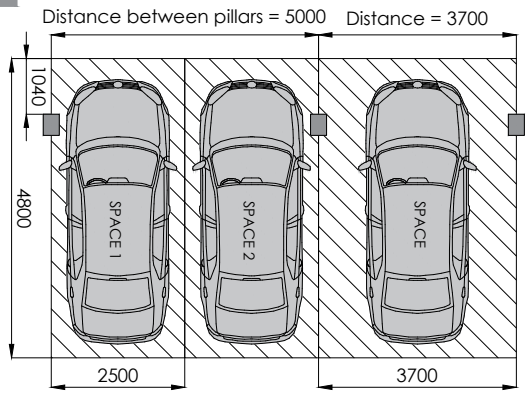
PR1-EN - With Sheetmetal

Assembly Plans

PR1-EN

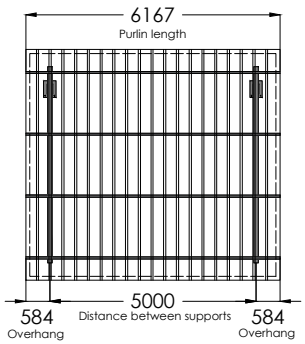
SUNFER

PARKING CANOPY

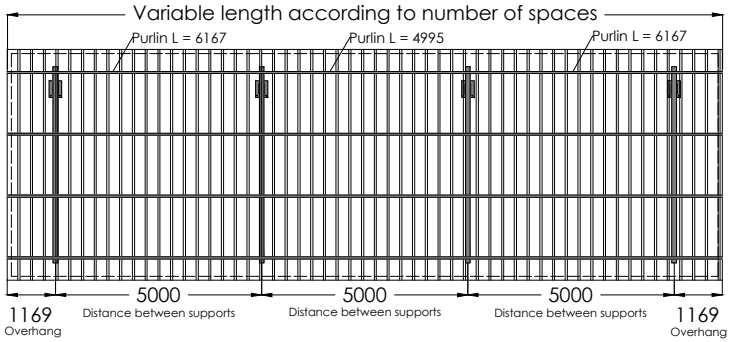


CANOPIES WITH EVEN NUMBER OF SPACES

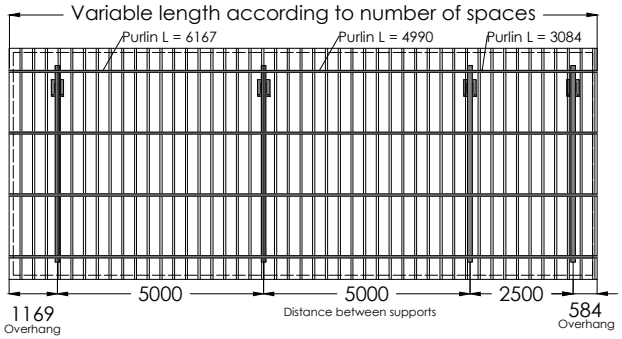
Overhang for 2 supports = 584 mm.



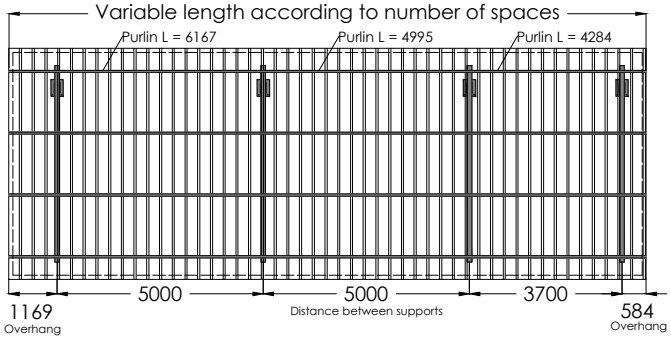
Overhang for more than 2 supports = 1169 mm.



CANOPIES WITH ODD NUMBER OF SPACES



CANOPIES WITH ODD NUMBER OF SPACES INCLUDING FUNCTIONAL DIVERSITY SPACES



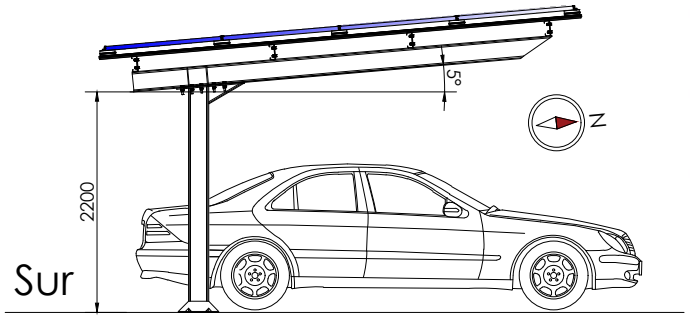
- Parking space dimensions: 2.50x4.80 m
- PV panels have horizontal or vertical orientation
- Size of functional diversity square: 3.70x4.80 m
- Standard pitch of 5°
- Minimum interior clearance 2.20 m

Materials:
Pillars, beams and purlins are hot-dip galvanised according to UNE-EN ISO 1461.

S275 structural steel.
Aluminum bars are EN AW 6005A T6.
Fasteners are A2-70 stainless steel.

Finishes:
Steel pillars, beams and purlins have a hot-dip galvanised finish.

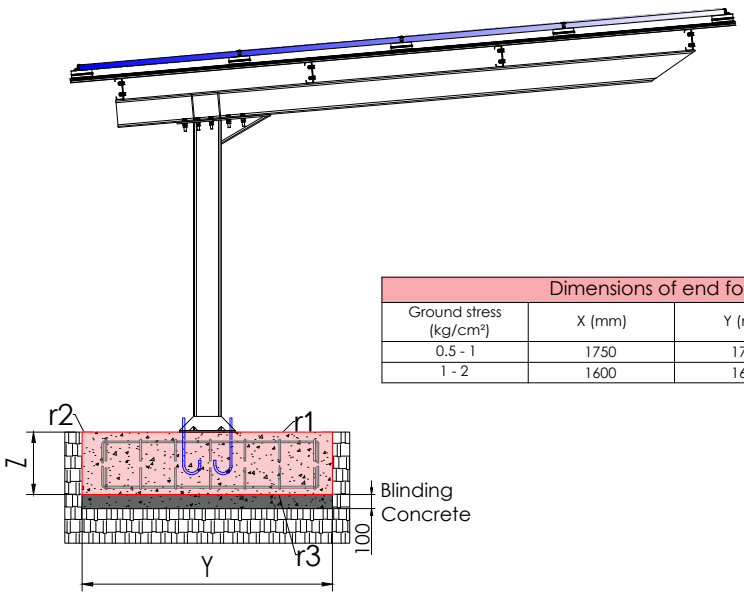
Sheetmetal roof covering is prefinished in Pyrenean White



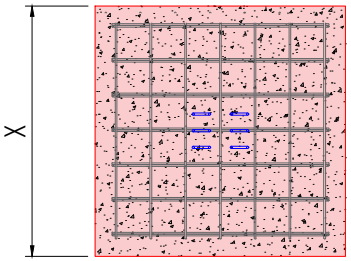
The foundation will need to be prepared before installing the parking canopy. Anchoring fasteners are not included.

It is recommended to carry out a geotechnical investigation.

END FOOTINGS

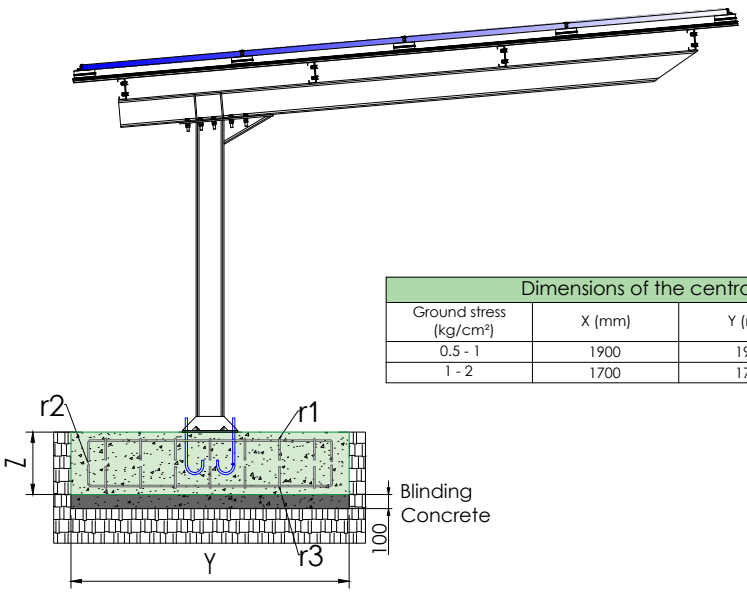


Dimensions of end footings			
Ground stress (kg/cm²)	X (mm)	Y (mm)	Z (mm)
0.5 - 1	1750	1750	400
1 - 2	1600	1600	400

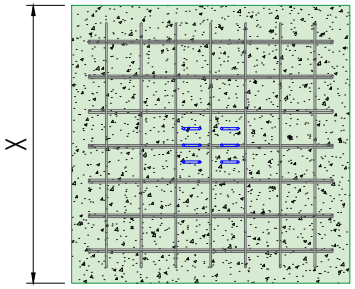


Reinforcement of end footings				
Ground stress (kg/cm²)	Lower reinforcement X	Lower reinforcement Y	Upper reinforcement X	Upper reinforcement Y
0.5 - 1	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm
1 - 2	7 Ø12 every 220 mm	7 Ø12 every 220 mm	7 Ø12 every 220 mm	7 Ø12 every 220 mm

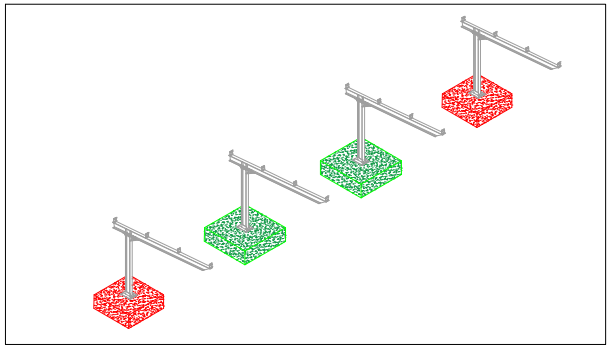
CENTRE FOOTINGS



Dimensions of the central footings			
Ground stress (kg/cm²)	X (mm)	Y (mm)	Z (mm)
0.5 - 1	1900	1900	400
1 - 2	1700	1700	400

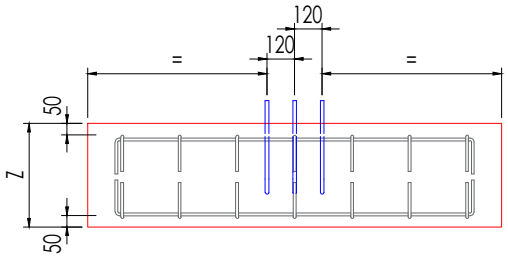


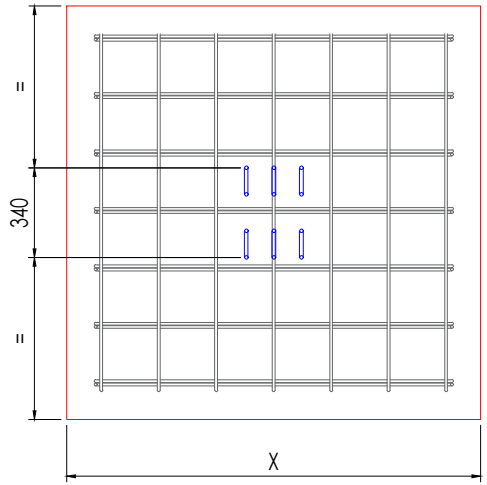
Reinforcement of central footings				
Ground stress (kg/cm²)	Lower reinforcement X	Lower reinforcement Y	Upper reinforcement X	Upper reinforcement Y
0.5 - 1	9 Ø12 every 220 mm	9 Ø12 every 220 mm	9 Ø12 every 220 mm	9 Ø12 every 220 mm
1 - 2	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm

