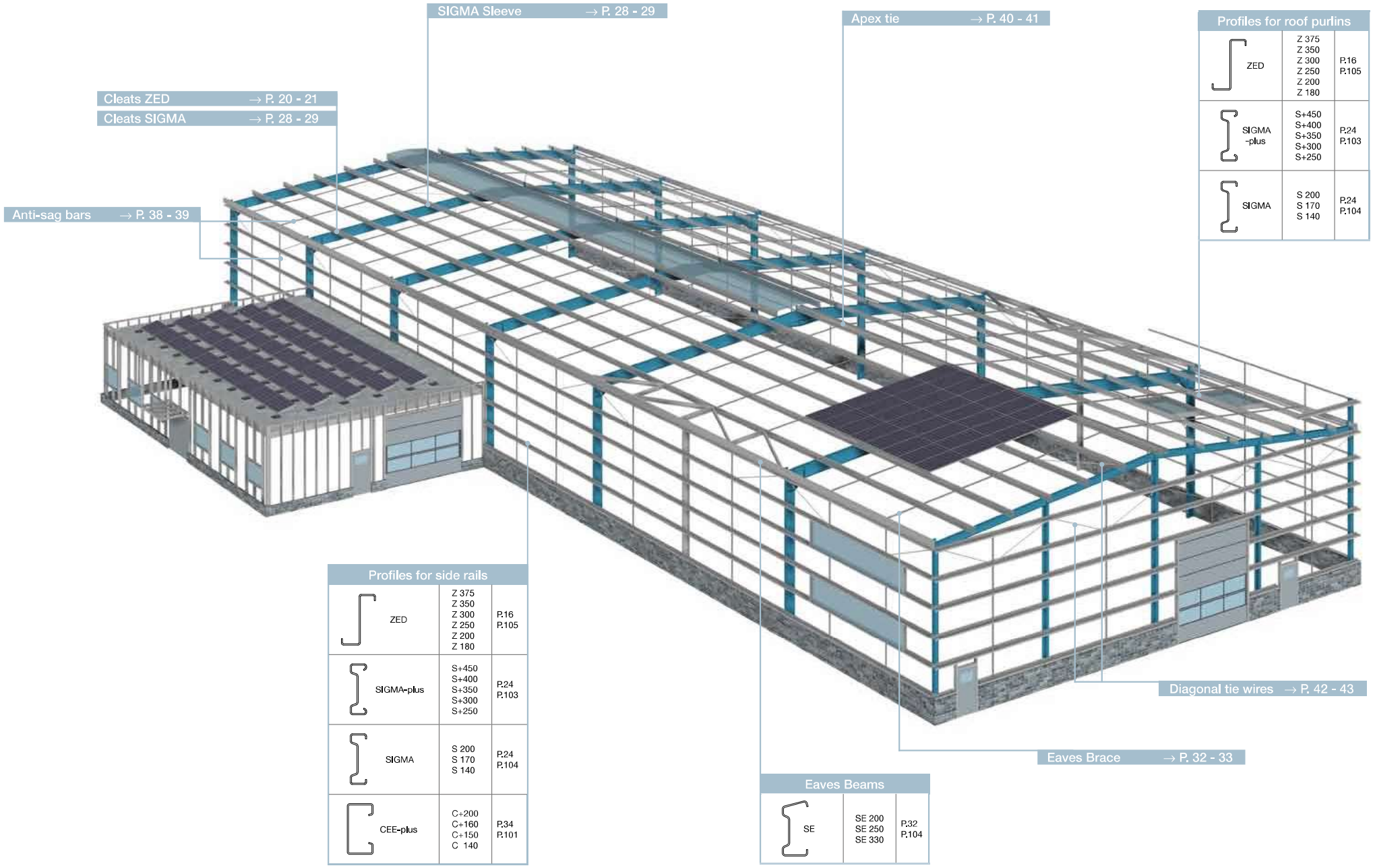
ROOF PURLINS AND SIDE RAILS

OVERVIEW



Profiles for roof purlins

ZED	Z 375 Z 350 Z 300 Z 250 Z 200 Z 180	P.16 P.105
SIGMA -plus	S+450 S+400 S+350 S+300 S+250	P.24 P.103
SIGMA	S 200 S 170 S 140	P.24 P.104

Profiles for side rails

ZED	Z 375 Z 350 Z 300 Z 250 Z 200 Z 180	P.16 P.105
SIGMA-plus	S+450 S+400 S+350 S+300 S+250	P.24 P.103
SIGMA	S 200 S 170 S 140	P.24 P.104
CEE-plus	C+200 C+160 C+150 C 140	P.34 P.101

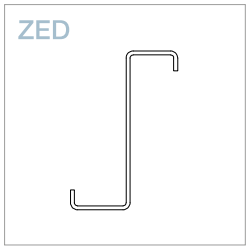
Eaves Beams

SE	SE 200 SE 250 SE 330	P.32 P.104

SADEF offers you a wide range of ZED sections for spans **up to 18 m.** The sections are suitable for any substructure.

The shape of the ZED section allows us to nest the sections, and to create an optimal beam system.

SADEF ZED sections can be used as single span beams, double span beams or as continuous overlap beams. The **optimal beam system** is, in most cases, a continuous overlap beam. The best solution for projects with a bigger roof slope is ZED sections. SADEF will be pleased to advice your design department.

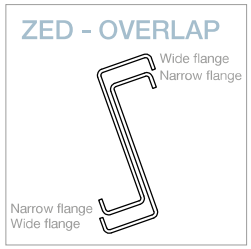


WE OFFER A COMPREHENSIVE SERVICE INCLUDING:

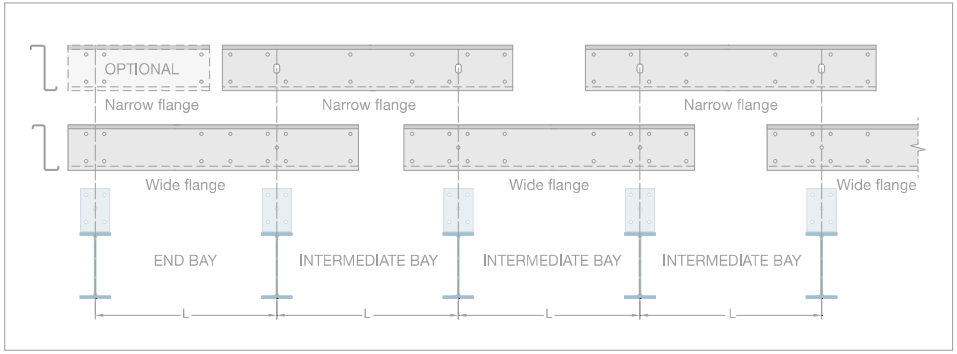
Detailed quotation according to the prevailing standards:
- Strength calculation
- Production drawings
- Assembly overview
- ISO certified

Tailor-made parts and components:
- Ready to assemble
- Delivered just-in-time
- Clear marking
- All accessories inclusive
- Professional packing
- CE certified

SADEF ZED-sections have one wide and one narrow flange. Nesting the sections in an overlap system creates a continuous beam resting on the intermediate supports of the primary structure.

