



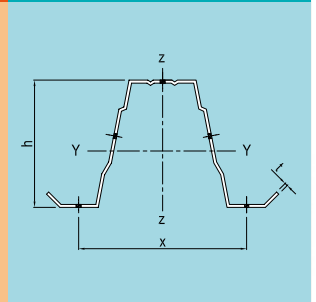
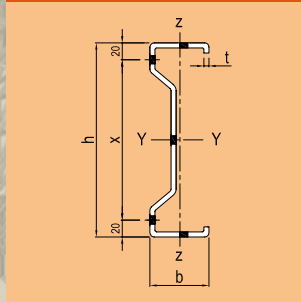
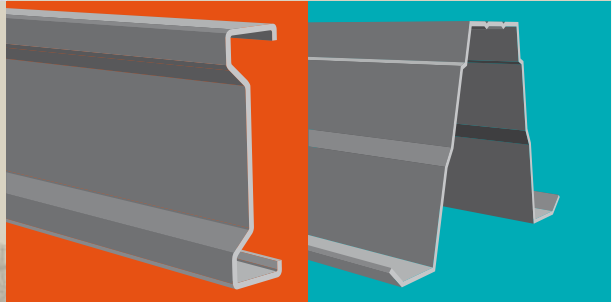
ArcelorMittal

Arval
by ArcelorMittal

Profil du Futur

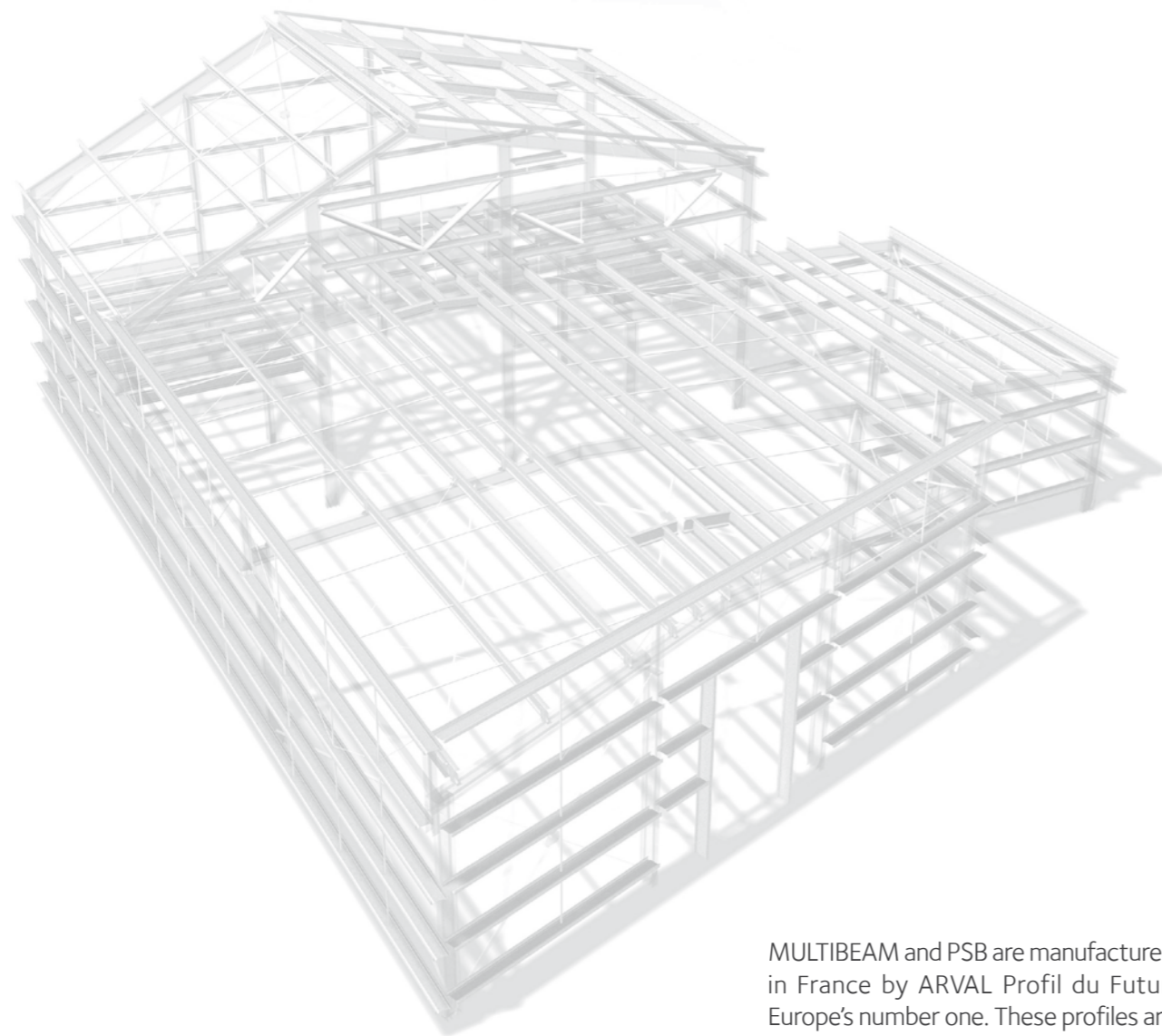


Structures
for all your
projects



Technical Guide

Highly efficient load-bearing structures for all your projects



MULTIBEAM and PSB are manufactured in France by ARVAL Profil du Futur, Europe's number one. These profiles are specially designed for use as roofing purlins, cladding rails and floor joists in accordance with current European standards



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Arval Profil du Futur has been present in Europe for 30 years now, carrying out close to 10 000 projects per year thus becoming the European leader in steel roofing, cladding and flooring supports thanks to its purlin, rail and joist systems.

Our MULTIBEAM and PSB ranges provide ARVAL Profil du Futur with the ability to offer you the best possible building solutions for a given site, whatever the size.

With our purlin, rail and joist systems you will receive the "complete ARVAL Profil du Futur service", which is as follows:

- A direct sales organization with a local network and inside technical sales representatives, an engineering and design department with engineers, technicians, designers and draughtsmen, a "customer service" with logistics people, who will schedule your production and dispatch your order according to your delivery time.

- All our purlin, rail and joist systems are delivered on-site, whatever the quantity, and are design justified on the basis of testing and Eurocodes. They are also covered by technical approvals and TAC, validated by auditors in France and in many other countries.

In-company quality controls are performed under the supervision of the official German organization "Versuchsanstalt für Stahl, Holz und Steine".



Sales department

Our local area representatives will set up and maintain good business relationships with you as well as good business cooperation. They represent and fully commit ARVAL Profil du Futur.

In our offices, technical sales representatives are in charge of defining systems with high-level optimization, and they also perform quantity surveys according to your specifications (the building's properties, weather loading, working loads ...) and they will give you a written agreement to the price and lead time.

Order servicing: Logistics people - Engineering & design department - Technical department

Our logistics people are in charge of processing orders, from the time they acknowledge receipt of the order to its delivery on-site.

They make sure detail plans, a drawing of the general layout and design calculations have been made and then they schedule release for manufacture.

They are in permanent contact with our shipper thus guaranteeing delivery on the agreed date.

Our engineering & design department has software adapted to our product range and based on Auto CAD and Tekla structures, which serves to establish all the plans concerning details, location, manufacturing and assembly according to your framework drawing.

Our technical department makes out design calculation documents for the inspection bodies. It ensures compliance with current standards and due renewal of all appropriate technical approvals.

Manufacturing

In our Horbourg-Wihr plant, near Colmar (France), we have facilities specially designed to obtain efficient and cost effective manufacturing of the whole ARVAL Profil du Futur range as well as all our flashings, thus guaranteeing observance of the lead time.

Our raw materials are subject to very stringent specifications and undergo a systematic quality check.

Our finished products are checked daily by our quality control department, and very regularly by an outside independent inspection body.

Delivery

The scope of our business is such that we can guarantee on-site delivery in keeping with the contractual deadline whatever the size of the affair.

Our shipper has a shipping office in our plant, which enables him to be even more reactive, supervise the progress of the order and enjoy the advantage of customer proximity.



Rapid installation

Symmetrical profile
(no right-hand and left-hand)

Stable profile

Wide flanges (easy roof laying)

Simple fixing onto stanchions and rafters

Simple and efficient positioning of ties

Cost effective

Lightweight

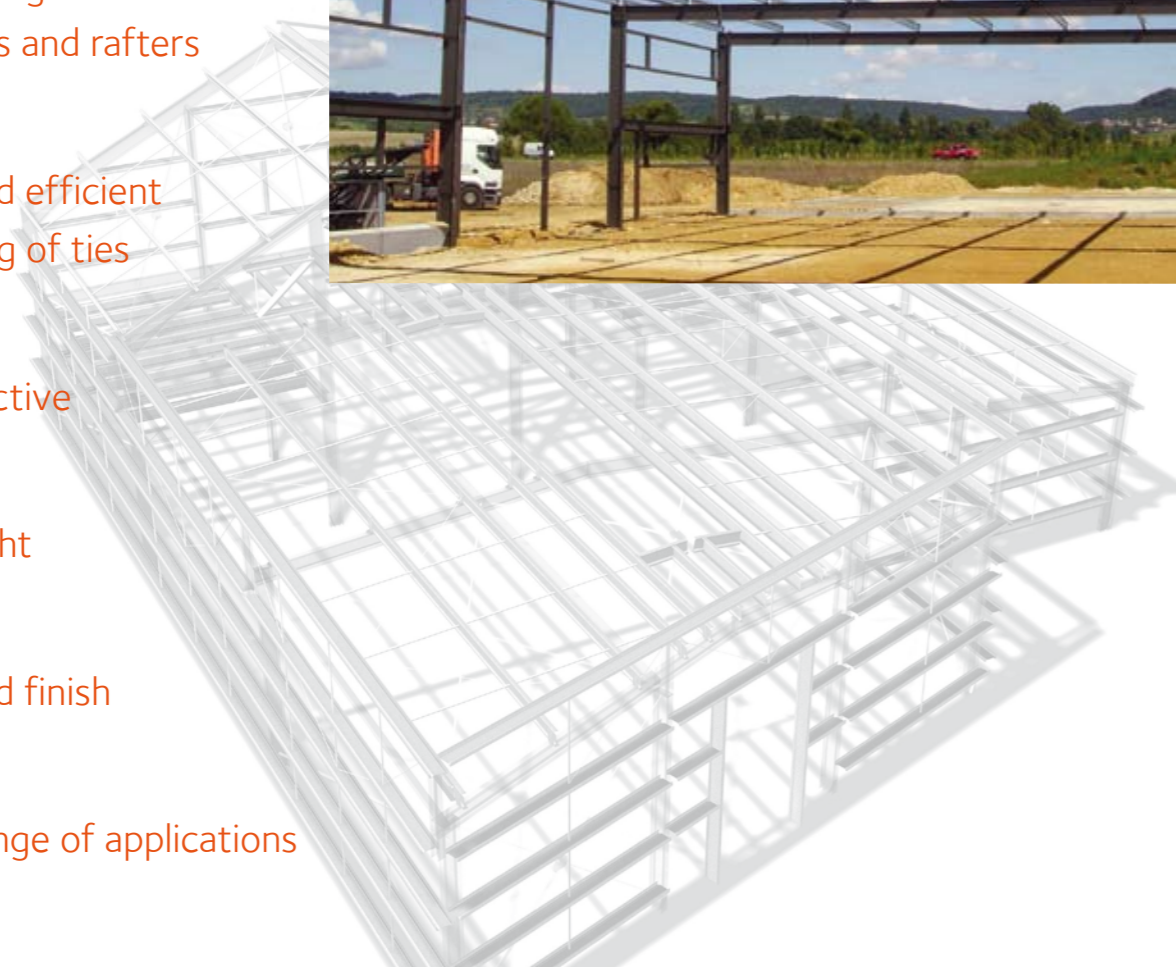
Galvanized finish

A wide range of applications

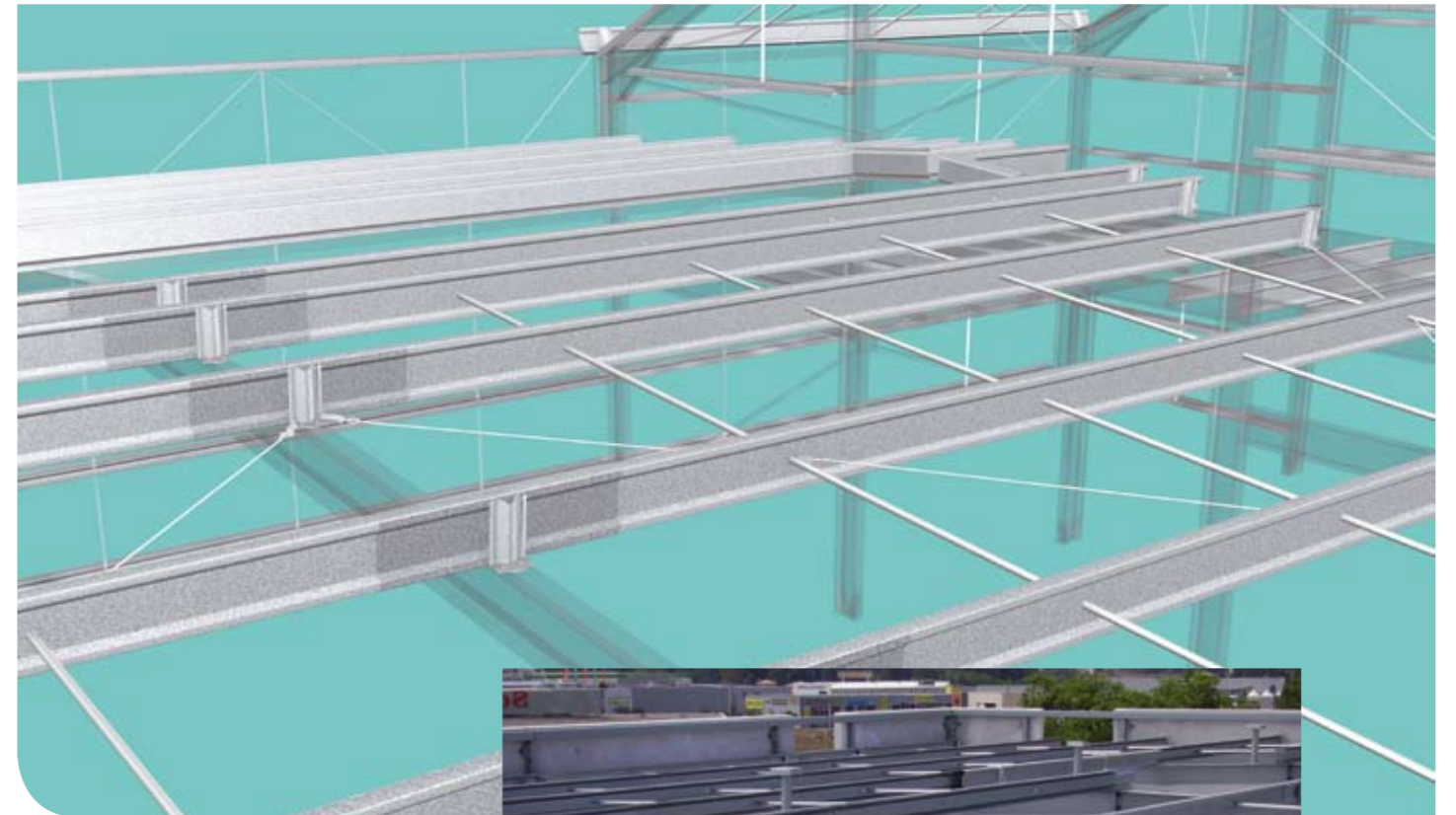
Multibeam is the result of intensive testing and is compatible with the latest design and construction techniques.

Multibeam has been present in Europe for over 30 years, continually optimizing its performance, and now offers an unbeatable mixture of simplicity and efficiency.

Multibeam is manufactured from Sendzimir processed galvanized steel (275 gr/m² double-sided for standard applications and up to 600 gr/m² double-sided for special applications, coastal, aggressive environments...). The guarantee of a 350 N/mm² and 390 N/mm² yield stress contributes to the performance and quality of the profiles.



A simple but modern purlin system suited to all types of buildings as well as to all kinds of frames and bays.

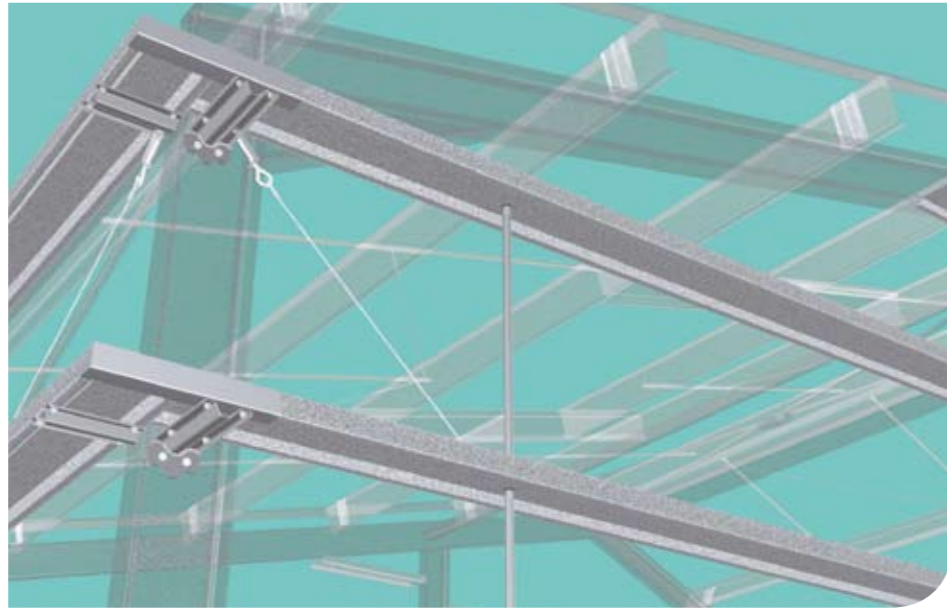
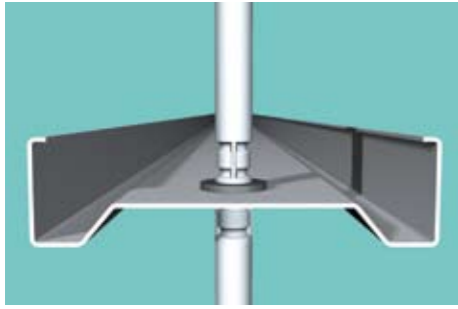


Multibeam on a steel structure



Multibeam on a concrete structure

The Multibeam rail system is one of the simplest today. The rails and ties are perfectly suited to all kinds of structures and make the system rigid and easy to install.



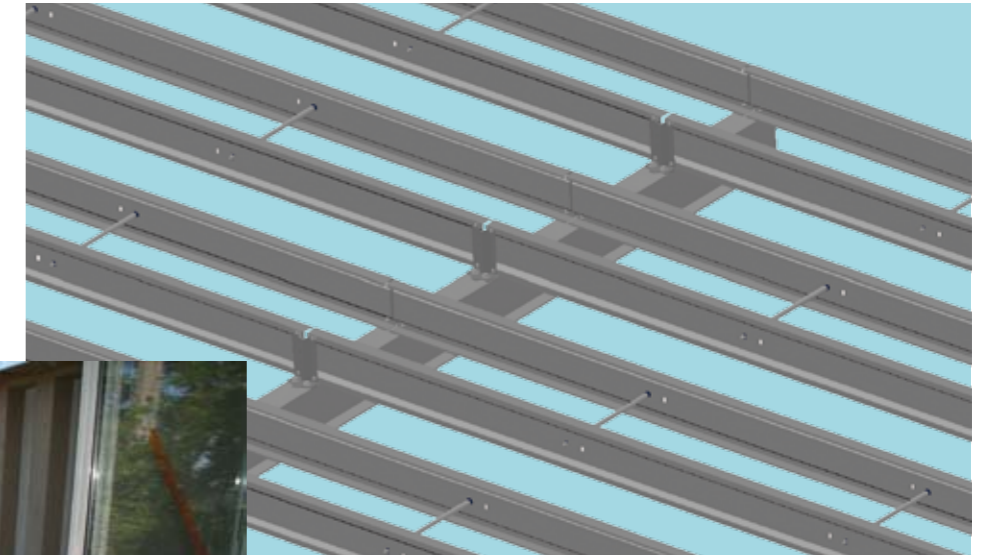
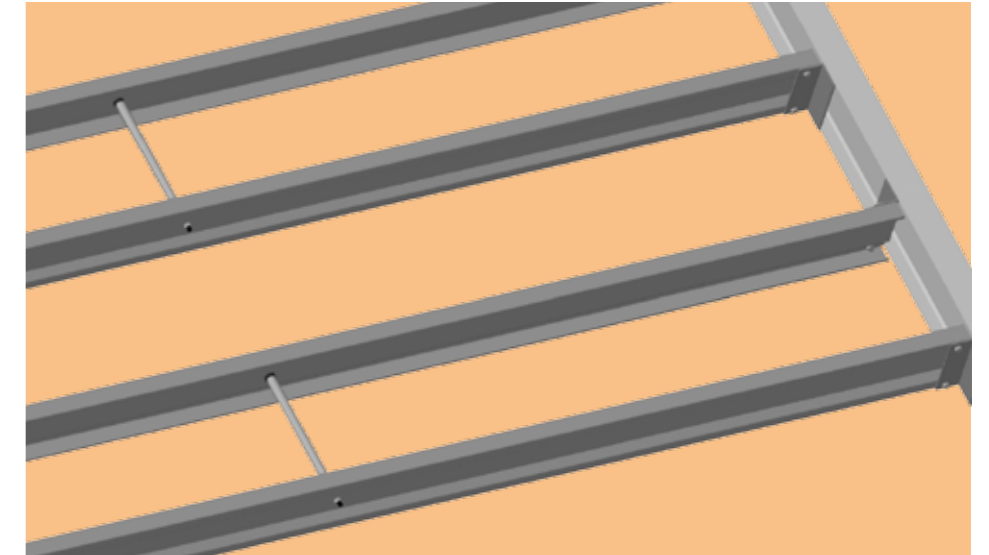
Rail system between and in front of stanchions

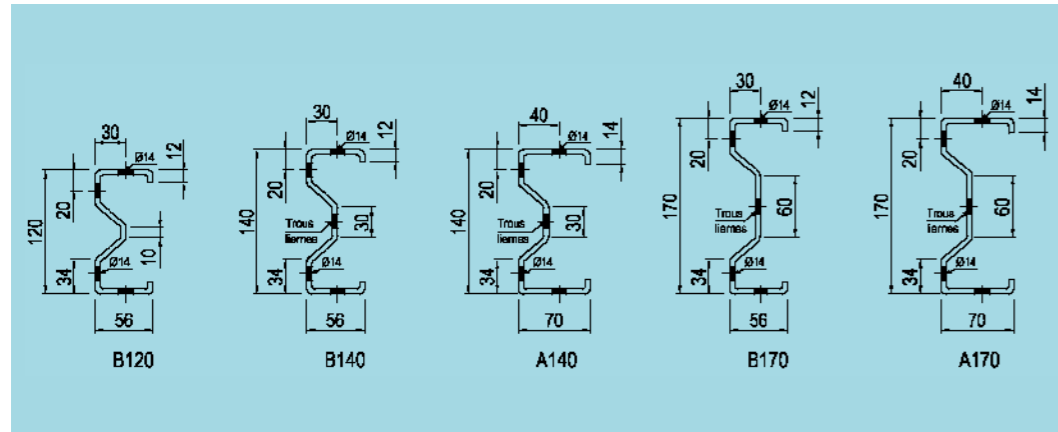


Multibeam joisting is resistant, cost-effective and the solution you need for your new floors, refurbishments, extensions and mezzanines because the elements can be hand-carried most of the time.