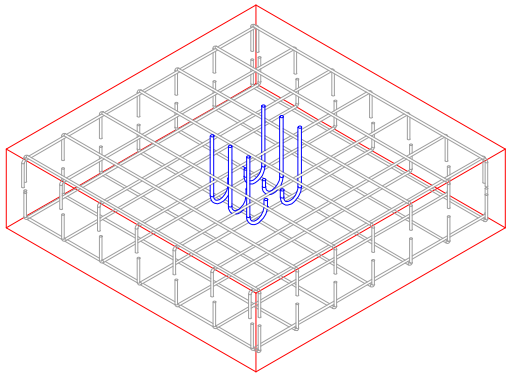


r1 From upper face of the element	30 mm
r2 From soil (when cemented against it)	80 mm
r3 From the surface of the blinding concrete	30 mm

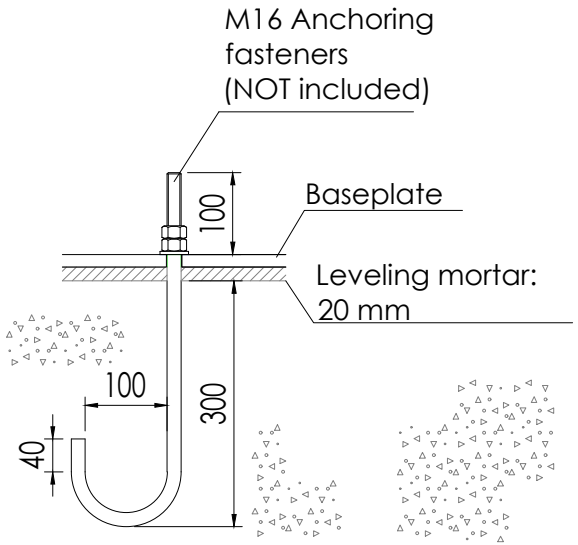
END FOOTINGS







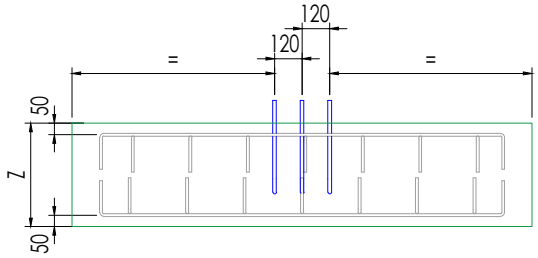
The upper reinforcement/rebar must be located as to not intersect with the anchors. The anchors must remain centered in the footing.

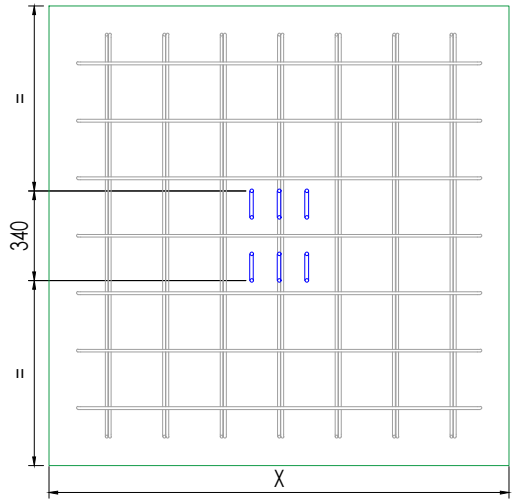


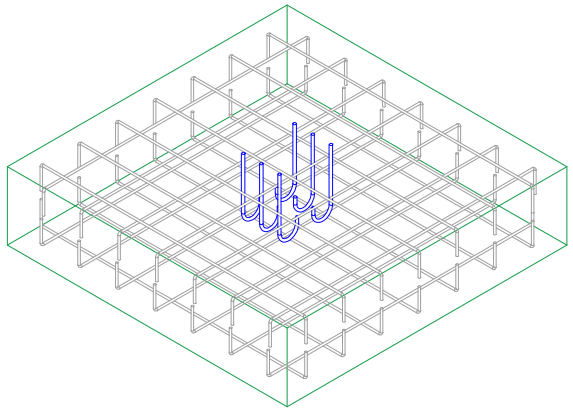
Concrete: HA-25, Yc=1.5

Orient the J-anchors (not included) toward the center of the footing

CENTRE FOOTINGS







PR1-EN

SUNFER

ANCHORS

PARKING CANOPY

END FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 150 km/h
Snow: 65 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	-0.003	0.004	0.529	-0.003	-0.699	0.000
V1	-0.032	0.003	0.345	-0.003	-0.586	0.000
V2	0.030	-0.003	-0.327	0.003	0.555	0.000
V3	-0.040	0.004	0.436	-0.004	-0.741	0.000
V4	0.017	-0.002	-0.182	0.001	0.309	0.000
V5	-0.008	0.001	0.091	-0.001	-0.154	0.000
V6	0.053	-0.006	-0.582	0.005	0,987	0.000
N1	-0.005	0.008	0.766	-0.006	-1.138	0.000
Q1	-0.005	0.007	0.730	-0.006	-1.084	0.000

CENTRE FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 150 km/h
Snow: 65 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	0.000	0.000	0.648	0.000	-0.866	0.000
V1	-0.040	0.000	0.454	0.000	-0.765	0.000
V2	0.037	0.000	-0.430	0.000	0.725	0.000
V3	-0.050	0.000	0.574	0.000	-0.967	0.000
V4	0.021	0.000	-0.239	0.000	0.403	0.000
V5	-0.010	0.000	0.120	0.000	-0.201	0.000
V6	0.067	0.000	-0.765	0.000	1.289	0.000
N1	0.000	0.000	1.008	0.000	-1.478	0.000
Q1	0.000	0.000	0.960	0.000	-1.408	0.000

CALCULATION CHARACTERISTICS:

- Overload = 40 Kg/m²*
- Max allowable bearing stress of soil = 2 Kg/cm²

The CTE dictates that Project Management must conduct a study to check that the soil's allowable bearing stress is equal to or greater than that of the design

*Overload not concurrent

REINFORCED CONCRETE CHARACTERISTICS:

- Class of concrete = C25/30
- Consistency = Class S2 (5-9 cm)
- Max mesh of aggregate = 30mm
- Designation of environment type = XC2
- Calculation coefficient Yc= 1.5
- Reinforcement = B400S Steel rebar
- Steel elastic limit Ys= 1.15

NECESSARY CHECKS:

- Stresses on the soil
- Sinking of the footing
- Bending in the footing
- Shear in the footing
- Oblique compression in the footing
- Minimum depth
- Minimum rebar:concrete ratio
- Minimum rebar:concrete ratio for bending
- Minimum rebar diameter
- Maximum separaction between rebar
- Minimum separaction between rebar
- Anchor length

Calculations carried out using Cype 3D, accounting for integral metal structure, loads and allowable bearing stress of soil.

SUNFER certifies that that the PR1-EN foundation meets or exceeds all criteria for the ground conditions, materials, dimensions, and reactions mentioned in this document.

END FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 130 km/h
Snow: 70 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	-0.003	0.004	0.529	-0.003	-0.699	0.000
V1	-0.023	0.003	0.255	-0.002	-0.432	0.000
V2	0.023	-0.003	-0.255	0.002	0.432	0.000
V3	-0.030	0.003	0.327	-0.003	-0.555	0.000
V4	0.013	-0.001	-0.145	0.001	0.247	0.000
V5	-0.008	0.001	0.091	-0.001	-0.154	0.000
V6	0.007	-0.001	-0.073	0.001	0.123	0.000
N1	-0.006	0.008	0.821	-0.007	-1.220	0.000
Q1	-0.005	0.007	0.730	-0.006	-1.084	0.000

CENTRE FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 130 km/h
Snow: 70 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	0.000	0.000	0.648	0.000	-0.866	0.000
V1	-0.029	0.000	0.335	0.000	-0.564	0.000
V2	0.029	0.000	-0.335	0.000	0.564	0.000
V3	-0.037	0.000	0.430	0.000	-0.725	0.000
V4	0.017	0.000	-0.191	0.000	0.322	0.000
V5	-0.010	0.000	0.120	0.000	-0.201	0.000
V6	0.008	0.000	-0.096	0.000	0.161	0.000
N1	0.000	0.000	1.080	0.000	-1.584	0.000
Q1	0.000	0.000	0.960	0.000	-1.408	0.000

CALCULATION CHARACTERISTICS:

- Overload = 40 Kg/m²*
- Max allowable bearing stress of soil = 2 Kg/cm²

The CTE dictates that Project Management must conduct a study to check that the soil's allowable bearing stress is equal to or greater than that of the design

*Overload not concurrent

REINFORCED CONCRETE CHARACTERISTICS:

- Class of concrete = C25/30
- Consistency = Class S2 (5-9 cm)
- Max mesh of aggregate = 30mm
- Designation of environment type = XC2
- Calculation coefficient Yc= 1.5
- Reinforcement = B400S Steel rebar
- Steel elastic limit Ys= 1.15

NECESSARY CHECKS:

- Stresses on the soil
- Sinking of the footing
- Bending in the footing
- Shear in the footing
- Oblique compression in the footing
- Minimum depth
- Minimum rebar:concrete ratio
- Minimum rebar:concrete ratio for bending
- Minimum rebar diameter
- Maximum separaction between rebar
- Minimum separaction between rebar
- Anchor length

Calculations carried out using Cype 3D, accounting for integral metal structure, loads and allowable bearing stress of soil.

SUNFER certifies that that the PR1-EN foundation meets or exceeds all criteria for the ground conditions, materials, dimensions, and reactions mentioned in this document.

END FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 110 km/h
Snow: 80 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	-0.003	0.004	0.529	-0.003	-0.699	0.000
V1	-0.017	0.002	0.182	-0.001	-0.309	0.000
V2	0.015	-0.002	-0.164	0.001	0.278	0.000
V3	-0.022	0.002	0.236	-0.002	-0.401	0.000
V4	0.008	-0.001	-0.091	0.001	0.154	0.000
V5	-0.003	0.000	0.036	0.000	-0.062	0.000
V6	0.030	-0.003	-0.327	0.003	0.555	0.000
N1	-0.007	0.010	0.949	-0.008	-1.409	0.000
Q1	-0.005	0.007	0.730	-0.006	-1.084	0.000

CENTRE FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 110 km/h
Snow: 80 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	0.000	0.000	0.648	0.000	-0.866	0.000
V1	-0.021	0.000	0.239	0.000	-0.403	0.000
V2	0.019	0.000	-0.215	0.000	0.362	0.000
V3	-0.027	0.000	0.311	0.000	-0.524	0.000
V4	0.010	0.000	-0.120	0.000	0.201	0.000
V5	-0.004	0.000	0.048	0.000	-0.081	0.000
V6	0.037	0.000	-0.430	0.000	0.725	0.000
N1	0.000	0.000	1.248	0.000	-1.830	0.000
Q1	0.000	0.000	0.960	0.000	-1.408	0.000

CALCULATION CHARACTERISTICS:

- Overload = 40 Kg/m²*
- Max allowable bearing stress of soil = 2 Kg/cm²

The CTE dictates that Project Management must conduct a study to check that the soil's allowable bearing stress is equal to or greater than that of the design

*Overload not concurrent

REINFORCED CONCRETE CHARACTERISTICS:

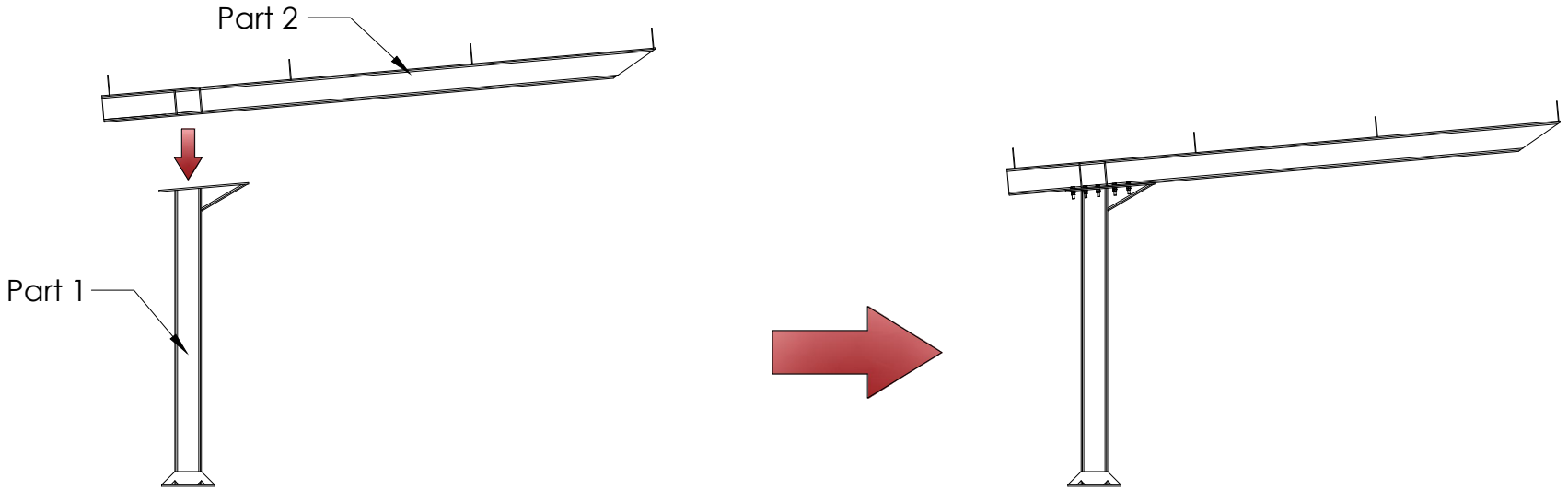
- Class of concrete = C25/30
- Consistency = Class S2 (5-9 cm)
- Max mesh of aggregate = 30mm
- Designation of environment type = XC2
- Calculation coefficient Yc= 1.5
- Reinforcement = B400S Steel rebar
- Steel elastic limit Ys= 1.15

NECESSARY CHECKS:

- Stresses on the soil
- Sinking of the footing
- Bending in the footing
- Shear in the footing
- Oblique compression in the footing
- Minimum depth
- Minimum rebar:concrete ratio
- Minimum rebar:concrete ratio for bending
- Minimum rebar diameter
- Maximum separaction between rebar
- Minimum separaction between rebar
- Anchor length

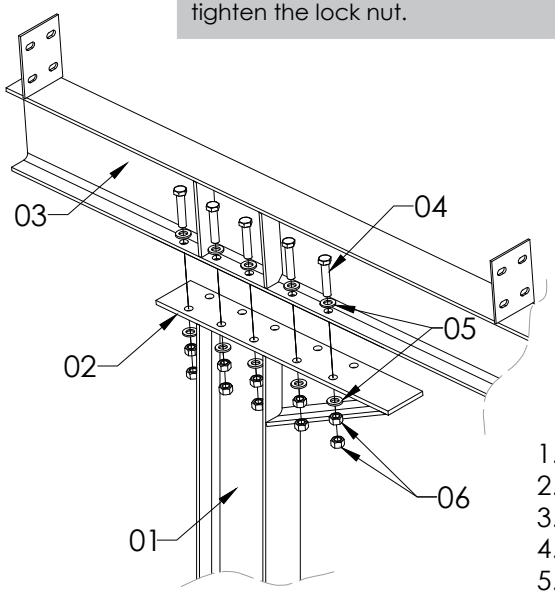
Calculations carried out using Cype 3D, accounting for integral metal structure, loads and allowable bearing stress of soil.

SUNFER certifies that that the PR1-EN foundation meets or exceeds all criteria for the ground conditions, materials, dimensions, and reactions mentioned in this document.

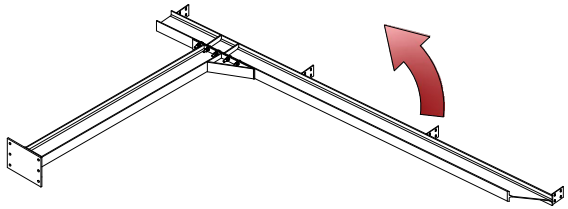


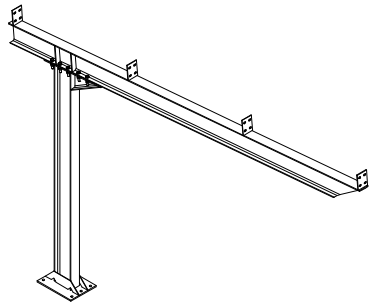
STEP 1: The PR1-EN car park supports are supplied in two parts. Both parts are connected by means of connecting plates with 10 bolts, 5 on each side of the beam.

First tighten the nut to the marked torque and then tighten the lock nut.



1. IPE Pillar 200
2. Connecting plate pillar-beam)
3. Beam IPE 200
4. Hexagonal screw M16x60 (x10)
5. Flat Washer M16 (x20)
6. Hexagonal nut M16 (x20)





To facilitate assembly, it is recommended that this step is carried out on the ground and, once the connection has been made, lift the completed support.

Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

PR1-EN

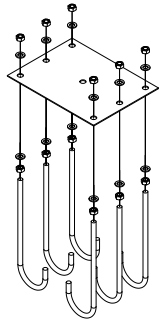
SUNFER

CP1 ANCHOR ASSEMBLY

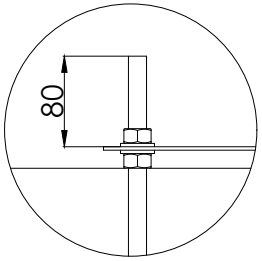
PARKING CANOPY

NOT INCLUDED

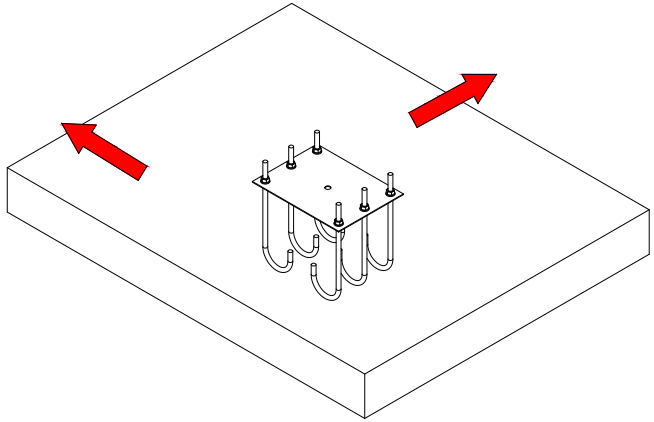
1. Use 1 nut and 1 washer beneath each side to position the bolts on the plate prior to concreting.



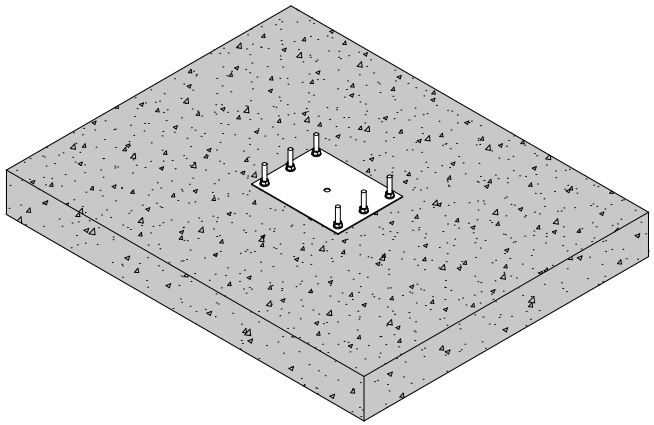
2. Leave 80 mm of rod protruding from the plate.



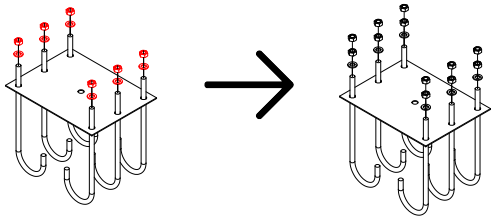
3. Level the plate with it in place. Make certain that it is level about both axes to ensure correct installation. Do not use screws for leveling.

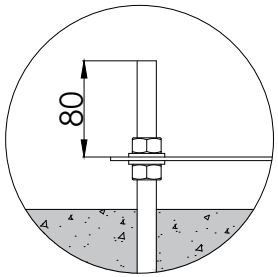


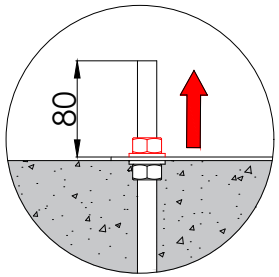
4. Once concrete is poured, plate will be fixed in place.

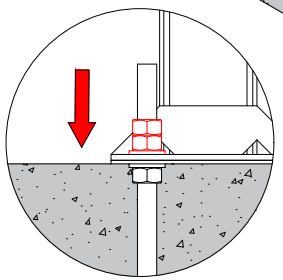


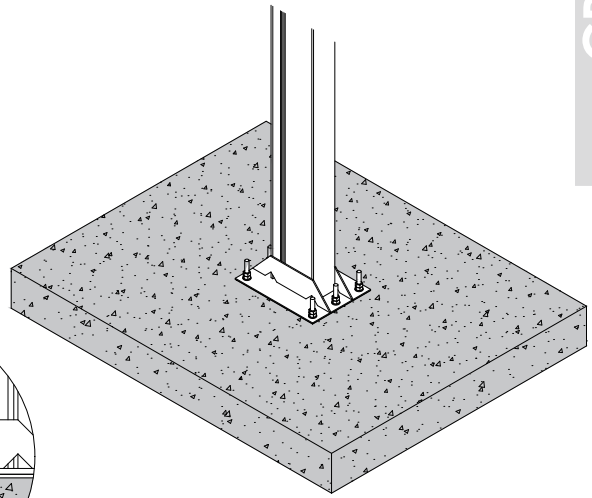
5. Remove the nuts and washers from the exposed side (Red) and place the pillar with the correct fasteners.

