	7.59	9.665	92.4020	25.213	24.608
0.80	8.67	11.044	10.56015	28.774	28.087
0.90	9.75	12.425	11.88010	32.322	31.558
1.00	10.83	13.805	13.20007	35.863	35.020
1.20	13.00	16.565	15.84011	42.912	41.919
1.50	16.24	20.704	19.80053	53.413	52.204

Thickness mm	span condition	thickness of concrete above deck sheet						
		50	75	100	125	150	175	200
		Permissible Span in mtr for construction stage - wt of concrete + LL 1.5 kN/m2						
0.7		2.663	2.540	2.438	2.350	2.273	2.206	2.146
		3.352	3.134	2.953	2.801	2.670	2.556	2.455
		3.290	3.139	3.012	2.903	2.809	2.725	2.651
Ultimate moment Of resistance Composite (kNm)		24.55	31.63	38.8	45.78	42.86	59.94	67.02
0.8		2.784	2.656	2.549	2.457	2.377	2.306	2.244
		3.581	3.348	3.155	2.992	2.852	2.730	2.623
		3.440	3.281	3.149	3.034	2.936	2.849	2.772
Ultimate moment Of resistance Composite (kNm)		28.07	36.16	44.24	52.33	60.42	68.51	76.60
0.9		2.896	2.762	2.651	2.555	2.472	2.399	2.332
		3.796	3.549	3.344	3.171	3.023	2.894	2.780
		4.243	3.967	3.739	3.545	3.380	3.235	3.108
Ultimate moment Of resistance Composite (kNm)		31.59	40.69	49.79	58.89	67.99	77.09	86.19
1.0		2.999	2.861	2.745	2.646	2.560	2.484	2.417
		3.998	3.738	3.523	3.341	3.185	3.049	2.927
		3.705	3.535	3.392	3.269	3.163	3.069	2.986
Ultimate moment Of resistance Composite (kNm)		35.11	45.22	55.33	65.44	75.55	85.65	95.77
1.2		3.187	3.040	2.917	2.812	2.721	2.640	2.568
		4.283	4.086	3.854	3.655	3.484	3.335	3.204
		3.937	3.756	3.604	3.474	3.361	3.262	3.172
Ultimate moment Of resistance Composite (kNm)		35.57	54.30	66.43	78.56	90.69	102.82	114.95
1.4		3.355	3.201	3.071	2.960	2.864	2.779	2.704
		4.509	4.302	4.128	3.943	3.759	3.598	3.456
		4.145	3.954	3.794	3.657	3.538	3.434	3.340
Ultimate moment Of resistance Composite (kNm)		35.06	59.09	77.54	91.69	105.84	119.98	134.13
1.5		3.433	3.275	3.143	3.029	2.931	2.844	2.757
		4.614	4.402	4.224	4.070	3.888	3.722	3.575
		4.241	4.406	3.882	3.741	3.621	3.513	3.417
Ultimate moment Of resistance Composite (kNm)		35.70	59.14	83.09	98.26	113.40	128.56	143.72

DECKING SHEETS

DSD 45/150
Decking Sheets



Specification

- Aluminium profiled sheet is 0.5 mm up to 1.2 mm thick alloy A3105-H16 Temper from tension leveled coils. Different alloy can be supplied on request.
- GI and Alu Zinc coated steel profile sheets 0.4 to 0.9 mm thick as per ASTM A653 for GI and ASTM A792 for Alu Zinc. Different grades can be supplied on request.
- Painting is baked regular modified enamel polyester, with 5 micron primer and 20 micron coat on the weathering side and 5/7 micron primer on the reverse. PVDF, Silicon, Modified Polyester, Platisol and ARS coating on request is applicable.

SECTION PROPERTIES (per meter of coverage width)

Thickness	Weight	Area	Top in Compression				Bottom in Compression				Shear
(mm)	Kg/m ²	cm ²	x cm ⁴	Sx Top cm ³	Sx Bottom cm ³	Ma KN-m	x cm ⁴	Sx Top cm ³	Sx Bottom cm ³	Ma KN-m	Va KN
0.70	7.433	9.481	27.414	11.227	13.041	3.733	27.511	11.456	12.841	3.809	60.057
0.80	8.494	10.863	31.743	13.103	14.920	4.127	31.670	13.097	14.887	4.127	74.122
0.90	9.57	12.190	35.577	14.671	16.691	4.621	35.577	14.672	16.693	4.623	83.178
1.00	10.618	13.544	39.450	16.221	18.422	5.110	39.377	16.222	18.444	5.111	92.189

ULTIMATE UNIFORM LOAD CAPACITIES (KN/m)

Thickness	No. of Spans	Span in Meters						
(mm)	No's	1	1.25	1.5	1.75	2	2.25	2.5
0.70	Single Spans	16.16	10.33	6.44	4.06	2.72	1.92	1.40
	Multi Spans	20.03	12.94	8.99	6.60	5.06	3.7	2.63
0.80	Single Spans	18.34	11.74	7.36	4.64	3.2	2.19	1.60
	Multi Spans	22.94	14.47	10.20	7.49	5.74	4.12	4
0.90	Single Spans	20.73	13.27	8.28	5.22	3.50	2.46	1.80
	Multi Spans	25.93	16.59	11.52	8.47	6.49	4.63	3.38
1.00	Single Spans	22.98	14.8	9.20	5.80	3.89	2.73	2.00
	Multi Spans	28.75	18.40	12.78	9.39	7.19	5.15	3.76