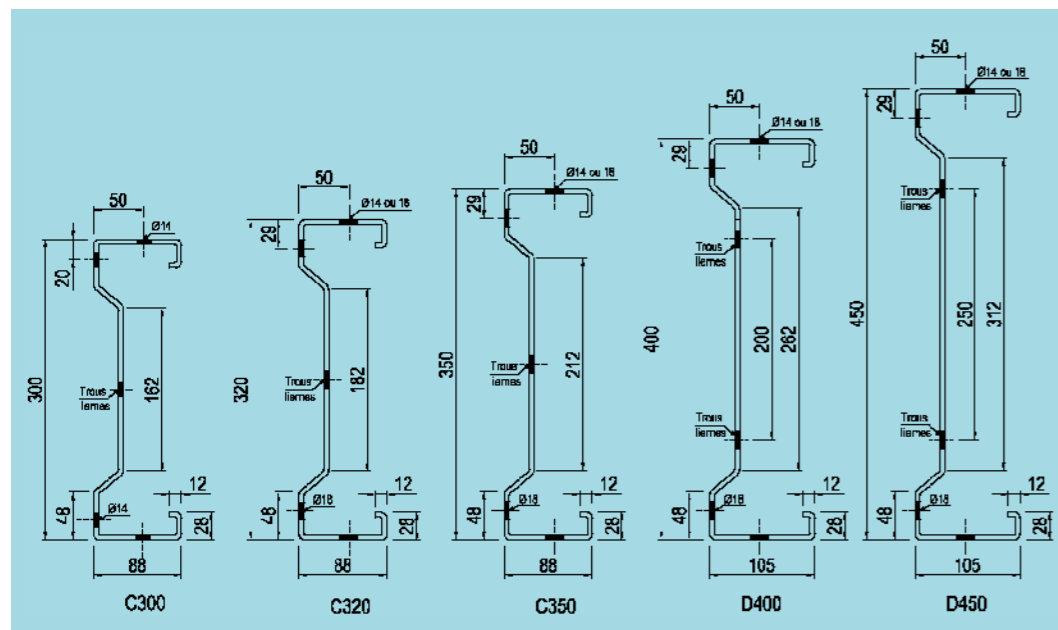
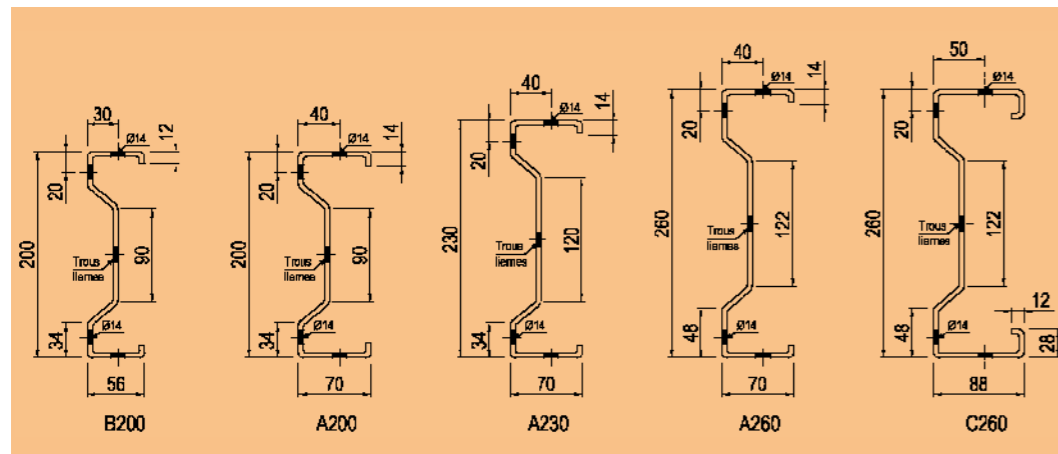
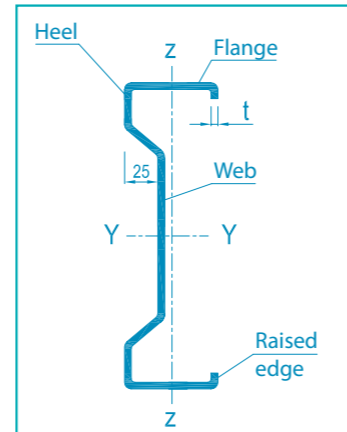


Joists between bars and over bars

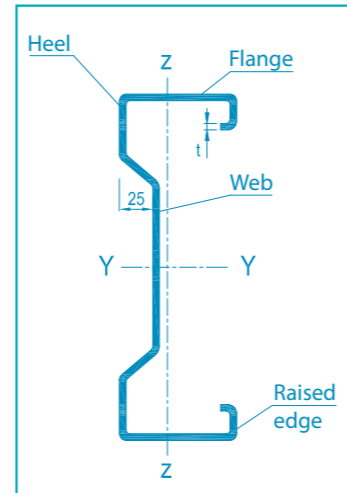




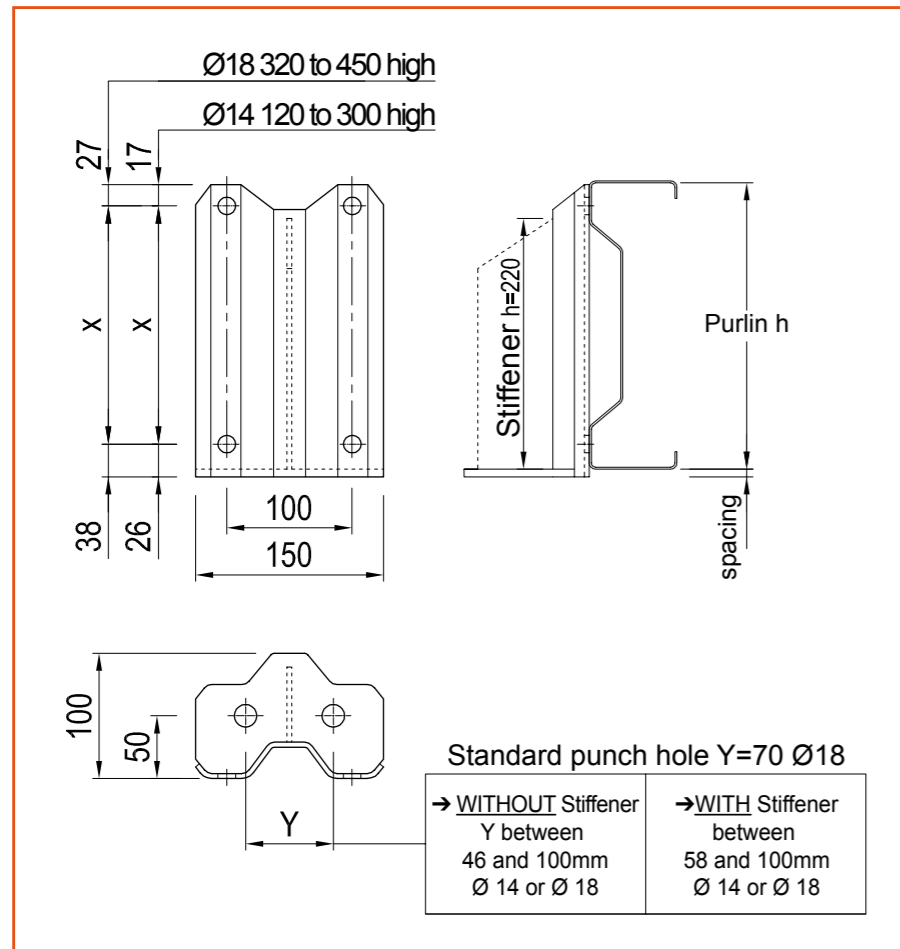
Types A and B



Types C and D

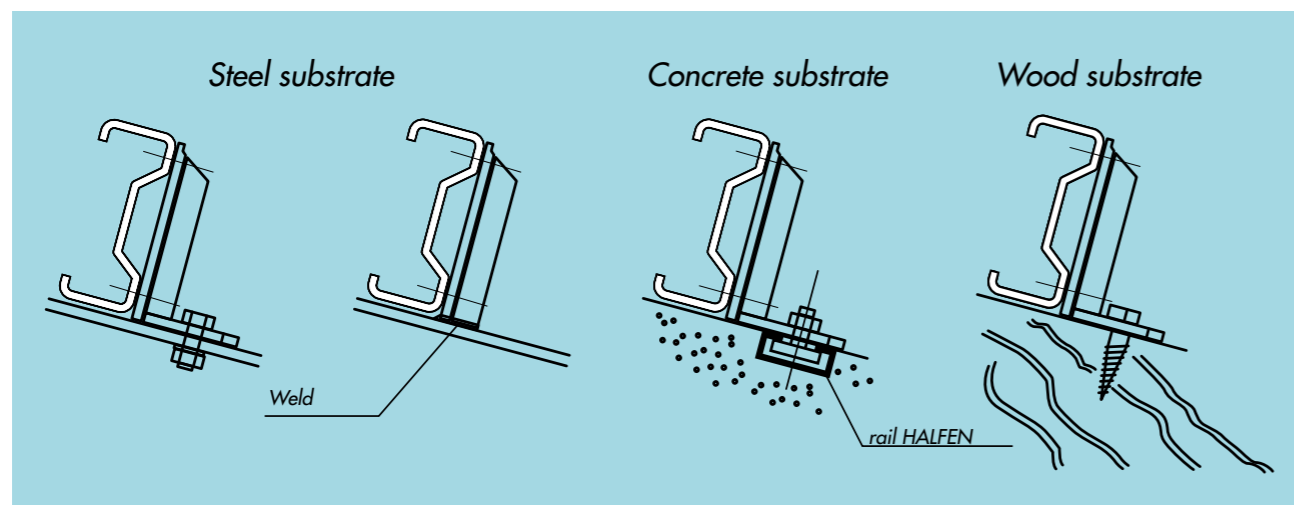


Profiles	Height (mm)	Thickness t (mm)	Weight G (kg/m)	Gross properties						
				Area A (cm ²)	Inertia I _y (cm ⁴)	Modulus of section W _y (cm ³)	Gyration radius i _y (cm)	Inertia I _z (cm ⁴)	Modulus of section W _{zmin} (cm ³)	Gyration radius i _z (cm)
B120150	120	1,5	3,07	3,87	82,6	13,94	4,62	12,62	3,57	1,81
B140150	140	1,5	3,34	4,16	118,91	17,17	5,35	12,72	3,64	1,75
B140200		2	4,45	5,53	156,67	22,71	5,32	16,46	4,75	1,72
A140150	140	1,5	3,69	4,63	140,42	20,28	5,51	23,36	5,33	2,25
A140200		2	4,92	6,16	185,35	26,86	5,49	30,4	6,99	2,22
B170150	170	1,5	3,69	4,6	189,16	22,45	6,42	12,84	3,73	1,67
B170200		2	4,92	6,12	249,73	29,73	6,39	16,63	4,88	1,65
A170150	170	1,5	4,04	5,06	221,21	26,26	6,61	23,36	5,34	2,15
A170200		2	5,39	6,75	292,52	34,82	6,58	30,41	7,00	2,12
B200150	200	1,5	4,04	5,03	280,09	28,22	7,46	12,93	3,8	1,6
B200200		2	5,39	6,71	370,33	37,41	7,43	16,77	4,99	1,58
A200150	200	1,5	4,37	5,5	324,78	32,72	7,68	23,36	5,34	2,06
A200200		2	5,83	7,34	430,06	43,44	7,66	30,41	7,00	2,04
A230150	230	1,5	4,73	5,94	453,11	39,66	8,73	23,36	5,34	1,98
A230200		2	6,30	7,92	600,61	52,68	8,71	30,41	7,01	1,96
A230250	230	2,5	7,87	9,88	744,24	65,43	8,68	37,00	8,6	1,93
A260150		260	1,5	5,08	6,38	601,00	46,5	9,71	25,71	5,67
A260200	2		6,77	8,51	797,2	61,8	9,68	33,53	7,45	1,98
A260250	260	2,5	8,46	10,62	988,55	76,78	9,65	40,86	9,16	1,96
C260150		1,5	6,08	7,56	764,16	59,12	10,05	64,76	12,11	2,93
C260175	260	1,75	7,09	8,83	889,59	68,89	10,04	74,78	14,01	2,91
C260200		2	8,11	10,08	1013,45	78,56	10,03	84,51	15,86	2,9
C260250	260	2,5	9,93	12,56	1256,46	97,59	10,00	103,06	19,42	2,86
C260320		3,2	12,72	15,97	1586,15	123,53	9,97	127,08	24,07	2,82
C300150	300	1,5	6,55	8,15	1074,18	71,97	11,48	65,11	12,05	2,83
C300175		1,75	7,64	9,51	1250,94	83,88	11,47	75,18	13,94	2,81
C300200	300	2	8,73	10,86	1425,6	95,68	11,45	84,94	15,78	2,8
C300250		2,5	10,72	13,55	1768,67	118,9	11,43	103,57	19,32	2,77
C300320	300	3,2	13,72	17,23	2235,00	150,61	11,39	127,67	23,95	2,72
C320175		1,75	7,92	9,85	1459,8	91,74	12,17	75,36	13,9	2,77
C320200	320	2	9,05	11,26	1663,88	104,65	12,16	85,14	15,74	2,75
C320250		2,5	11,11	14,04	2064,92	130,07	12,13	103,8	19,28	2,72
C320320	320	3,2	14,22	17,87	2610,49	164,8	12,09	127,93	23,89	2,68
C350175		1,75	8,33	10,37	1810,26	103,96	13,21	75,6	13,86	2,7
C350200	350	2	9,52	11,84	2063,75	118,61	13,2	85,41	15,69	2,69
C350250		2,5	11,7	14,78	2562,24	147,47	13,17	104,11	19,21	2,65
C350320	350	3,2	14,98	18,81	3241,13	186,92	13,13	128,29	23,82	2,61
D400200		400	2	10,84	13,49	3113,87	156,48	15,19	136,8	20,37
D400250	2,5		13,35	16,84	3870,89	194,76	15,16	167,25	24,99	3,15
D400320	400	3,2	17,09	21,47	4905,36	247,25	15,12	206,97	31,06	3,1
D450200		450	2	11,62	14,47	4130,87	184,41	16,9	137,87	20,31
D450250	2,5		14,33	18,07	5137,56	229,61	16,86	168,53	24,91	3,05
D450320	450	3,2	18,34	23,05	6514,9	291,62	16,81	208,51	30,97	3,01



Bolt-on cleats are hot dip galvanized.
Weld-on cleats are black and without a base

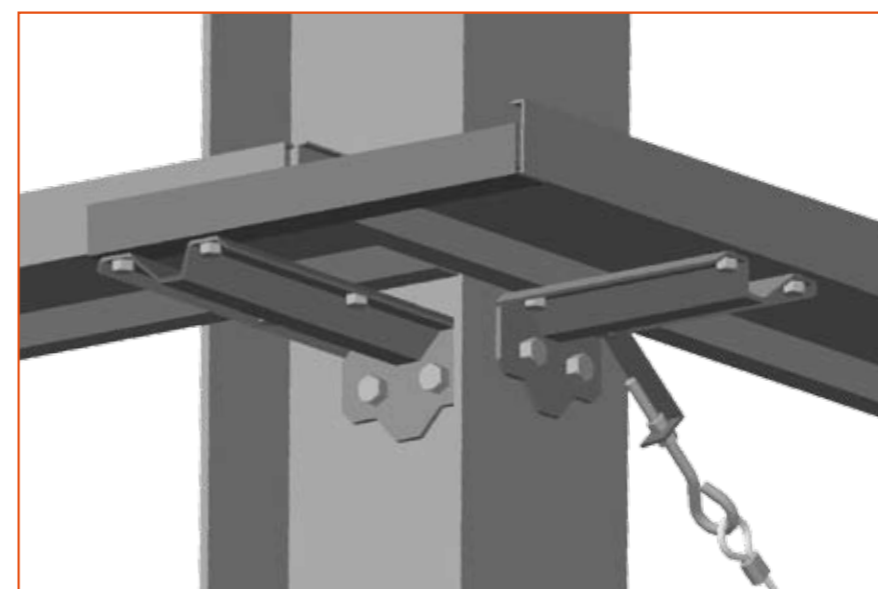
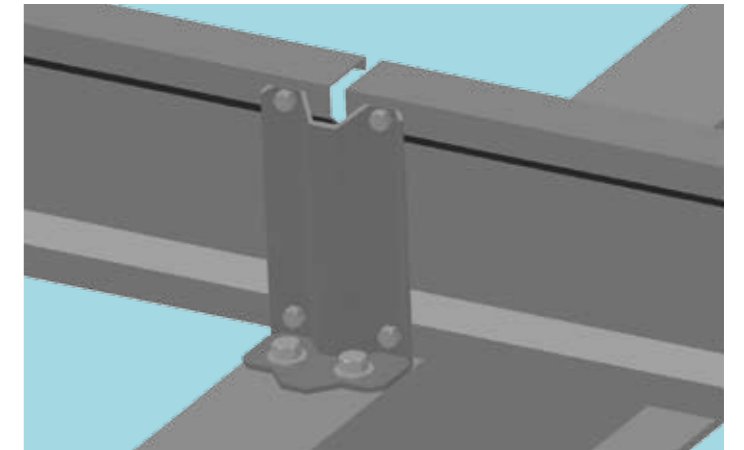
Different ways of fixing



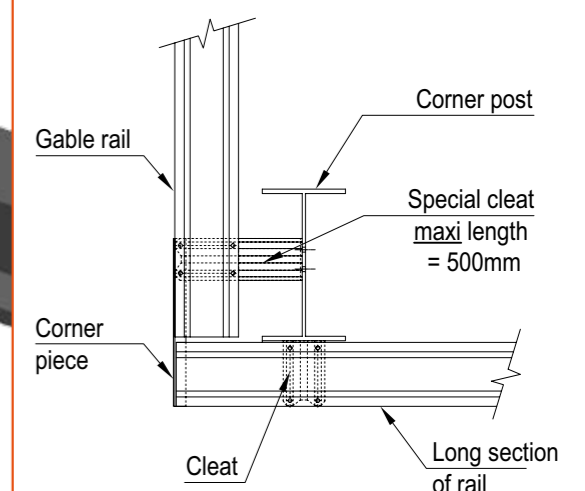
References

Purlin H	Weld-on ref.	Bolt-on ref.	Size X	H CD	Spa-cing	Stif-fener
120	CD12	CD12B	80	123	6	
140	CD14	CD14B	100	143	6	
170	CD17	CD17B	130	173	6	
200	CD20	CD20B	160	203	6	
230	CD23	CD23B	190	233	6	
260	CD26	CD26B	220	263	6	X*
300	CD30	CD30B	260	303	6	X*
320	CD32	CD32B	262	327	9	X
350	CD35	CD35B	292	357	9	X
400	CD40	CD40B	342	407	9	X
450	CD45	CD45B	392	457	9	X

* For rail systems only

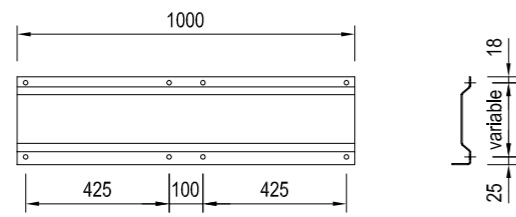


Corner detail



Sleeve Ø 14 punch holes



Plan reference 

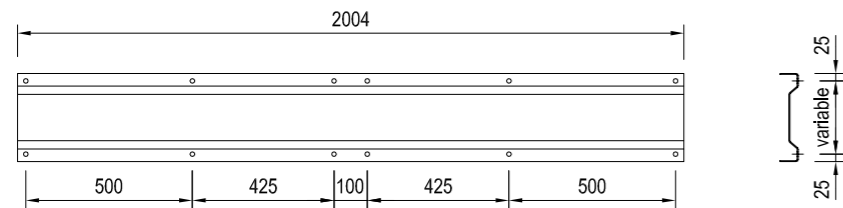


Standard thickness 3.2 mm

Type	Profile
SL14	B140
SL17	B170-A170
SL20	B200-A200
SL23	A230
SL26	A260-C260
SL30	C300

SD-SR Rail Ø 14 Drill



Plan reference : SD : 
SR : 

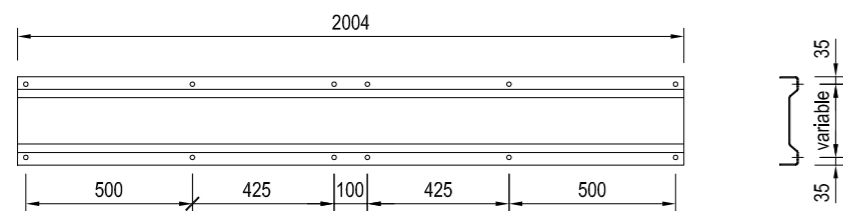


Standard thickness SD 3.2mm - SR 4mm

Type	Profile
SD20	A200
SR20	A200
SD23	A230
SR23	A230
SD26	A260-C260
SR26	A260-C260
SD30	C300
SR30	C300

SD-SR Rail Ø 18 Drill

Plan reference : SD : 
SR : 

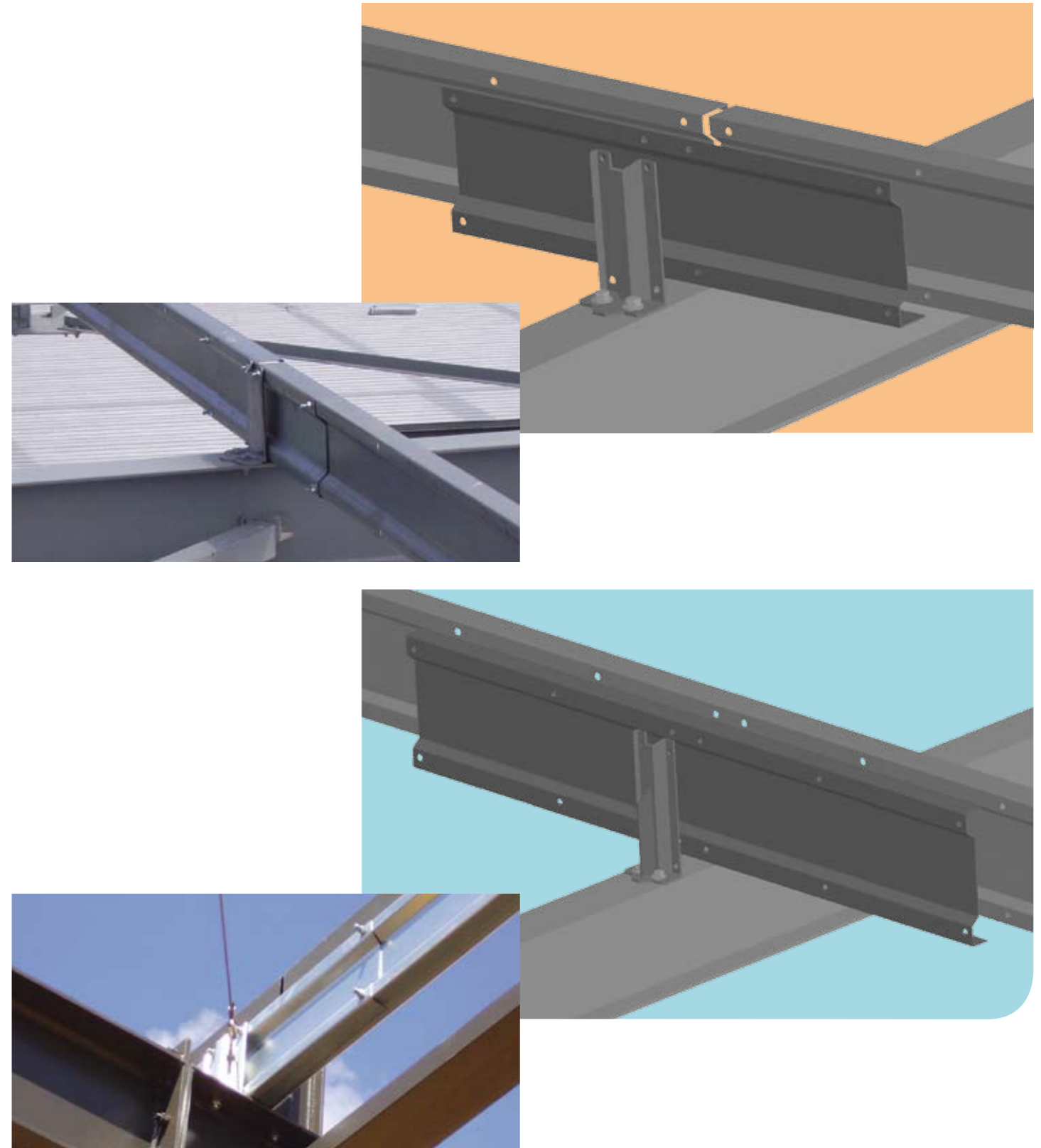


Standard thickness SD 3.2mm - SR 4mm

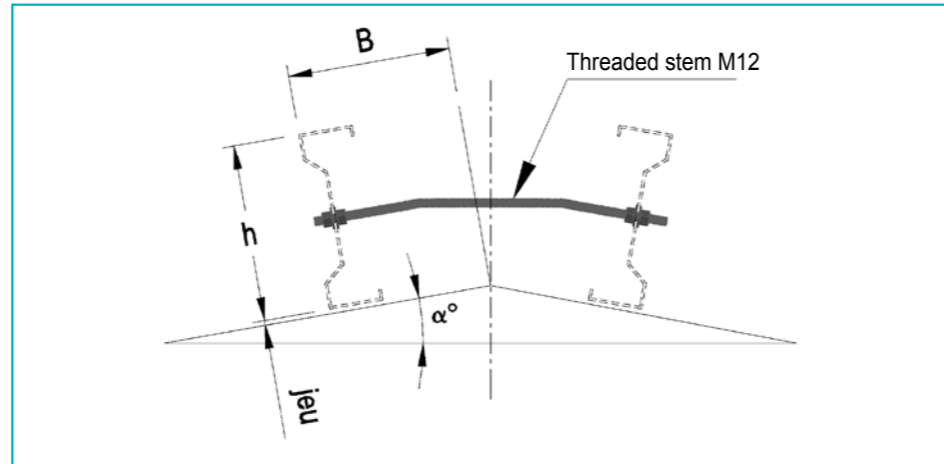
Type	Profile
SD32	C320
SR32	C320
SD35	C350
SR35	C350
SD40	D400
SR40	D400
SD45	D450
SR45	D450

Note : standard drilling, consult us for any other drilling.