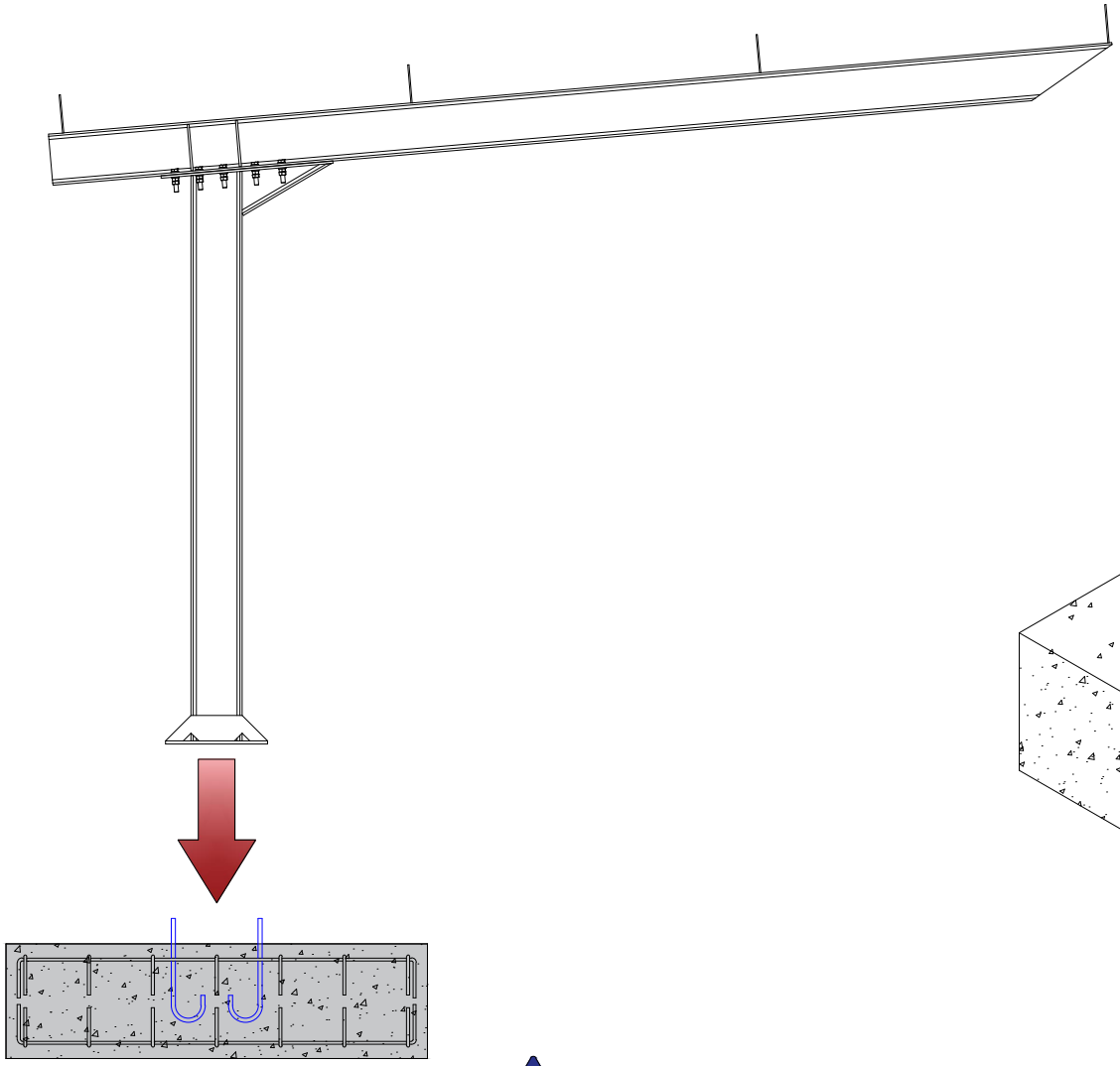


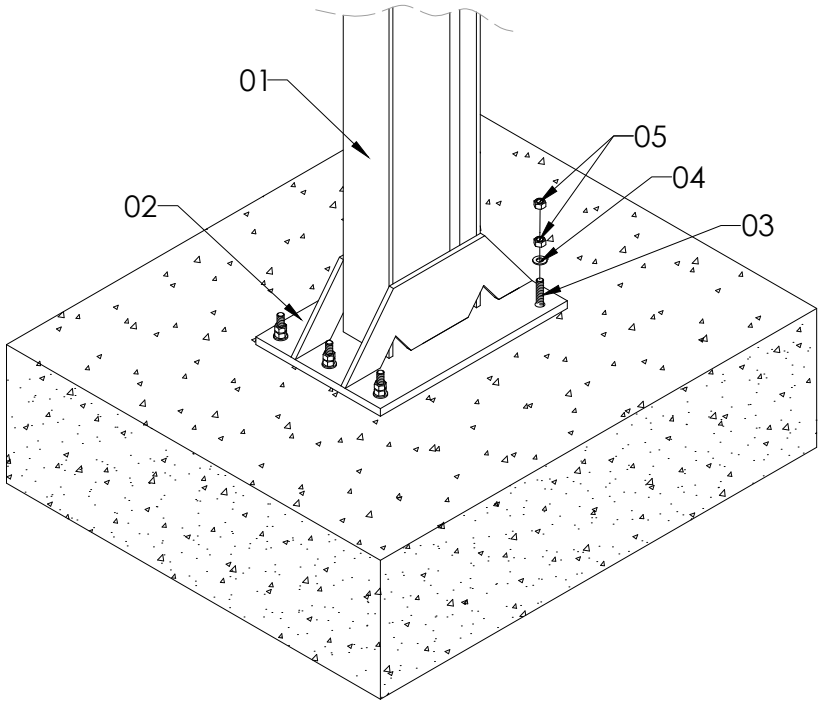








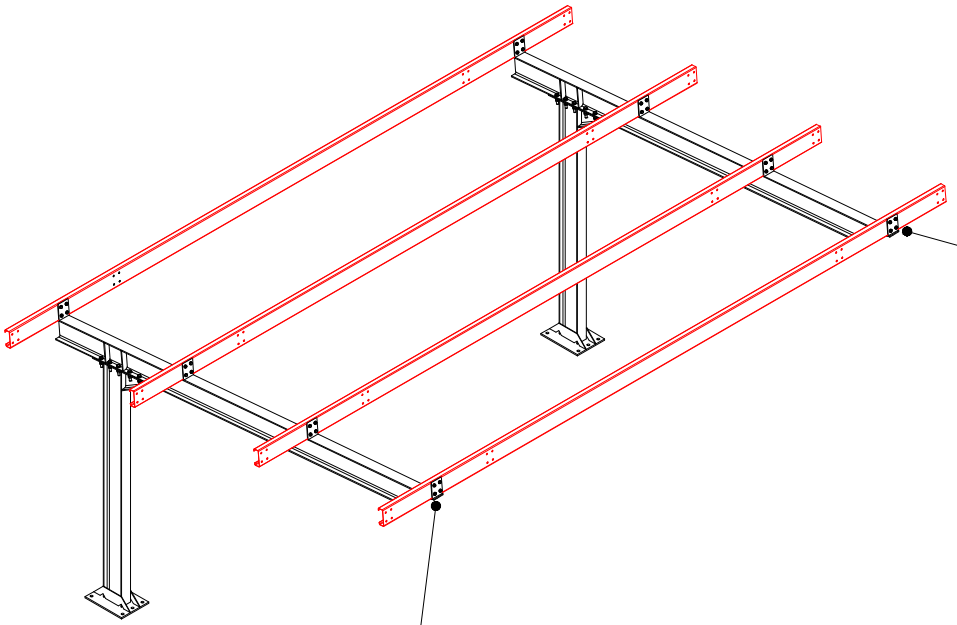


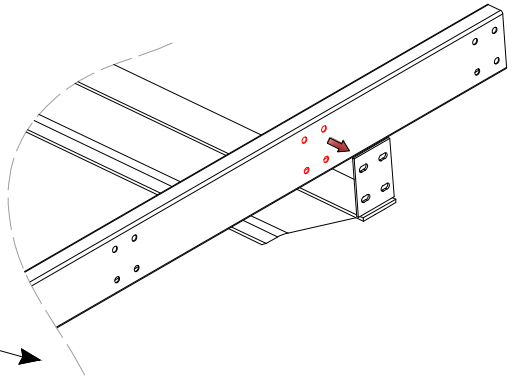


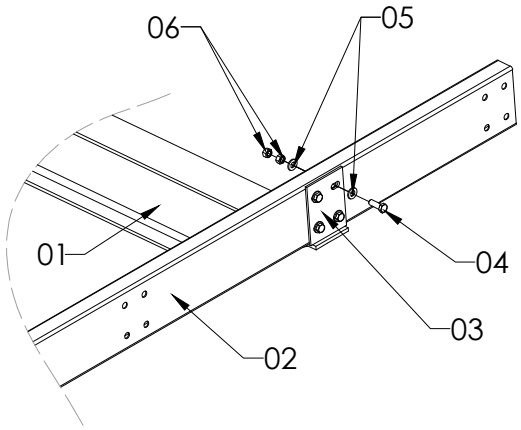
Tighten the nut first to the marked torque and then tighten the lock nut.

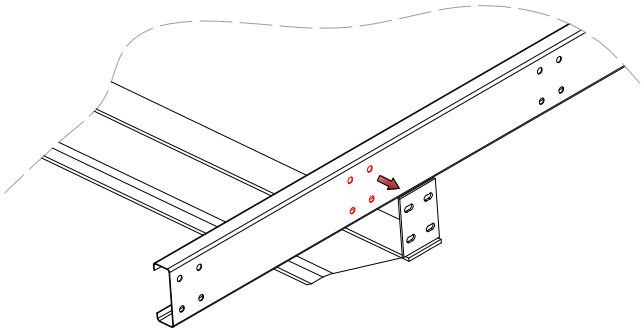
1. Pillar IPE 200
2. Base plate (400x300x12)
3. Anchor bolts M16 (NOT INCLUDED)
4. Flat washer M16 (NOT INCLUDED)
5. Nut M16 (NOT INCLUDED)

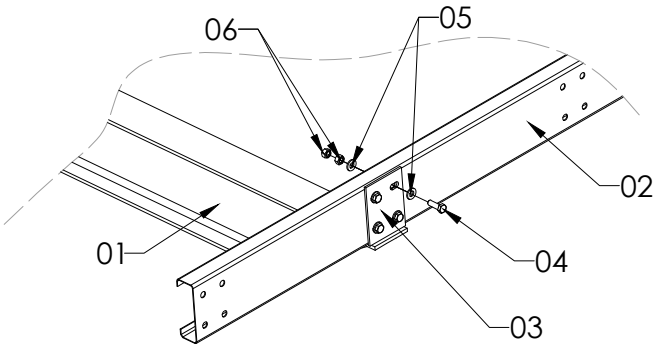
STEP 2: Connect the base plate to the pillar by matching the holes with the anchor bolts. Then insert the washers and nuts into the anchorage hook.











Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

01. Beam IPE 200
02. Purlin L=6167 mm
03. Cleat
04. Hexagonal screw M12x35
05. Flat washer M12
06. Hexagonal nut M12

First tighten the nut to the marked torque and then tighten the lock nut.

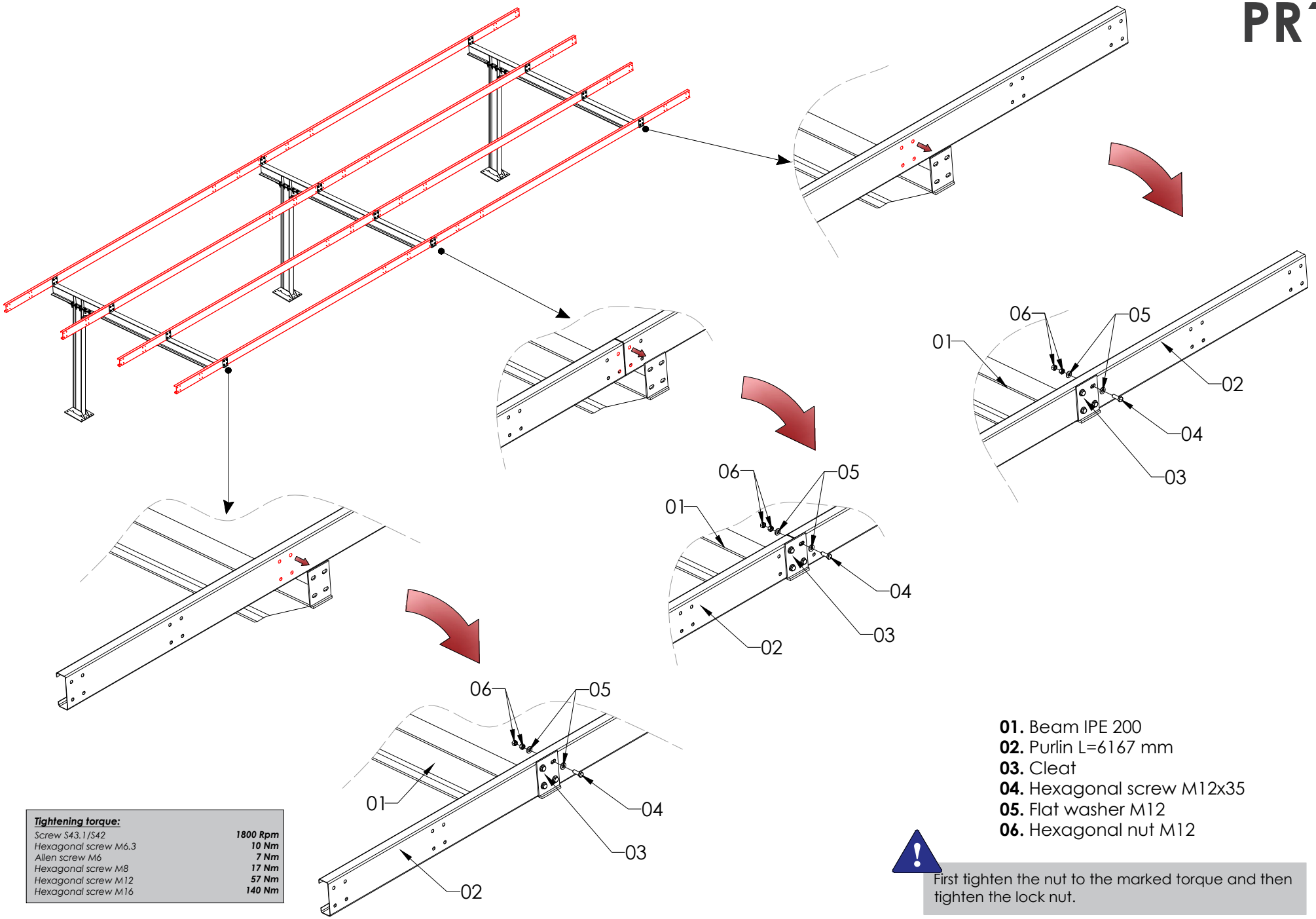
STEP 3: Place the purlin on the beams and match the red coloured holes of the purlin with the holes of the cleat. Screw the connection with 4 screws for each cleat.