BOLTECHIN C & Z PURLINS

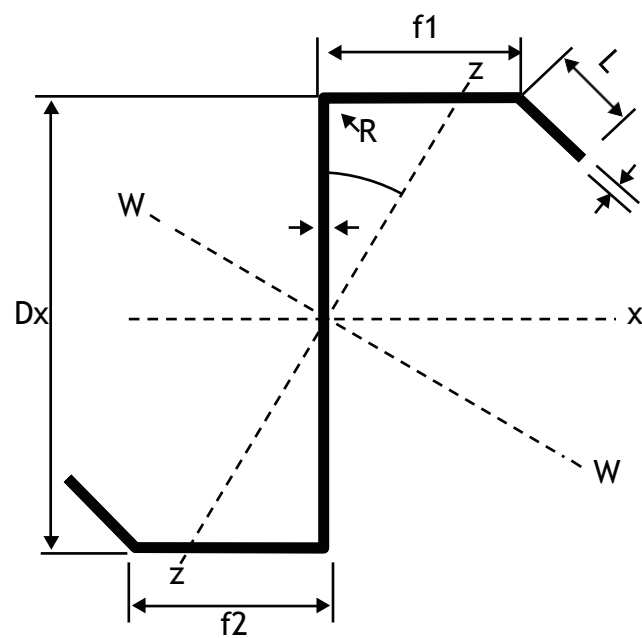
BOLTECHIN facilities are well equipped for producing Z- Purlins and C- Channels which are the secondary structural members used to support the roof sheeting and the wall cladding.

Besides being economical to use, the Z-Purlins and C-Channels provide excellent strength to weight ratio. The Z and C Channels are manufactured from galvanized coils conforming to ASTM - A 653, Grade D with minimum yield strength of 345 Mpa. The range of purlins produced by BOLTECHIN varies in depth from 100mm to 450 mm and the related thickness varies up to 3mm thereby allowing them to cater to large spans of up to 12.0 m.

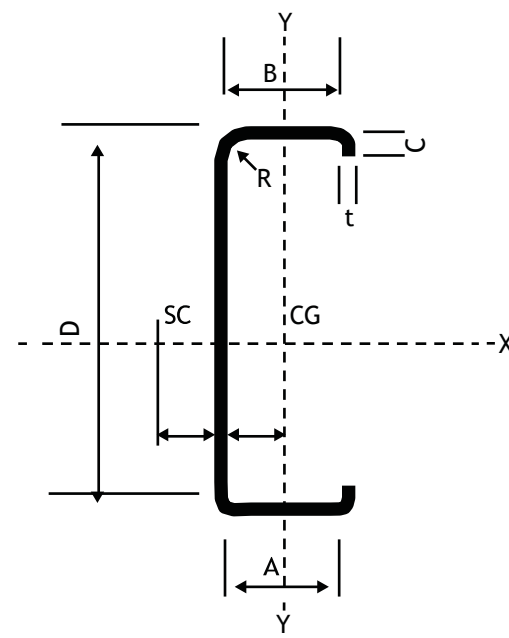
The flange widths, lip sizes and flange angles of the sections can be set to be manufactured based on individual client needs. The same is true of the anti-sag rods and connection fasteners as well as the Z and C Channels which are customized in size to provide flexibility of the connection to the main structure whether by utilizing the overlapped system or the sleeved system.

Benefits of BOLTECHIN Purlins

- High strength to weight ratio
- Economical
- Can be used for large spans of up to 11m
- Better quality and finish
- Quick installation
- Custom made to requirement



Z Purlin



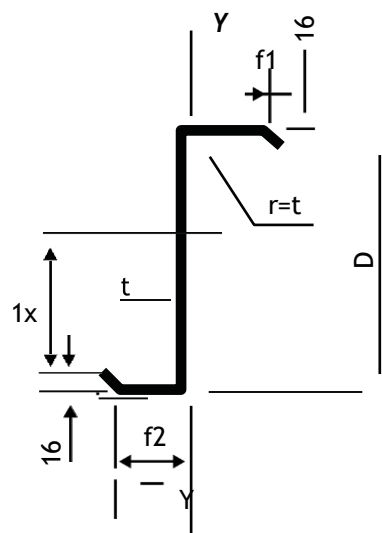
C Purlin

COLD FORMED “C” PURLINS

COLD FORMED “Z” PURLINS

COLD FORMED PURLINS

“Z”



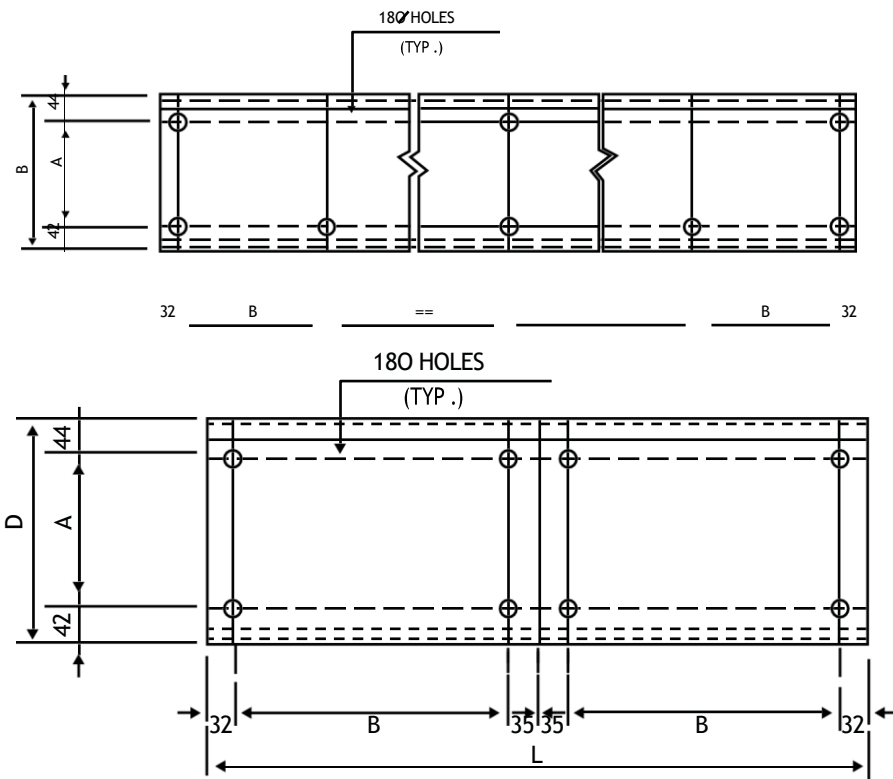
Normal units are in parenthesis

D=depth of section (mm)
f1=flange width (mm)
L=length of lip (mm)
R=average bent radius (mm)
t=steel thickness (mm)
A=area of section (mm²)
C.G=centre of gravity
S.C=shear centre