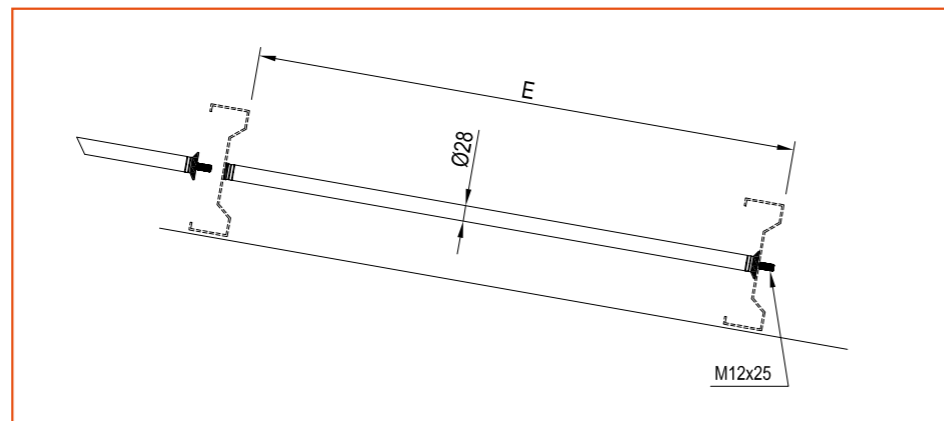
The sleeves are designed to fit the contours of the profiles they assemble, thus ensuring continuity on bearing points and transforming the statically determinate purlin system into a continuous system of purlins over one or more bays. They can vary in length and in thickness, allowing them to adapt to all types of bays and loadings.



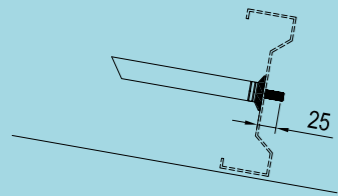
Ridge tie



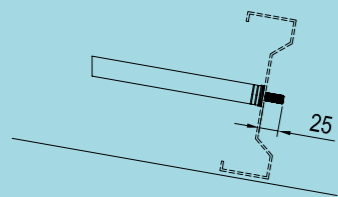
Tubular tie



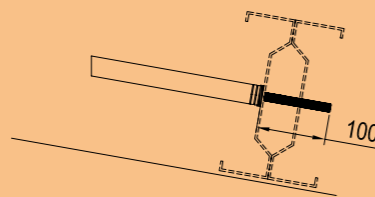
Male tip - Ø50
- screw M12X25



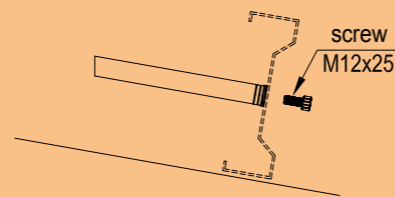
Male tip - Ø30
- screw M12X25



Male tip - Ø30
- screw M12X100

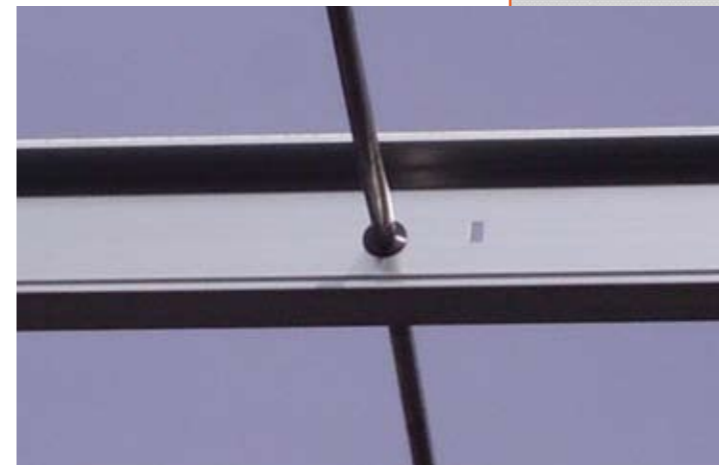
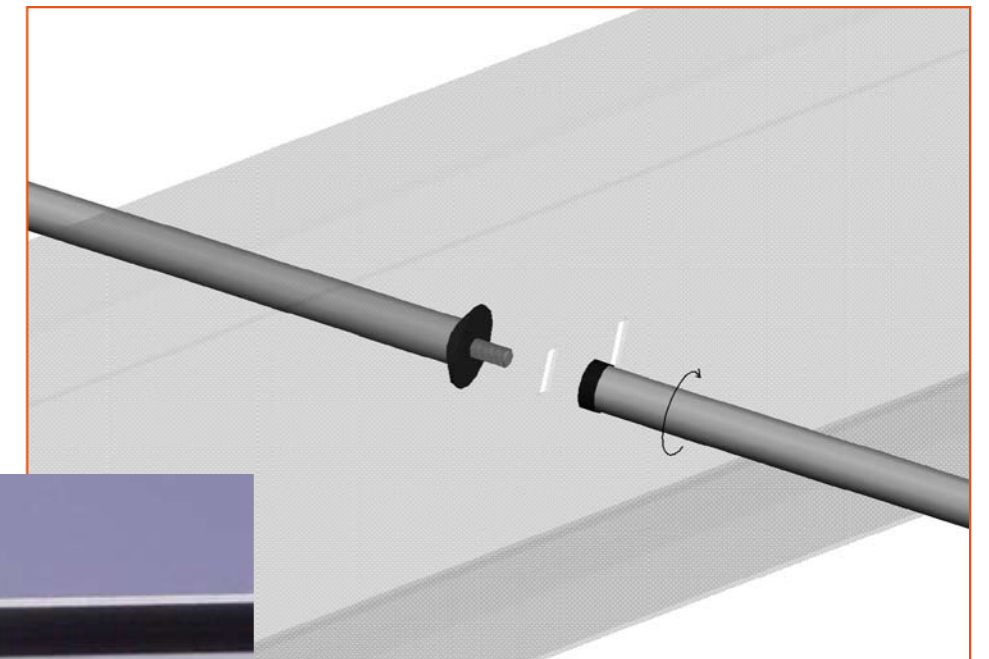
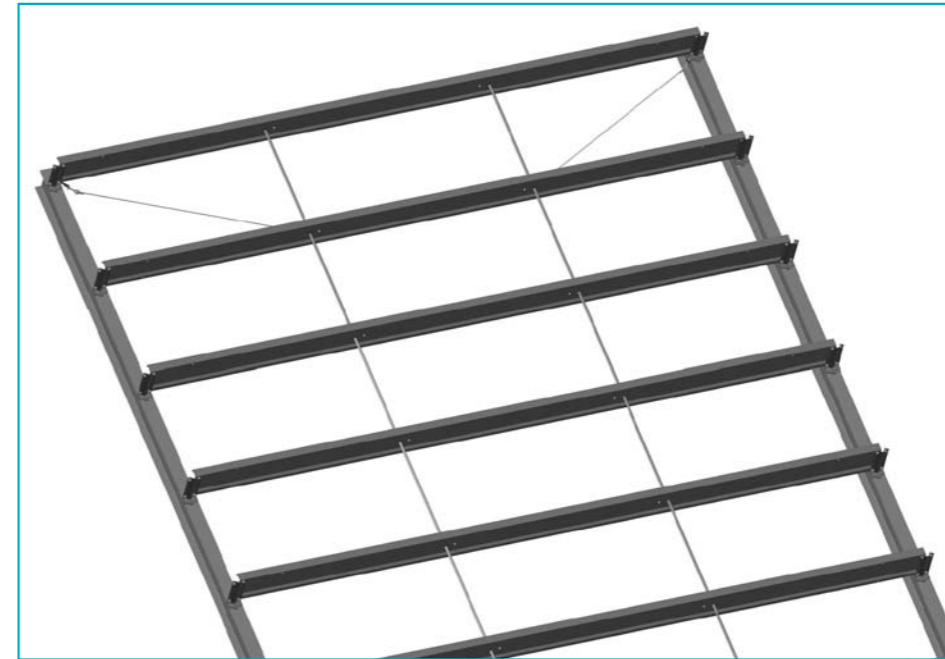


Female tip - Ø30
- screw M12

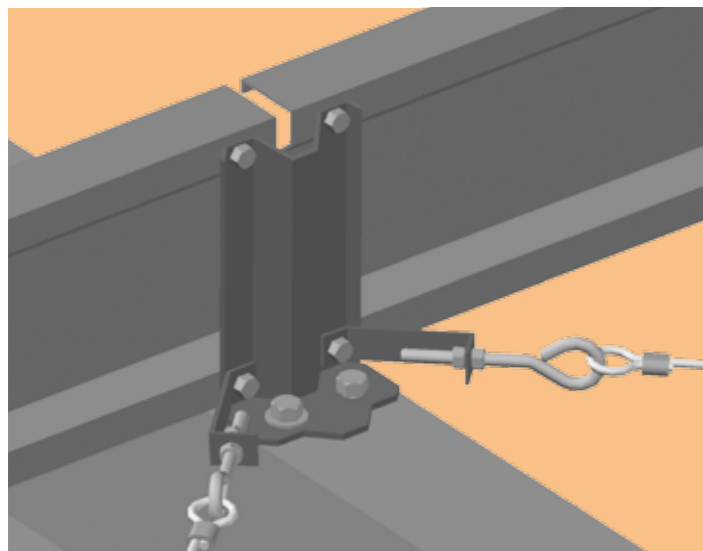
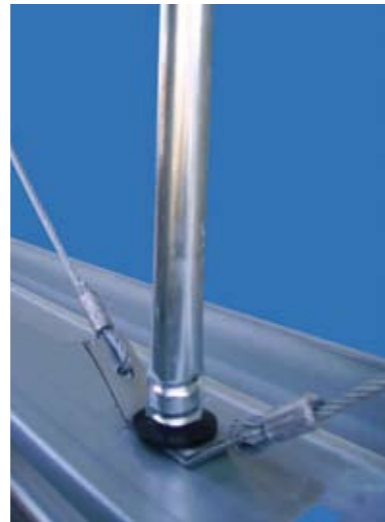
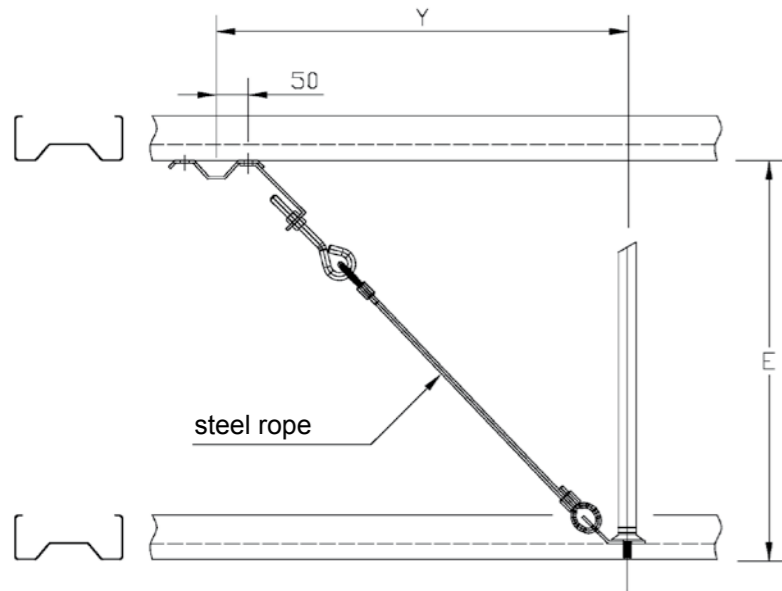


Tubular ties are designed and developed to ensure the stability of purlins, rails and joists in a simple and efficient manner. They can be screwed together without the use of tools.

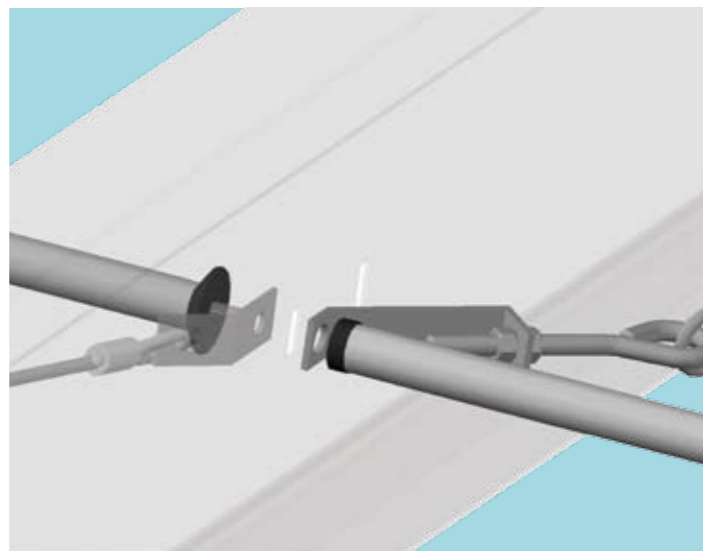
Ties placed over the ridge ensure the conjoining of ridge purlins, and even provide a "hard spot" in some instances.



The linking system is composed of sag rods and/or adjustable tie rods. The latter are the "hard spots" of purlins, rails and joists. They ensure independent stability of the secondary structure. They have adjusting possibilities which allow for quick and easy assembly.

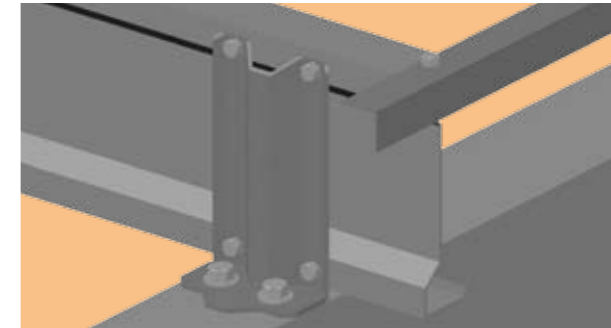


Positioning adjustable tie rods

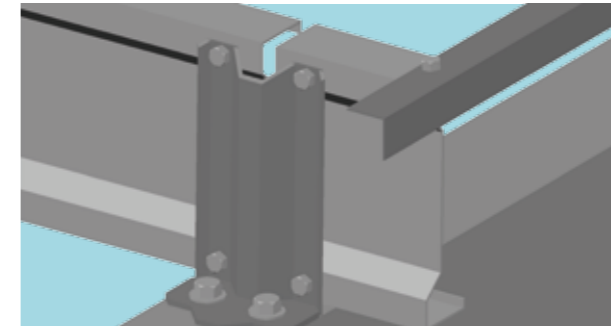


Fixing adjustable tie rods

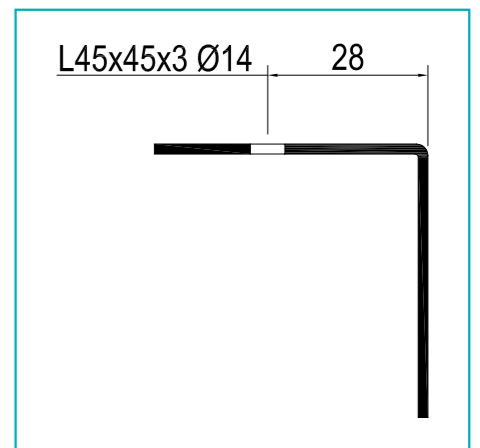
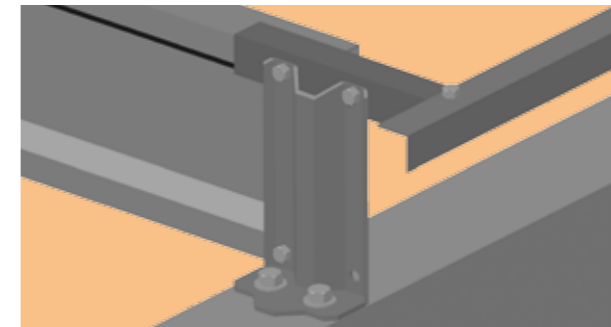
Fixed overhang with cleader rail



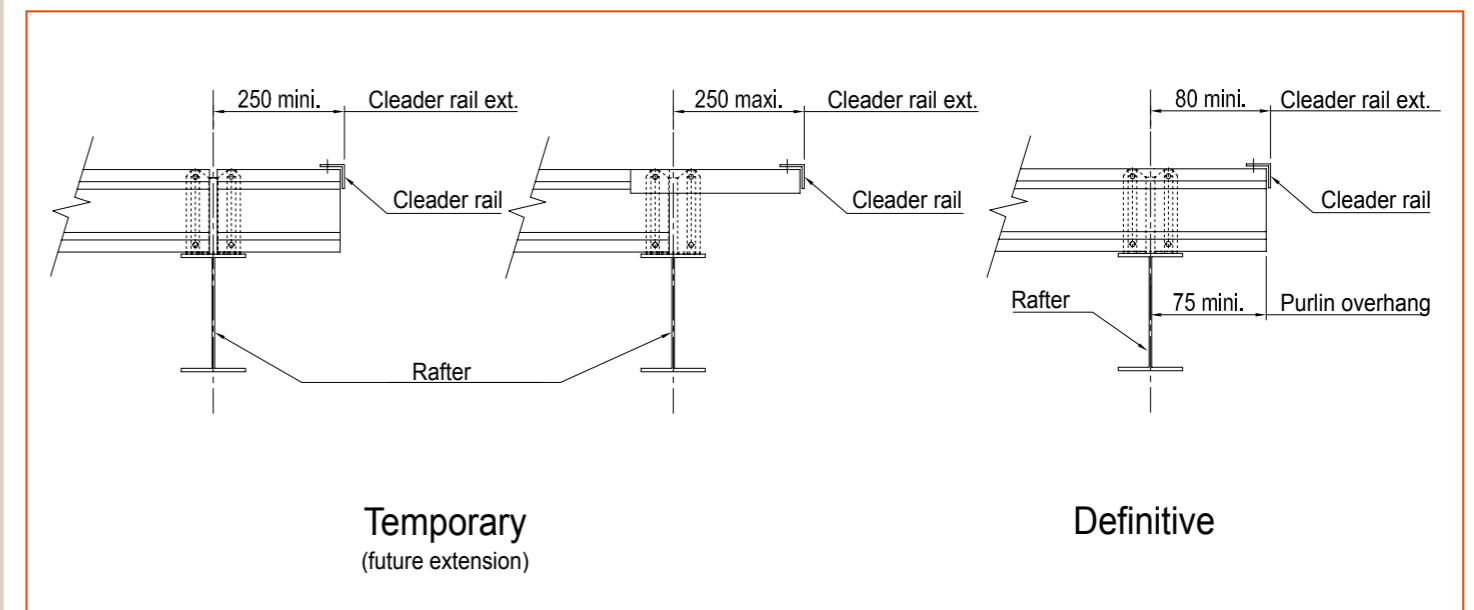
Removable purlin overhang with cleader rail



Removable corner bar overhang with cleader rail

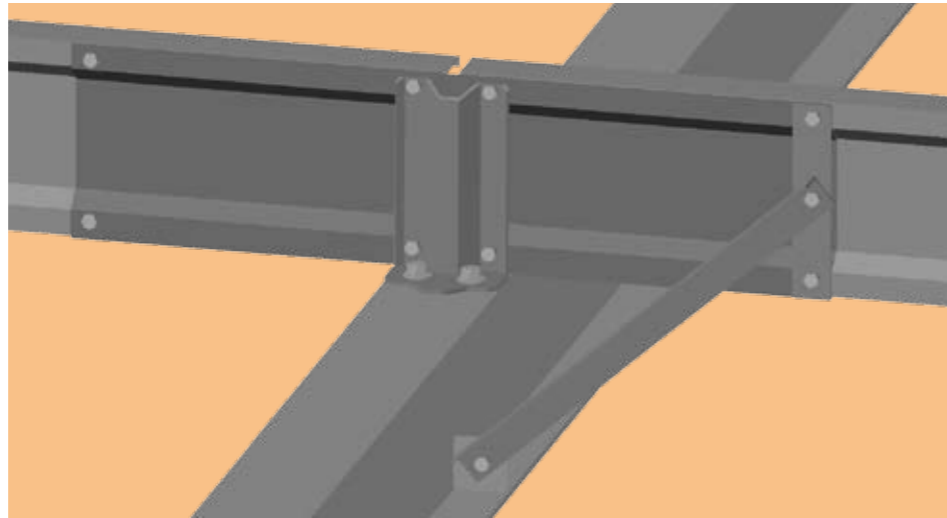


Cleader rail



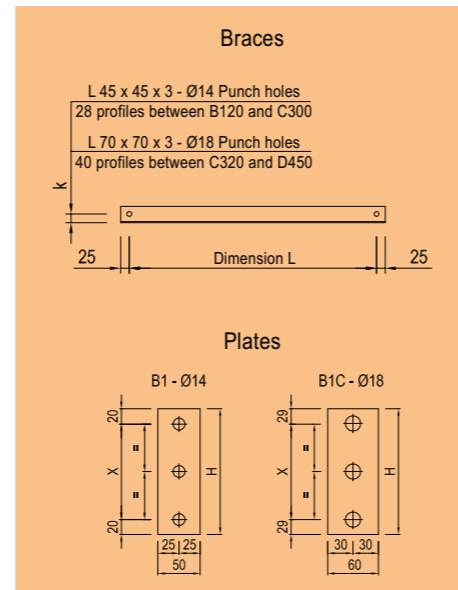
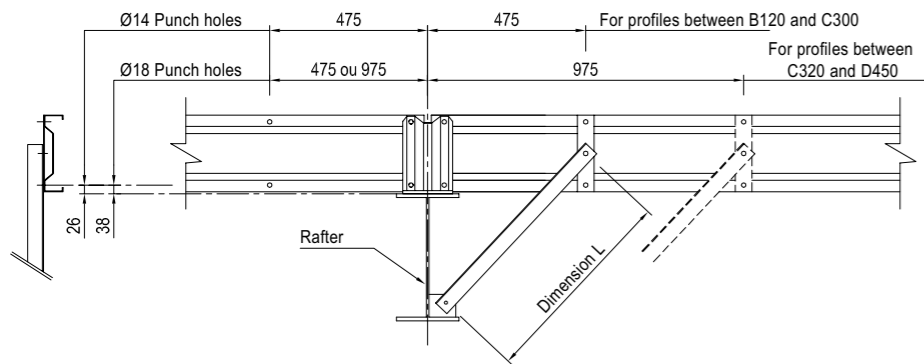
Temporary
(future extension)