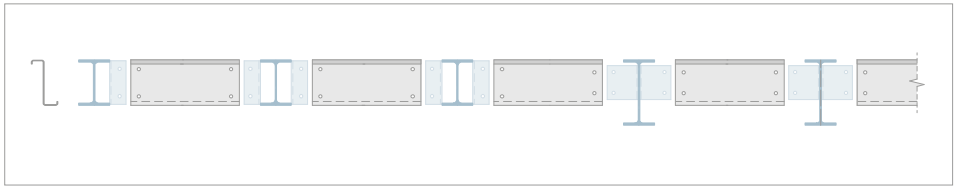


OVERLAP BEAM WITH QA-SYSTEM

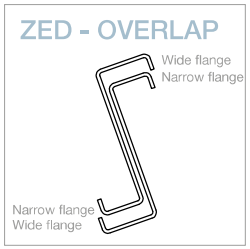


- Nesting narrow flange inside wide flange creates an overlap.
- Nesting of beams results in a double section at intermediate beam supports (where loads are to be transferred) thus ensuring that the material is used to its optimum efficiency.
- Several possibilities for optimizing the beam system: adjust the overlap length (between 5 and 15% of the span), use heavier beams or a double 'nested' beam on end bays. (see OPTION)
- Faster and safer assembly is achieved using the QA-system.

SINGLE SPAN BEAMS (ASSEMBLY BETWEEN SPANS)



SADEF QA-system (Quick Assembly System) will save **considerable assembly** time. ZED sections are therefore fitted separately to the individual cleats and subsequently connected to the nesting purlin, without loosening the bolts of the initial assembly.



QA-SYSTEM: SAFE, FAST AND EASY-TO-INSTALL

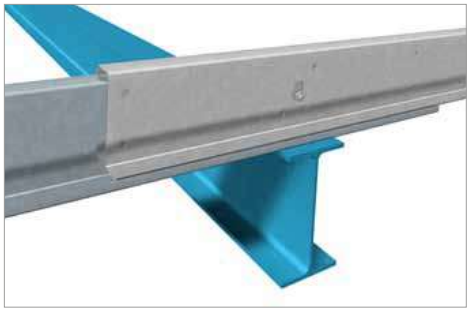
STEP **A**

→ Standard cleat with 5 holes.

STEP **B**

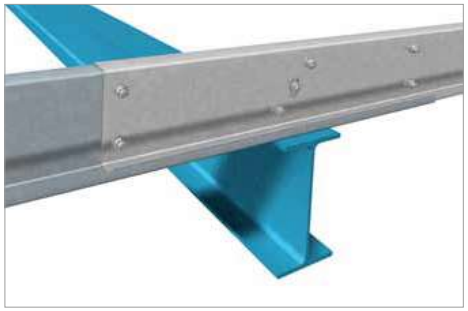
→ Fitting the 1st ZED-section using central bolt hole only.

STEP **C**



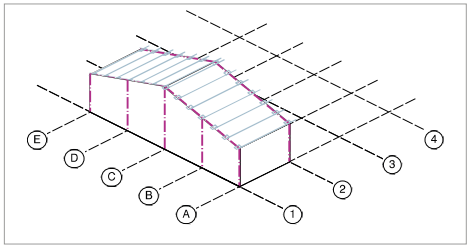
→ Nesting the 2nd purlin (small flange down) into the 1st one Thanks to the special perforations in these ZED sections, the overlap can be made without loosening the central bolt.

STEP **D**



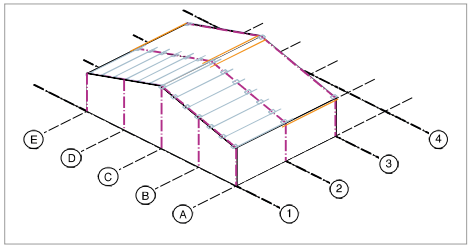
→ Overlap is created by assembling both purlins to the cleats through prepierced holes.

STEP **1**



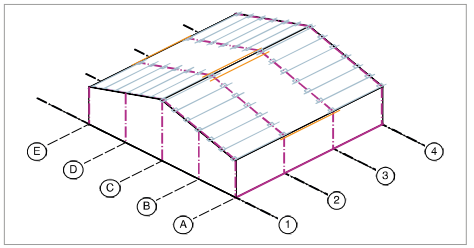
→ The ZED sections are fitted with wide flange down and bolted to cleats on axis 2, only using the central hole. See **STEP B.**

STEP **2**



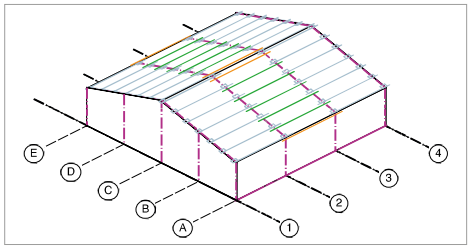
→ If ZED sections are supposed to brace the rafter on axis 3, these sections are fully bolted on axis 2 and fitted to axis 3 with 1 temporary bolt.