I_{xx} = moment of inertia about X-X axis (mm⁴)
S_{xx} = elastic section modulus about X-X axis (mm³)
R = radius of gyration about about X-X axis (mm)
I_{yy} = moment of inertia about Y-Y axis (mm⁴)
S_{yy} = elastic section modulus about Y-Y axis (mm³)
r_y = radius of gyration about about Y-Y axis (mm)
r_{min} = radius of gyration about about Z-Z axis (mm)
teta = angle between Z-Z axis and Y-Y axis (radians)

PURLIN SECTION PROPERTIES AND ALLOWABLES

Section		142Z15	142Z20	172Z15	172Z20	202Z15	202Z15	202Z25	232Z15	232Z25
Description	Units									
Depth	D mm	142	142	172	172	202	202	202	232	232
Thickness	t mm	1.5	2.0	1.5	2.0	1.5	2.0	2.5	1.5	2.0
Top Flange	f1 mm	50	50	65	65	65	65	65	75	75
Bottom Flange	f2 mm	45	45	60	60	60	60	60	70	70
Lip	L mm	16	16	16	16	16	16	16	16	16
Lip Angle	Deg	45	45	45	45	45	45	45	45	45
Bend Radius	R mm	2.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0
Weight	W Kg/m	3.33	4.44	3.81	5.10	4.12	5.49	6.86	4.78	6.37
Area	A m ²	421.82	558.19	481.82	638.19	526.82	698.19	865.30	601.82	798.19
I _{xx} (t)	cm ⁴	135.26	177.34	221.87	291.55	322.76	424.67	521.59	487.09	641.96
S _{xx} (l)	cm ³	19.39	25.43	26.20	34.43	32.41	42.65	52.39	42.73	56.32
S _{xx} (b)	cm ³	18.72	24.54	25.41	33.38	31.51	41.46	50.92	41.28	54.40
R _x	cm	5.66	5.64	6.79	6.76	7.83	7.80	7.76	9.00	8.97
I _{yy}	cm ⁴	36.06	47.09	44.26	57.93	44.26	57.94	71.01	64.34	84.40
S _{yy} (l)	cm ³	5.39	7.07	6.17	8.10	6.18	8.11	9.98	7.94	10.44
S _{yy} (r)	cm ³	5.20	6.82	5.95	7.82	5.94	7.81	9.60	7.57	9.95
R _y	cm	2.92	2.90	3.03	3.01	2.90	2.88	2.87	3.27	3.25
Allowable Shear	V _a KN	14.92	29.89	12.17	29.21	10.28	24.62	46.70	8.90	21.28
Allowable BM*	Mag KN-m	3.35	4.72	4.45	6.08	5.46	7.60	10.31	6.25	9.75
Allowable BM**	Mawc KN-m	3.12	4.40	4.14	5.66	5.09	7.07	9.60	5.82	9.07
Allowable BM3	Maws KN-m	2.23	3.14	2.96	4.04	3.63	5.05	6.86	4.16	6.48
Ultimate Shear	V _u KN	22.42	44.92	18.29	43.90	15.45	37.00	70.19	13.37	31.98
Ultimate BM*	Mug KN-m	5.32	7.49	7.05	9.64	8.67	12.05	16.36	9.92	15.46
Ultimate BM**	Muwc KN-m	4.95	6.98	6.57	8.98	8.07	11.22	15.23	9.23	14.40
Ultimate BM3	Muws KN-m	3.54	4.98	4.69	6.41	5.76	8.02	10.88	6.59	10.28

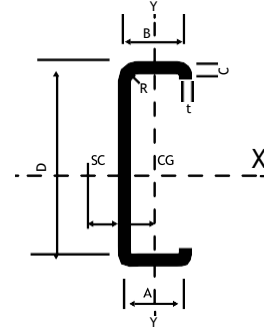


PURLIN SECTION PROPERTIES AND ALLOWABLES

Section		232Z25	250Z20	250Z25	262Z20	262Z25	302Z25	302Z30
Description	Units							
Depth	D mm	232	250	250	262	262	302	302
Thickness	t mm	2.5	2.0	2.5	2.0	2.5	2.5	3.0
Top Flange	f1 mm	75	75	75	75	75	75	75
Bottom Flange	f2 mm	70	70	70	70	70	70	70
Lip	L mm	16	16	16	16	16	18	18
Lip Angle	Deg	45	45	45	45	45	45	45
Bend Radius	R mm	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Weight	W Kg/m	7.96	6.71	8.39	6.90	8.63	9.79	11.73
Area	A m ²	990.30	848.19	1052.80	872.19	1082.80	1247.30	1491.80
I _{xx} (t)	cm ⁴	790.24	786.90	969.52	878.84	1083.18	1661.13	1978.11
S _{xx} (t)	cm ³	69.34	64.15	79.05	68.33	84.23	111.79	133.12
S _{xx} (b)	cm ³	66.95	61.80	76.13	65.89	81.20	108.29	128.95
R _x	cm	8.93	9.63	9.60	10.04	10.02	11.54	11.52
I _{yy}	cm ⁴	103.67	95.30	117.14	95.31	117.15	171.05	292.50
S _{yy} (l)	cm ³	12.87	11.34	13.99	11.35	13.99	17.99	21.35
S _{yy} (r)	cm ³	12.26	10.75	13.26	10.75	13.25	17.13	20.33
R _y	cm	3.24	3.35	3.34	3.31	3.29	3.70	3.68
Allowable Shear	V _a KN	42.29	19.68	39.05	18.74	37.15	31.56	54.73
Allowable BM*	Mag KN-m	12.55	10.93	13.88	11.66	14.84	19.48	23.61
Allowable BM**	Mawc KN-m	11.68	10.18	12.93	10.86	13.82	18.14	21.98
Allowable BM3	Maws KN-m	8.35	7.27	9.23	7.76	9.87	12.96	15.70
Ultimate Shear	V _u KN	63.56	29.57	58.69	28.16	55.84	47.44	82.26
Ultimate BM*	Mug KN-m	16.91	17.34	22.03	18.50	23.55	30.91	37.45
Ultimate BM**	Muwc KN-m	18.54	16.15	20.51	17.23	21.92	28.78	34.87
Ultimate BM3	Muws KN-m	13.24	11.53	14.65	12.30	15.66	20.56	24.90