Definitive

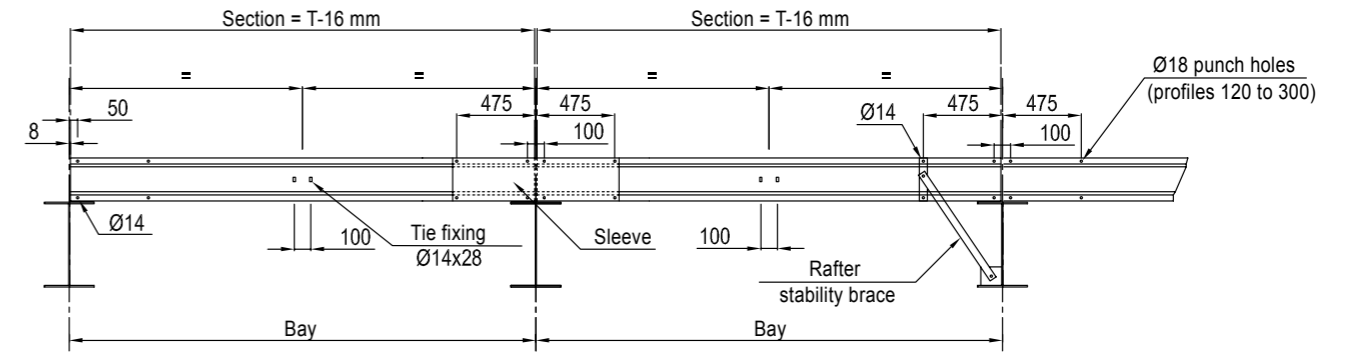


Rafter stability brace

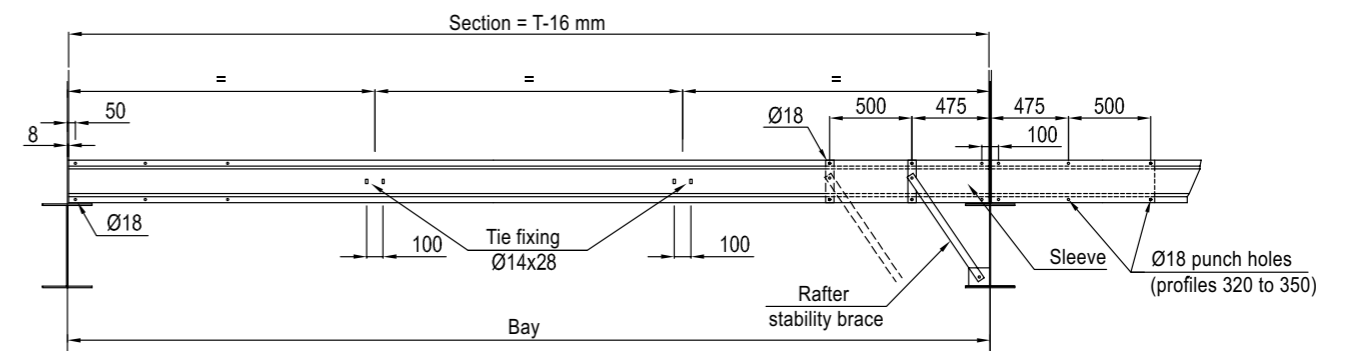
Stability bracing on one side.
The user is responsible for checking the brace and the rigidity of the stabilisation system.



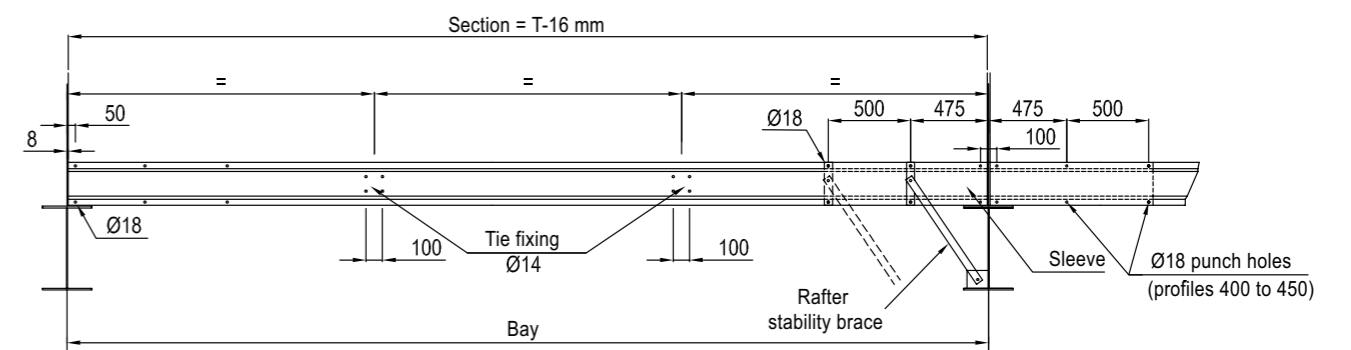
Multibeam profile 120 to 300



Multibeam profile 320 to 350

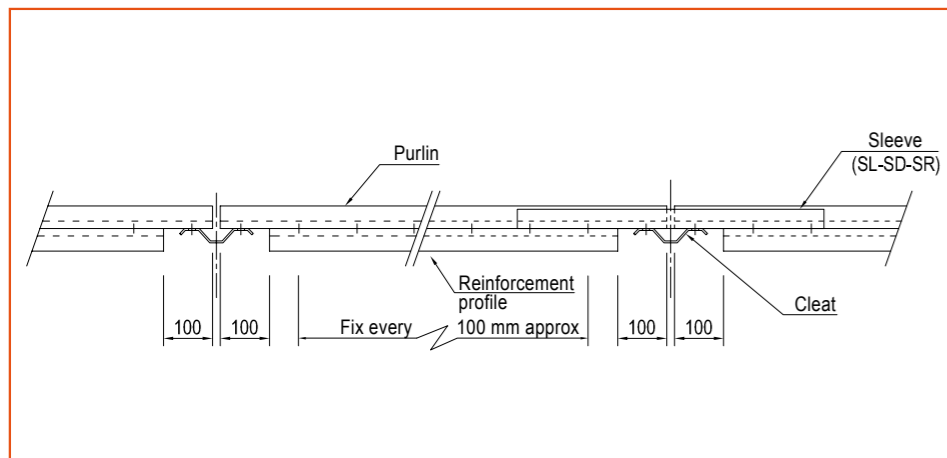
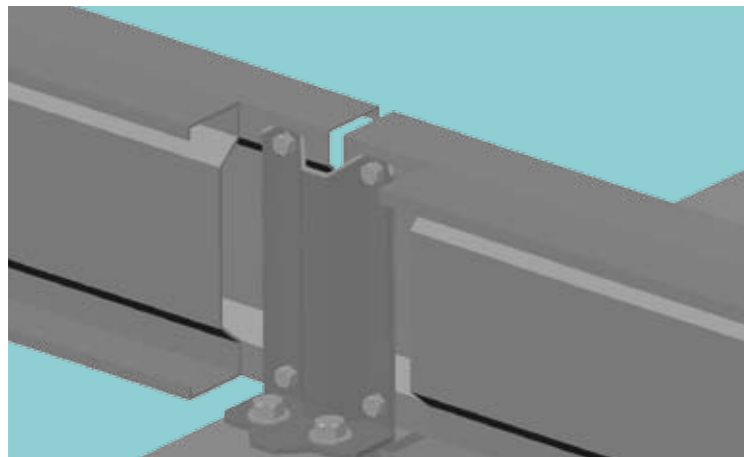
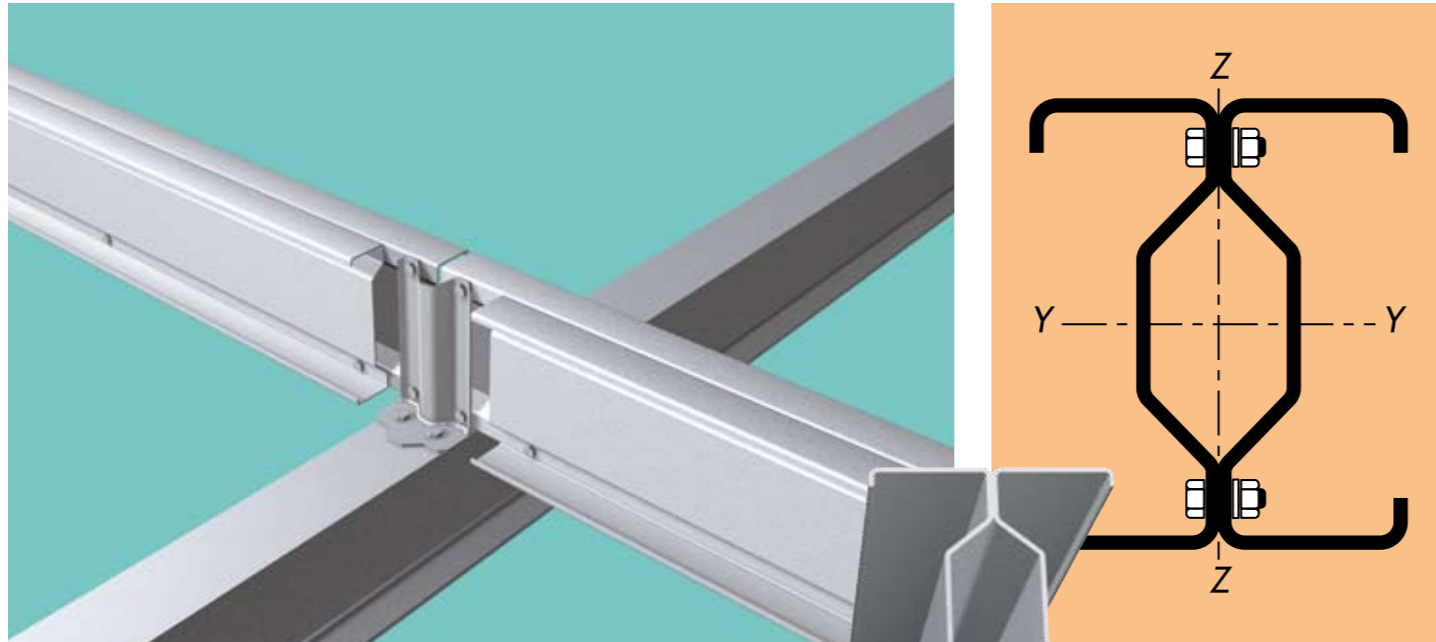


Multibeam profile 400 to 500



Arval Multibeam Double Profile System

by ArcelorMittal



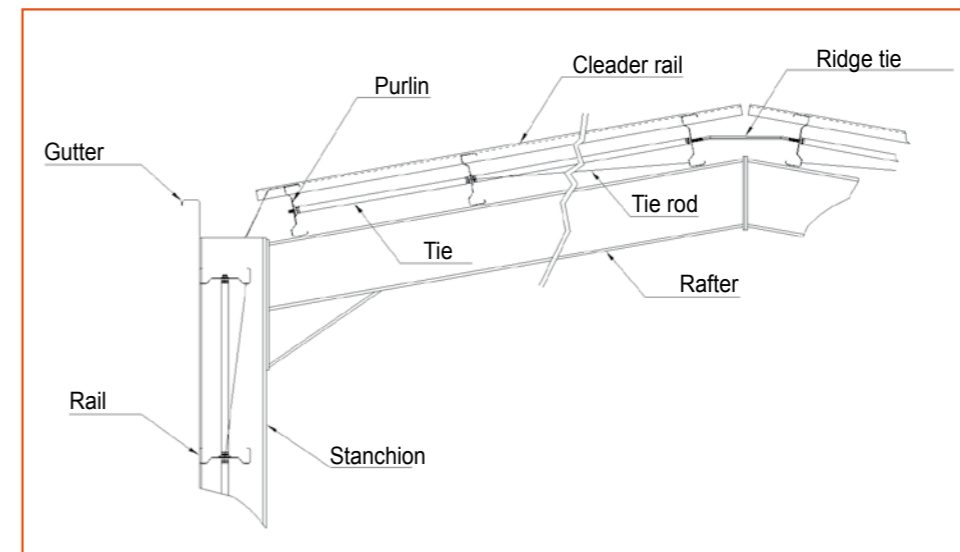
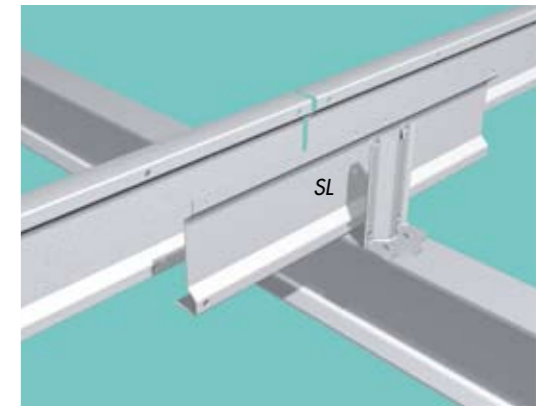
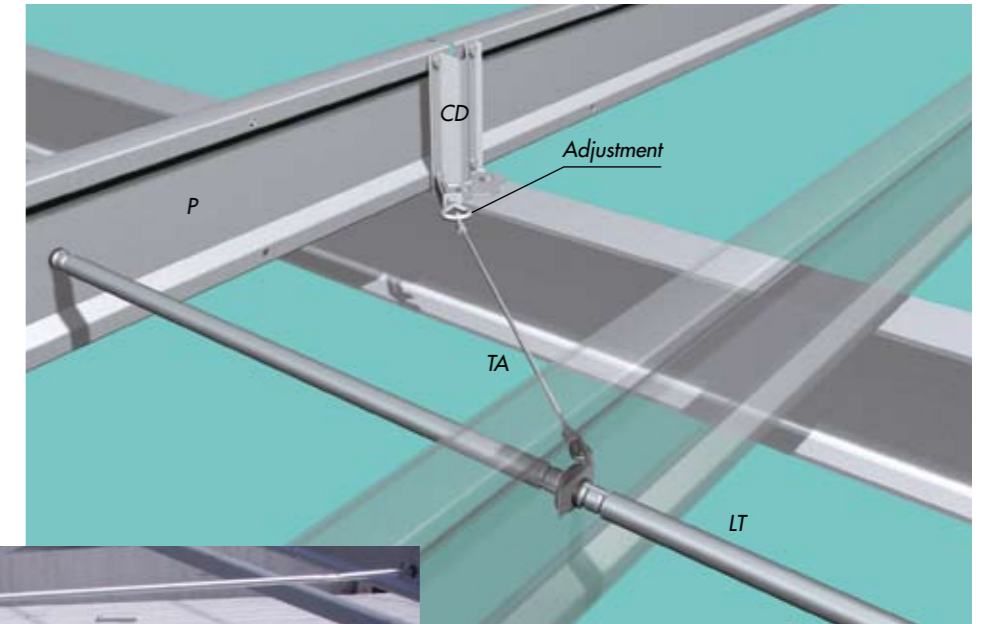
This range of compounded beams can favourably replace hot rolled sections in a great many applications : joists, lintels, frame members, sprinkler supports, etc...

These compounded beams are much lighter than their equivalent in hot rolled sections. They are easy to handle and are delivered complete with a galvanized finish and ready to install (bolts not provided).

Arval Multibeam Assembly Principles

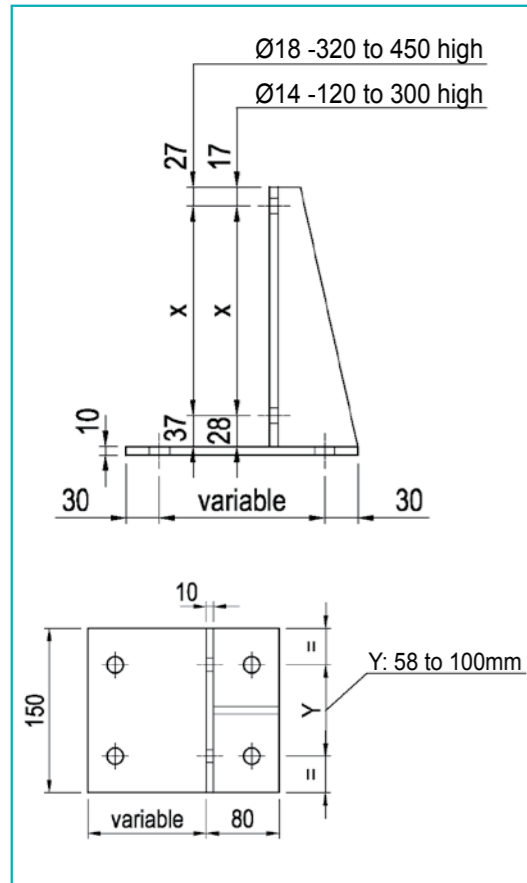
by ArcelorMittal

- TA = Adjustable tie rod
- LT = Tubular tie
- P = Purlin
- S^R_D = Sleeve
- CD = Cleat

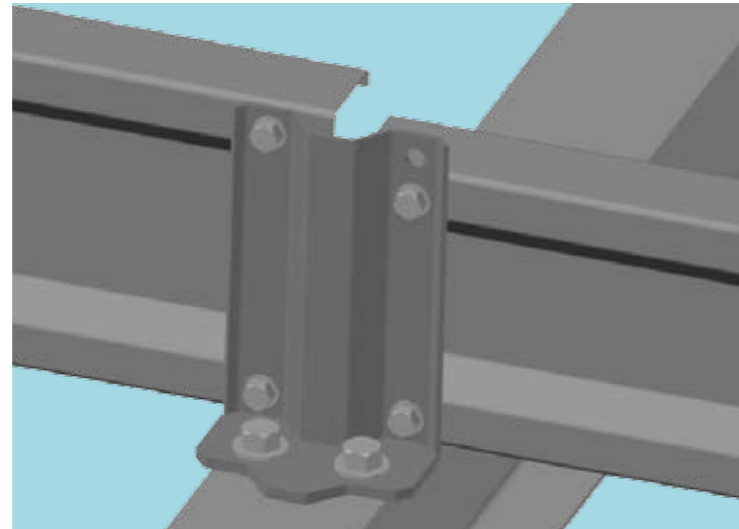


Special cleats

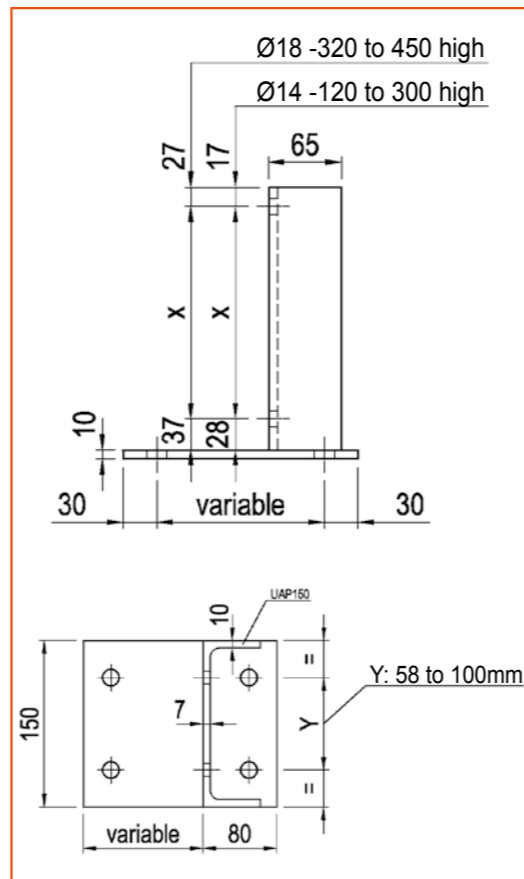
Type 1 cleat
to sustain compressive loads



For discrepancy between different
roof covering elements

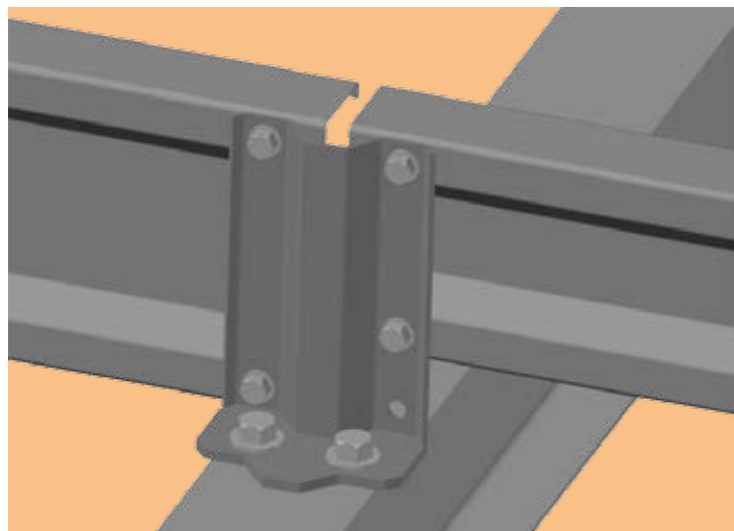


Type 2 cleat to sustain
compressive loads.



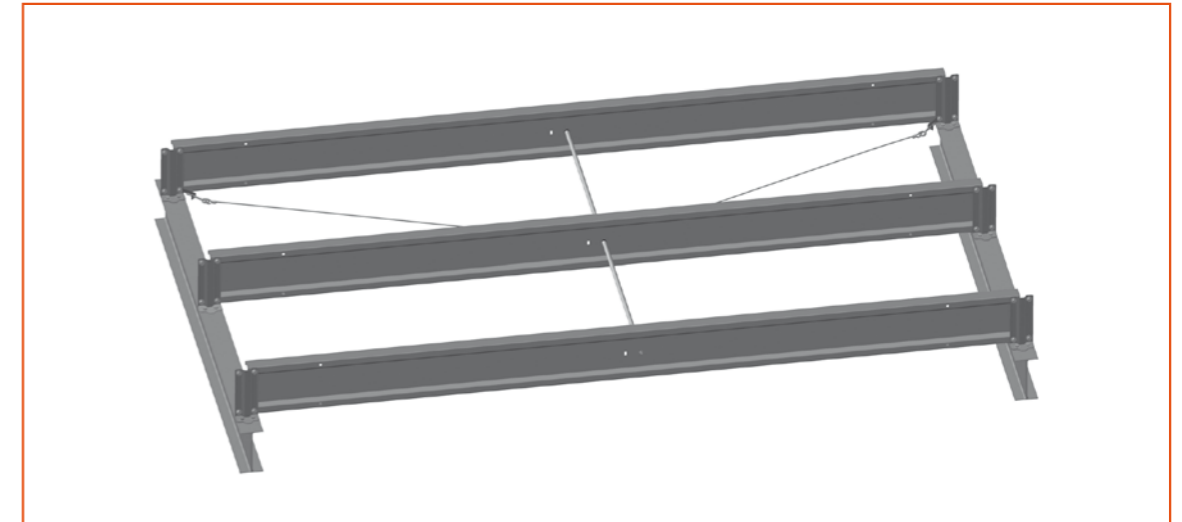
Cleats are provided by
Profil du Futur on request.
(Consult us for the price
and delivery time)

Cleat for different heights
of profiles.