STEP **3**



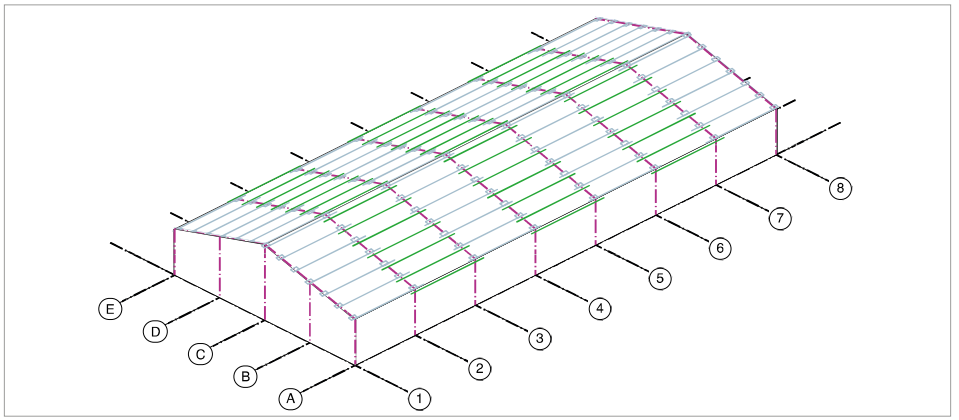
→ The ZED sections of bay 3 are fitted to axes 3 and 4 with the wide flange down and with only the central bolt, as per **STEP B.**

STEP **4**



→ Missing ZED purlins of bay 2 are fully bolted with the narrow flange to axes 2 and 3. See **STEP C and D.**

STEP **5**



→ The remaining bays can be fitted by repeating **STEPS 2-3 & 4.**

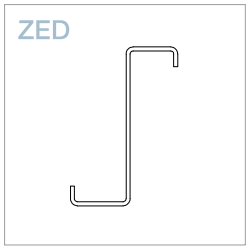
Remark: The client has to inform SADEF about the assembly sequence (especially the first field to be assembled)

CLEATS

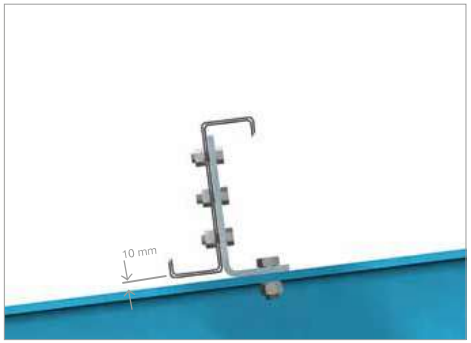
SADEF sections are fitted to the substructure by means of cleats.
ZED-purlins should be bolted to the cleats with their top flanges pointing to the roof ridge.

To avoid web crippling, a 10 mm clearance between main frame and SADEF beams is required. This is achieved by the offset hole position in beams and cleats.

Cleats are also necessary for transmitting the roof diaphragm forces to the substructure. SADEF-cleats are made from HSLA-steel grades and are hot-dip galvanized.

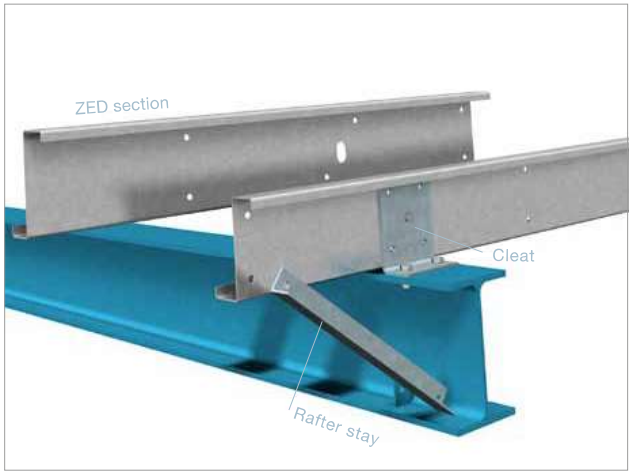


ROOF - CLEATS



SIDE RAIL - CLEATS

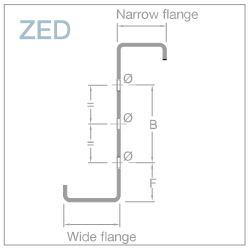
+/- 10 mm clearance between Sadef ZED sections and substructure



RAFTER STAYS

Rafter stays can be fixed in the holes at the end of the overlap. Please inform SADEF if rafter stays are to be used. This element will then be taken into consideration for the strength calculations.

Depending on the substructure geometry either standard (EZED) or reinforced (EZEDXX) cleats can be used. Both types are suitable for the QA-system.

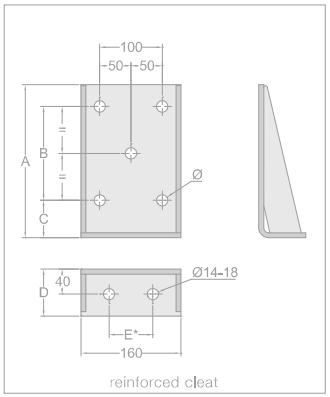


Section properties:
please turn to page 105

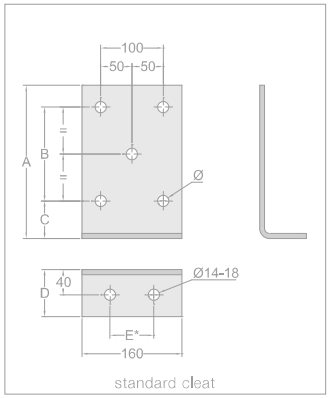
ZED - CLEATS							
Type	Section name	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	Ø (mm)
EZED375XX	Z 375x5	365	265	65	85	60,0	18
	Z 375x4					58,0	
	Z 375x3					57,5	
	Z 375x2,5					57,0	
	Z 375x2					56,5	
EZED350XX	Z 350x4	340	240	65	85	58,0	18
	Z 350x3,5					58,0	
	Z 350x3					57,5	
	Z 350x2,5					57,0	
	Z 350x2					56,5	
EZED300XX	Z 300x5	290	190	65	85	59,5	18
	Z 300x4					58,0	
	Z 300x3,5					58,0	
	Z 300x3					58,0	
	Z 300x2,5					57,0	
	Z 300x2					56,5	
	Z 300x1,75					56,0	
EZED250 EZED250XX	Z 250x4	245	150	60	75	53,5	18
	Z 250x3,5					53,0	
	Z 250x3					52,5	
	Z 250x2,5					52,0	
	Z 250x2					51,5	
	Z 250x1,75					51,5	
	Z 250x1,5					52,0	
EZED200 EZED200XX	Z 200x4	195	100	60	75	53,5	14
	Z 200x3					53,0	
	Z 200x2,5					53,0	
	Z 200x2					52,0	
	Z 200x1,75					52,0	
	Z 200x1,5					52,0	
EZED180 EZED180XX	Z 180x2,5	176	81,5	60	75	52,0	14
	Z 180x2					50,5	
	Z 180x1,75					50,0	
	Z 180x1,5					50,0	
	Z 180x1,25					50,0	