COLD FORMED PURLINS

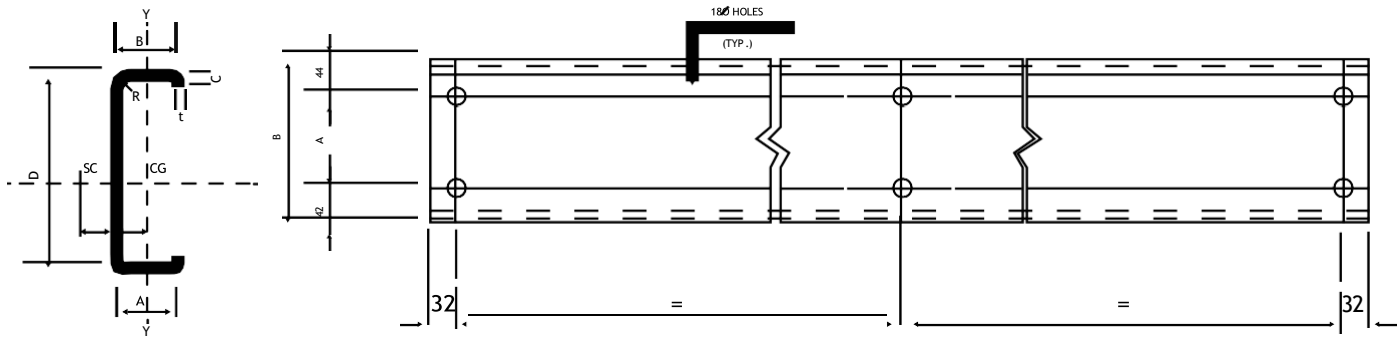
“C”



Normal units are in parenthesis

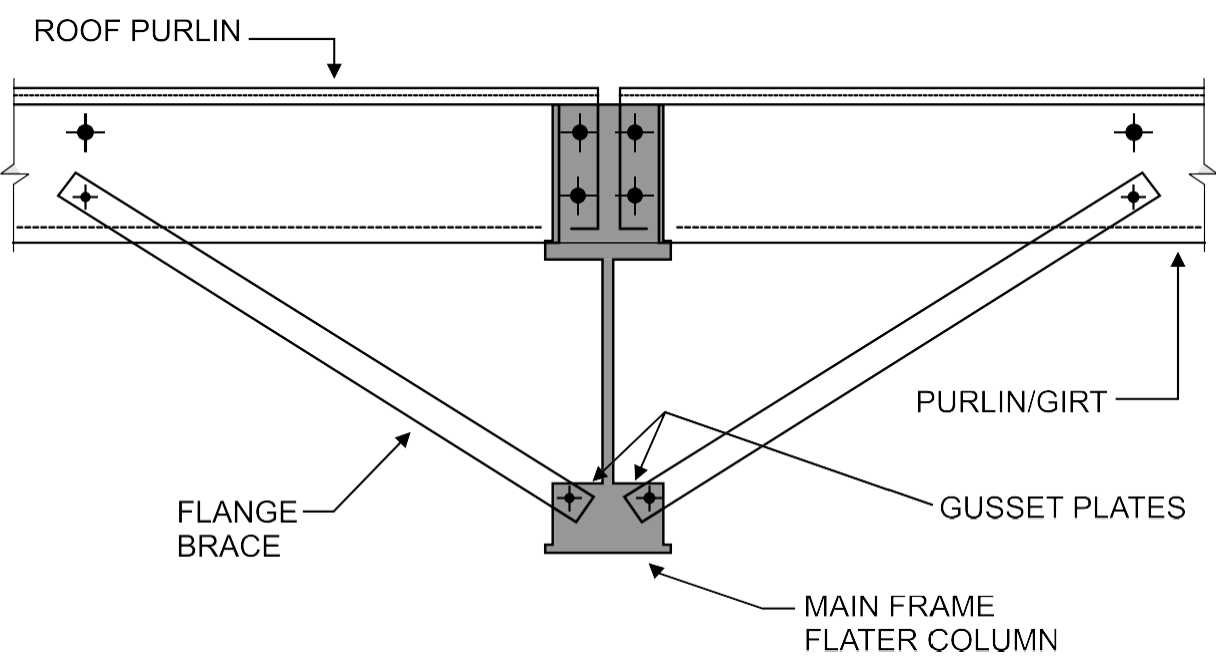
D = depth of section (in.)
A = flange width (in.)
C = length of lip (in.)
R = average bent radius (in.)
t = steel thickness (in.)
A = area of section (in.2)
C.G = centre of gravity
S.C = shear centre

I_{xx} = moment of inertia about X-X axis (in.4)
 S_{xx} = elastic section modulus about X-X axis (in.3)
 r_x = radius of gyration about X-X axis (in.)
 I_{yy} = moment of inertia about Y-Y axis (in.4)
 S_{yy} = elastic section modulus about Y-Y axis (in.3)
 r_y = radius of gyration about Y-Y axis (in.)
 x = distance from centre of web to centre of gravity (in.)
 e = distance from centre of web to shear centre (in.)

