ASSEMBLY MANUAL

CANTILEVER

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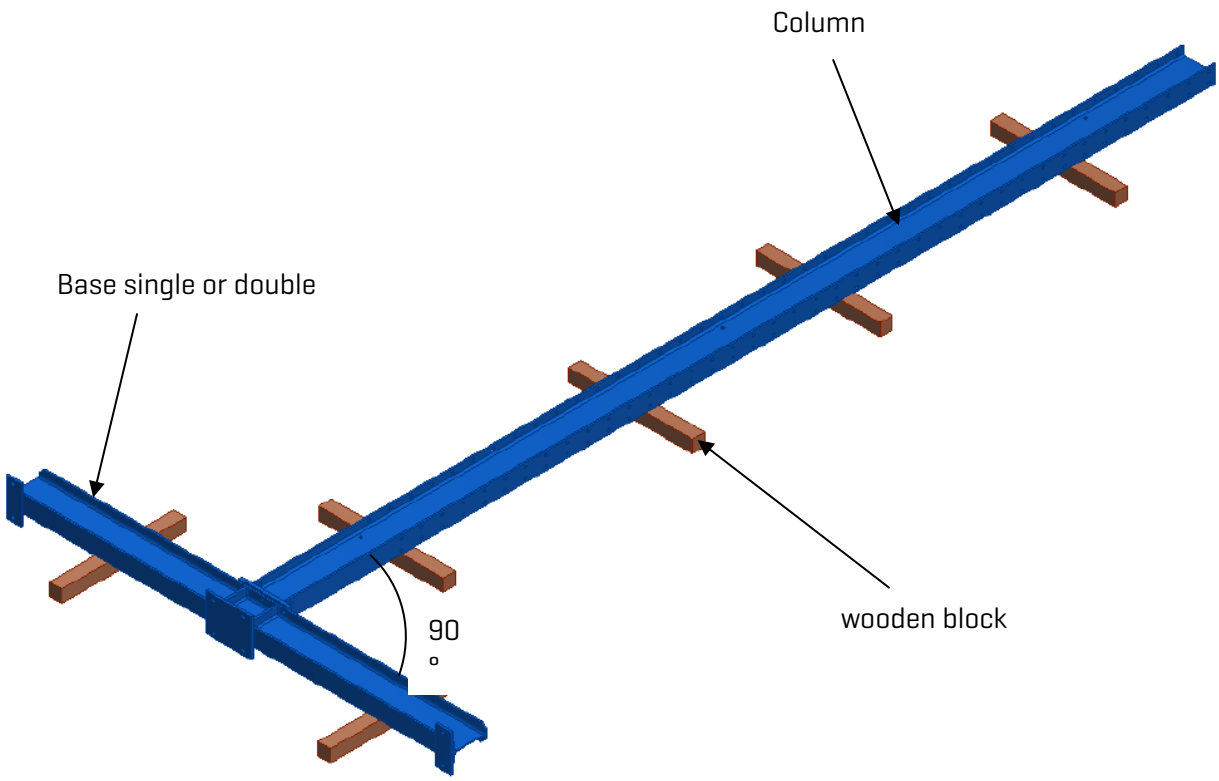
I. CANTILEVER ASSEMBLY

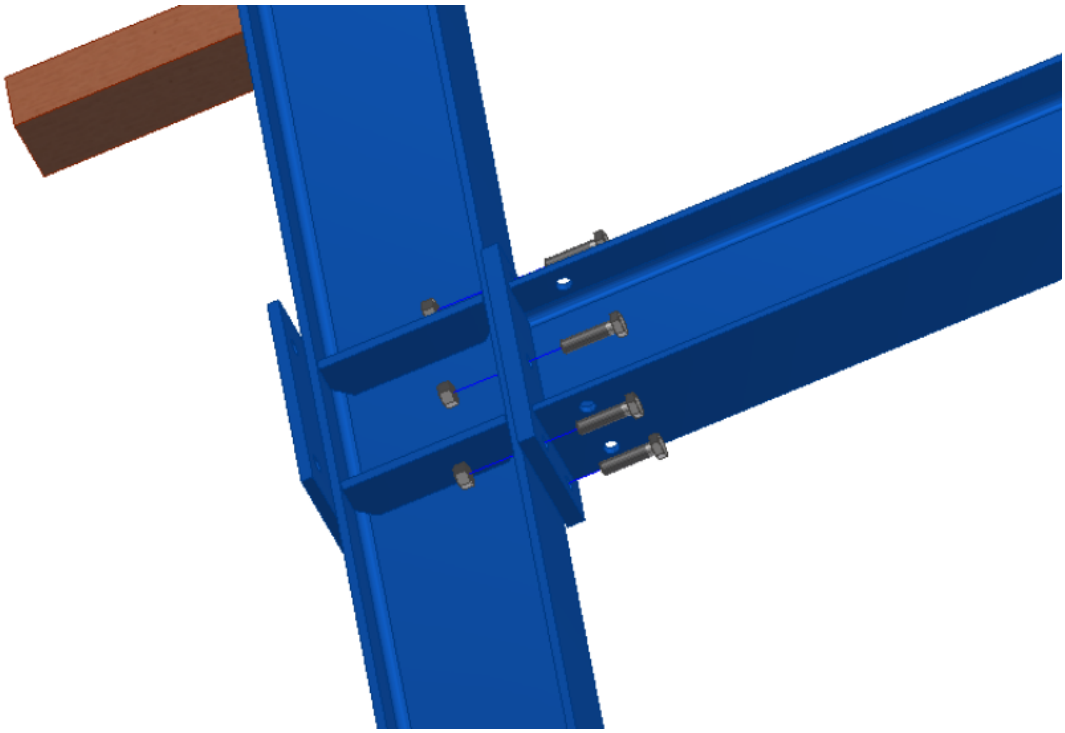
II. CANTILEVER ASSEMBLY ACCESSORIES

All bolts are required to be class 10.9 and nuts class 10 for diameter M12 or bigger.

I.1. Base column fixation

The assembly is identical for single or double bases.
Position the column and the base on wooden blocks, respecting the perpendicularity.

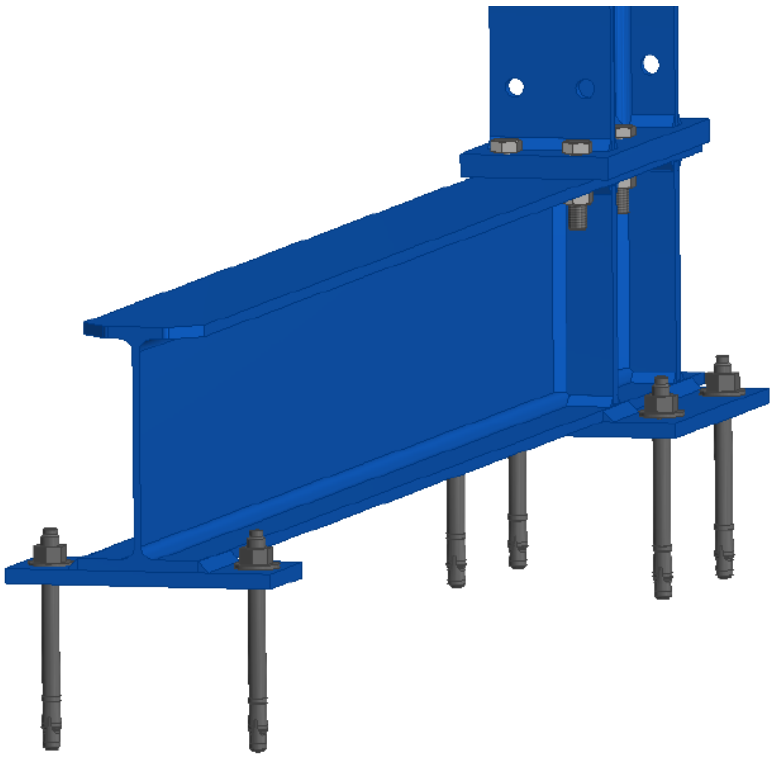




The column is fixed to the base with the bolts indicated in the table below :