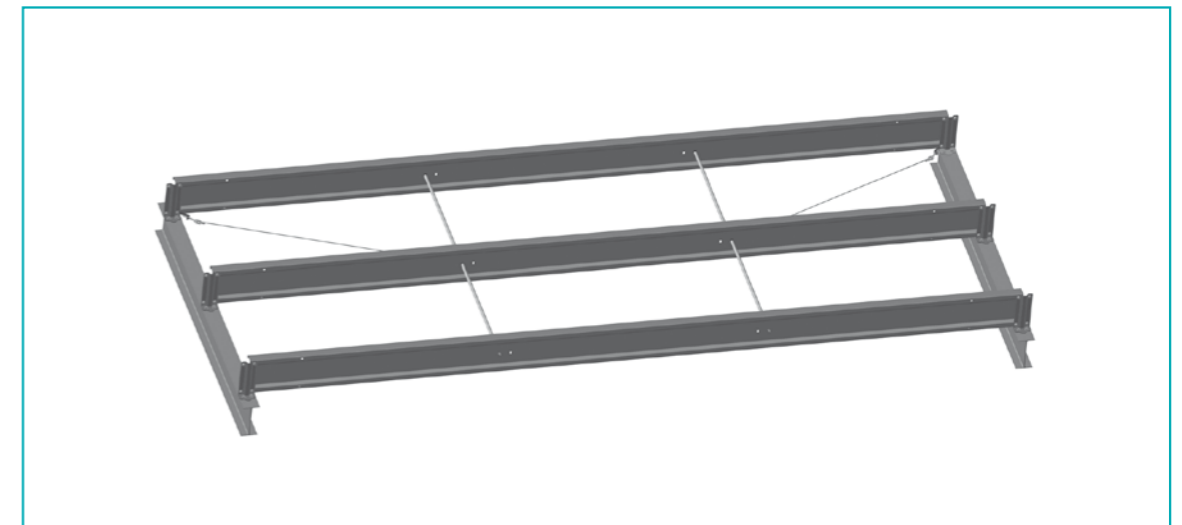


Multibeam rail, purlin and joist systems

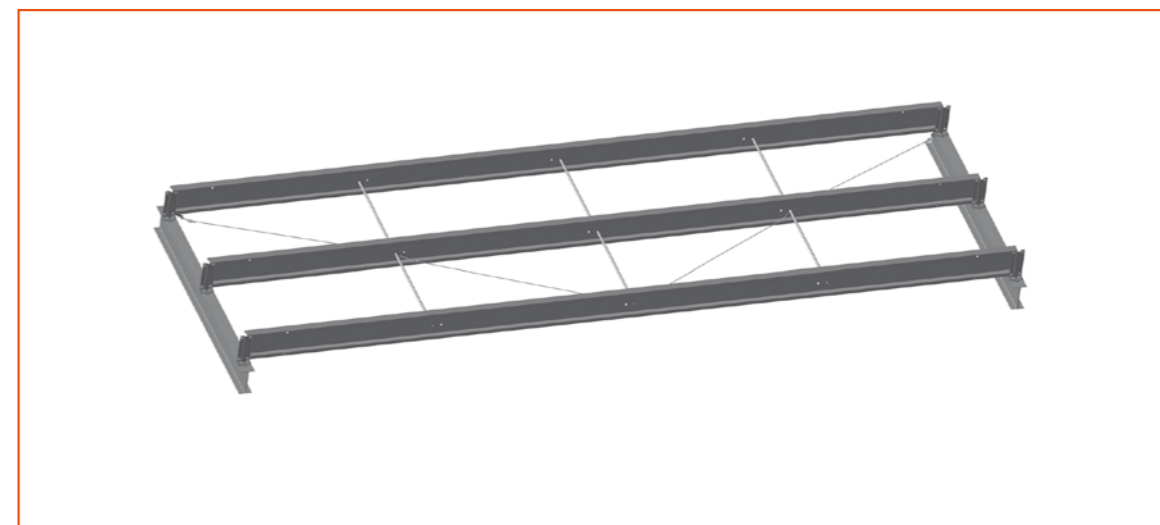
1 row of ties



2 rows
of ties



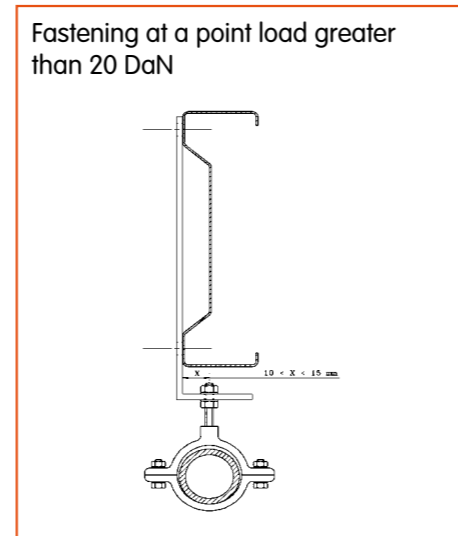
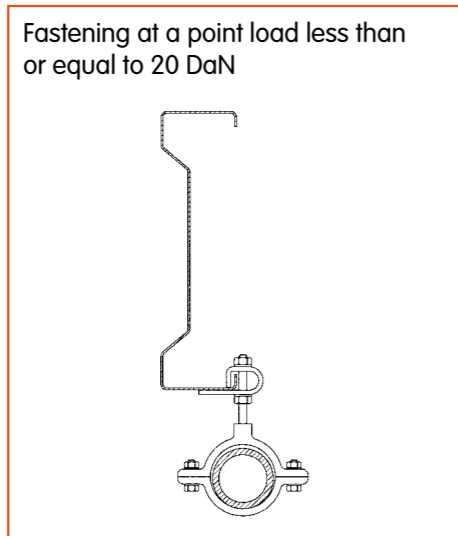
3 rows
of ties





Principles for fastening elements under the purlins

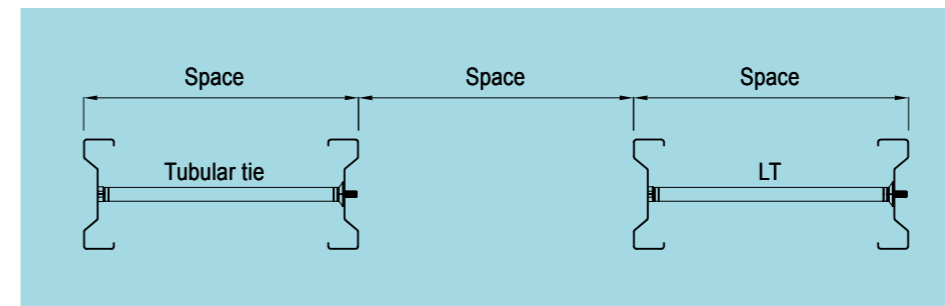
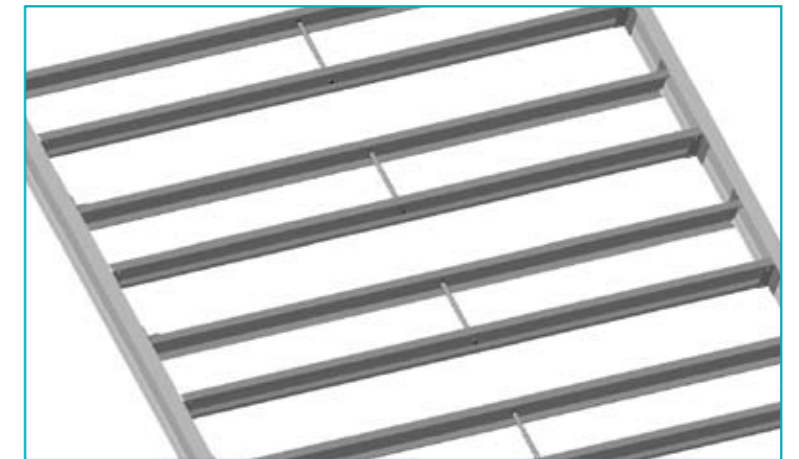
Specify loading when work is sized



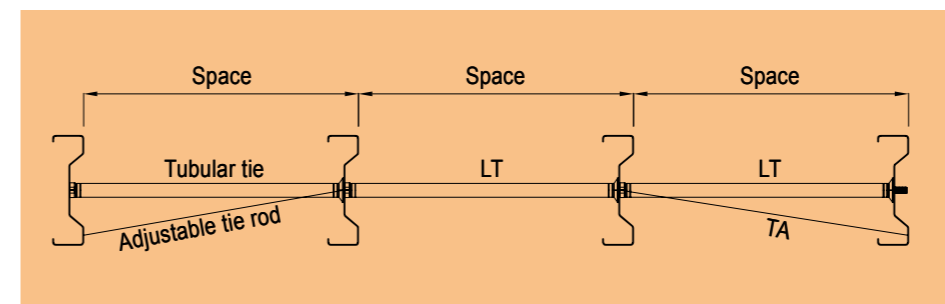
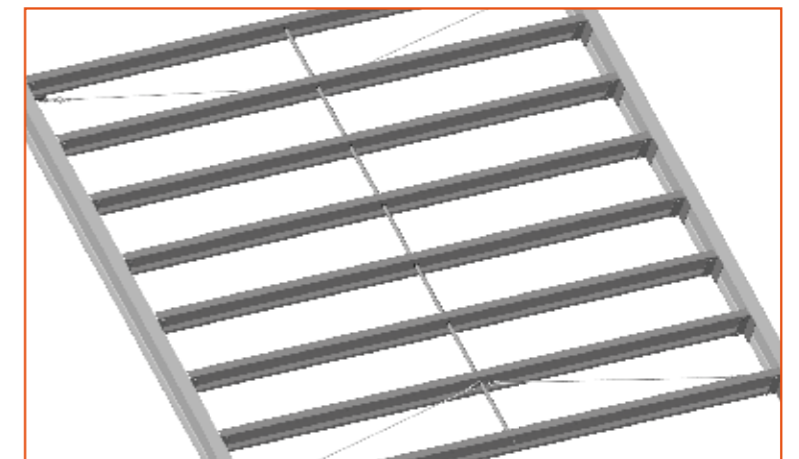
Multibeam rail and joist systems

Floor with bracing

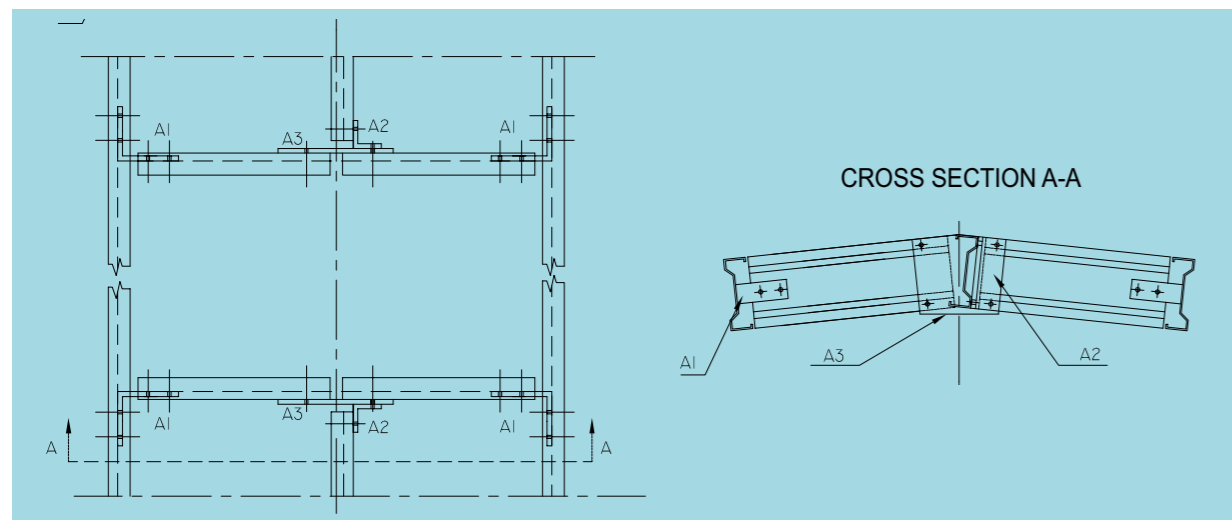
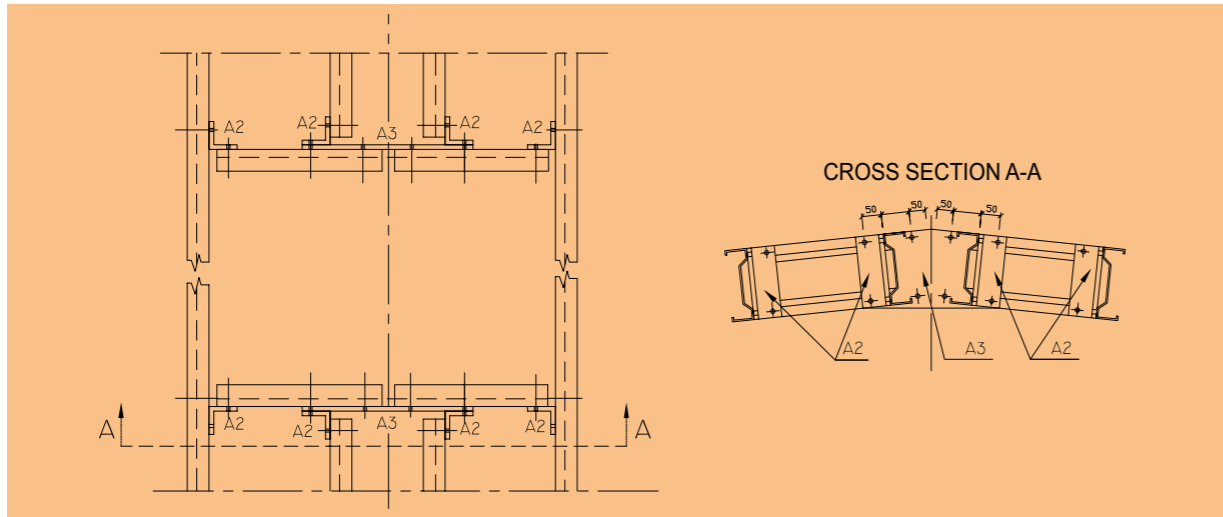
A simple, rapid and efficient solution for our floor system screwed onto joists



Support for false ceilings and for flooring without bracing

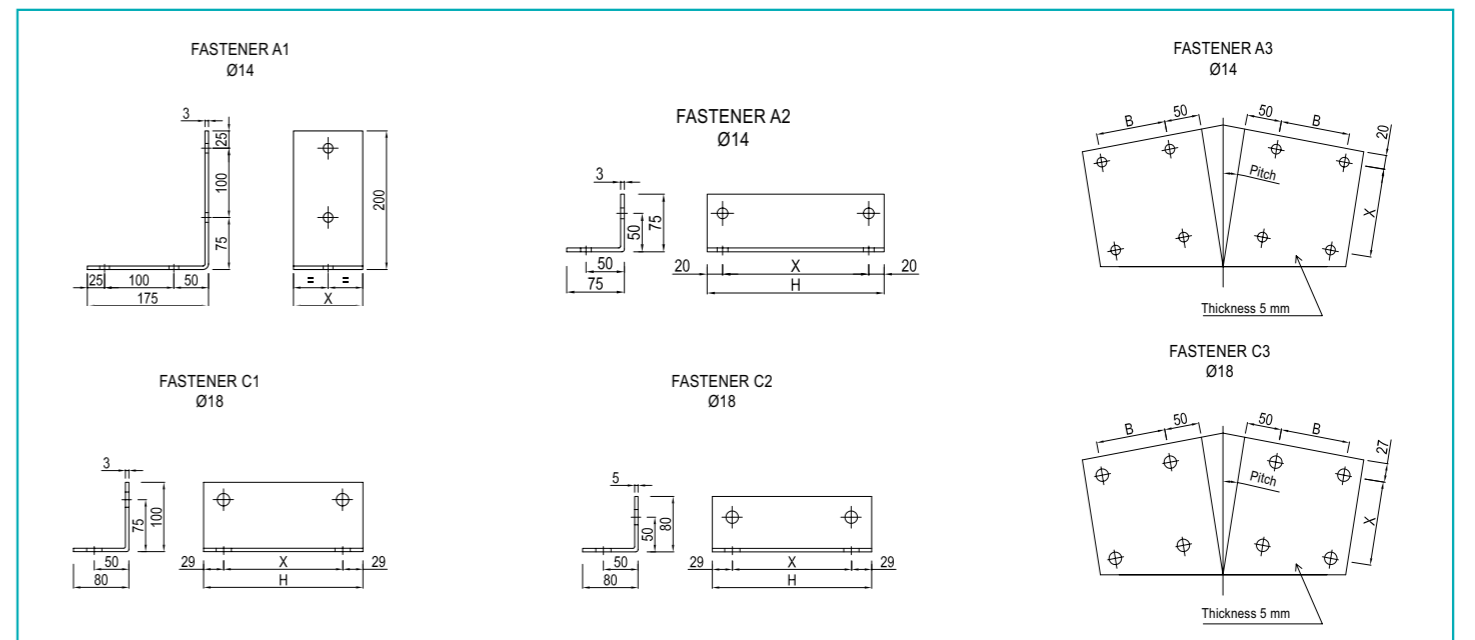
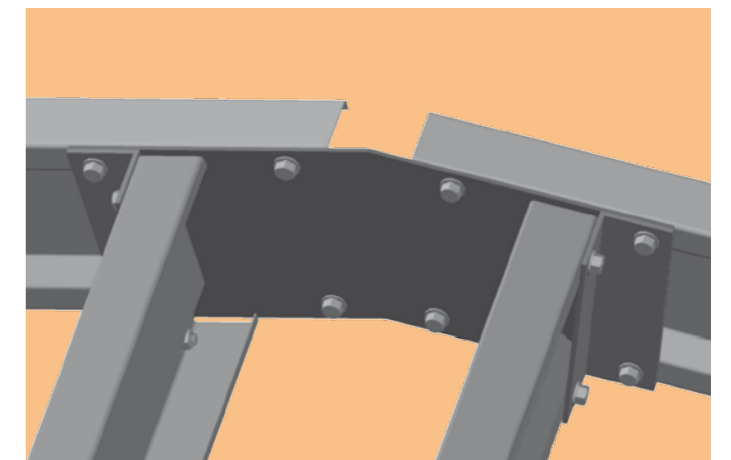
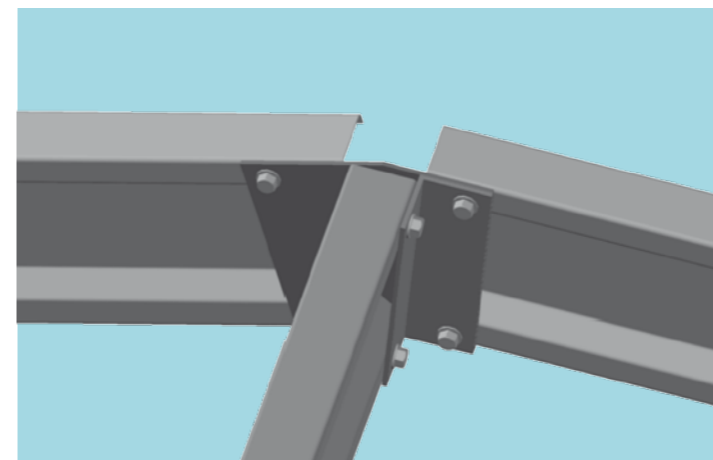
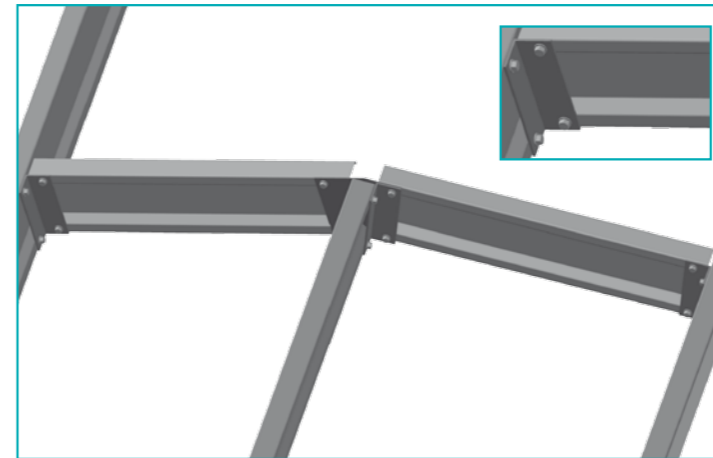
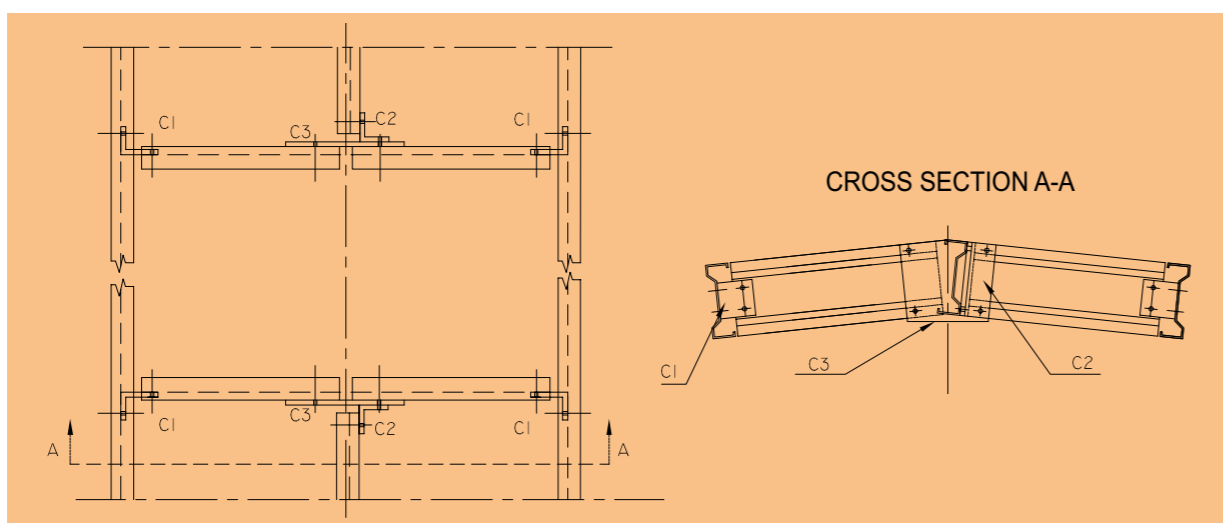