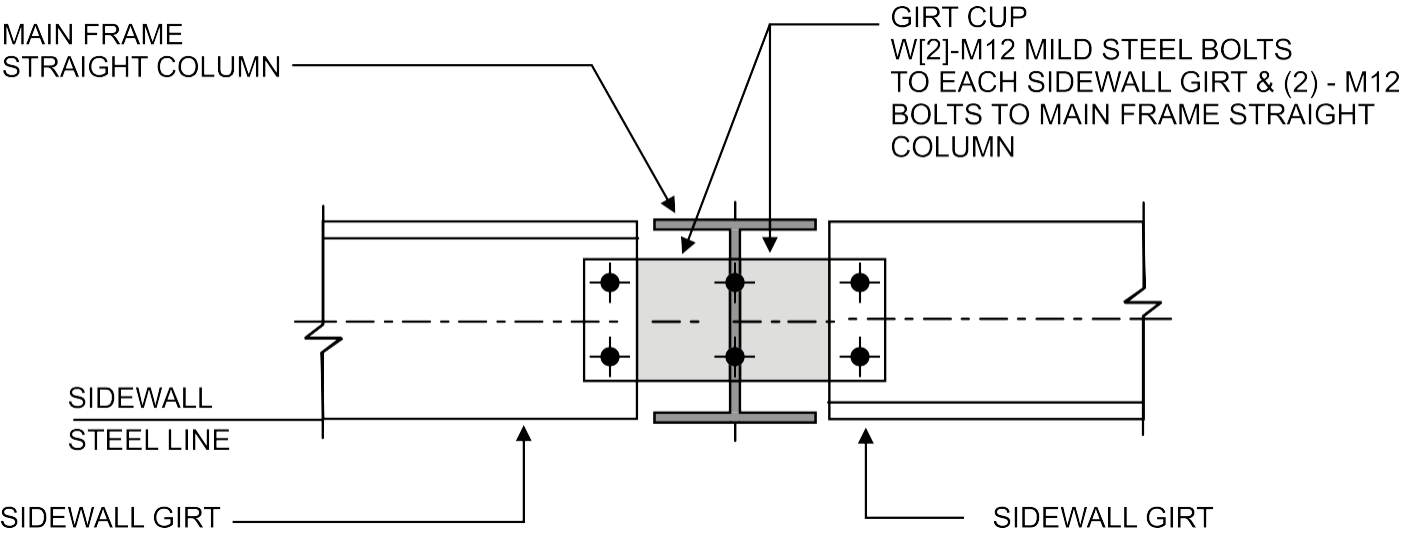


Nominal Dimensions										Section Properties					
Section Ref.	Depth D mm	Top Flange f1 mm	Top Flange f2 mm	Thickness t mm	A mm	B mm	L mm	Wt / m Kg	Area cm ²	I_{xx} cm ⁴	I_{yy} cm ⁴	Z_{xx} cm ³	R_{yy} cm ²	y mm	x mm
14215	142	55	50	1.5	56	193	520	3.2	4.05	128.8	26.06	17.73	17.73	50.04	72.29
14218	142	55	50	1.8	56	193	520	3.84	4.892	153.85	31.65	21.28	21.28	50.19	72.39
14220	142	55	50	12	56	193	520	4.27	5.42	1682	34.3	23.27	23.27	50.33	72.39
17215	172	64	59	1.5	86	218	570	3.79	4.185	220.38	44.2	25.24	25.24	59.42	87.33
17218	172	64	59	1.8	86	218	570	4.55	5.78	264.46	52.2	30.29	30.29	59.29	87.33
17220	172	64	59	2	86	218	570	5.06	6.83	289.95	57.4	33.2	33.2	59.17	87.33
17225	172	64	59	2.5	86	218	570	6.33	7.98	361.56	69.6	41.5	41.5	59.06	87.33
20215	202	64	59	1.5	116	248	630	4.14	5.265	320.92	44.2	31.33	31.33	59.32	102.4
20218	202	64	59	1.8	116	248	630	4.97	6.33	402	52.1	39.24	39.24	52.02	102.4
20220	203	73	73	2	116	248	630	5.53	6.98	422.73	57.4	41.27	41.27	59.07	102.4
20225	202	64	59	2.5	116	248	630	6.91	8.63	535.72	69.75	52.22	52.22	59.01	102.4
23215	232	75	70	1.5	146	293	720	4.73	6.015	481.16	68.5	40.97	40.97	69.04	117.4
23218	232	75	70	1.8	146	293	720	5.68	7.22	577.39	76.8	49.16	49.16	69.03	117.4
23220	232	75	70	2	146	293	720	6.31	8.02	641.54	84.5	54.63	54.63	69.02	117.4
23225	232	75	70	2.5	146	293	720	7.89	9.975	797.85	103.3	67.96	67.96	68.09	117.4