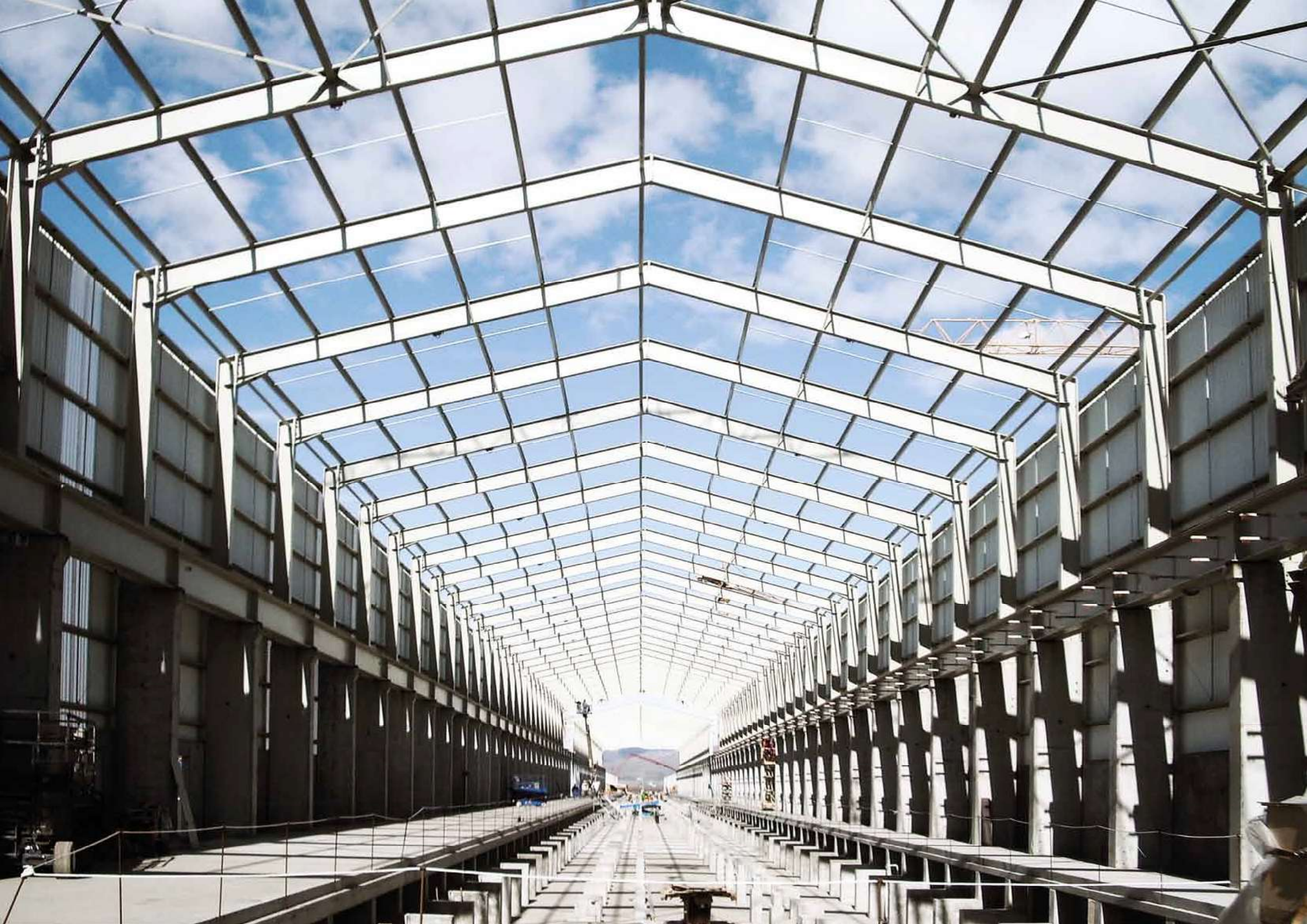
Piercing pattern is symmetrical in the bottom of the cleats.
For alternative piercing patterns: please contact SADEF.
E*: Hole distance variable from 50 to 100 mm with 70 mm (Ø 18 mm) as standard.

TYPE EZEDXX



TYPE EZED





SADEF offers you an extensive range of SIGMA sections for spans up to 18 m.

The sections are suitable for virtually any substructure. SADEF SIGMA can be used as single span beams, double span beams or as a continuous beam.

Use continuous sleeve beams for optimum deflection and strength. SADEF will be pleased to advise your design department.

SIGMA

WE OFFER A COMPREHENSIVE SERVICE INCLUDING:

Detailed quotation according to the prevailing standards:
- Strength calculation
- Production drawings
- Assembly overview
- ISO certified