IPE upright	Bolts number	Bolts type	Codes for indoor use	Codes for outdoor use
160	6	M12x45	BOHH 12X45 C10.9 + NU 12 C10	BOHHE 12X45 C10.9 + NUE 12 C10
180	8	M12x45	BOHH 12X45 C10.9 + NU 12 C10	BOHHE 12X45 C10.9 + NUE 12 C10
200	8	M12x45	BOHH 12X45 C10.9 + NU 12 C10	BOHHE 12X45 C10.9 + NUE 12 C10
220	8	M16x50	BOHH 16X50 C10.9 + NU 16 C10	BOHHE 16X50 C10.9 + NUE 16 C10
240	8	M16x50	BOHH 16X50 C10.9 + NU 16 C10	BOHHE 16X50 C10.9 + NUE 16 C10
270	8	M20x70	BOHH 20X70 C10.9 + NU 20 C10	BOHHE 20X70 C10.9 + NUE 20 C10
300	8	M20x70	BOHH 20X70 C10.9 + NU 20 C10	BOHHE 20X70 C10.9 + NUE 20 C10
330	8	M20x70	BOHH 20X70 C10.9 + NU 20 C10	BOHHE 20X70 C10.9 + NUE 20 C10
360	8	M20x70	BOHH 20X70 C10.9 + NU 20 C10	BOHHE 20X70 C10.9 + NUE 20 C10
400	8	M20x70	BOHH 20X70 C10.9 + NU 20 C10	BOHHE 20X70 C10.9 + NUE 20 C10

I.2. Fixation to the floor



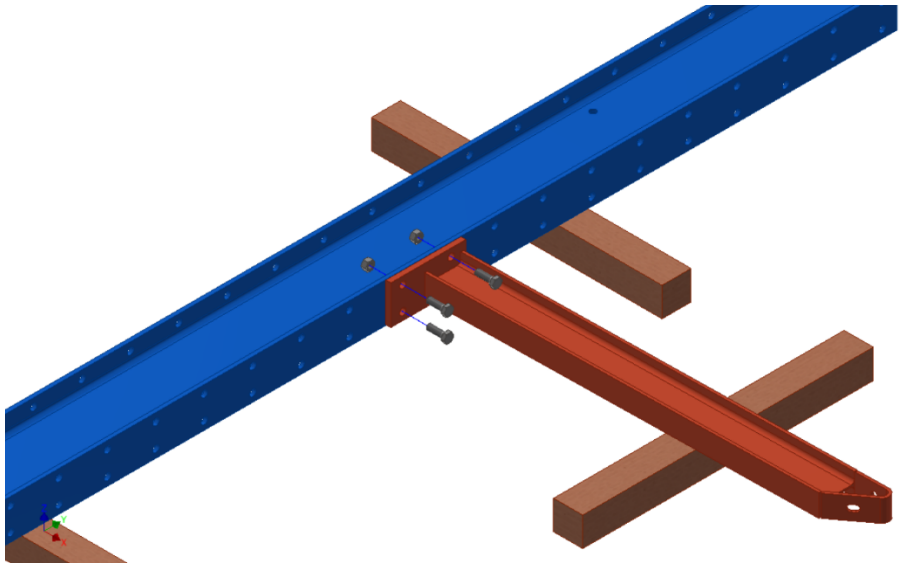
The bases are anchored to the floor by means of mechanical anchor bolts.
Use the mechanical anchor ANEX 12X100 with drill hole diameter 12 mm and drill depth 70 mm.
For higher loads anchoring with M12 chemical anchors ANCH 12X200 is an alternative.

Follow the installation instructions from the supplier that are mentioned on the boxes.

- ANEX 12X100 - Fischer ref. 95446 FAZ II 12/50 - key width 19 mm / Torque 60 Nm
- ANCH 12X200 - Fischer ref. 050283 (= stud M12x220) + Fischer ref. 518823 (chemical capsule)

I.3. Arm fixation

Use wooden blocks to support the arms to their correct position.



Fixation of the arm for indoor use

Profile	Type	Bolt	Nut	Fixation moment	Quantity	Qty Double
IPE 080	CNBS/CNBM	BOHH 12X45 C10.9	NUWL 12 C10	230	4	8
	CNBH/CNBE/CNBX	BOFT 16X50 C10.9 BOSP 16X50 C10.9	NUWL 16 C10	230 230	2 2	4 4
IPE 100	CNBS/CNBM	BOHH 12X45 C10.9	NUWL 12 C10	230	4	8
	CNBH/CNBE/CNBX	BOFT 16X50 C10.9 BOSP 16X50 C10.9	NUWL 16 C10	230 230	2 2	4 4
IPE 120	CNBH/CNBE/CNBX	BOFT 16X50 C10.9 BOSP 16X50 C10.9	NUWL 16 C10	230 230	2 2	4 4
IPE 140	CNBH/CNBE/CNBX	BOFT 16X50 C10.9 BOSP 16X50 C10.9	NUWL 16 C10	230 230	2 2	4 4
IPE 160	CNBH/CNBE/CNBX	BOFT 16X50 C10.9 BOSP 16X50 C10.9	NUWL 16 C10	230 230	2 2	4 4

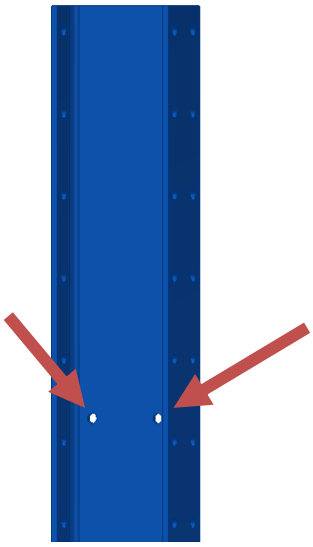
Fixation of the arm for outdoor use

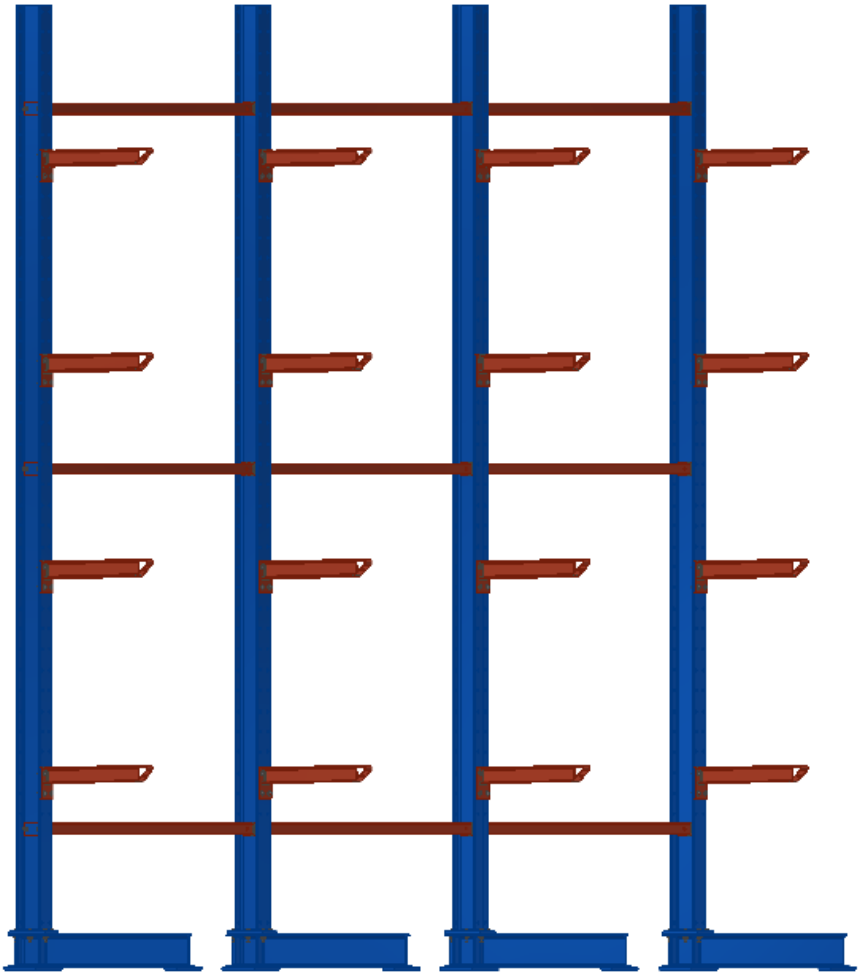
Profile	Type	Bolt	Nut	Fixation moment	Quantity	Qty Double
IPE 080	CNBS/CNBM	BOHHE 12X45 C10.9	NUWLE 12 C10	230	4	8
	CNBH/CNBE/CNBX	BOFTE 16X50 C10.9 BOSPE 16X50 C10.9	NUWLE 16 C10	230 230	2 2	4 4
IPE 100	CNBS/CNBM	BOHHE 12X45 C10.9	NUWLE 12 C10	230	4	8
	CNBH/CNBE/CNBX	BOFTE 16X50 C10.9 BOSPE 16X50 C10.9	NUWLE 16 C10	230 230	2 2	4 4
IPE 120	CNBH/CNBE/CNBX	BOFTE 16X50 C10.9 BOSPE 16X50 C10.9	NUWLE 16 C10	230 230	2 2	4 4
IPE 140	CNBH/CNBE/CNBX	BOFTE 16X50 C10.9 BOSPE 16X50 C10.9	NUWLE 16 C10	230 230	2 2	4 4
IPE 160	CNBH/CNBE/CNBX	BOFTE 16X50 C10.9 BOSPE 16X50 C10.9	NUWLE 16 C10	230 230	2 2	4 4

Stainless steel (Inox) bolts and nuts are not approved to be used with this type of cantilever as the required fixation moments cannot be achieved. Use instead bolts and nuts class 10.9 with Geomet® finish.