PR1-EN

SUNFER

PURLINS ASSEMBLY - 3 PORTICOS

PARKING CANOPY

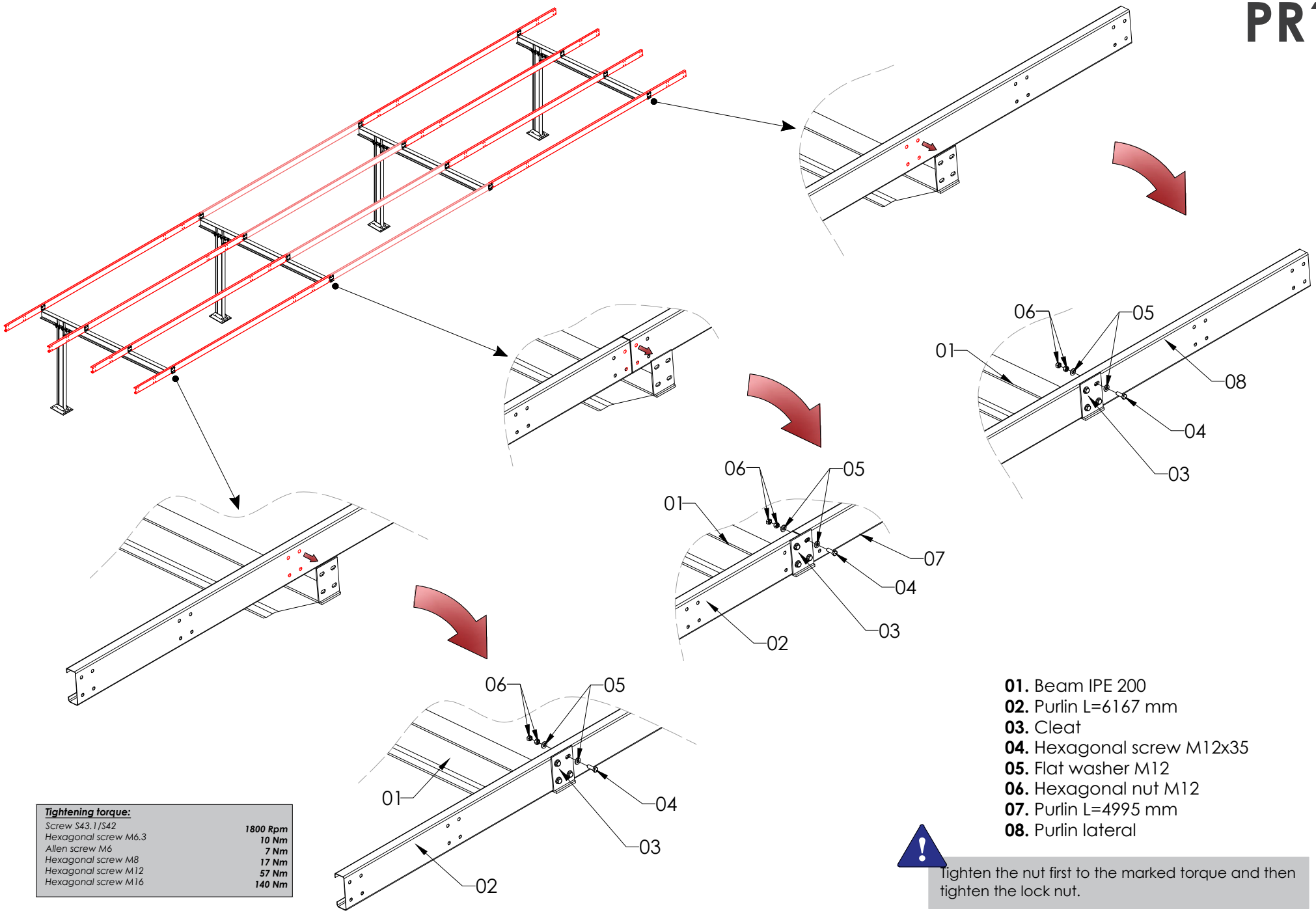


01. Beam IPE 200
02. Purlin L=6167 mm
03. Cleat
04. Hexagonal screw M12x35
05. Flat washer M12
06. Hexagonal nut M12

Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

First tighten the nut to the marked torque and then tighten the lock nut.

STEP 3: Place the purlin on the beams and match the red coloured holes of the purlin with the holes of the cleat. Screw the connection with 4 screws for each cleat.

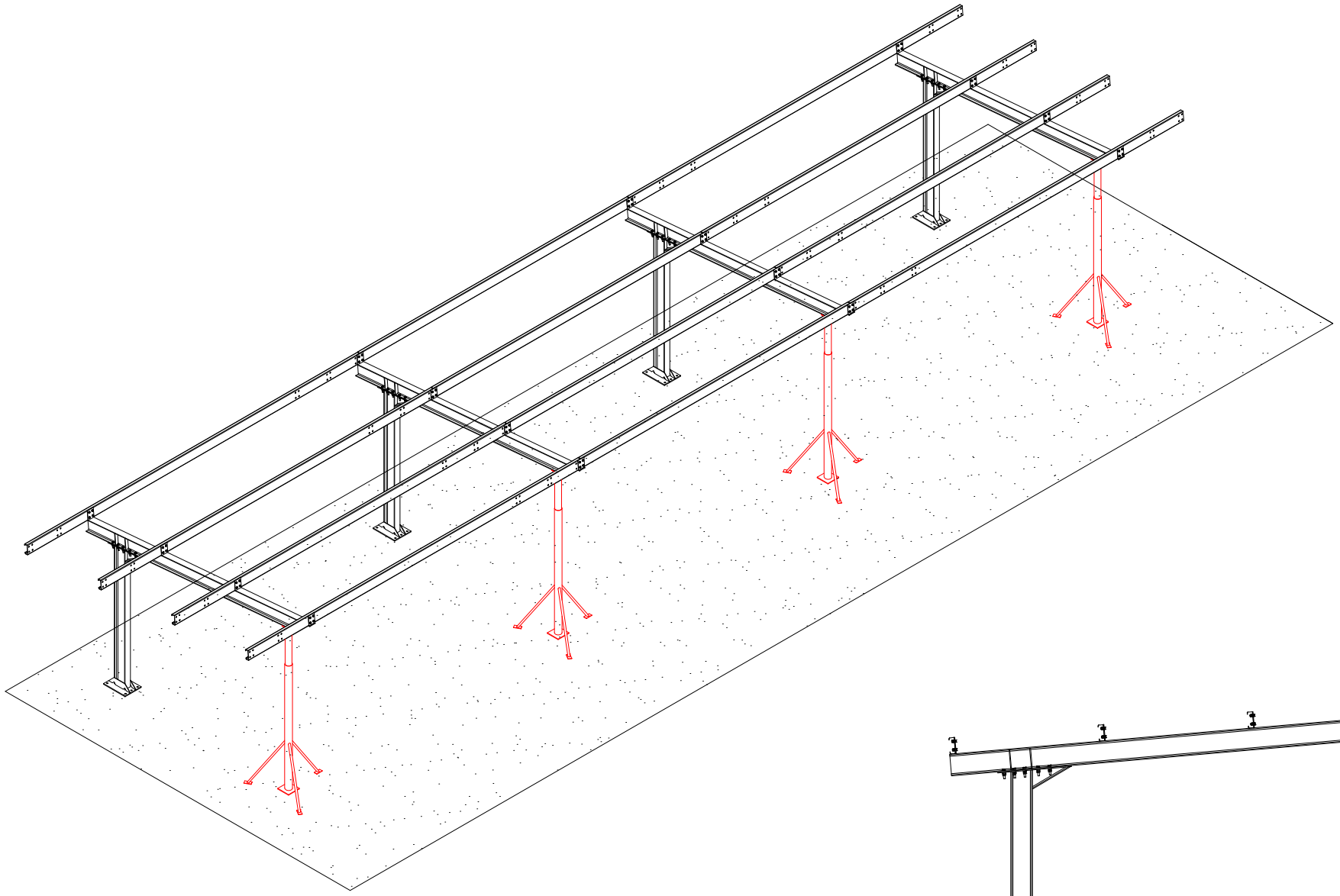


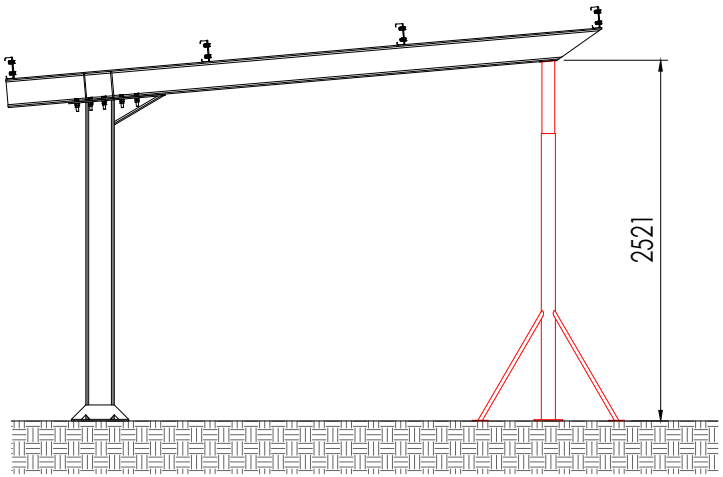
01. Beam IPE 200
02. Purlin L=6167 mm
03. Cleat
04. Hexagonal screw M12x35
05. Flat washer M12
06. Hexagonal nut M12
07. Purlin L=4995 mm
08. Purlin lateral

Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

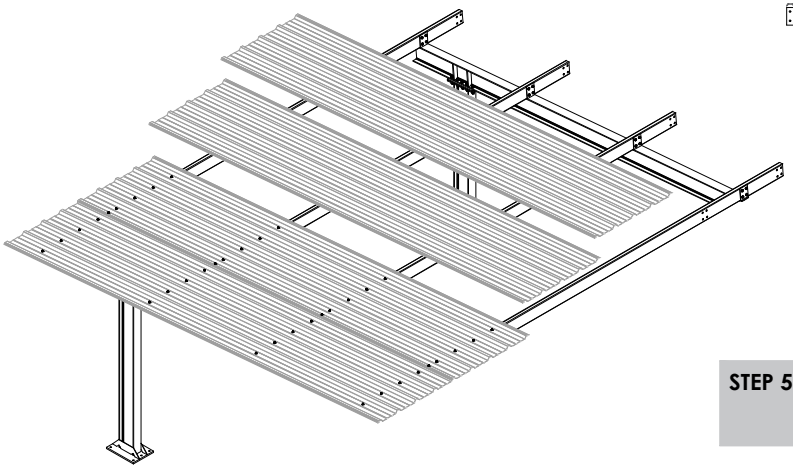
Tighten the nut first to the marked torque and then tighten the lock nut.