Example 1



Example 2

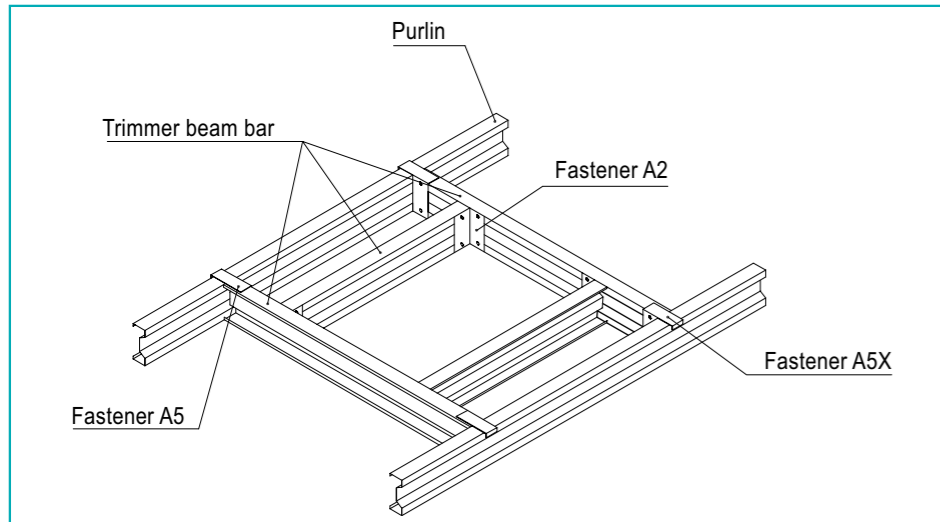
Example 3



Fasteners provided by Profil du Futur on request : consult us

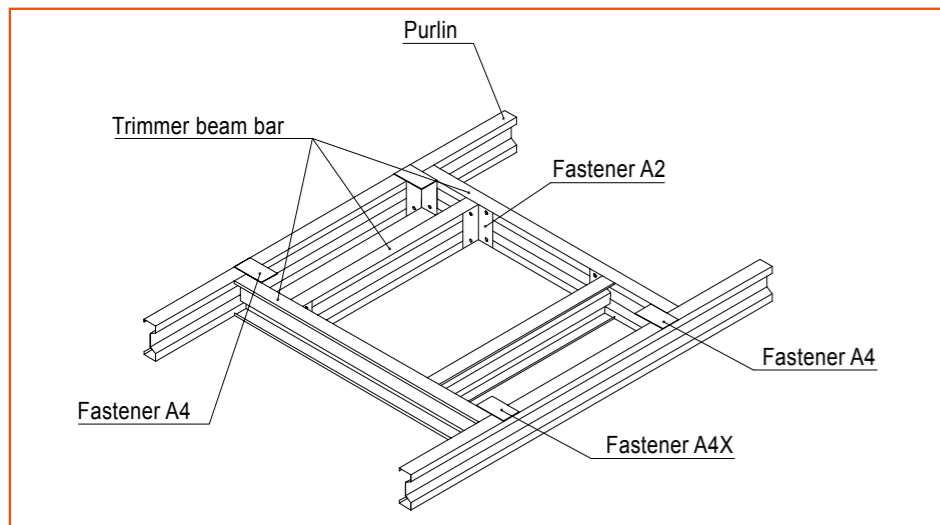
Sliding trimmer beam with 2, 3 or 4 branches

Trimmer beams for light domes

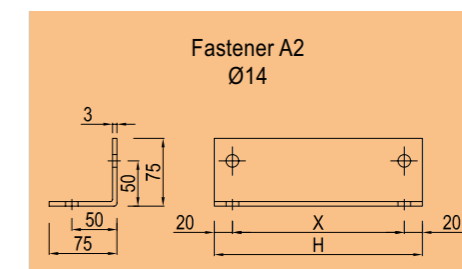
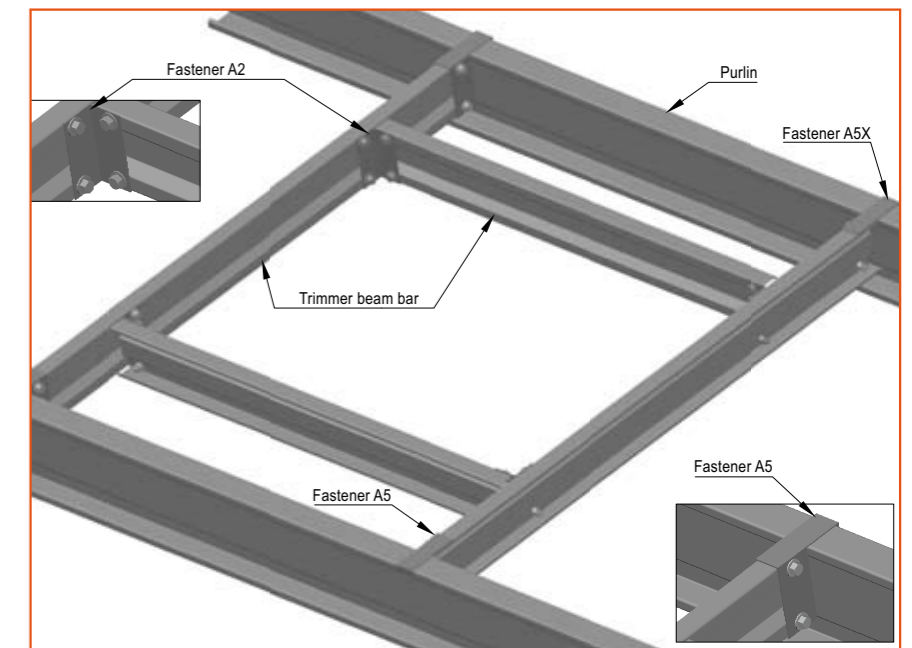
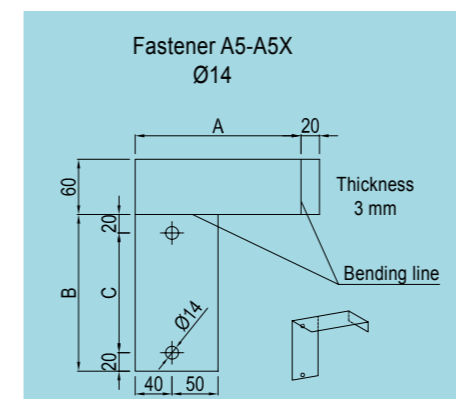
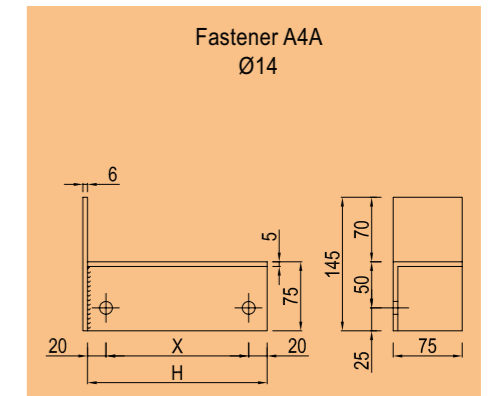
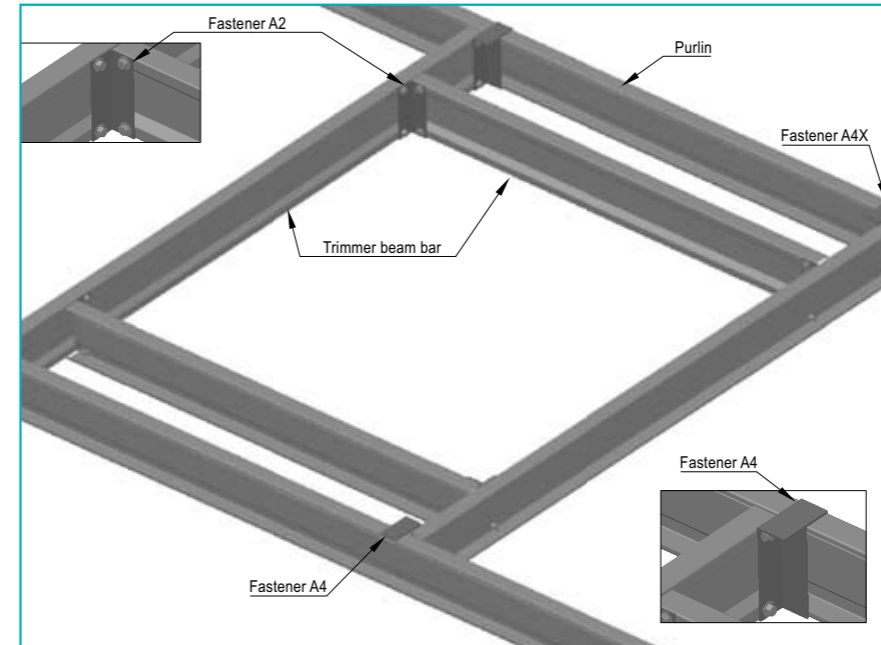
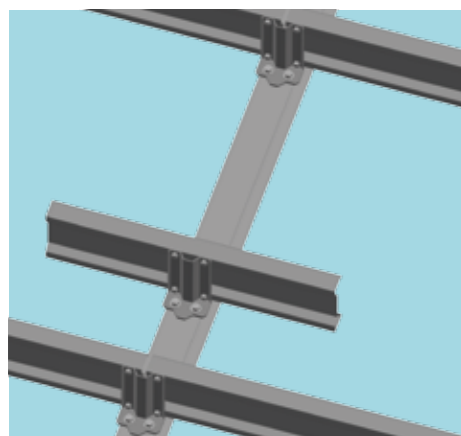


Note : please specify the loading the trimmer will need to sustain, as this determines the fasteners to be used.

Trimmer beams with reinforced fasteners



Downspout trimmer beam



A no flashings solution

The PSB solution requires no flashings for screw-fixed steel roofing, cladding and flooring.

PSB is optimized with dimensions and calculations in compliance with Eurocode standards.

PSB is manufactured from Sedzimir processed galvanized steel (275 gr/m² double sided for standard applications and up to 600 gr/ m² double sided for special applications, coastal, aggressive environments...).

The guarantee of a 350 N/mm² yield stress contributes to the performance and quality of the profiles.

Cost saving

Simple

High performance

No cleats

No sag rods

No tie rods

The solution for bays up to 7m in length

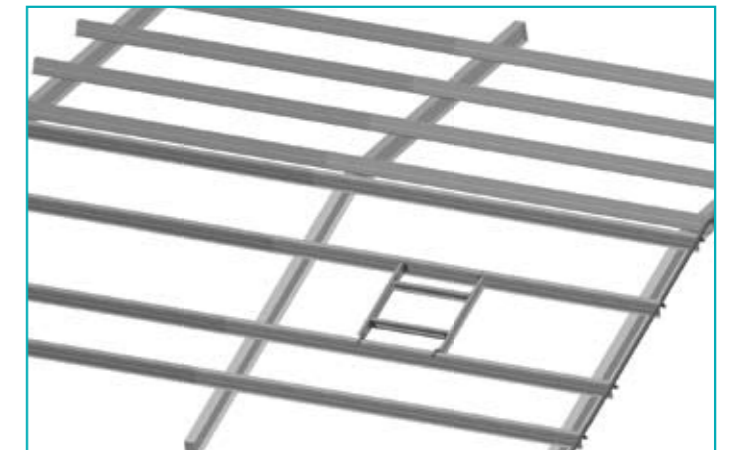
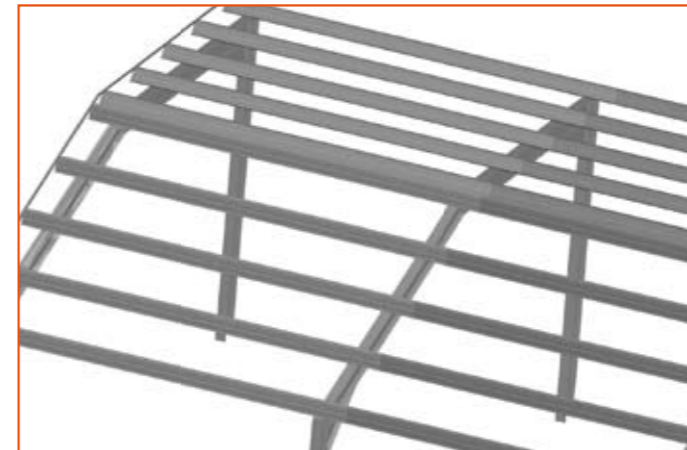
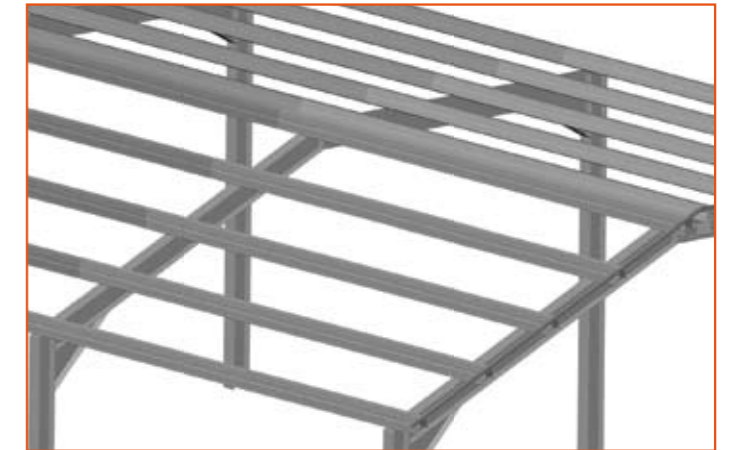
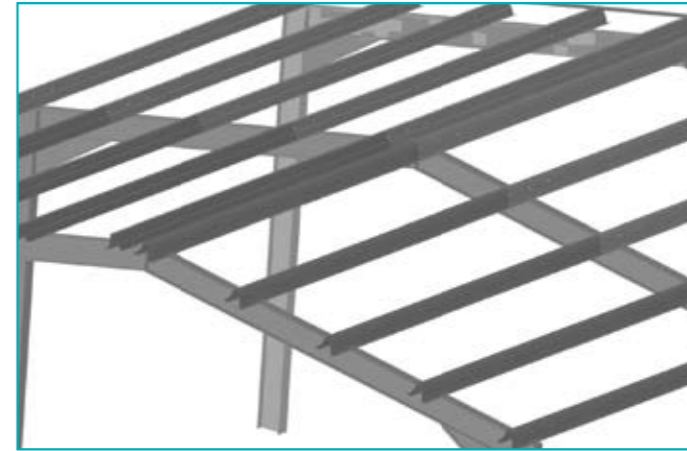
Stable and symmetrical

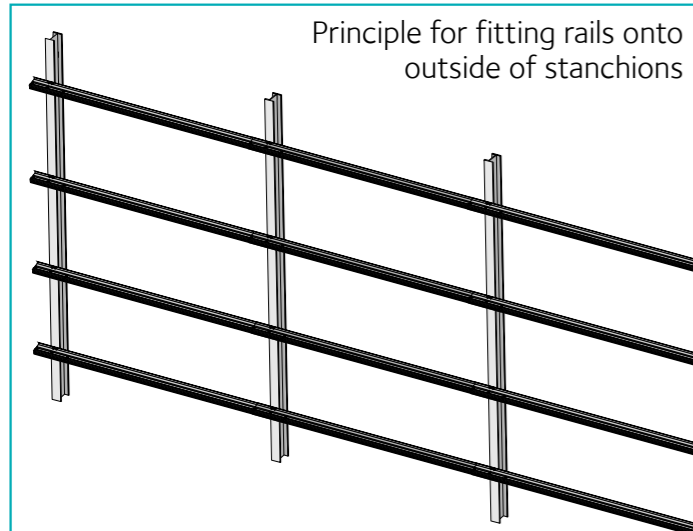


The PSB purlin system is specially suited to small bays (up to 7 metres long) and is the ideal solution for all kinds of buildings including those used for farming and industry.

No flashings are required to assemble the system providing the roofing is screw-fixed and compositely acting.

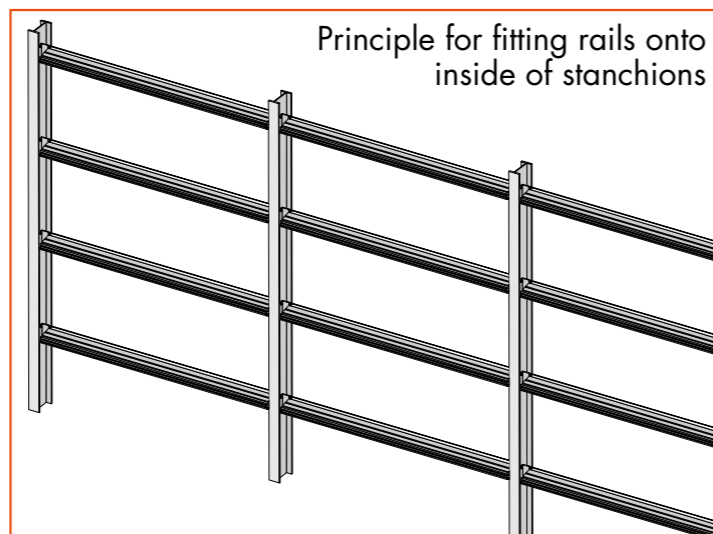
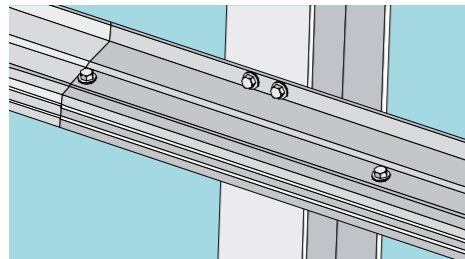
Profile overlapping guarantees the continuity of the system since the profiles are fitted and secured on-site with self-tapping screws, supplied by Arval – Profil du Futur.



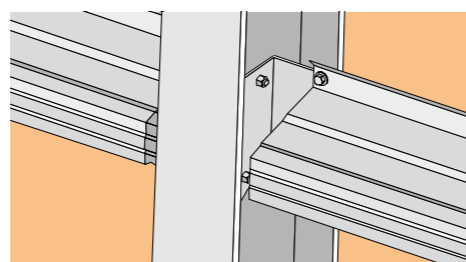


Principle for fitting rails onto outside of stanchions

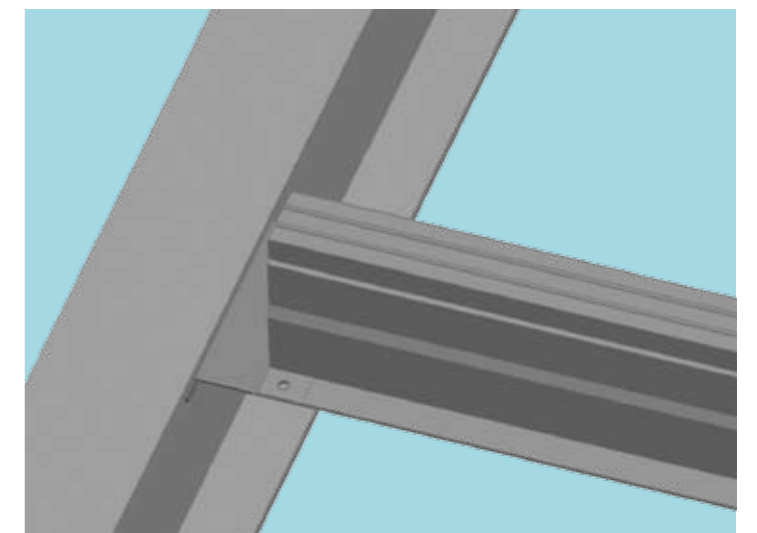
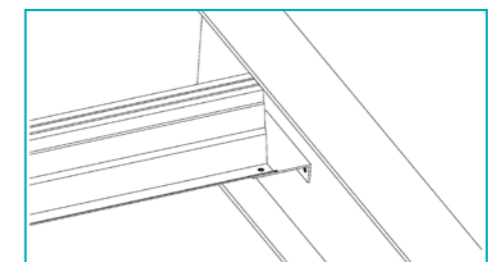
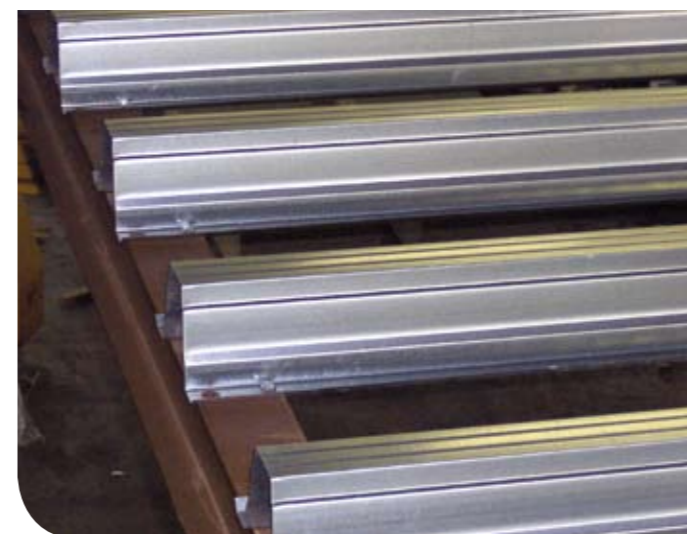
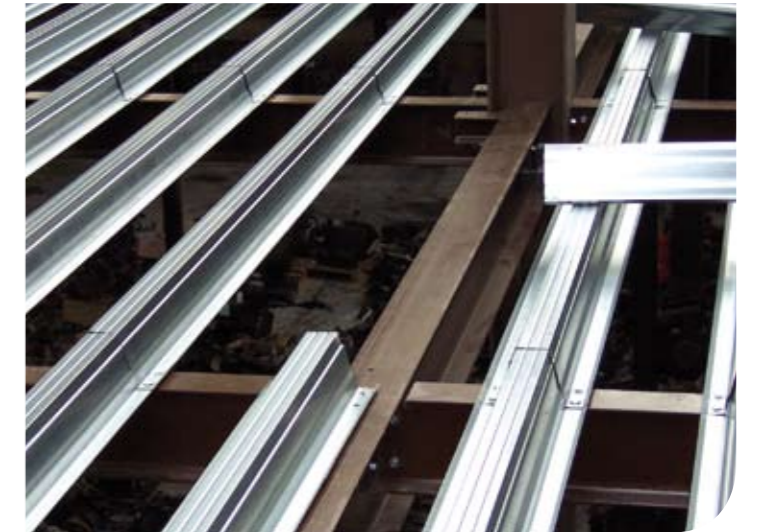
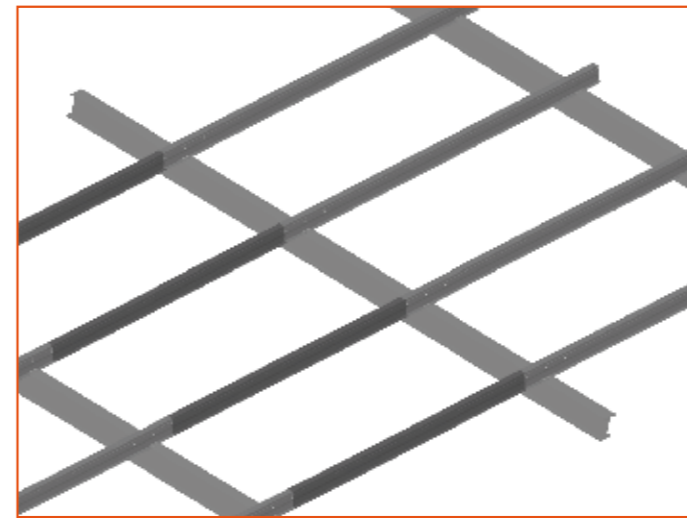
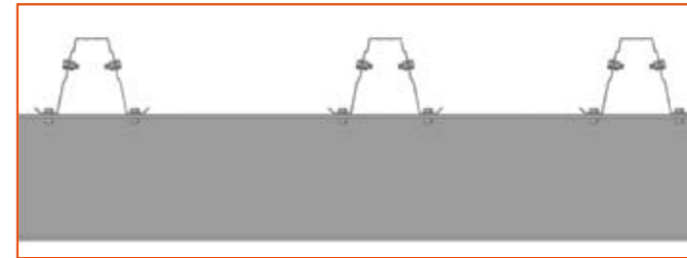
The PSB profile is symmetrical and stable with no need for flashings. It allows for easy installation and is a rigid building system. The PSB profile can be erected both ways round thus adapting to all types of structures.