PURLIN FIXING DETAILS



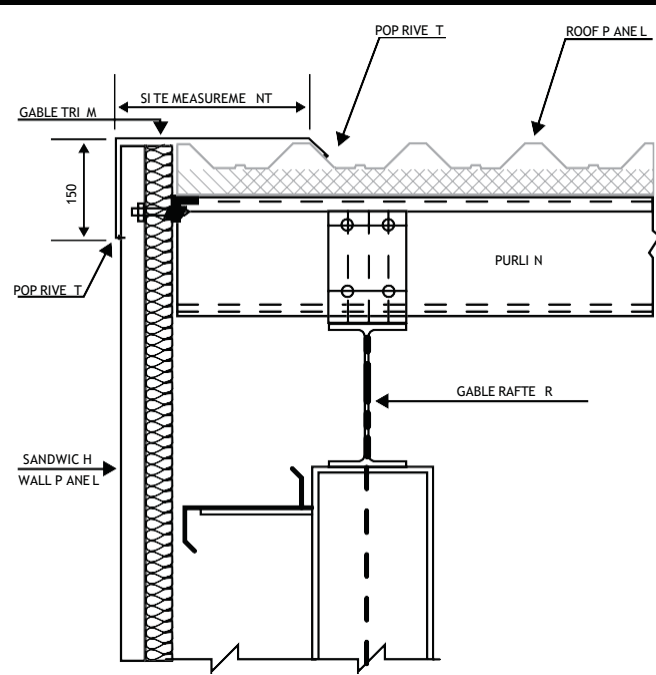
PURLIN/GI RT BUTT JOI NT



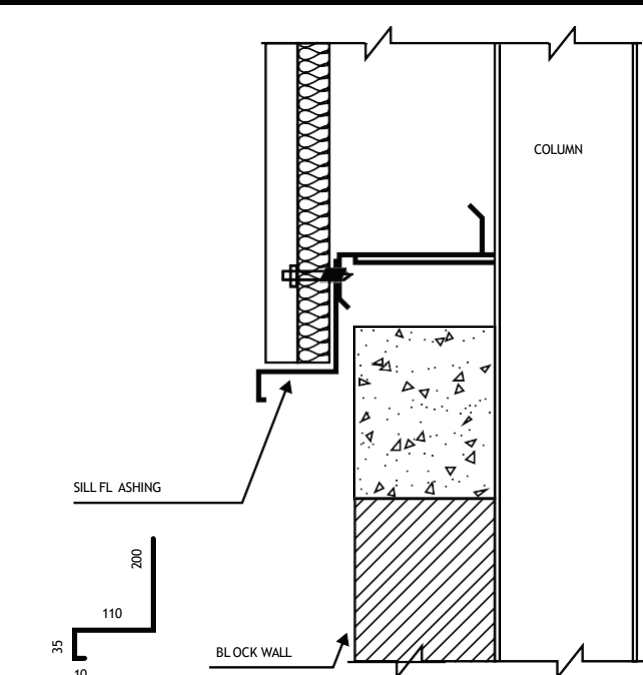
FLUSH SIDEW ALL GI RT S AT MAIN FRAME STRAIGH T COL UMN

INSTALLATION DETAILS

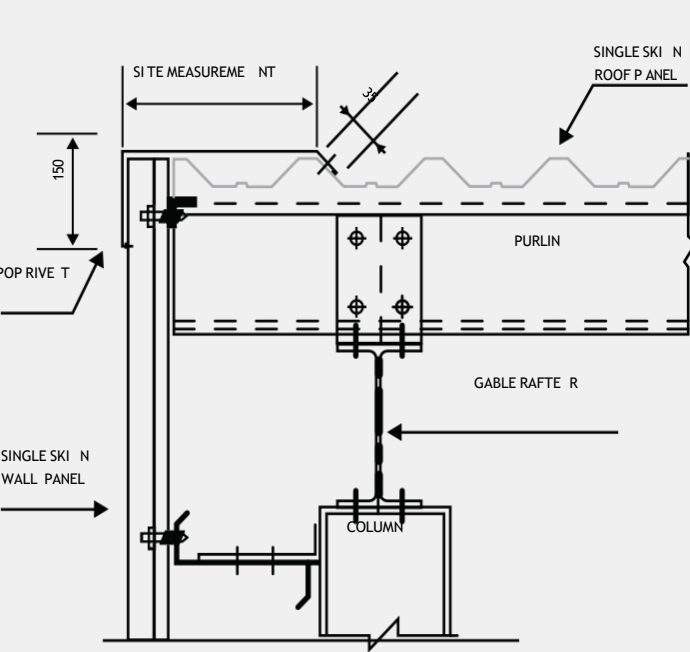
Cable Flashing Details Sandwich Panel



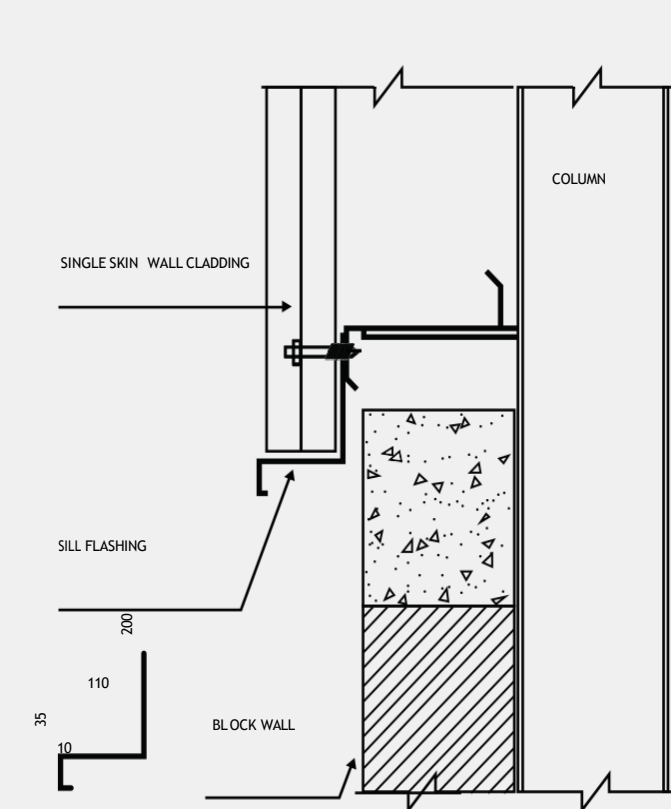
Sill Flashing Details Sandwich Panel



Cable Flashing Details Single Skin

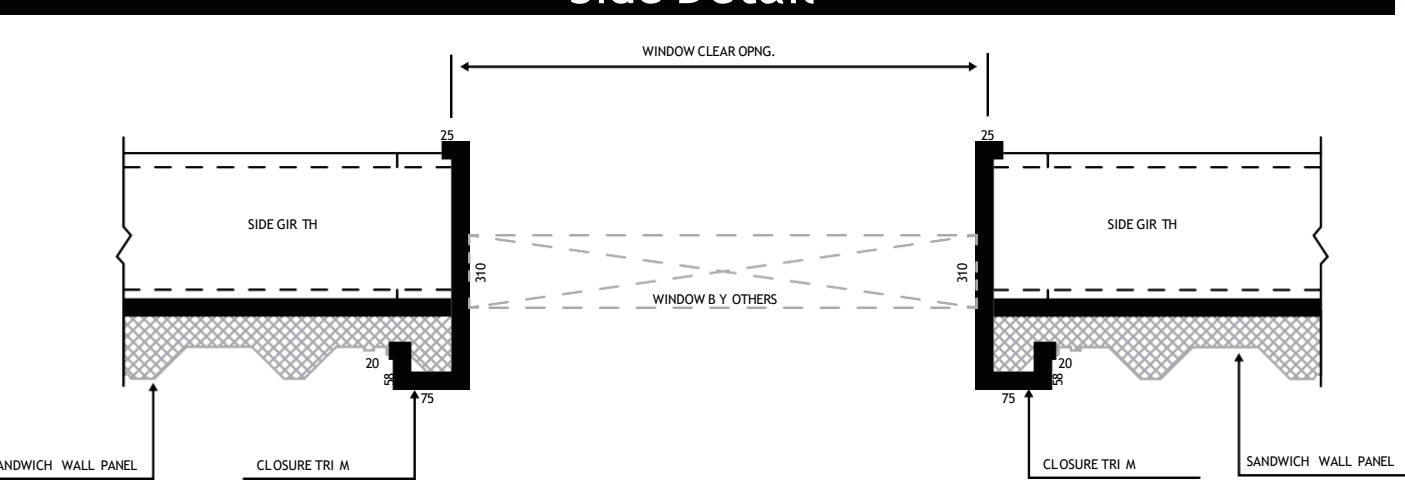


Sill Flashing Details Sandwich Panel

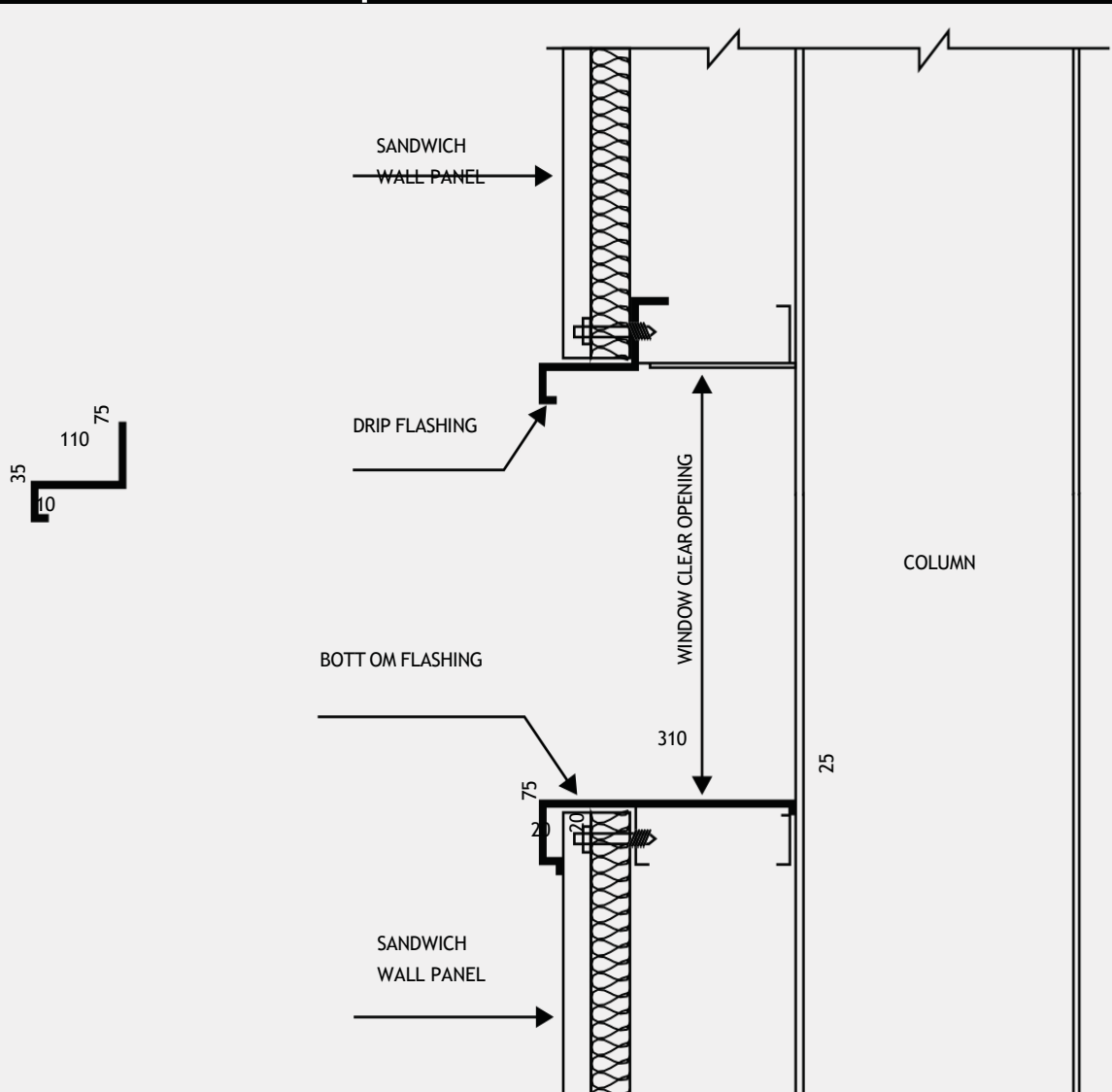


FLASHING AND TRIMS

Side Detail

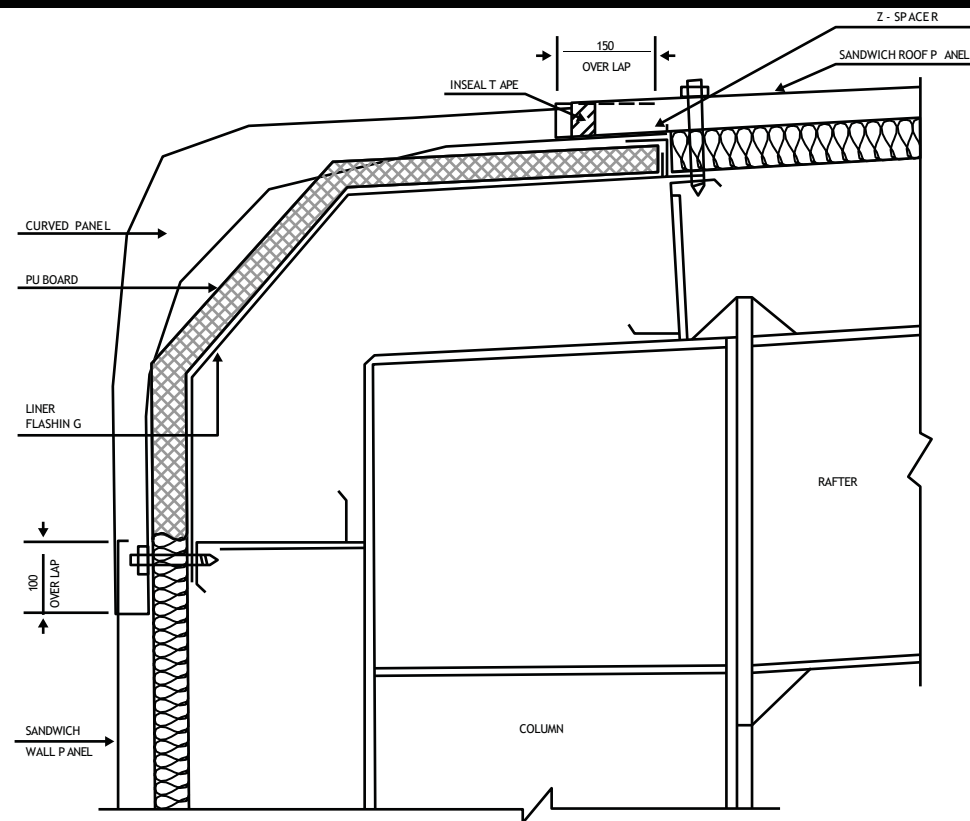


Top and Bottom Detail

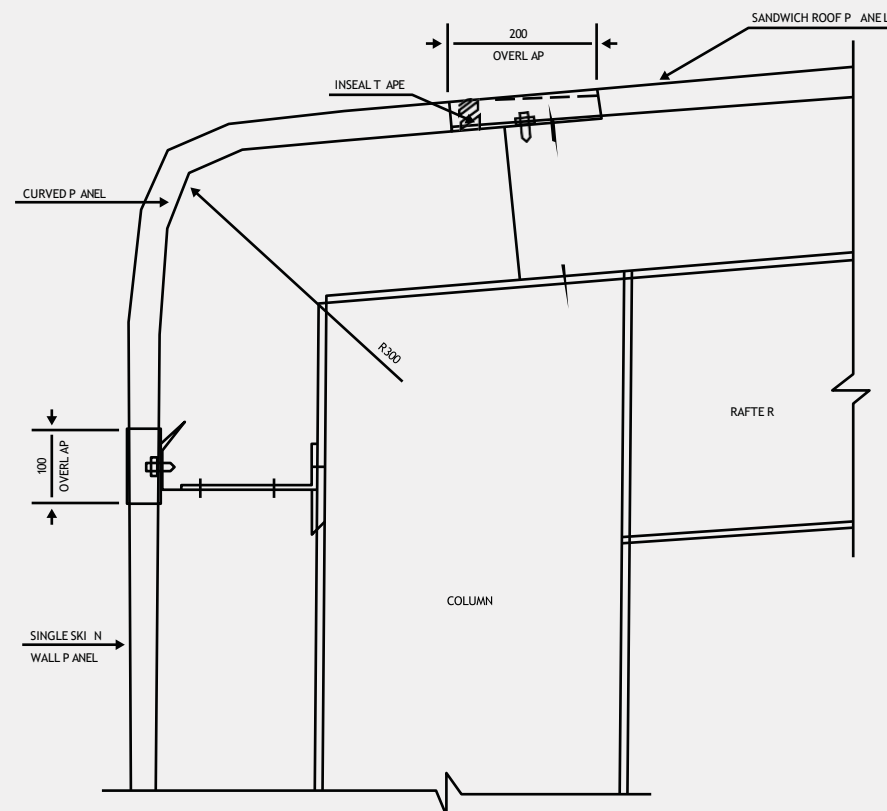


CURVED EAVES

Sandwich Panel



Single Skin



BOLTECHIN ACCESSORIES