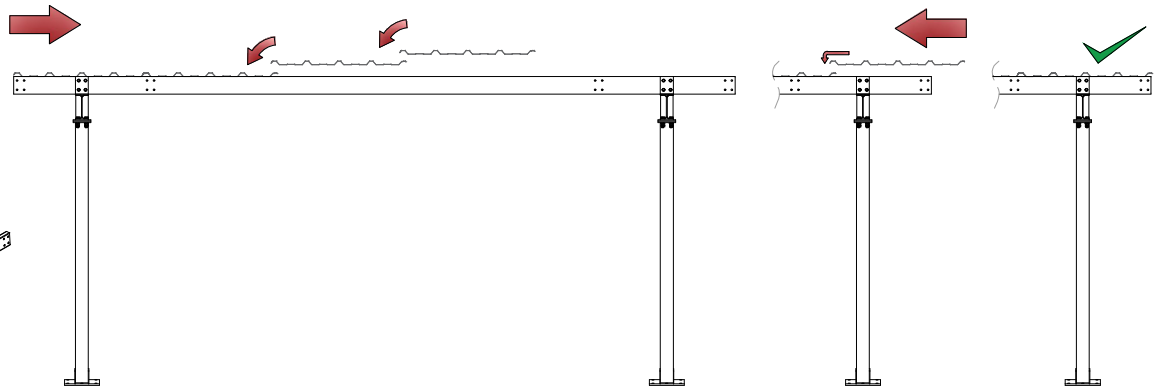
STEP 3: Place the purlin on the beams and match the red coloured holes in the purlin with the holes in the cleat. Screw the connection with 4 screws per cleat.



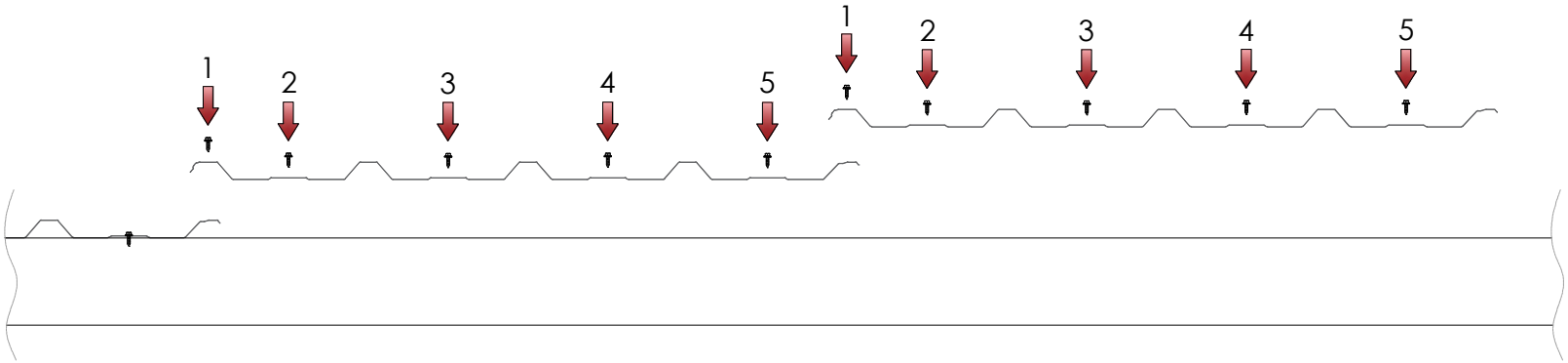


STEP 4: Once the purlins have been assembled, brace the porticos to prevent movement in any direction during the assembly of the rest of the car park.



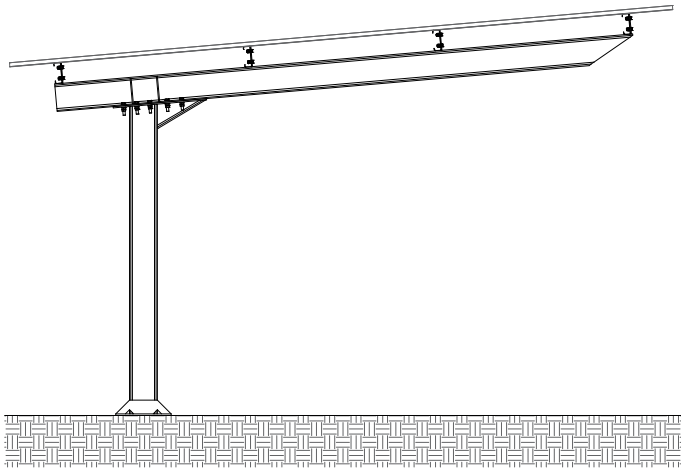


STEP 5: Start placing the sheets at one end of the purlin until you reach the opposite end. The last sheet shall overlap with the previous sheet so that it is as close as possible to the end of the purlin.



Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

In accordance with OHS regulations, it is not permitted to step on the sheet metal inappropriately during the assembly process or afterwards.



Screws for fixing sheets.
According to selection

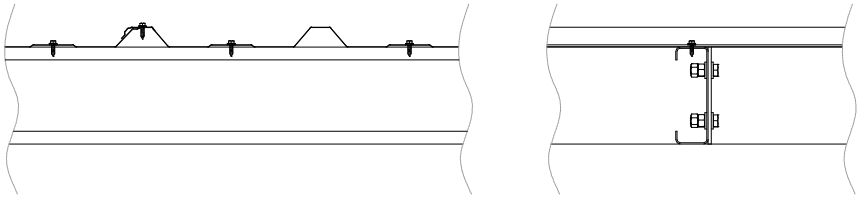
Bimetallic

S43.1

Galvanised

S42

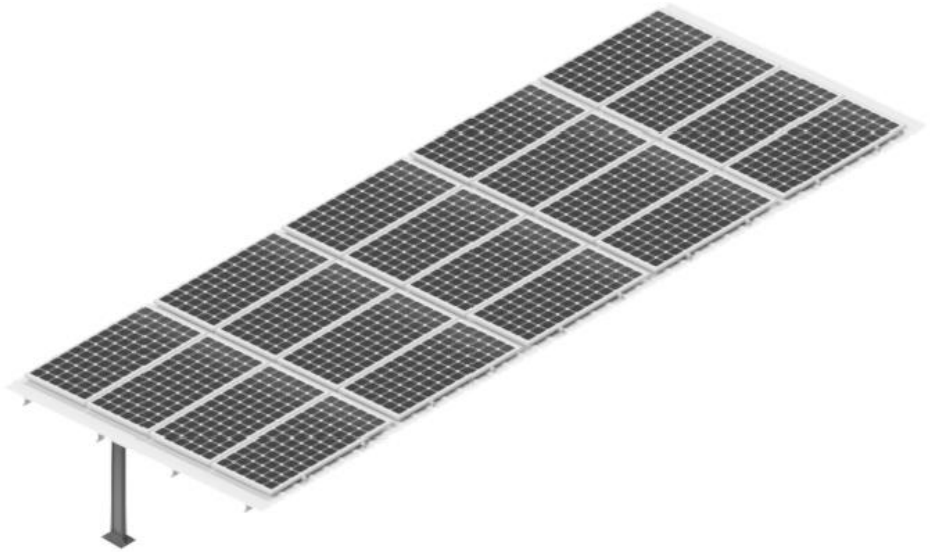
See report with the screws defined for the project



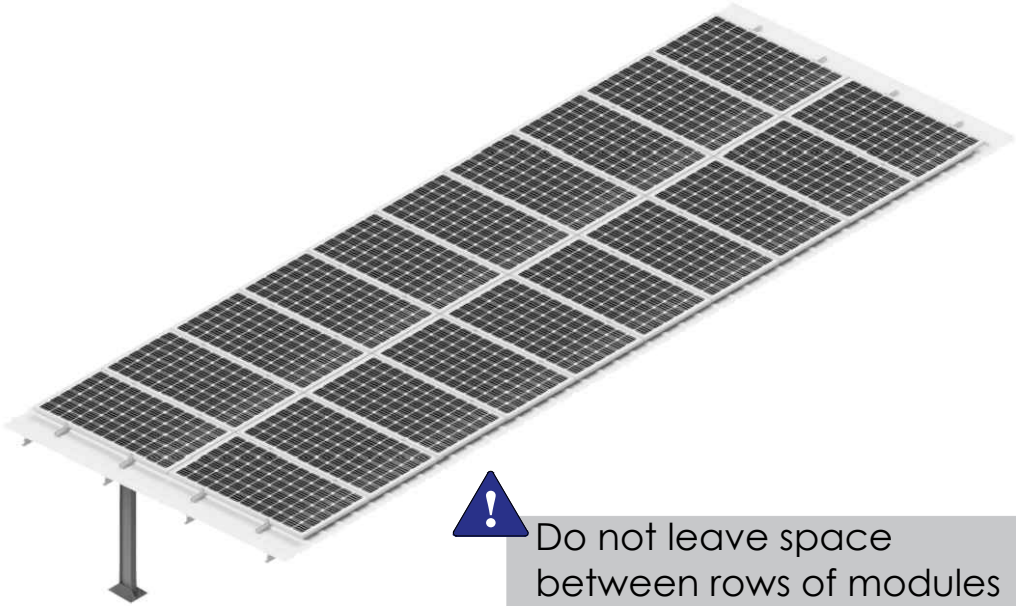
STEP 5: Each sheet needs 20 self-drilling screws to fix it to the 4 purlins, i.e. 5 screws per purlin. Screw 1 is used to connect the sheets and the rest are for fastening to the purlin.

STEP 6: Install the panels according to the layout and fixings indicated in the appropriate manual.