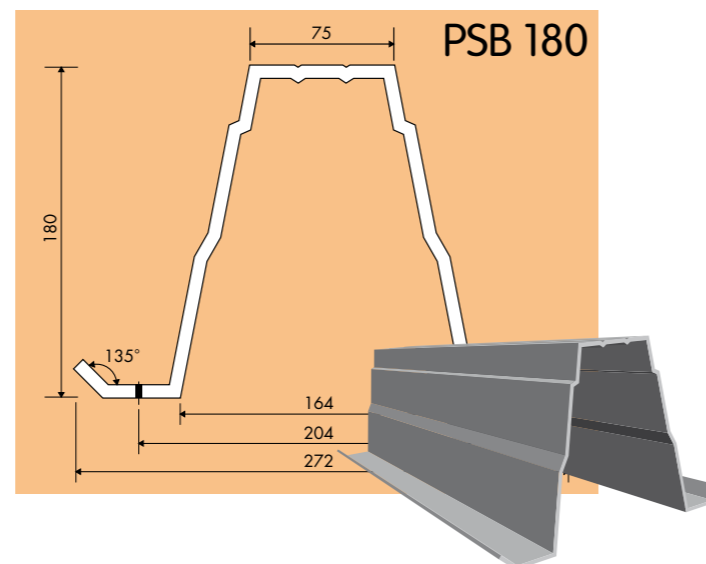
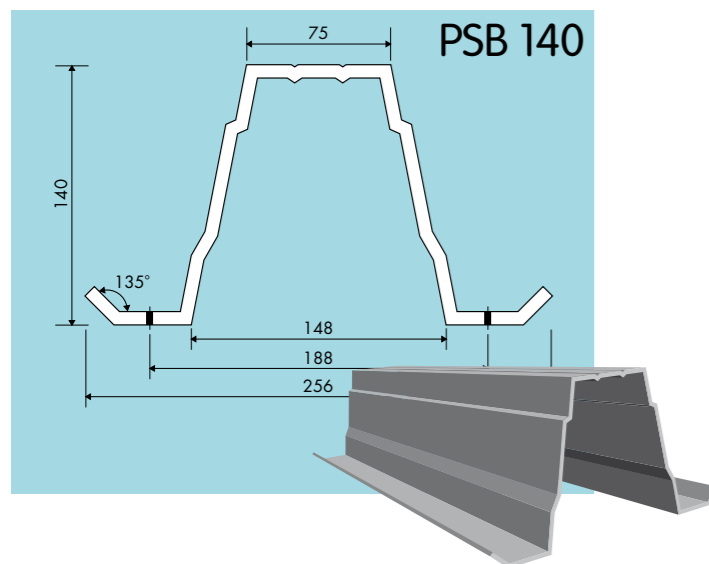
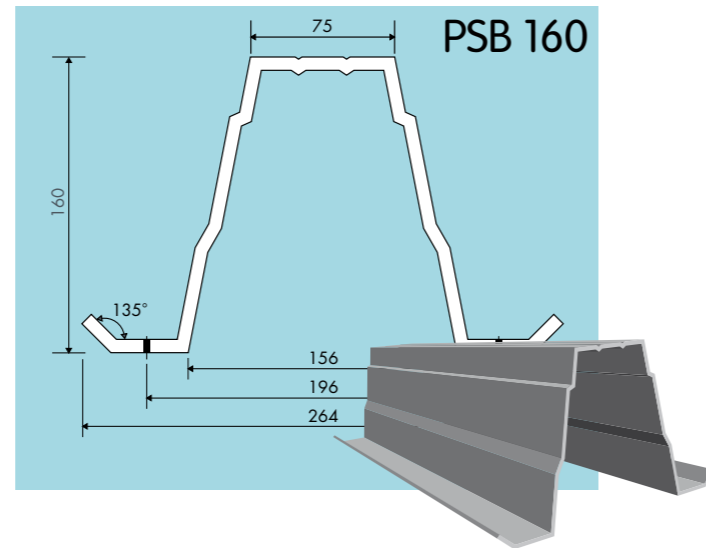
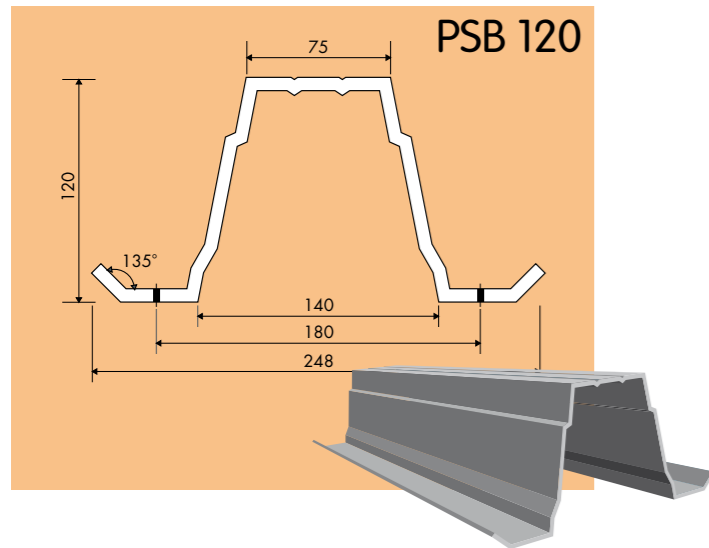


Principle for fitting rails onto inside of stanchions

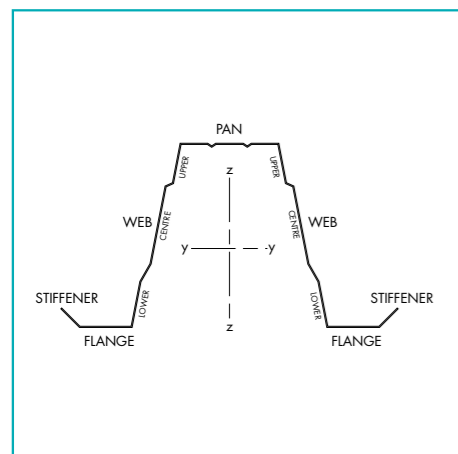


Properties regarding the strength of the PSB profile as well its simplicity and cost effectiveness are in the limelight when used to joist your new flooring, refurbishments, extensions and mezzanines.



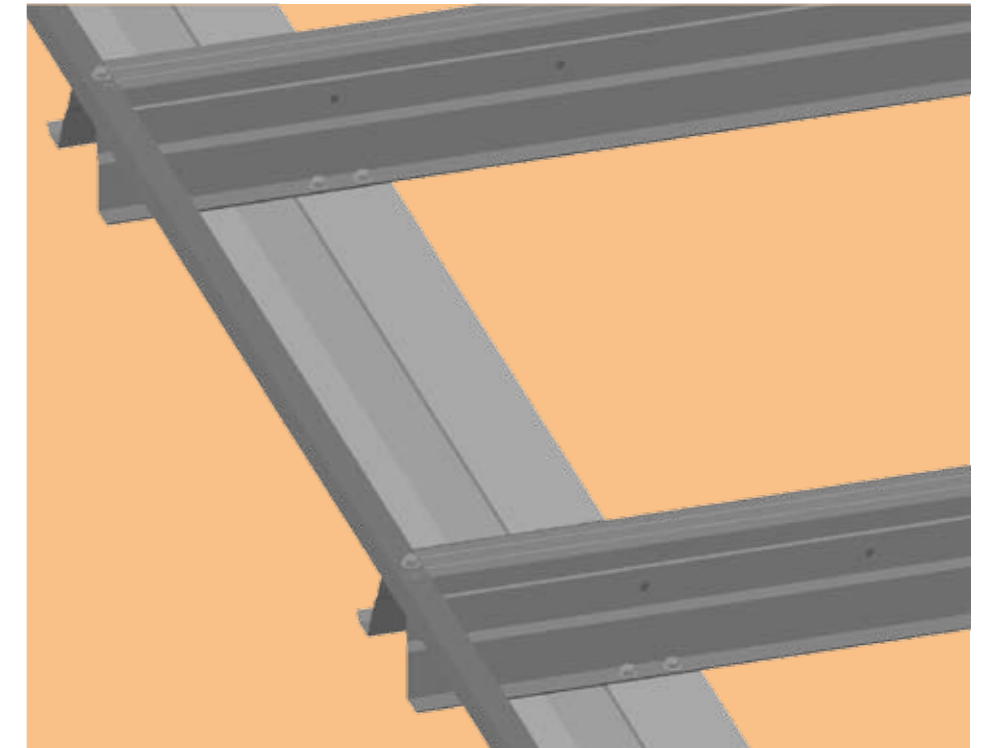
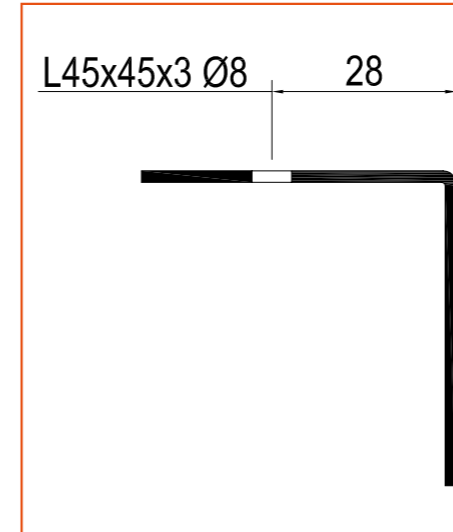


Gross mechanical properties

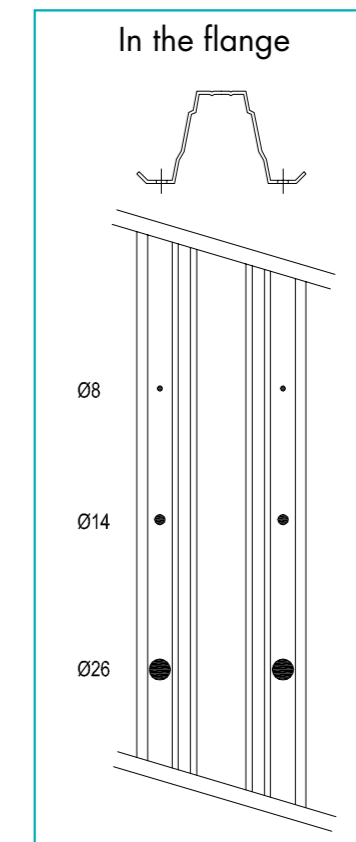
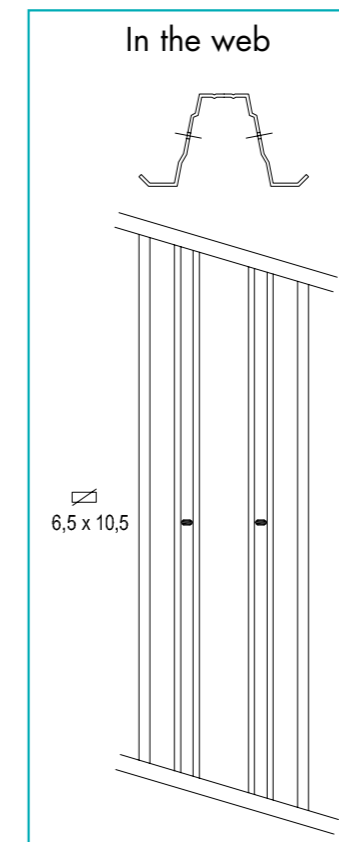
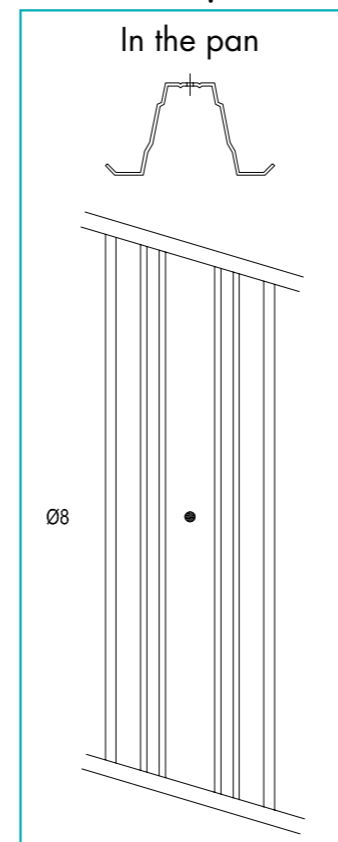


PROFILES	Thickness (mm)	Weight (daN/ml)	Area (mm ²)	Iy (cm ⁴)	Wymini (cm ²)	ry (cm)	Iz (cm ⁴)	Wz (cm ³)	rz (cm)
PSB 120	0,9	3,03	385,84	81,51	12,58	4,60	169,60	13,65	6,63
	1,2	4,08	519,62	109,26	16,85	4,59	227,75	18,34	6,62
PSB 140	0,9	3,30	420,88	117,35	15,64	5,28	195,98	15,30	6,82
	1,2	4,45	566,88	157,42	20,97	5,27	263,21	20,55	6,81
PSB 160	0,9	3,58	455,93	161,60	18,96	5,95	224,70	17,02	7,02
	1,2	4,82	614,15	216,91	25,44	5,94	301,81	22,87	7,01
PSB 180	0,9	3,85	490,97	214,96	22,54	6,62	255,86	18,83	7,22
	1,2	5,19	661,42	288,68	30,25	6,61	343,70	25,30	7,21

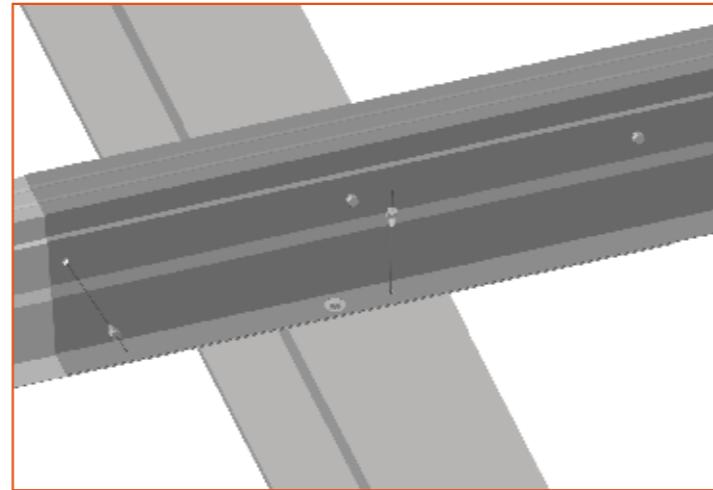
Cleader rails



Standard punch holes



In order to enhance the simplicity of the system and its installation, Arval - Profil du Futur and SFS intec have developed and perfected a self-tapping screw, to improve on the standard bolt. It has as much strength and is five to seven times as fast to install. This screw has the following properties:

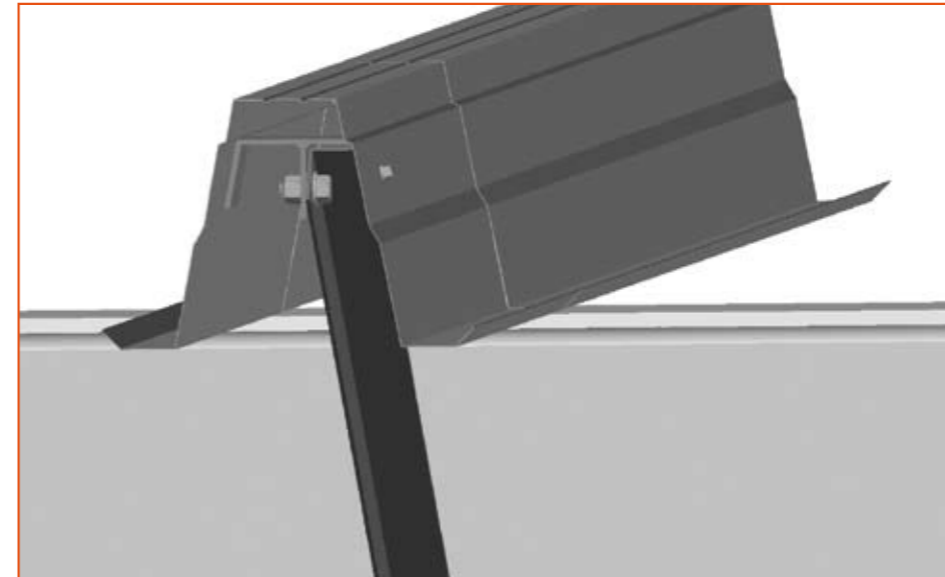


TDBL Ø 8,6

- Application**
- Appareils de pose (exemple)**
 - ⇒ visseuse à batterie **BF414** à percussion tangentielle associée à la douille magnétique **E313**
 -
- Facilité / Efficacité**
 - ⇒ facilité et rapidité de mise en œuvre
 - ⇒ installation d'une seule main et d'un seul côté
 - ⇒ une seule fixation pour couvrir toutes les applications
 - ⇒ autocentrage de la fixation grâce à la pointe pilote
 - ⇒ pas d'accessoire complémentaire
 - ⇒ aucun effort dans le poignet malgré le fort couple de taraudage
- Sécurité**
 - ⇒ Zone non filetée sous tête pour couturage longitudinal en toute sécurité de panne mince 2x0,9 à 2 x 1,2 mm
 - ⇒ résistance à l'autodesserage sur acier mince > 3 mm
 - ⇒ diminution des risques d'accident sur chantier (pas de position de travail dangereuse)
 - ⇒ protection anti-corrosion
- Fixation traditionnelle**
 - M12 x L
 - SANS Cr(VI)**
 - filetage rainuré
 - crantage sous tête

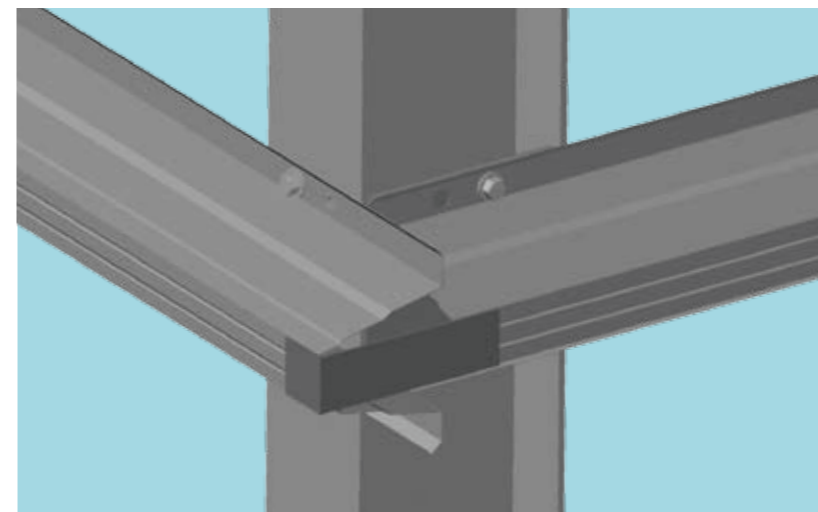
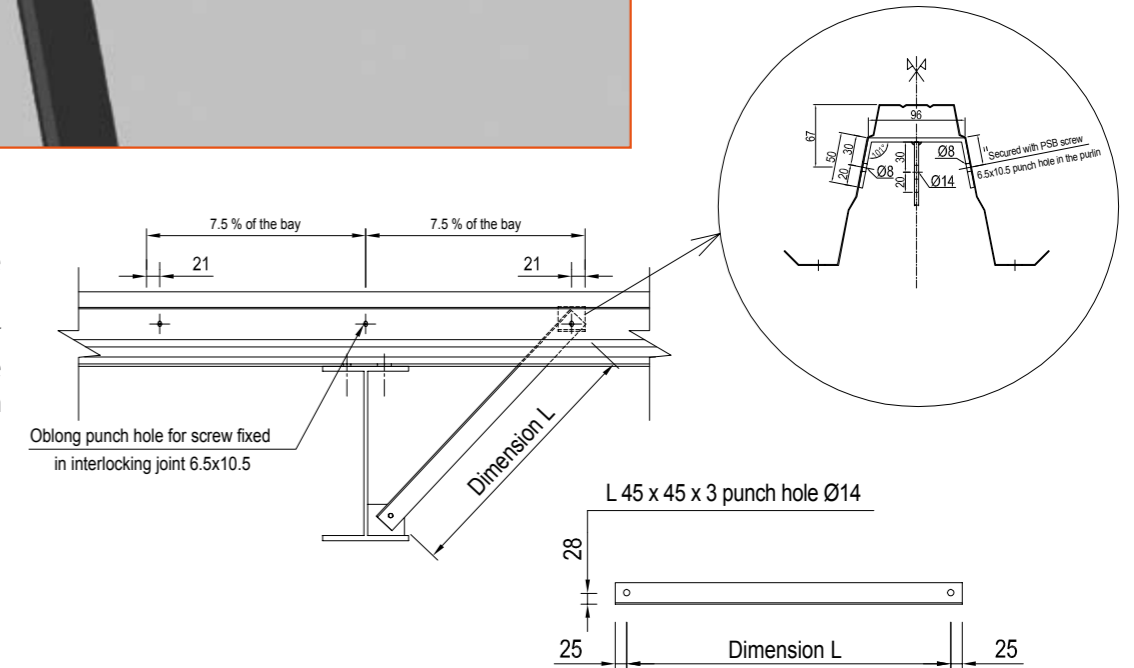
Screw : TDBL-T-8,6 x 16 mm
 - 13 mm hex head on flat side
 - Diameter of rod : d = 8.6 mm
 - Length under head L = 16 mm

Pre-drilling :
 - Ø 8 mm in rafters and stanchions
 - Ø 6,5 x 10,5 mm in PSB purlins

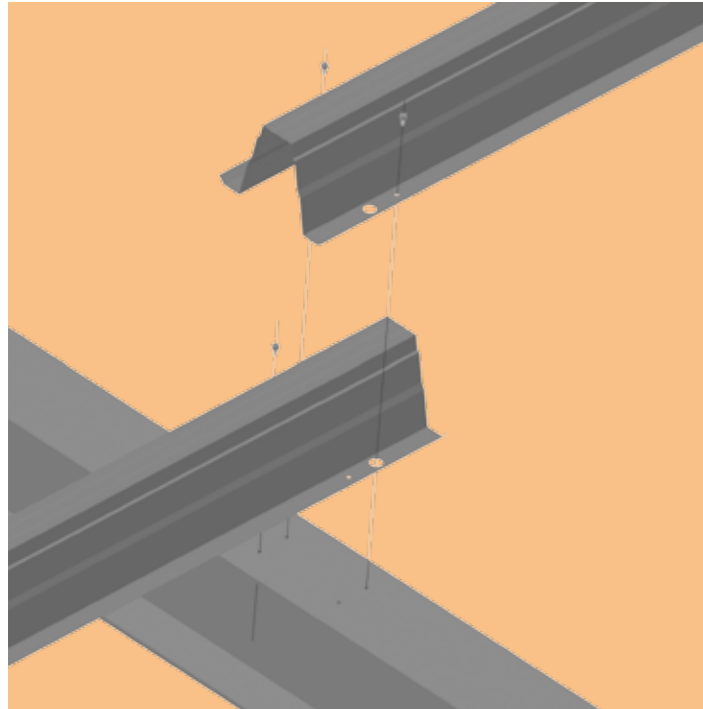


Rafter stability brace

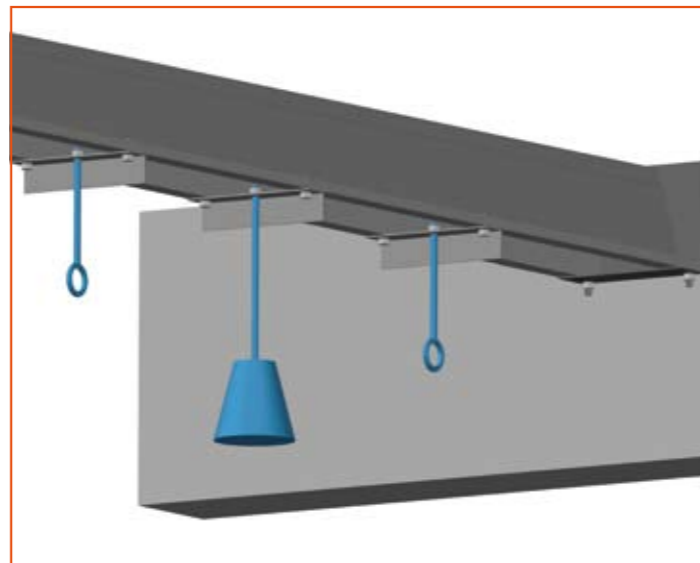
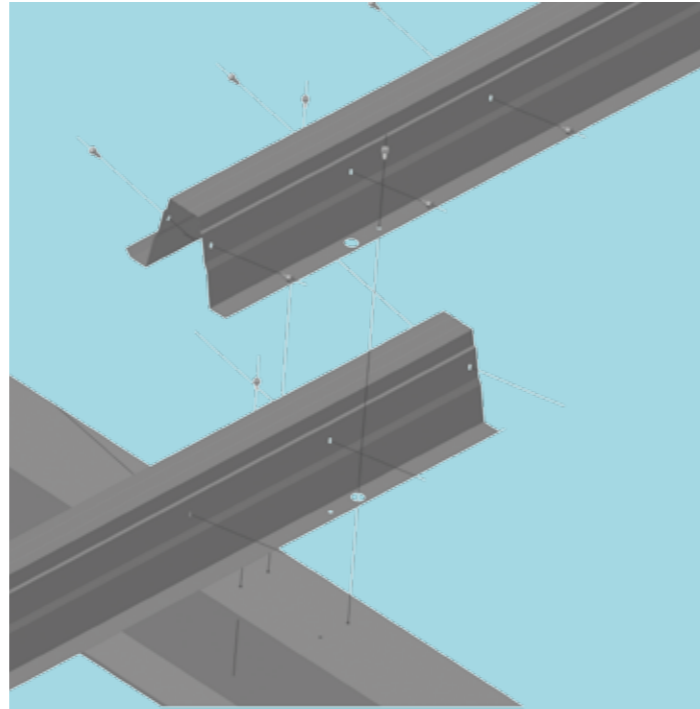
Stability brace on one side.
 The user is responsible for checking the brace and the rigidity of the stabilisation system.