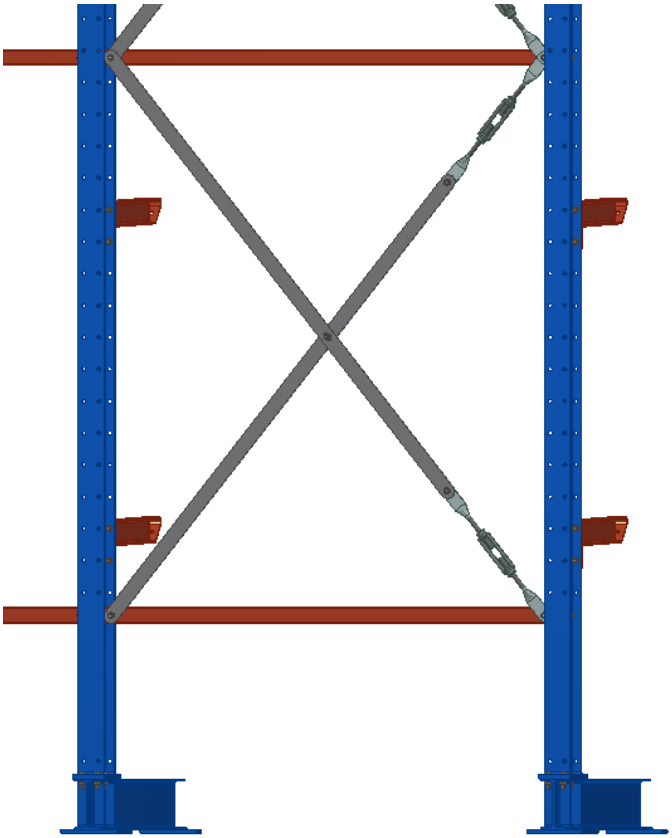
I.4. Stability beam & bracing fixation

Lift the columns with the pre-mounted arms and connect the columns with the horizontal stability beams.





The vertical bracing system consist of flat steel with turnbuckles and is bolted directly onto the horizontal stability beams.



One vertical bracing cross (set) consists of :

- 2 steel strips 40x5 mm — 2x code CNBRP 40X5
- 2 turnbuckles M16x500 — 2x code DITB 16/F
  turnbuckle M16 has distance between holes c/c of 500 mm

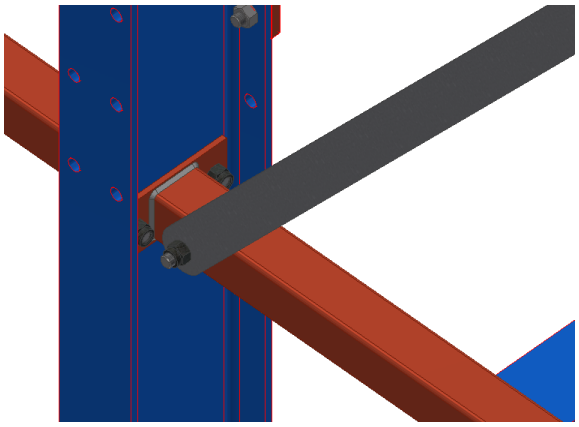
The table underneath shows the number of horizontal stability beams and number of vertical bracing crosses in height

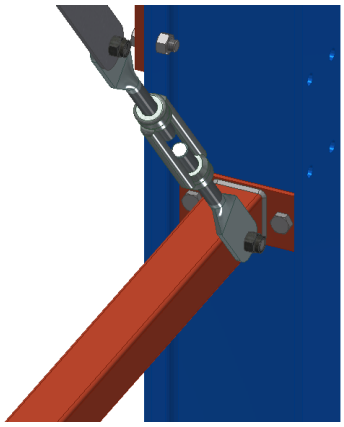
Rack height [mm]		Number of stability beams in height	Number of bracing crosses in height
From	To		
2000	4000	2	1
4001	6000	3	2
6001	9000	4	3

For indoor use generally there is 1 vertical bracing tower every 7 columns.
For outdoor use the number of vertical bracing towers depends on the wind intensity.

Depending on the type of column, a different type of horizontal stability beam is used.
The stability beam is fixed in between the columns with 4 bolts M12x30.

- 4 x BOFT 12X30 C10.9 + 4 x NUSL 12 C10 for indoor use
- 4 x BOFTE 12X30 C10.9 + 4 x NUSLE 12 C10 for outdoor use

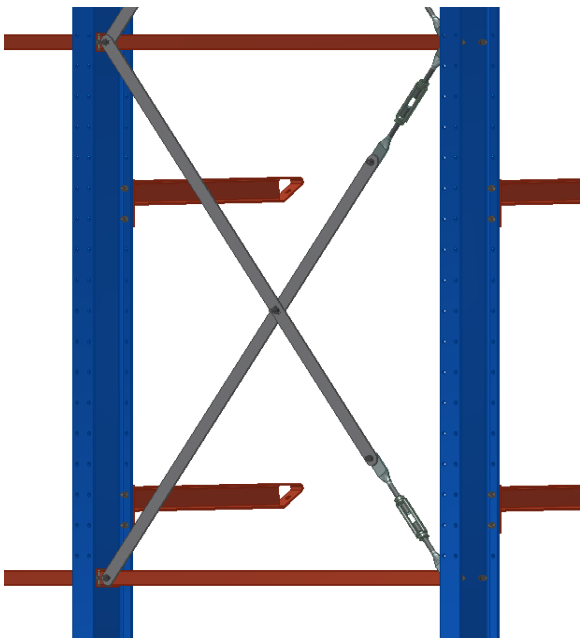


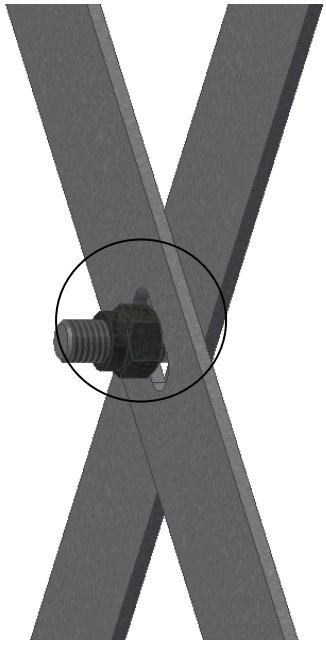


The vertical bracing is connected onto the stability beam with bolts M12x70 or M12x120, depending on the type of column and the type of stability beam.