Tailor-made parts and components:
- Ready to assemble
- Delivered just-in-time
- Clear marking
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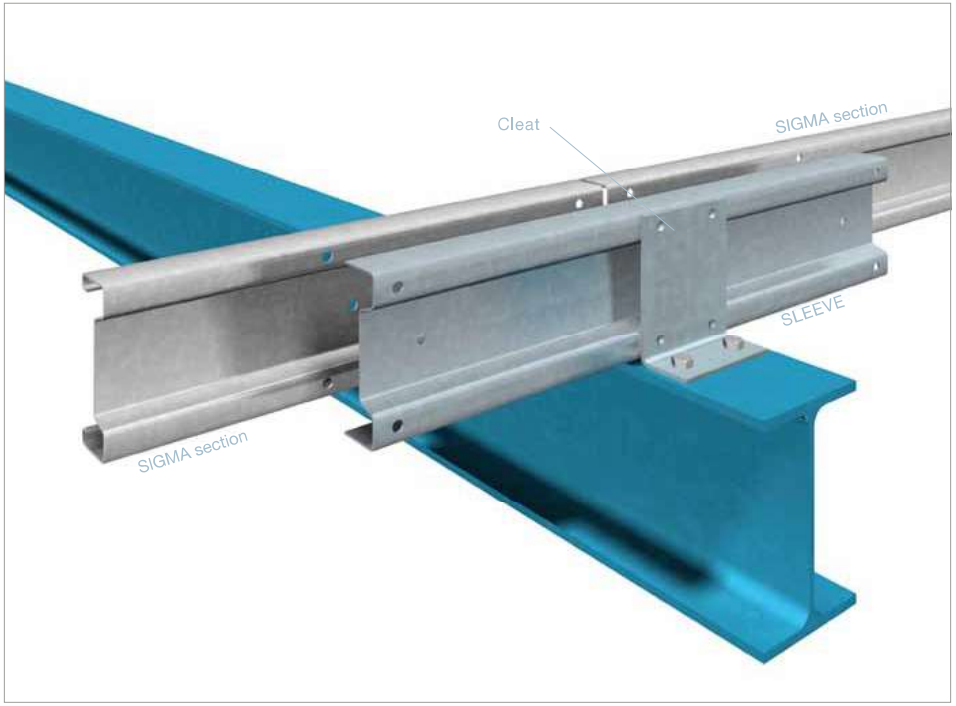
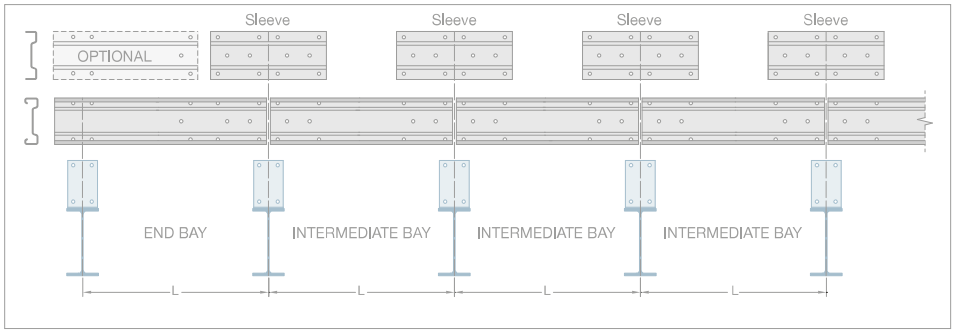
- CE certified

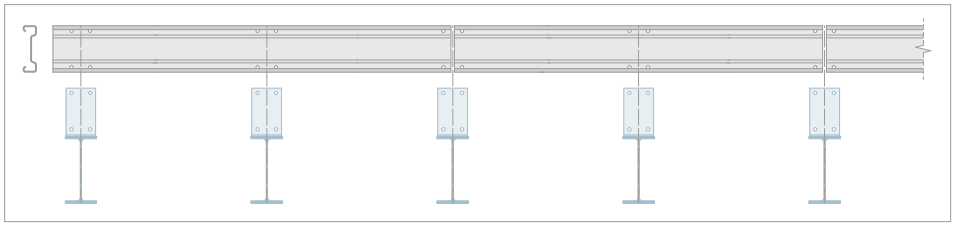


SLEEVE BEAM



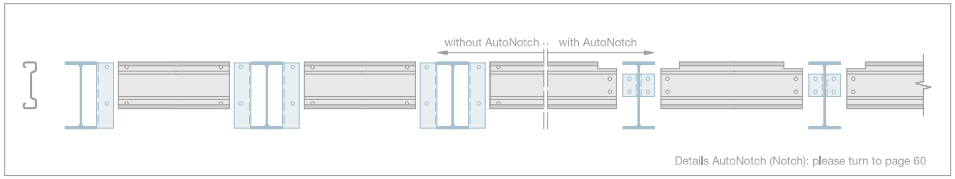
For wide spans (> 8 m), a continuous sleeve beam is usually the best solution. If necessary, the end bays can be fitted either with a thicker section or with a double beam **(see OPTION).** For standard SADEF sleeves, please turn to page 29.

DOUBLE SPAN BEAM



Double span beams are to be placed in a staggering pattern, ensuring an even distribution of the load to the primary structure.

SINGLE SPAN BEAMS (ASSEMBLY BETWEEN SPANS)



SIGMA sleeves can be used to create a continuous beam system. The optimum standard sleeve, depth and hole pattern of the sleeves are related to the SADEF SIGMA sections. SADEF has defined the optimal sleeve length for every section depth. (see also bottom of page 29)

SAFE, FAST AND EASY SLEEVE ASSEMBLY

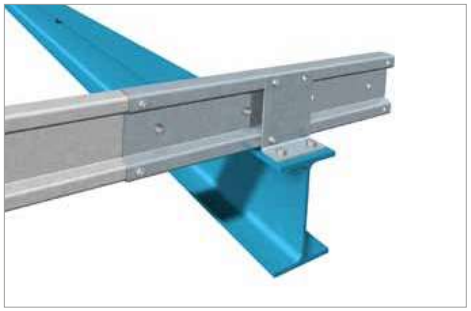
STEP **A**

→ Standard cleat with 4 holes.

STEP **B**

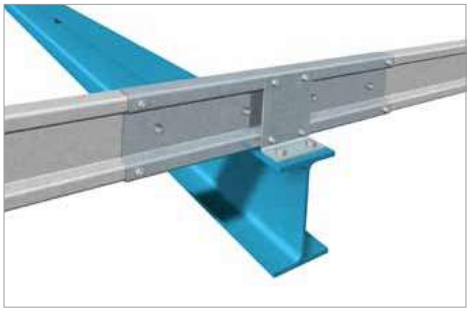
→ SIGMA to sleeve connection on ground level, using 2 or 4 bolts.

STEP **C**



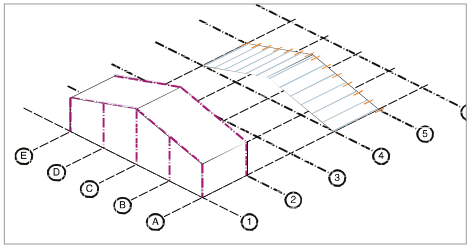
→ Bolting on sleeved SIGMA to cleat, using 2 bolts.

STEP **D**



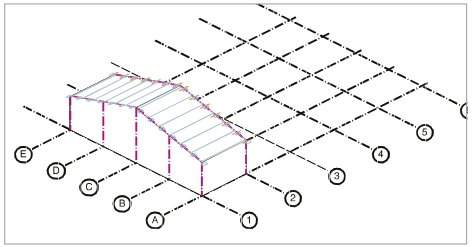
→ Repeat step B and bolt the next sleeved SIGMA to the cleat, using the 2 remaining bolt holes in the cleat.