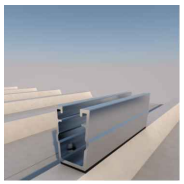
Arrangement of the modules horizontally



Arrangement of the modules vertically

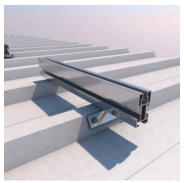


Do not leave space between rows of modules



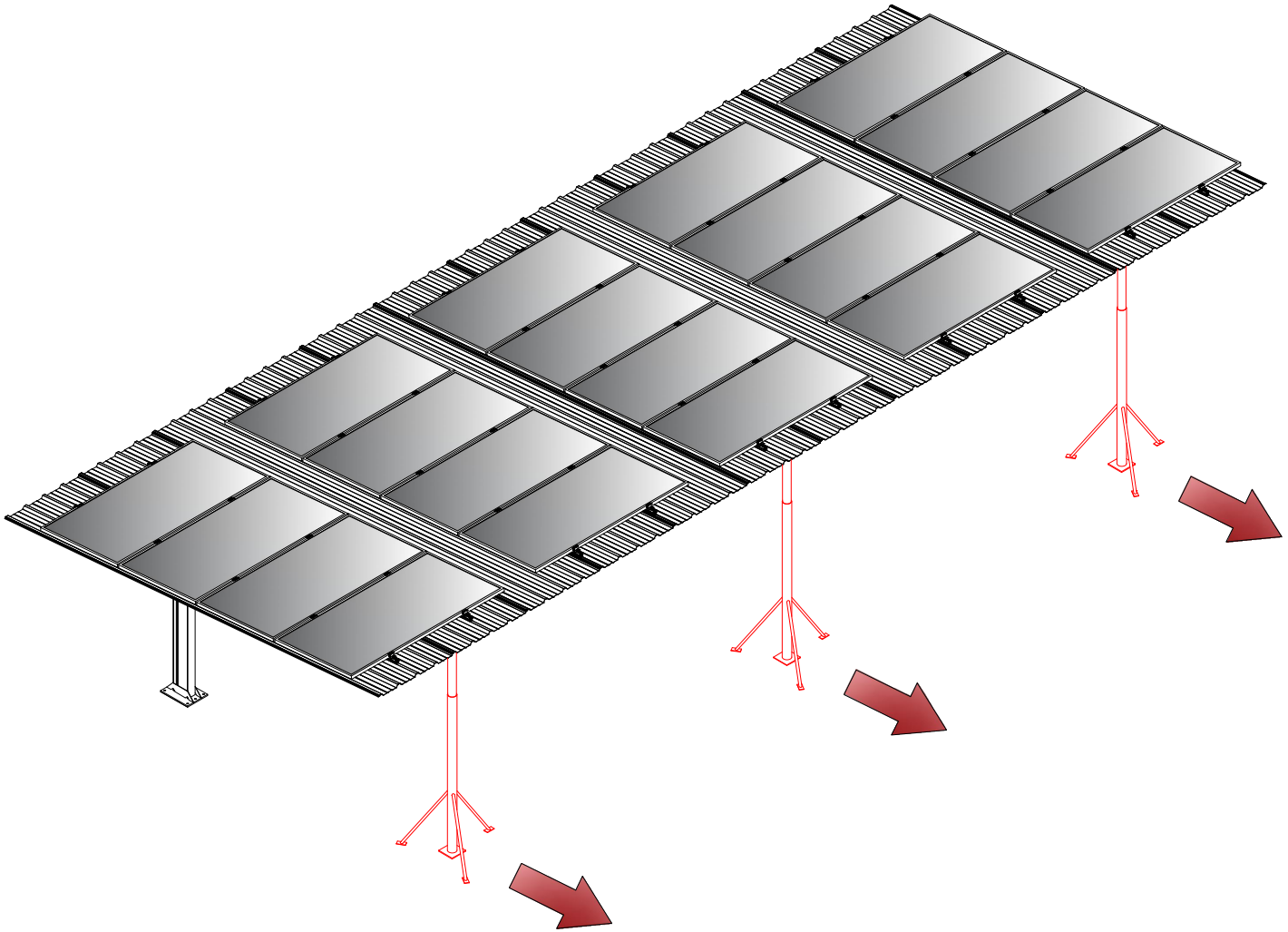
61H-EN

05V-EN



05.1V-EN

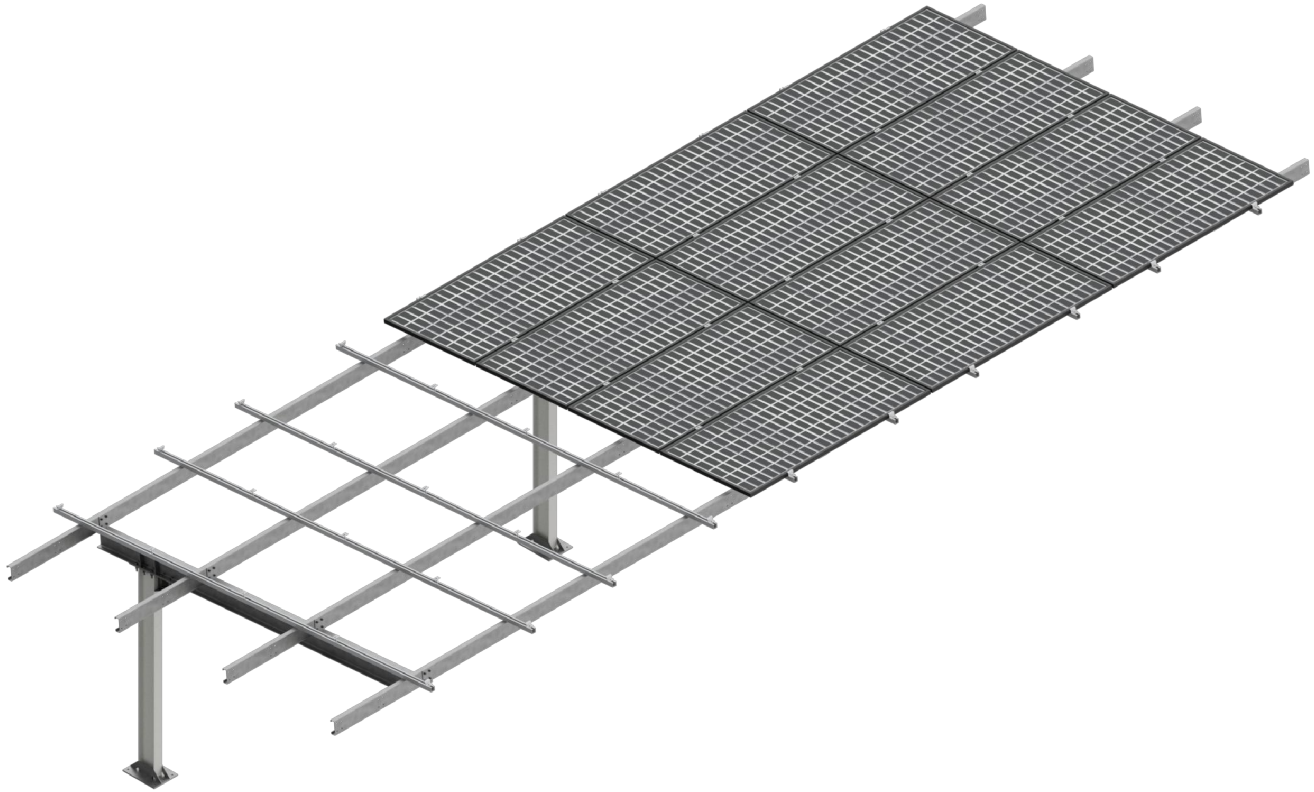
62V-EN



STEP 7: Loosen the braces and remove them.

PR1-EN - Without Sheetmetal

Assembly Plans

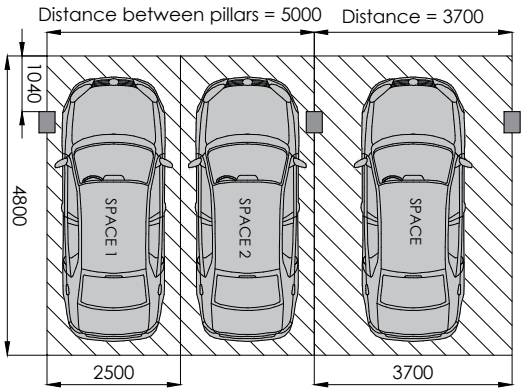


PR1-EN

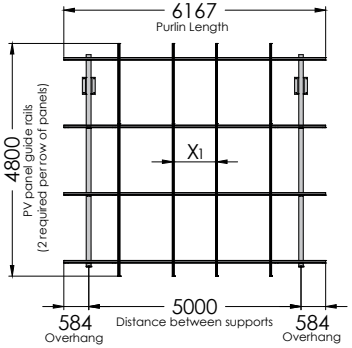
SUNFER

PARKING CANOPY

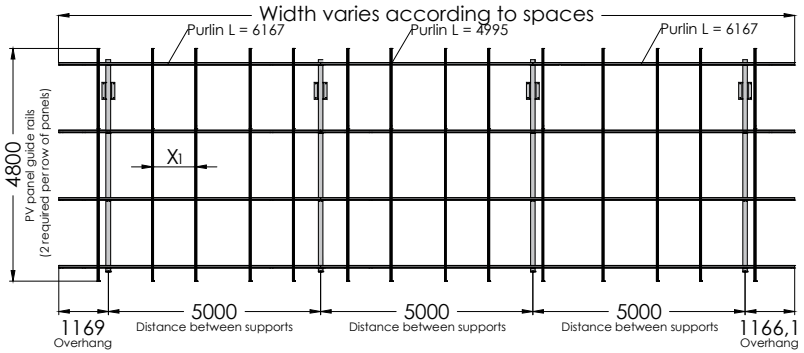
CANOPIES WITH EVEN NUMBER OF SPACES



Overhang for 2 supports = 583.5 mm.

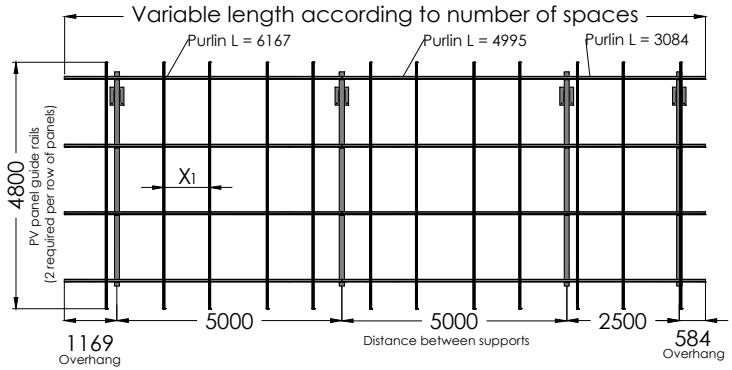


Overhang for more than 2 supports = 1169 mm.

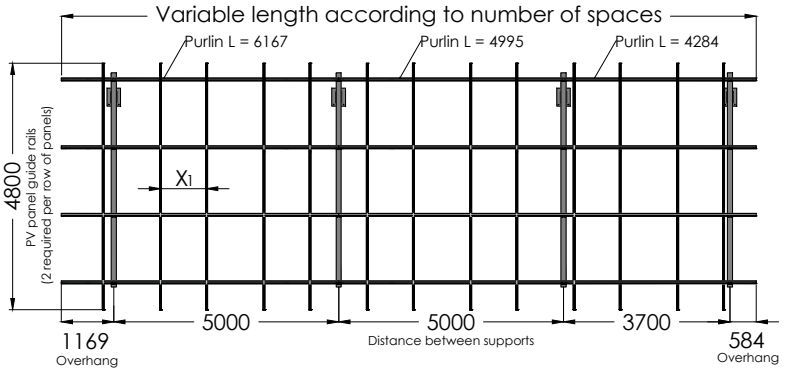


X_1 - The distance between guide rails may be determined by PV panels

CANOPIES WITH ODD NUMBER OF SPACES



CANOPIES WITH ODD NUMBER OF SPACES INCLUDING FUNCTIONAL DIVERSITY SPACES

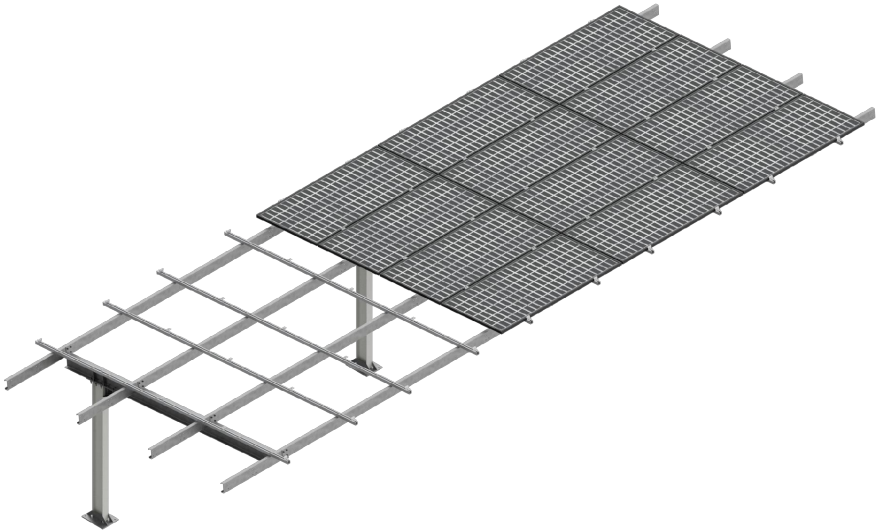


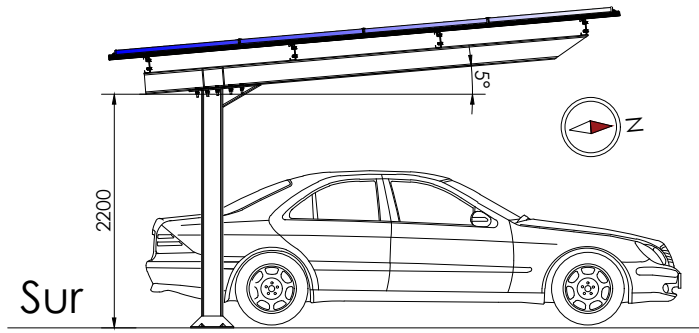
- Parking space dimensions: 2.50x4.80 m
- PV panels have horizontal orientation
- Size of functional diversity square: 3.70x4.80 m
- Standard pitch of 5°
- Minimum interior clearance 2.20 m

Materials:
Pillars, beams and purlins are hot-dip galvanised according to UNE-EN ISO 1461.