Column	Stability beam	Bolts & nuts indoor use	Bolts & nuts outdoor use
IPE 160 to 240	CNA 01 tube 50 x 50 x 2	4 x BOFT 12X70 C10.9 3 x BOFT 12X30 C10.9 7 x NUSL 12 C10 2 x DITB 16/F 4 x WA 12 C10.9	4 x BOFTE 12X70 C10.9 3 x BOFTE 12X30 C10.9 7 x NUSLE 12 C10 2 x DITB 16/F 4 x WAE 12 C10.9
IPE 270 to 400	CNA 02 tube 100 x 50 x 3	4 x BOFT 12X120 C10.9 3 x BOFT 12X30 C10.9 7 x NUSL 12 C10 2 x DITB 16/F 4 x WA 12 C10.9	4 x BOFTE 12X120 C10.9 3 x BOFTE 12X30 C10.9 7 x NUSLE 12 C10 2 x DITB 16/F 4 x WAE 12 C10.9

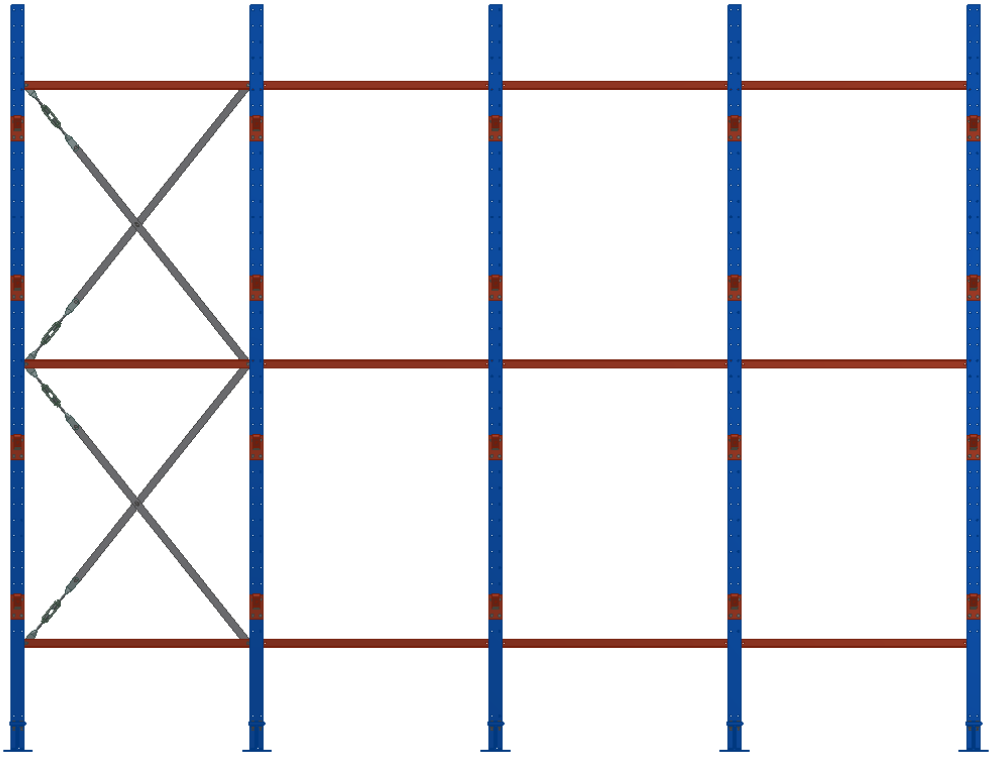
The connection between the turnbuckles and the flat steel and the connection of the 2 sections of flat steel in the middle is made with bolts M12x30.



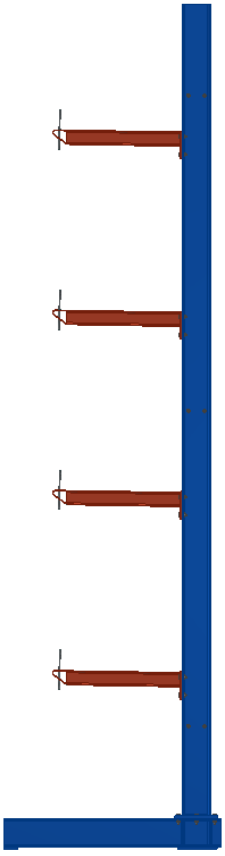


I.5. Rack overview – fully assembled

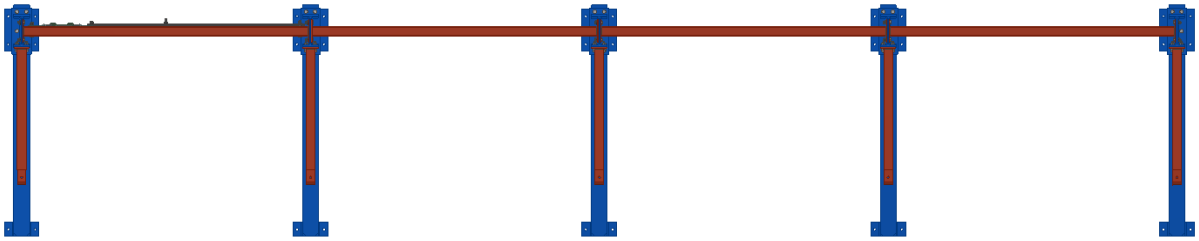
Front view



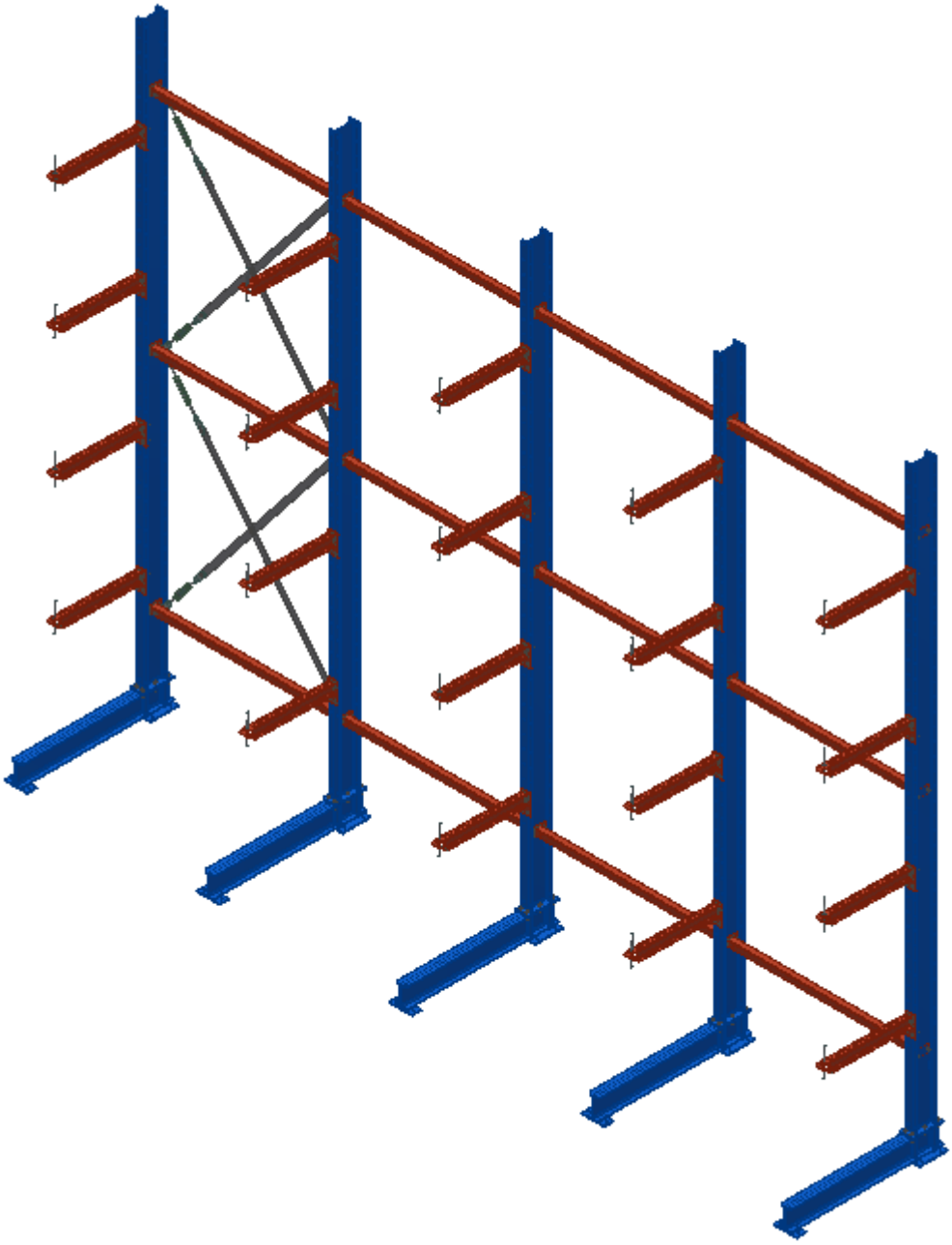
Side View



Top view

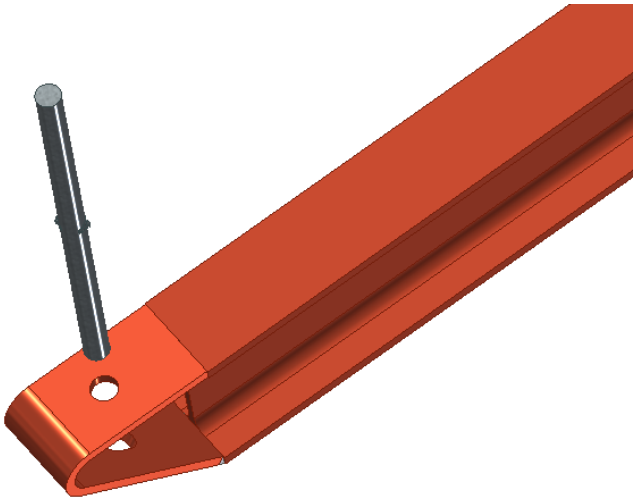


3D view



II.1. Endstop fixation

The optional endstops can be positioned inside the hole of entry noses at the end of the arms.