STEP **1**



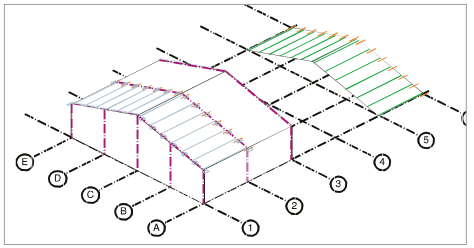
→ Assembly on ground level of Bay 1 SIGMA sections and corresponding sleeves. **(cfr. STEP B)**

STEP **2**



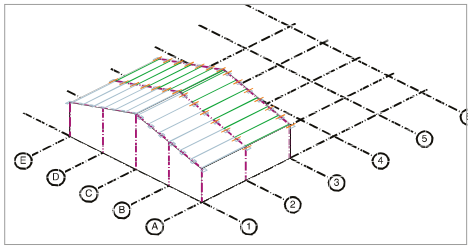
→ Fitting of sleeved SIGMA sections to Bay 1 cleats. **(cfr. STEP C)**

STEP **3**



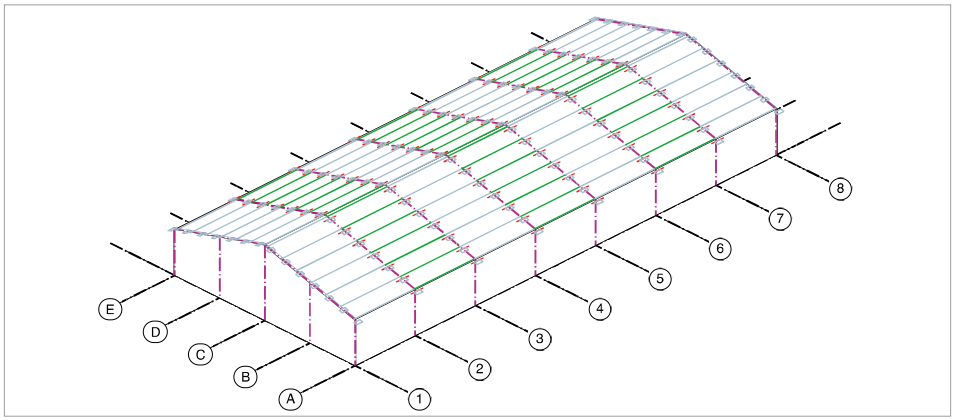
→ Assembly on ground level of Bay 2 (Bay 3, Bay 4…) SIGMA sections and corresponding sleeves. **(cfr. STEP B)**

STEP **4**



→ Fitting of sleeved SIGMA sections to Bay 2 (Bay 3, Bay 4, …) cleats **(cfr. STEPS C & D) STEP 5.**

STEP **5**



→ Bolting through remaining cleat holes by repeating **STEPS 3 & 4.**

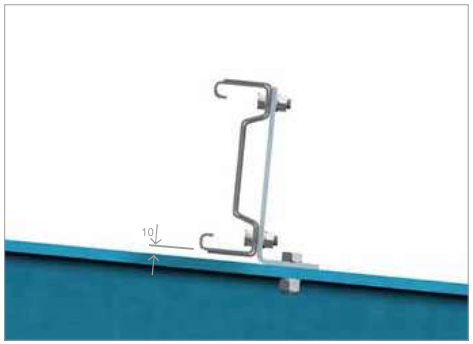
CLEATS

SADEF sections are fixed to the substructure by means of cleats.

To prevent web crippling, a 10 mm clearance between main frame and SADEF beams is required. This is achieved by the offset hole position in beams and cleats.

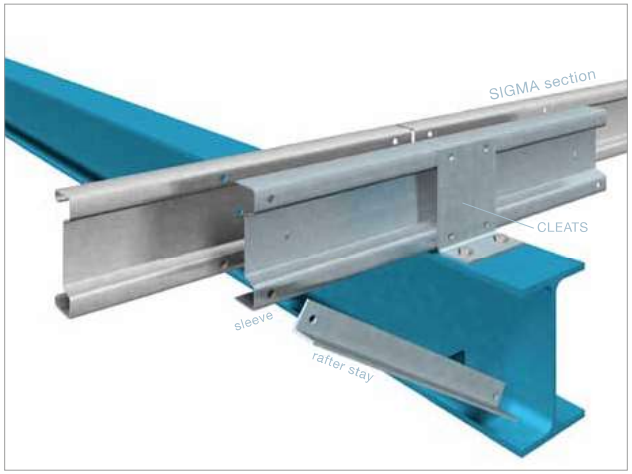
Cleats are also necessary for transmitting the roof diaphragm forces to the substructure. Standard SADEF cleats are made from HSLA-steel grades and are hot-dip galvanized.

ROOF - CLEATS



SIDE RAIL - CLEATS

+/- 10 mm clearance between Sadef SIGMA-sections and substructure is recommended.



RAFTER STAYS

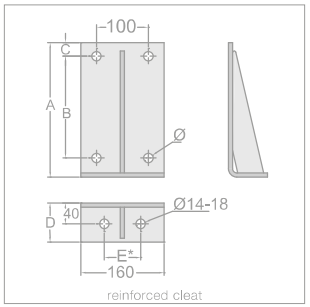
Rafter stays - used for stabilizing the lower flange of the portal frames - can be fixed in the holes at the end of the sleeve. Please inform SADEF if rafter stays are to be used.

SLEEVES

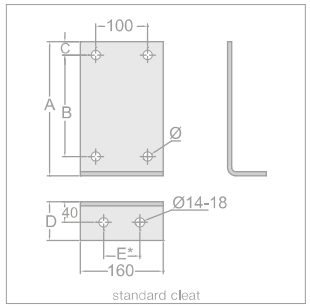
SADEF sleeves are supplied with the SADEF SIGMA sections just-in-time to the site ready for assembly.