BUTYL STRIP



Roofing and Cladding, side and end laps (special U shape strip available for double seal on end laps), joining single skin roof lights

FILLER BLOCK



SHEAR RESISTANCE: 592 daN

TEAR RESISTANCE: 724 daN

Sealing all roofing/cladding profiles against water/water vapour ingress. Roof light fillers. Eaves and ridges fillers.

GRP TRANSLUCENT SHEETS



They are Contact Moulded to any profile using clear UV stabilised Polyester Resins reinforced with Powder Donded "E" Grade fiberglass Mats. The raw materials used are from reputed manufacturers.

Particular care is taken to see there are no air pockets in the laminate and the surface which is not in contact with the Mould is top coated to provide closed surface which increases the life of Transluscent Sheet. We use GRP Moulds for manufacturing our Transluscent Sheets.

TYPE 'A'



Thread of 2,54 : Pointed end

- On wood purlins
- On steel purlins

3mm Thickness

Screw with Φ 19mm washer

6,5 x 25mm

6,5x 70mm

6,5x 130mm

TYPE 'B'

Thread of 1,81: flat end on steel purlins exceeding

3mm Thickness

Screw with Φ 19mm washer

6,3 x 20mm

6,3 x 80mm

6,3 x 110mm

POP BLIND RIVETS



Sealed type:

99.5% Pure Aluminium

Material composition to BS

1475 A 199.5

Mandrel: Aluminium (A)

PD 68A 48 x 11.4mm

Tensile 1060N

Strength (240lbf)

Shear 1060 N

Strength (240lbf)

SCREW CAP



Coloured plastic caps to fit hexagonal head of the screw and cover washer.



BOLTECHIN INTERNATIONAL

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