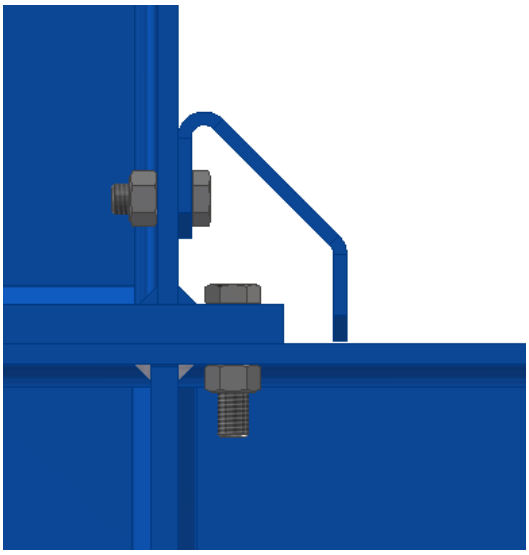


II.2. Bolt covers

Two types of bolt covers are available, depending on the type of column.

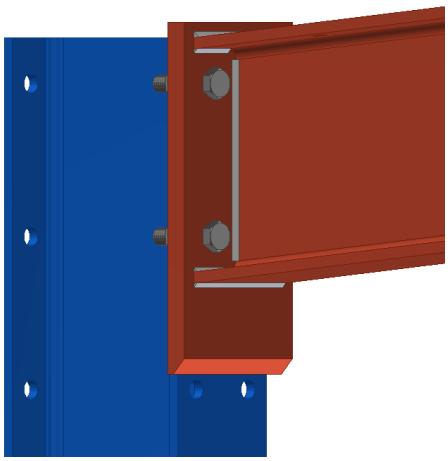
Column	Type of bolt cover	Bolts & nuts indoor use	Bolts & nuts outdoor use
IPE 160 to 200	CNCL	2 x BOFT 12X30 C10.9 2 x NUSL 12 C10	2 x BOFTE 12X30 C10.9 2 x NUSLE 12 C10
IPE 220 to 400	CNCH	2 x BOFT 16X35 C10.9 2 x NUSL 16 C10	2 x BOFTE 16X35 C10.9 2 x NUSLE 16 C10

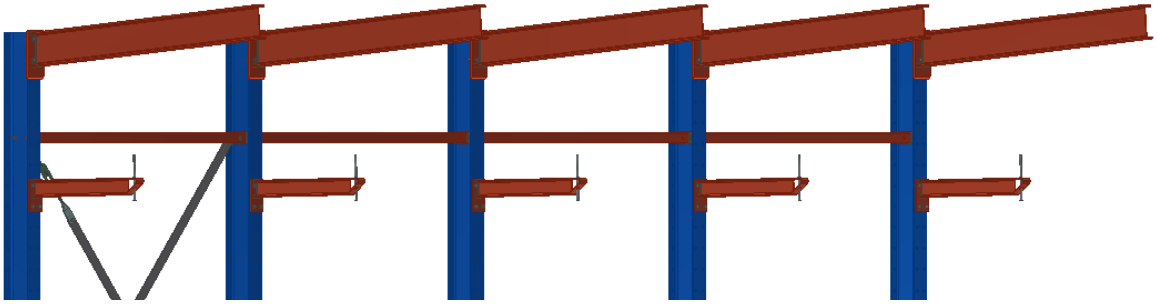
These bolt covers prevent the goods from being damaged by the bolts at the connection point between base & column.



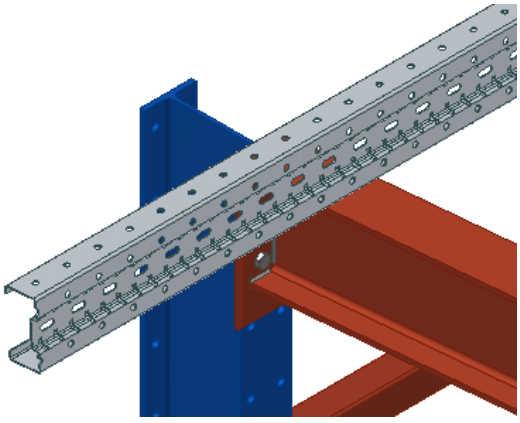
II.3. Roof assembly

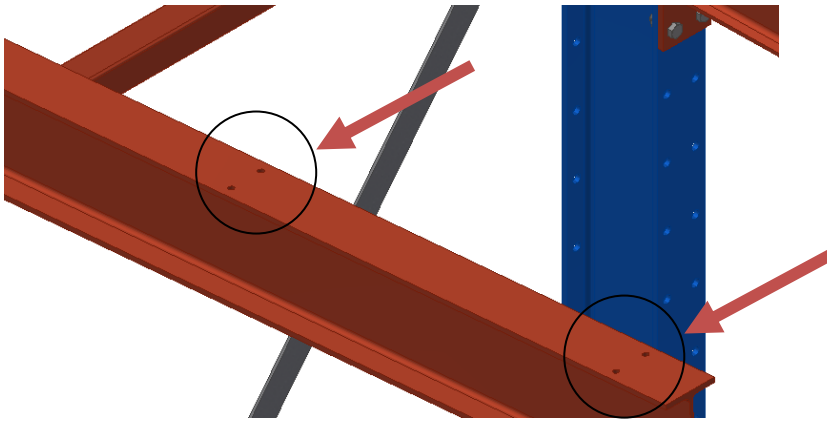
Mount the roof arms together with the other arms, see section I.3 of this manual.
The roof arms are positioned on the top holes of the columns.
Roof arms are always IPE sections 160, refer to the fixation table in section I.3 to use the correct type of bolt.



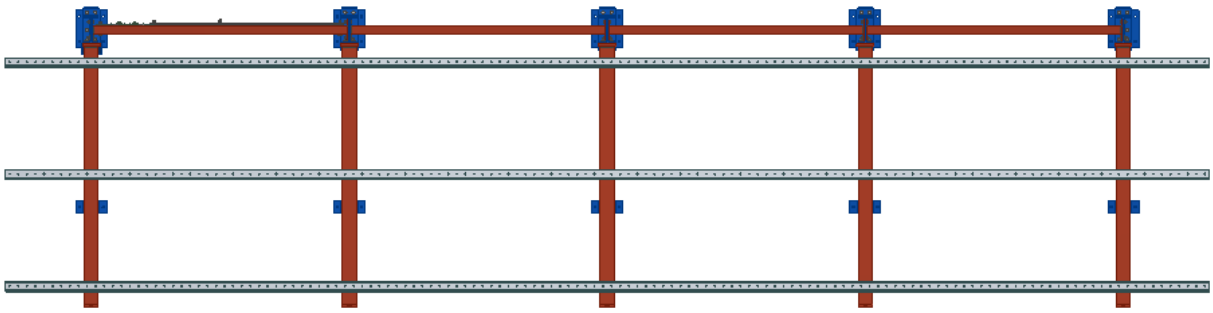


Position the ASMZ sigma profiles on top of the roof arms and fix them to the roof arms in the holes provided.
The sigma profiles are to be divided equally in depth over the roof arms.