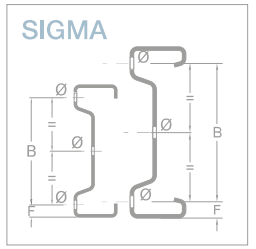
CLEATS

TYPE ESIGX



TYPE ESIG





Section properties:
please turn to pages 102 - 103 - 104

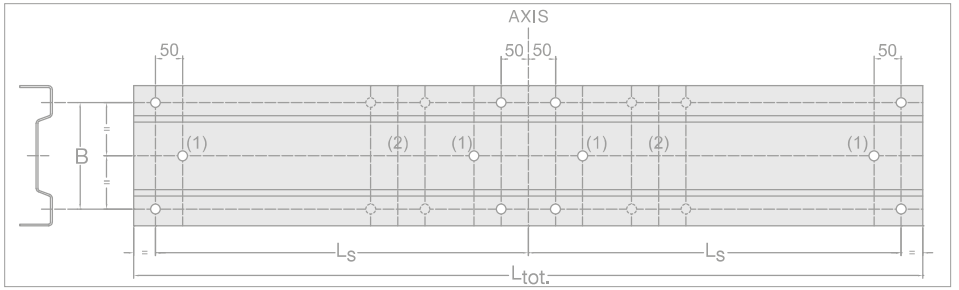
Piercing pattern is symmetrical in the bottom of cleats.
For alternative piercing arrangements, please contact SADEF.
E*: Hole distance variable from 50 to 100 mm with 70 mm (Ø 18 mm) as standard.

SIGMA section			
Type	B (mm)	F (mm)	Ø (mm)
S+400	330	35	18
S+350	296	27	18
S+300	246	27	18
S+250	196	27	18
S 200	162	19	14
S 170	132	19	14
S 140	102	19	14

SLEEVE		
Type	L_{tot} (mm)	L_S (mm)
SL400	2680	1300
SL350	2180	1050
SL300	1880	900
SL250	1580	750
SL200	1260	600
SL170	1110	525
SL140	960	450

Cleats			
Type	A (mm)	C (mm)	D (mm)
ESIG400X	409	34	85
ESIG350X	359	26	85
ESIG300X	309	26	85
ESIG250 ESIG250X	259	26	75
ESIG200X ESIG200	209	18	75
ESIG170 ESIG170X	179	18	75
ESIG140 ESIG140X	149	18	75

SLEEVE

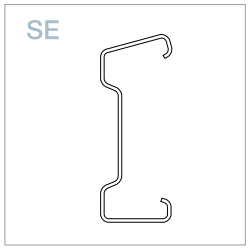


(1) Holes in web centre only for section depth > 200 mm.
(2) Holes to be used only where sleeves are placed off centre. (sleeve+ and sleeve++)

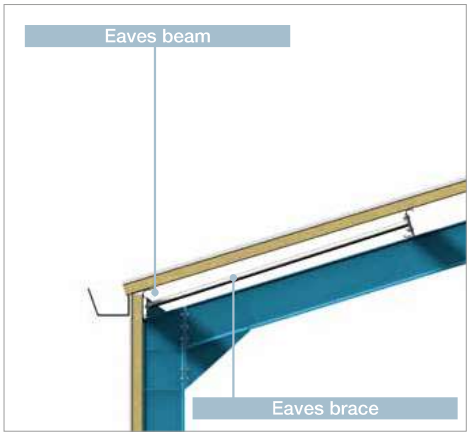
SE - EAVES BEAM

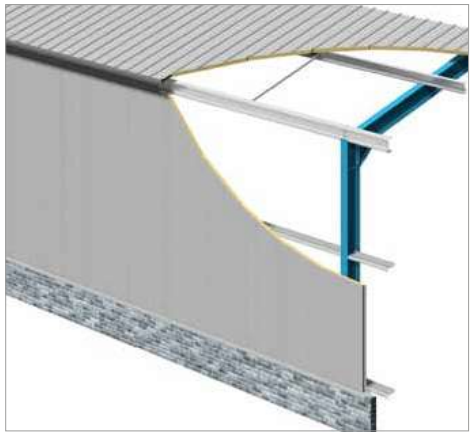
The SADEF SE - section is both roof purlin and side rail, combined into one single section and designed to support the outside gutter.

A particularly strong horizontal axis, designed for taking heavy wind loads on the side wall, is its main characteristic. Eaves braces can be used to achieve a light and cost-effective design. (For details: contact SADEF)

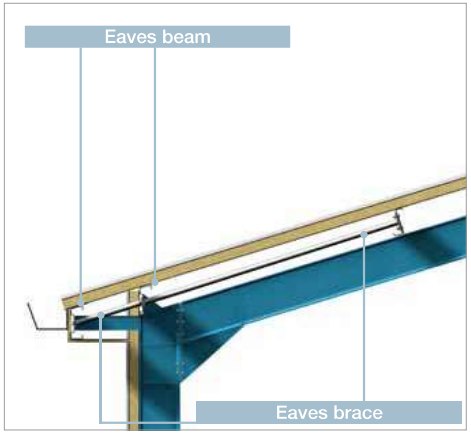


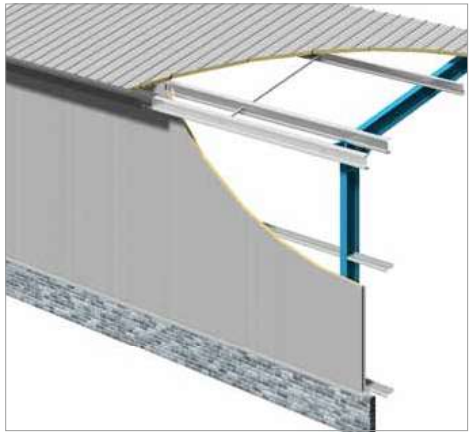
OUTSIDE GUTTER FIXED ON WALL CLADDING





OUTSIDE GUTTER FIXED ON ROOF PROJECTION

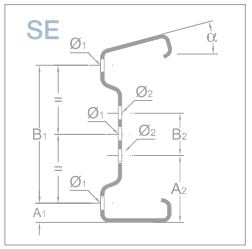




SE - EAVES BEAM

Section	Prepiercings						AutoNotch	
Type	A_1 (mm)	B_1 (mm)	$Ø_1$ (mm)	A_2 (mm)	B_2 (mm)	$Ø_2$ (mm)	V (mm)	W* (mm)
SE 330	27	276	18	100	130	18	≤ 50	≥ 50
SE 250	27	196	18	95	60	18	≤ 50	≥ 50
SE 200	19	162	14	70	60	18	≤ 35	≥ 50

* AutoNotches must be identical at both ends.