Overlapping isostatic PSB assembly



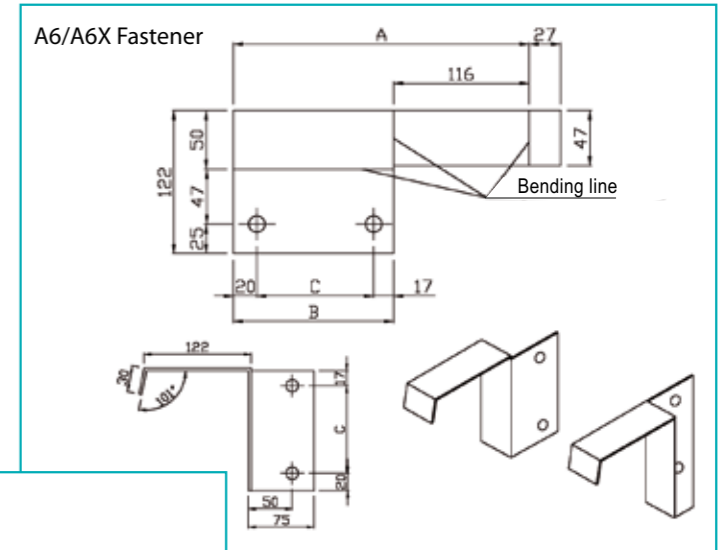
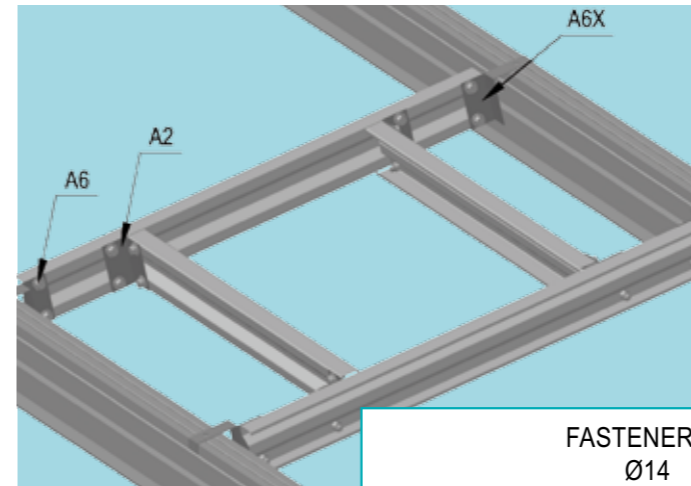
Continuous PSB assembly



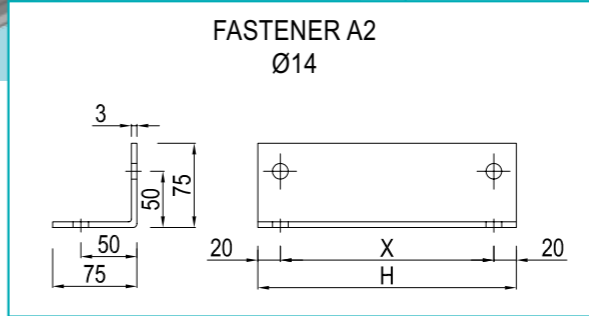
Principle for fastening elements without purlins. Specify loading when work is sized.

Sliding trimmer beams with 2, 3 or 4 branches

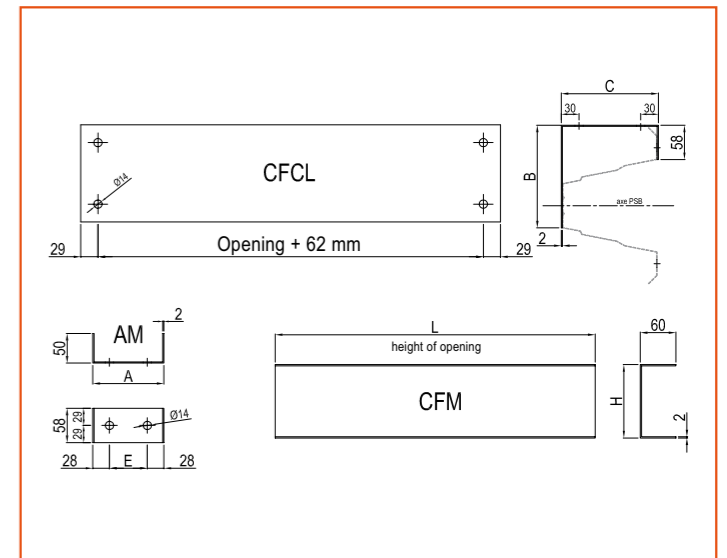
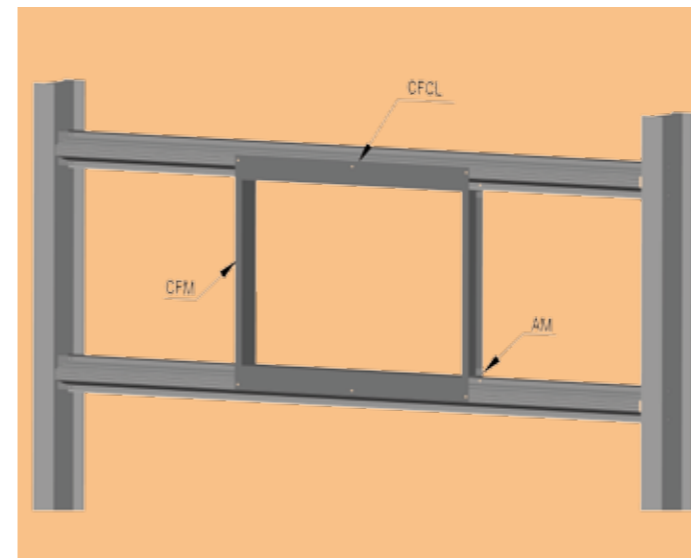
Trimmer beams for light domes



Roofing



Note : For all enquiries, specify the loading sustained by the trimmer beam as this determines the fasteners to be used.



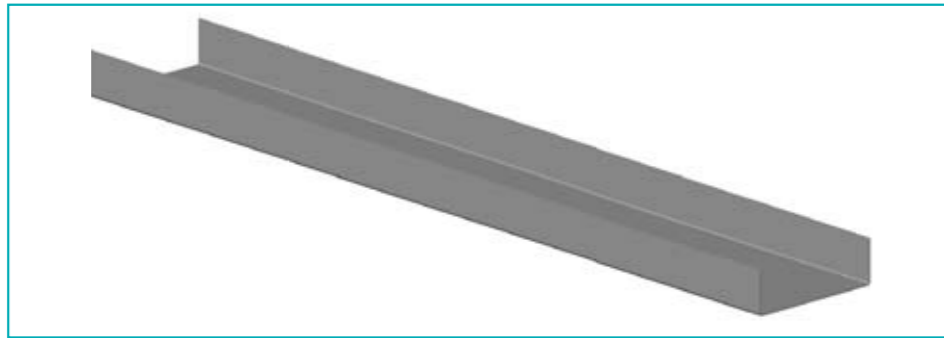
Façade

Façade trimmer beam fasteners

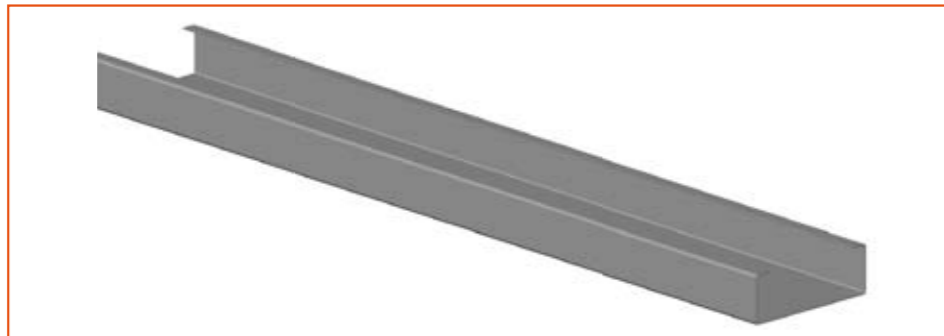
Profiles	A	E	H	B	C
PSB120	120	64	124	165	124
PSB140	140	84	144	169	144
PSB160	160	104	164	173	164
PSB180	180	124	184	178	184

All additional profiles are manufactured from Sedzimir processed galvanized steel coils (275 g/m² double sided for standard use) with a minimum yield stress guaranteed at 350 N/mm²

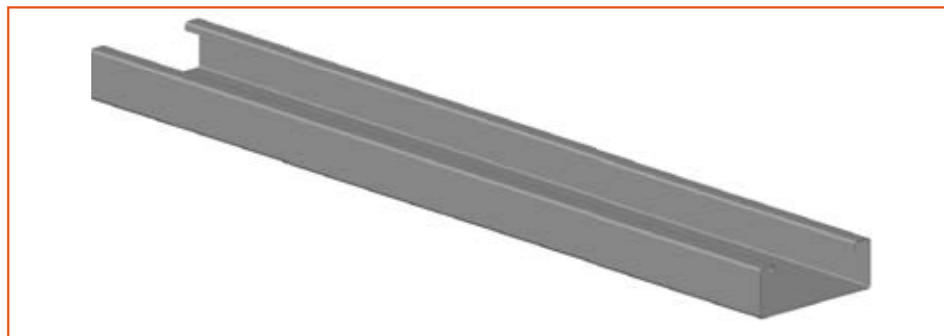
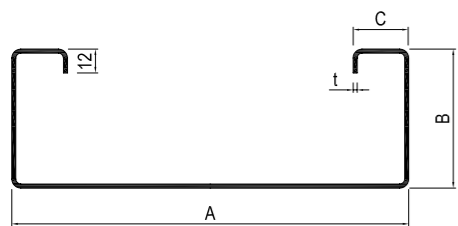
U Profile



CE Profile

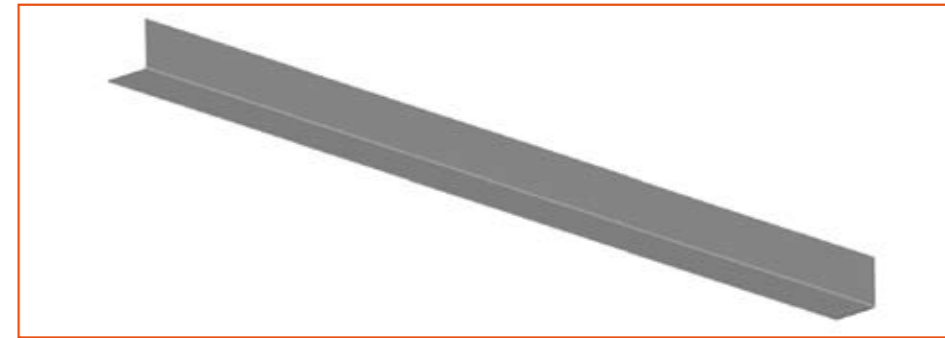


CE+ Profile

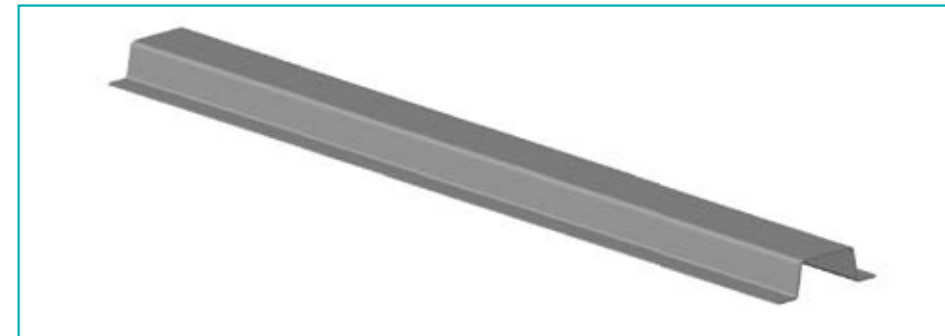
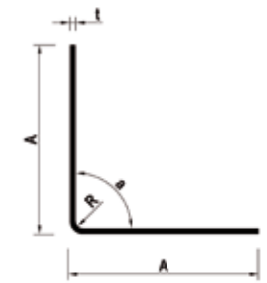


	A available mm *			B mm	C mm	t maxi	
U Profile	120	140	170	200	40 to 70	3 mm	
CE Profile	120	140	170	200	70	14 to 28	3 mm
CE+ Profile	120	140	170	200	70	28	3 mm

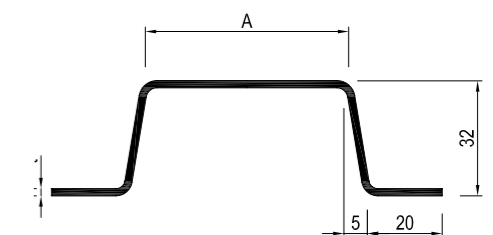
* Other heights on request



Cleader angle

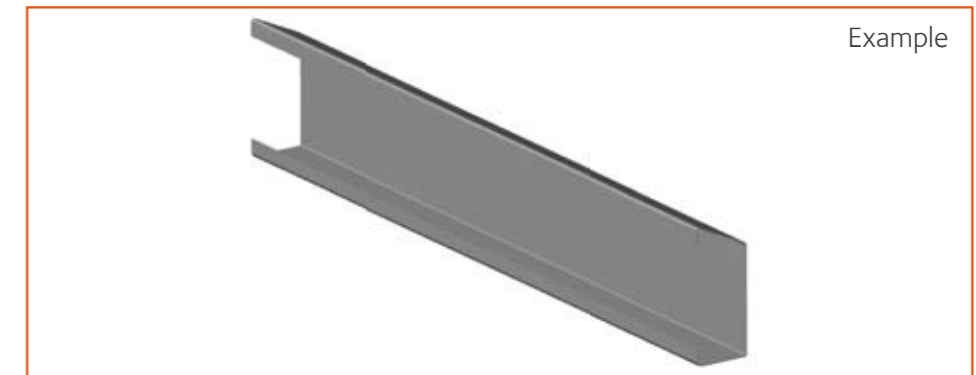


Top hat



Eaves purlin

Maximum lengthwise bend 8 m
Consult us



	A mm	t maxi
Cleader angle *	40 to 70	3 mm
Top hat	50 to 150	2 mm

* Cleader angle with unequal legs, maximum length 8m.

Description of post-painting operations

System : powder coating onto galvanised steel

SURFACE PREPARATION

APPLIED AUTOMATICALLY
(PARKER tri-metal treatment)..

- Pickling
- Phosphate/degrease
- Chrome passivation
- Demineralised water rinse,
- Stoving.

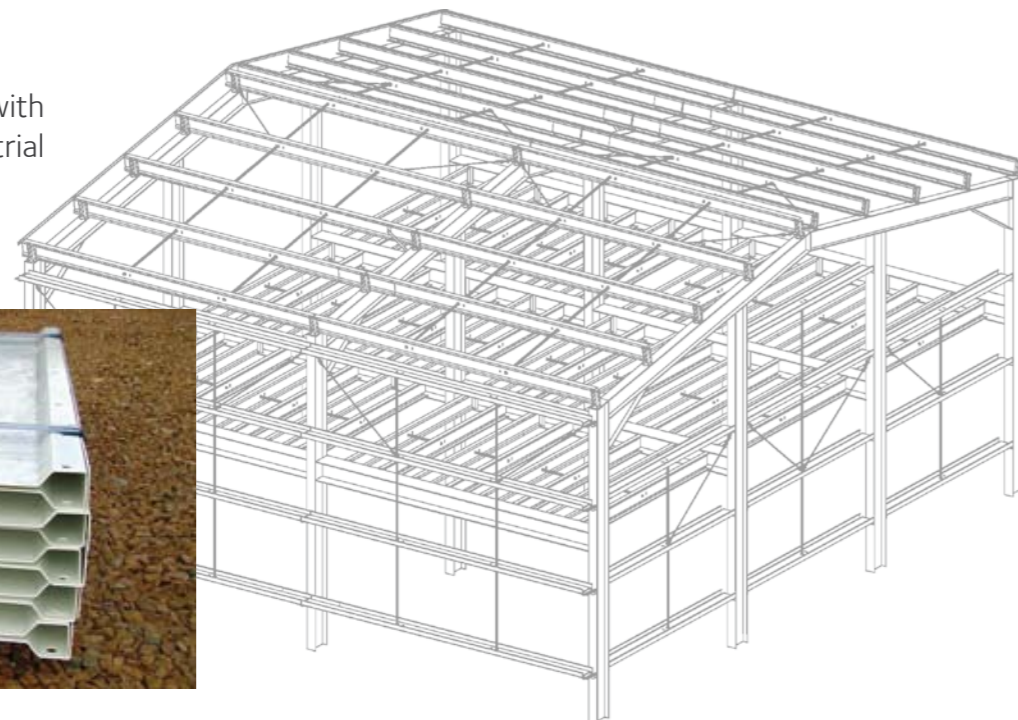
APPLIED MANUALLY

- Phosphate/degrease
- Water rinse,
- 1 layer of wash primer, PASSIREX primer or water-soluble primer, 10/15 µ thick,
- Stoving or ambient-drying.

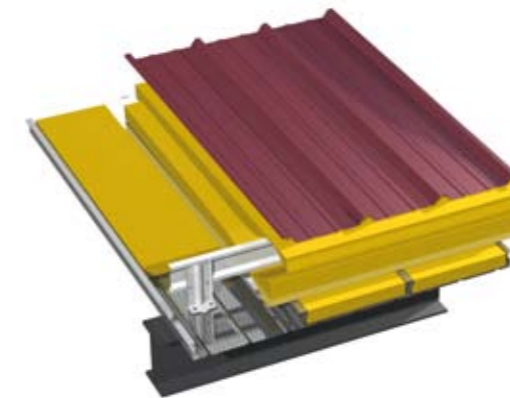
COATING

APPLIED AUTOMATICALLY OR MANUALLY

- 1 layer of polyester powder with a QUALICOAT label, or industrial polyester, 60 µ thick.



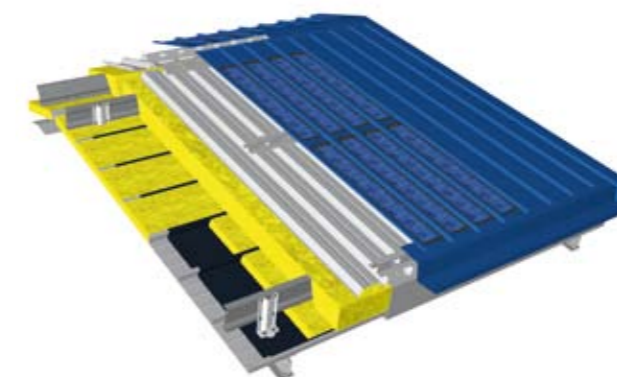
Acoustic and thermal complex



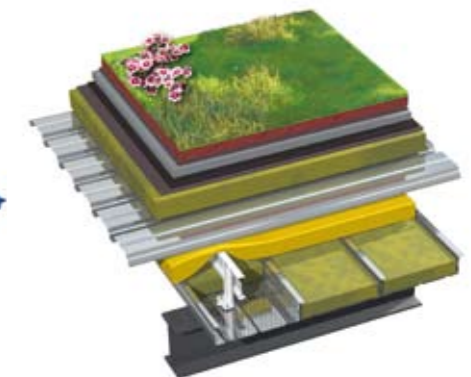
Acoustic complex and structure



Hairaqua and structure



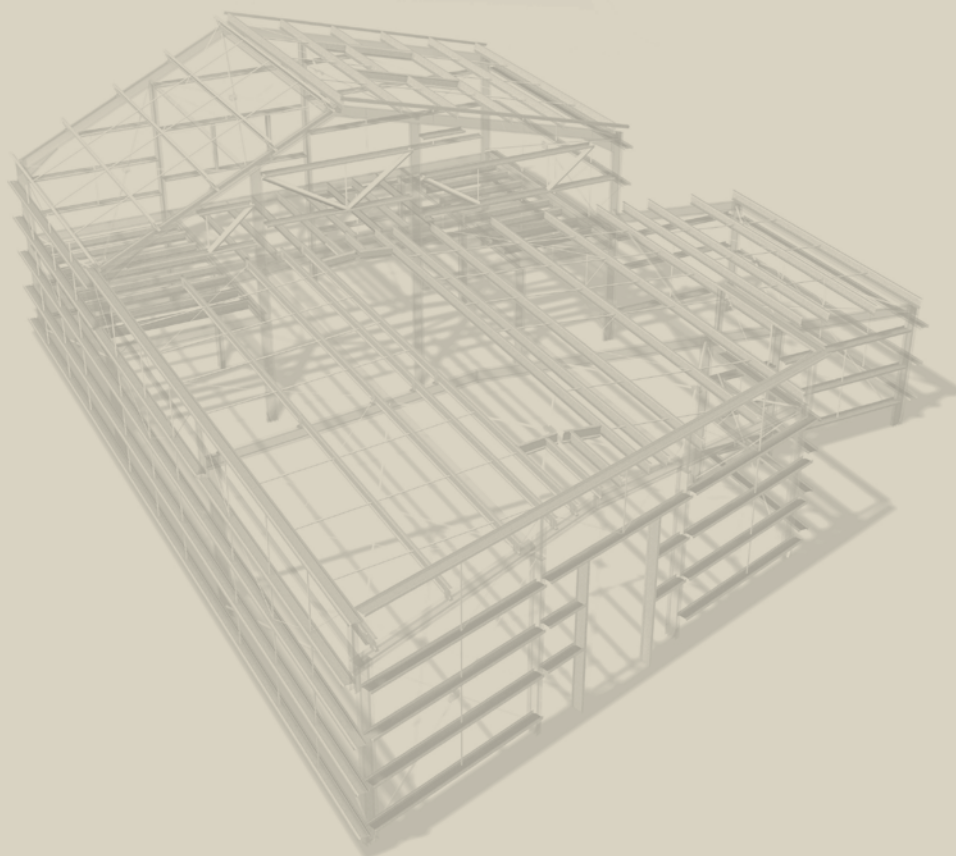
Arsolar and structure



Vegetated roofing and structure



ArcelorMittal



Arval

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