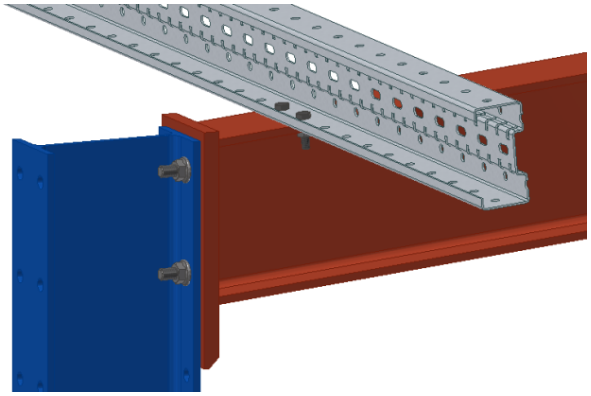


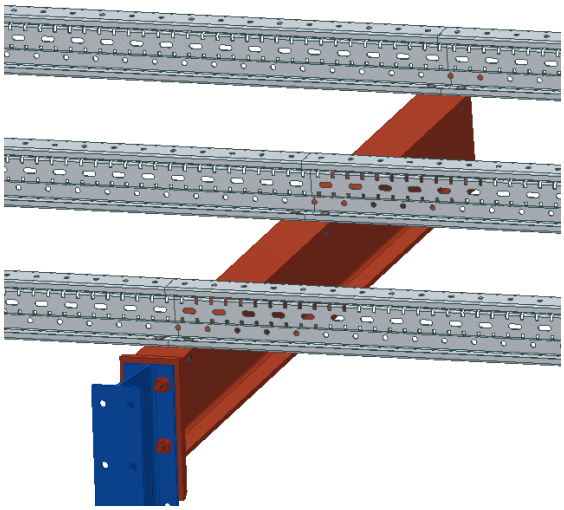


TOP VIEW



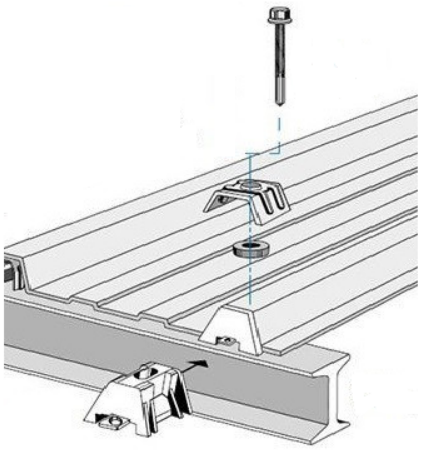
The sigma's are bolted twice to every connection joint with the roof arms.
2 sigma's come together at the middle of the roof arms.

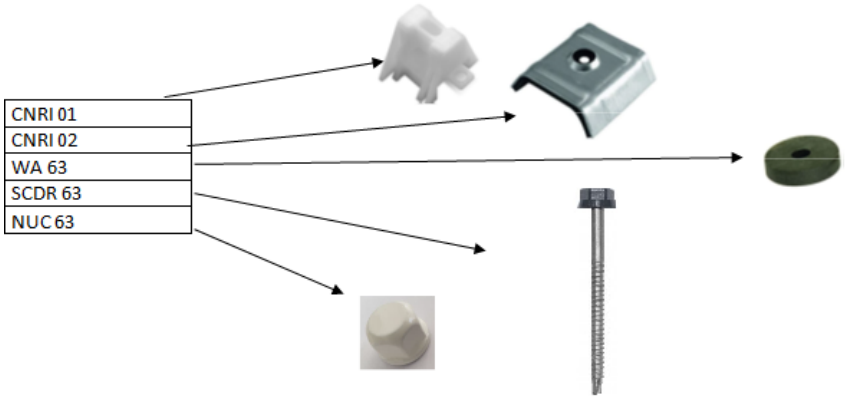


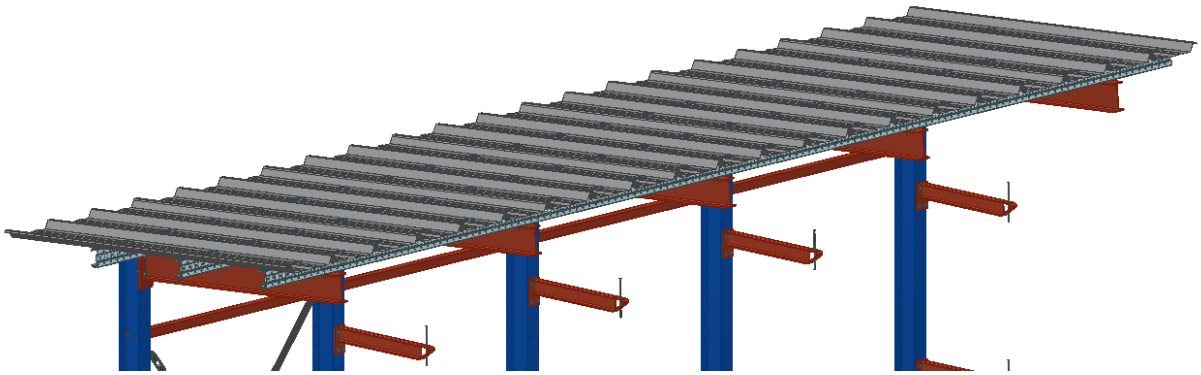


Roof arm Length	Qty ASMZ sigma's	Bolt	Nut	Bolts per roof arm
1500	2	BOFTE 8X30 C8.8	NUWLE 8 C8	4
	3	BOFTE 8X30 C8.8	NUWLE 8 C8	6
2000	2	BOFTE 8X30 C8.8	NUWLE 8 C8	4
	3	BOFTE 8X30 C8.8	NUWLE 8 C8	6
	4	BOFTE 8X30 C8.8	NUWLE 8 C8	8

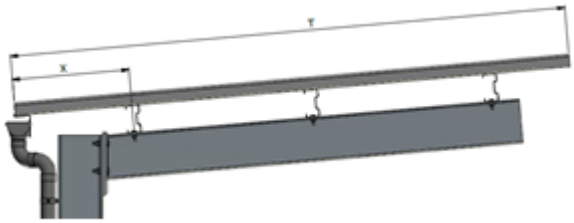
The roof panels are delivered in fixed dimensions 2775 x 1000 mm and need to be fixed onto the sigma profiles by means of special clamps and self drilling screws, 3 fixations per panel and per beam.