Section properties:
please turn to pages 104

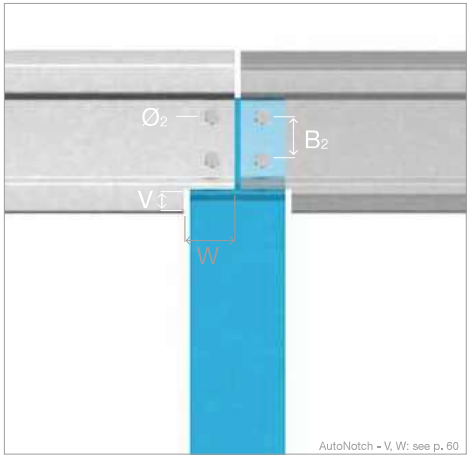
SE-section is suitable for roof slopes up to 26°

α - Standard angle of the upper flange	For roof slope
0°	-3° → 3°
6°	4° → 8°
10°	9° → 12°
15°	13° → 17°
20°	18° → 22°
24°	23° → 26°

ADVANTAGES:

- Easier
- Less components
- Quick assembly
- Closing the gap between roof sheets and wall cladding panels

AutoNotch



AutoNotch - V, W: see p. 60

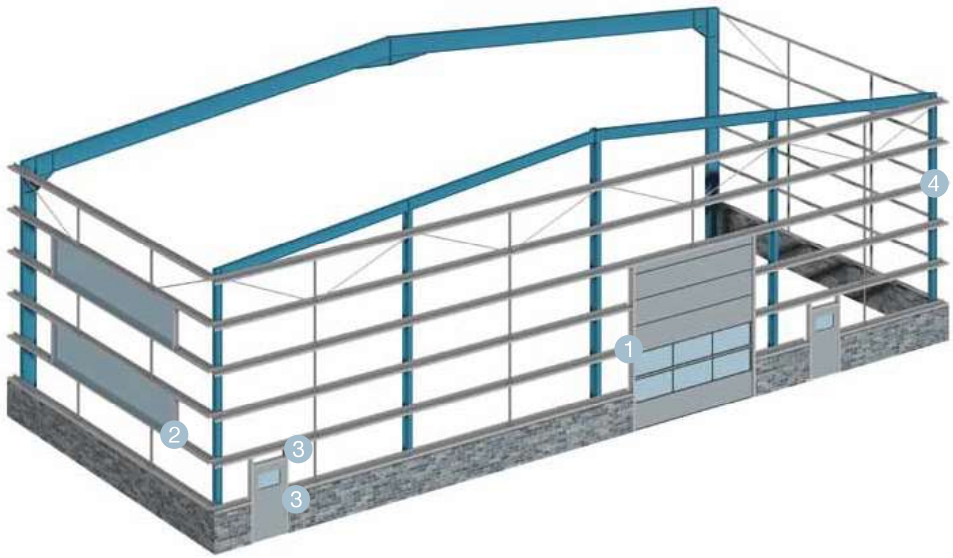
An AutoNotch can be made in the lower flange at the end of the eaves beams.

CEE-plus

SADEF building systems include a wide range of CEE-Plus sections.

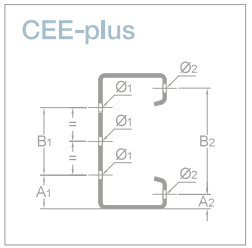
They are mainly used as side rails and particularly where door- or windowframes with flush inner faces are to be incorporated. Bolting can therefore be done through the web or through the profile lips.

Used as side rails, they will be either single or double span beams.

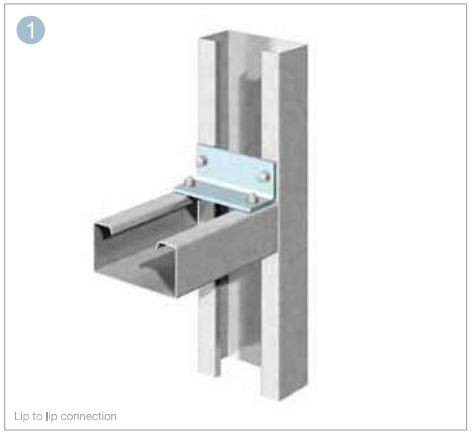


For more information, detailed piercing possibilities and the minimum production batches: please contact SADEF.

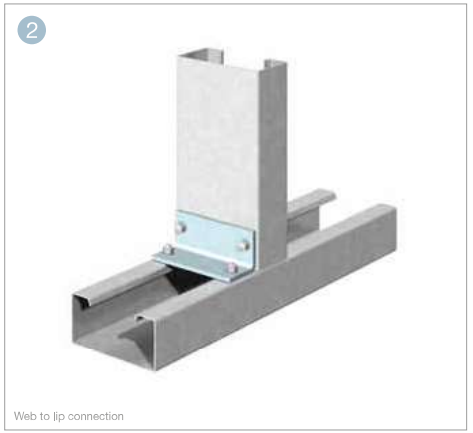
Section	Prepiercings					
Type	A1 (mm)	B1 (mm)	Ø1 (mm)	A2 (mm)	B2 (mm)	Ø2 (mm)
C+200	50	100	14 or 18	21,5	157	14
C+160	50	60	14 or 18	21,5	117	14
C+150	45	60	14 or 18	21,5	107	14
C 140	40	60	14 or 18	-	-	-



Section properties:
please turn to pages 101 - 106

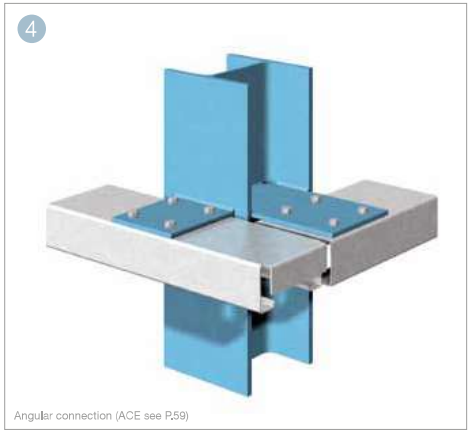


Lip to lip connection



Web to lip connection

Web to web connection



Angular connection (ACE see P.59)