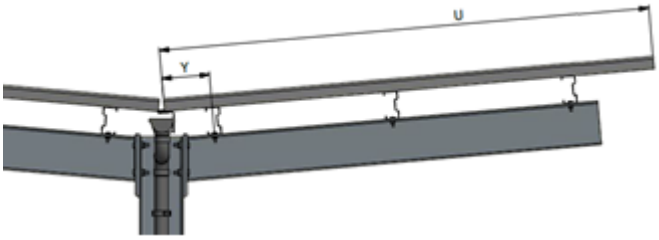






POSITION OF THE ROOF PANELS





SINGLE CANTILEVER

X	T
275 + IPE *	Arm length + 600

DOUBLE CANTILEVER

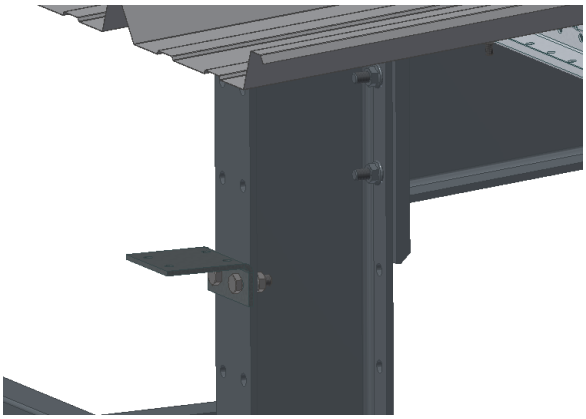
Y	U
75 + (IPE * / 2)	Arm length + 300

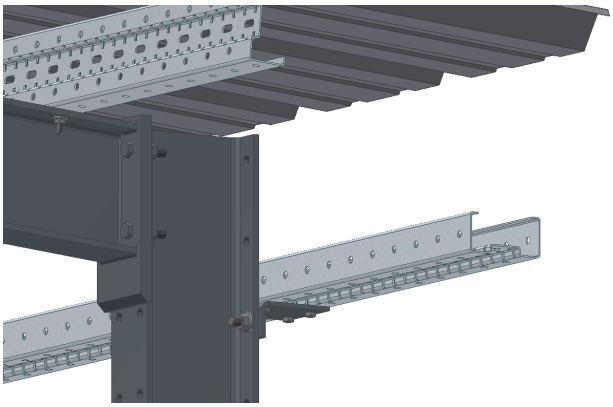
* IPE = width of the IPE column

II.4. Cladding rear assembly

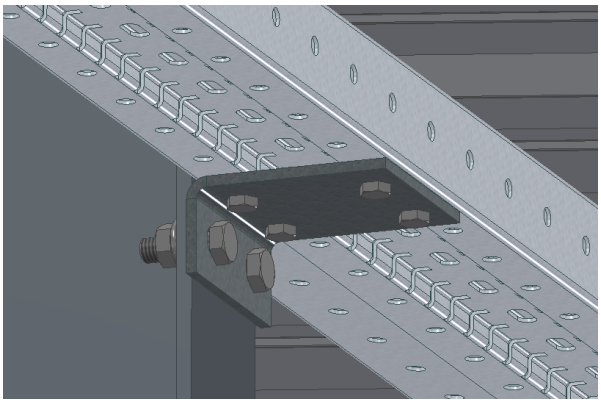
The same ASMZ sigma profiles that are used for the roof cladding, are also used to support and fix the rear cladding. The sigma profiles are supported by L-support brackets, that are bolted to the back of the IPE columns.

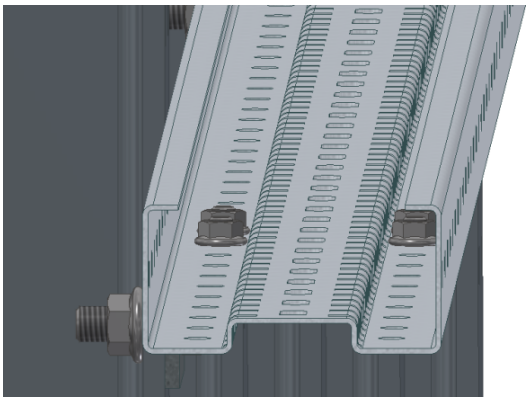
Fixation of the L-supports with 2 x BOHHE 12X45 C10.9 bolts and 2 x NUWLE 12 C10 nuts.



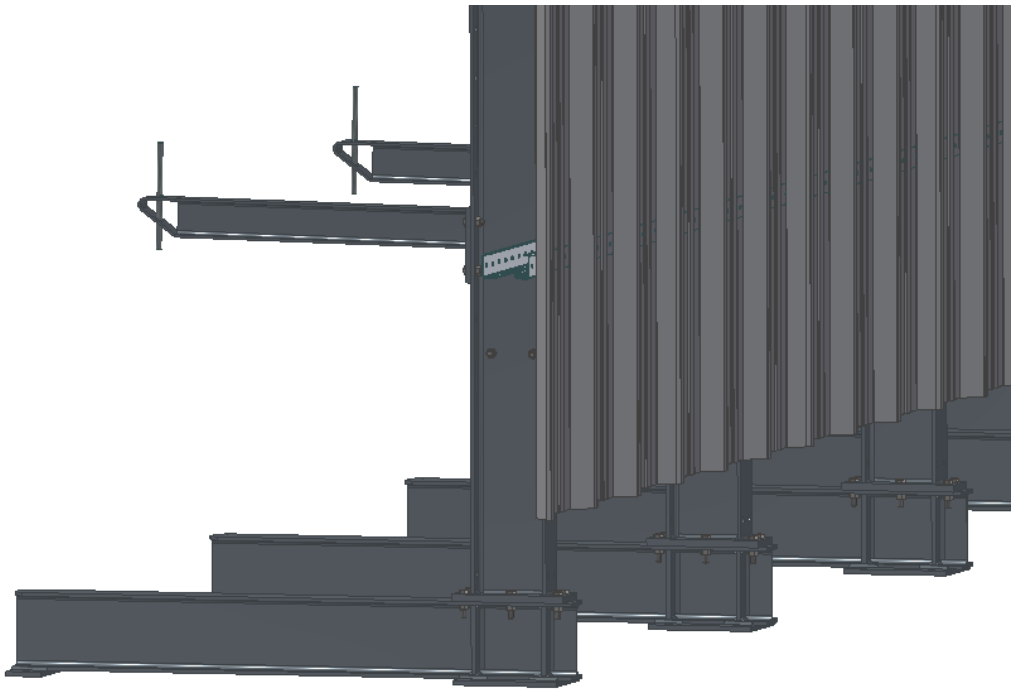


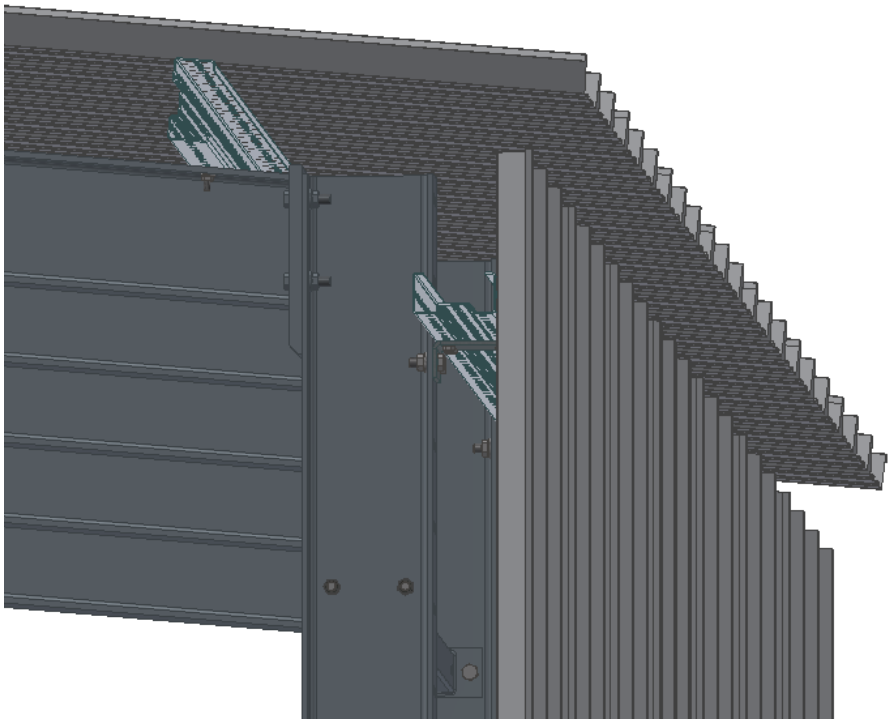
Fixation of the sigma profiles with 4 x BOFTE 8X30 C8.8 bolts and 4 x NUWLE 8 C8 nuts.





The rear claddings panels are mounted from the bottom to the top and are fixed to the rear ASMZ sigma profiles with the self-drilling screws.

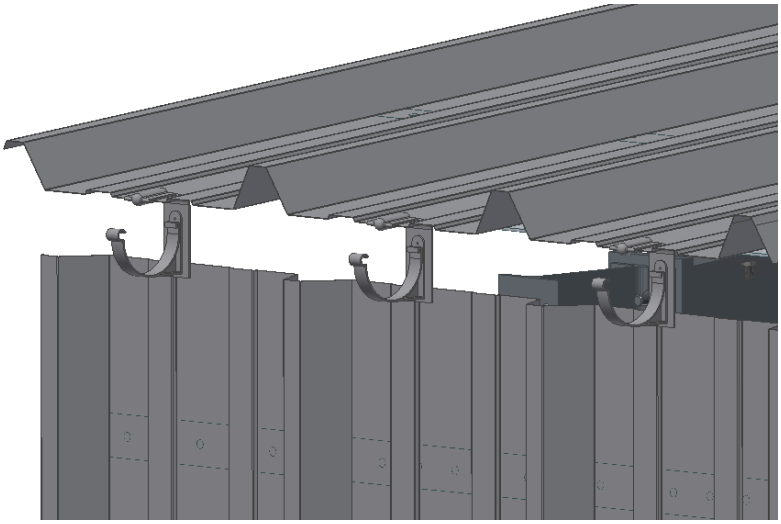




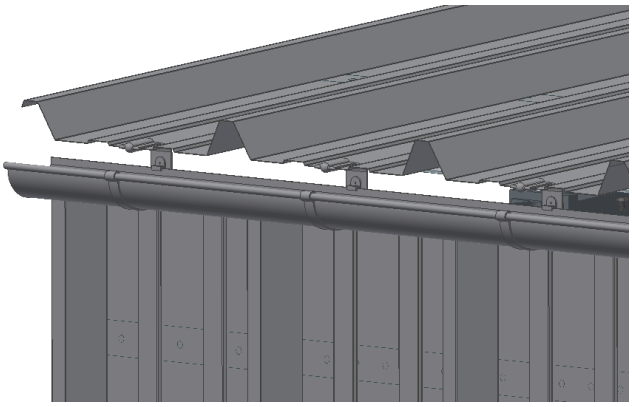
II.5. Gutter assembly

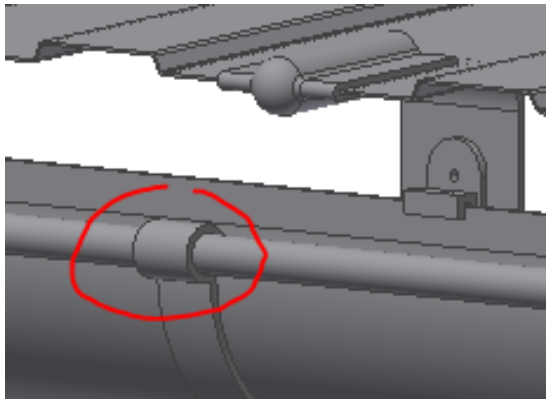
The rain gutter profiles and rain gutter tubes are delivered in fixed lengths of 4 m and must be cut on site to the correct length. The gutter profiles can be connected to each other by means of rain gutter connections.

The gutter supports are clipped onto the roof panels over the entire length of the roof.



The rain gutter is supported by these gutter clips.





The horizontal rain gutters need a slight slope in order for the water to run smoothly towards the vertical gutter tubes. For a good functioning, the slope should be between 5 and 20 mm/m.

Consider a maximum length of 12 m for a single slope gutter. For longer gutter lengths a double slope should be considered, either towards 1 vertical gutter tube in the centre, either towards 2 vertical gutter tubes at the outer ends.

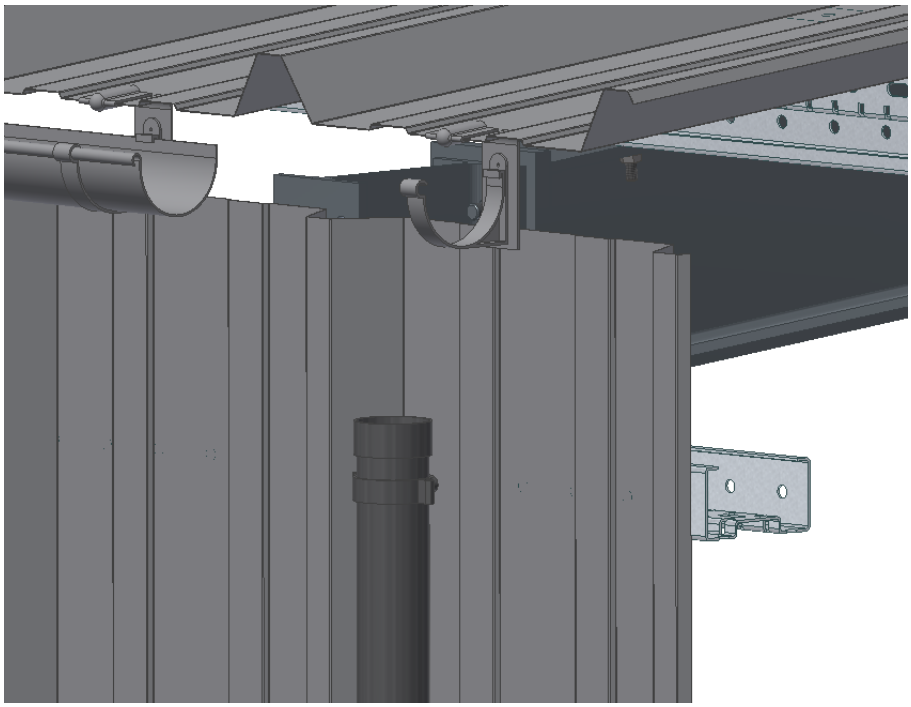
VERTICAL GUTTER TUBES

The table below shows the maximum distance in between 2 vertical gutter tubes for a roof of 35 m²

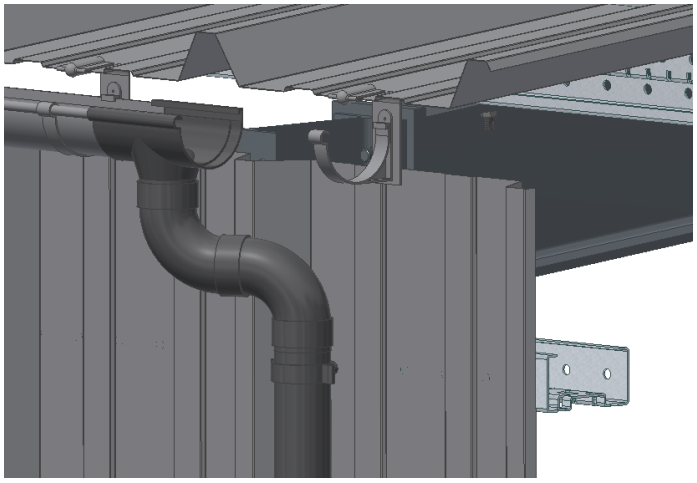
Length of the roof arms [mm]	Max distance between 2 vertical gutter tubes [m]
1500 mm	23 m
2000 mm	17.5 m

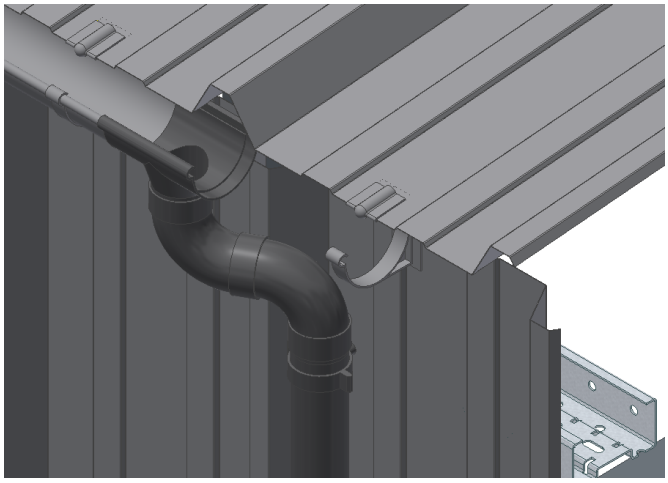
Fixation of the vertical gutter tubes with the gutter tube supports

The gutter tube supports are fixed through the cladding into the sigma beams using self-drilling screws.

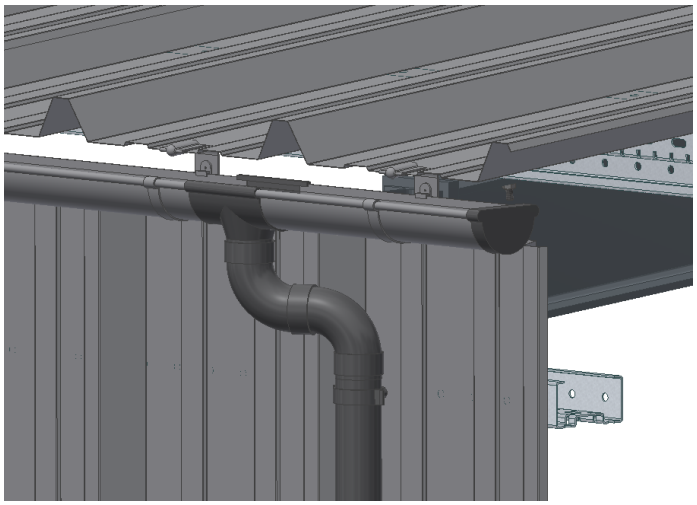


Connect the horizontal rain gutter with the vertical gutter tube by means of the T-joint and elbow joint parts.





Finish the gutter assembly by placing an end part and closing the horizontal gutter with the endstops.



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