S275 structural steel. Aluminum bars are EN AW 6005A T6. Fasteners are A2-70 stainless steel.

Finishes:
Steel pillars, beams and purlins have a hot-dip galvanised finish.

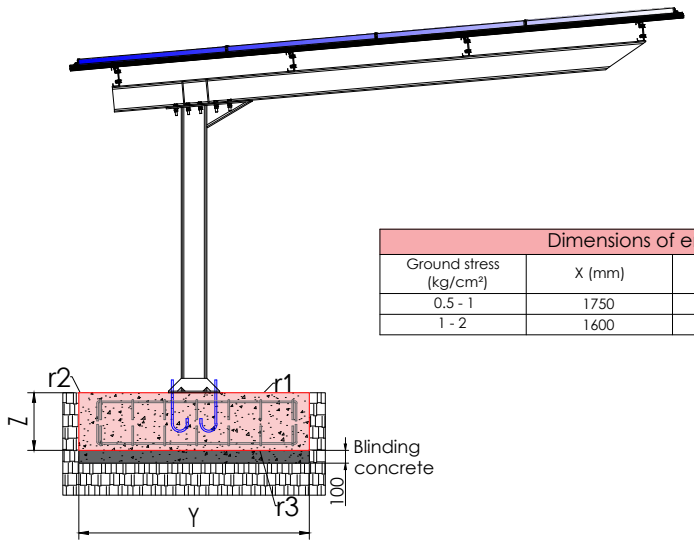




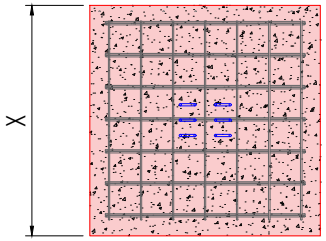
The foundation will need to be prepared before installing the parking canopy. Anchoring fasteners are not included.

It is recommended to carry out a geotechnical investigation.

END FOOTINGS

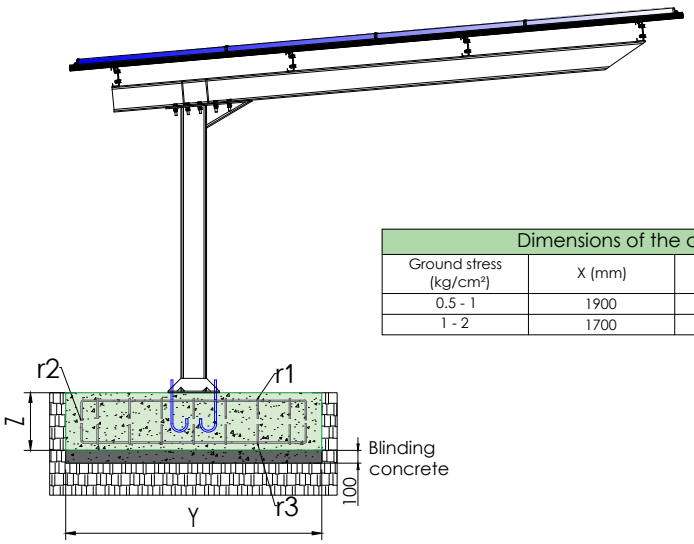


Dimensions of end footings			
Ground stress (kg/cm²)	X (mm)	Y (mm)	Z (mm)
0.5 - 1	1750	1750	400
1 - 2	1600	1600	400

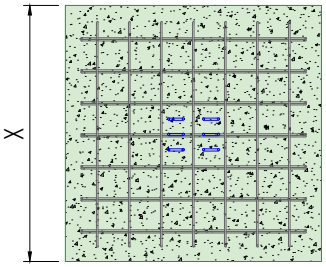


Reinforcement of end footings				
Ground stress (kg/cm²)	Lower reinforcement X	Lower reinforcement Y	Upper reinforcement X	Upper reinforcement Y
0.5 - 1	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm
1 - 2	7 Ø12 every 220 mm	7 Ø12 every 220 mm	7 Ø12 every 220 mm	7 Ø12 every 220 mm

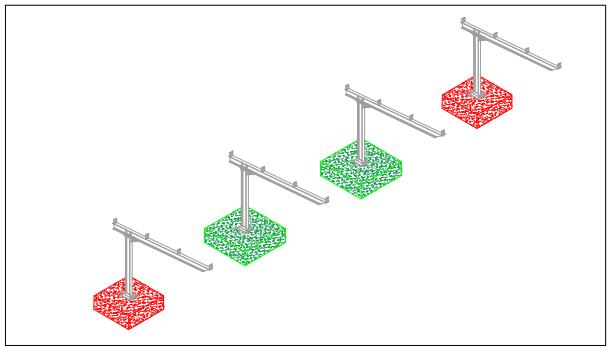
CENTRE FOOTINGS



Dimensions of the central footings			
Ground stress (kg/cm²)	X (mm)	Y (mm)	Z (mm)
0.5 - 1	1900	1900	400
1 - 2	1700	1700	400



Reinforcement of central footings				
Ground stress (kg/cm²)	Lower reinforcement X	Lower reinforcement Y	Upper reinforcement X	Upper reinforcement Y
0.5 - 1	9 Ø12 every 220 mm	9 Ø12 every 220 mm	9 Ø12 every 220 mm	9 Ø12 every 220 mm
1 - 2	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm	8 Ø12 every 220 mm



r1	From upper face of the element	30 mm
r2	From soil (when cemented against it)	80 mm
r3	From the surface of the blinding concrete	30 mm

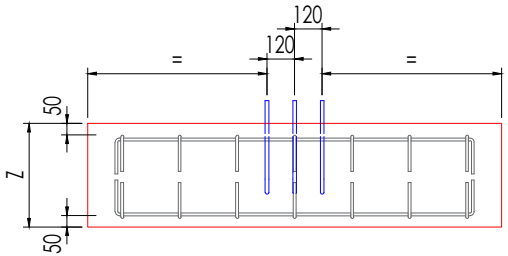
PR1-EN

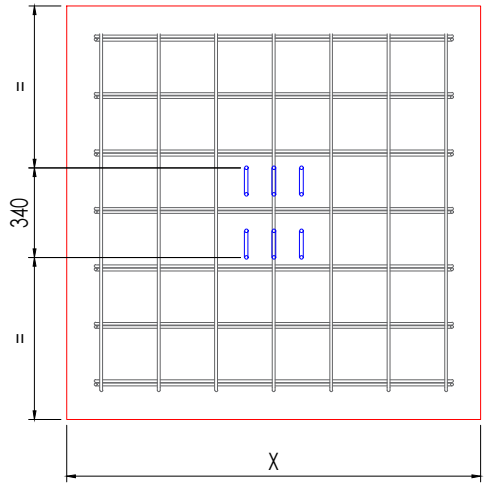
SUNFER

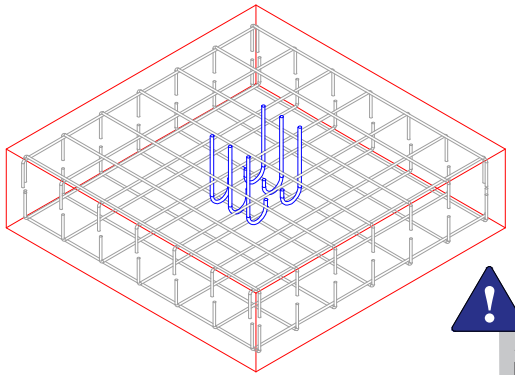
ANCHORS

PARKING CANOPY

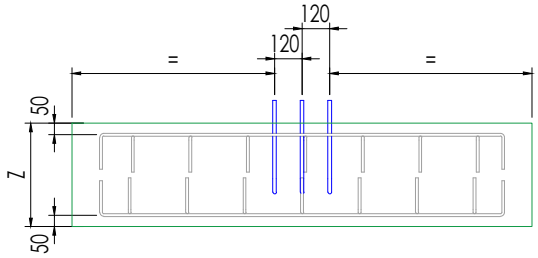
END FOOTINGS

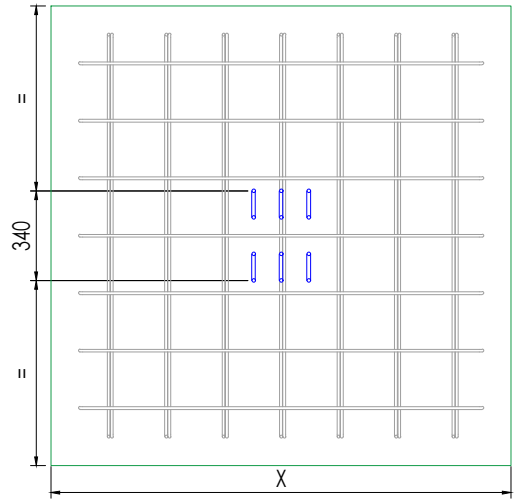


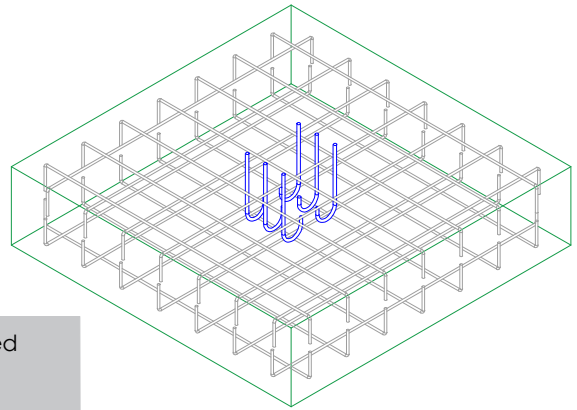




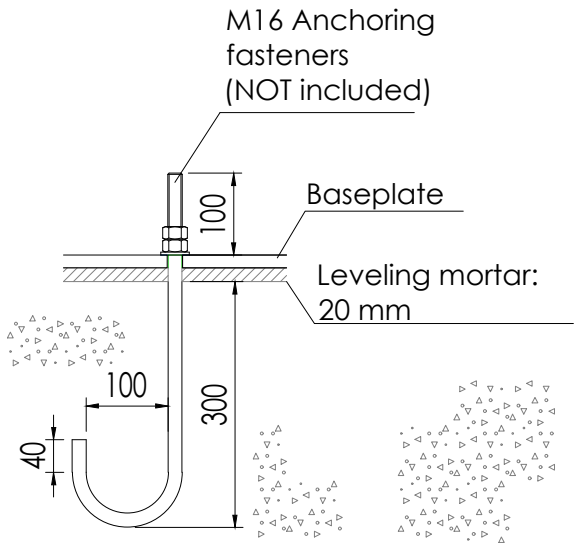
CENTRE FOOTINGS







The upper reinforcement/rebar must be located as to not intersect with the anchors. The anchors must remain centered in the footing.



Concrete: HA-25, Yc=1.5

Orient the J-anchors (not included) toward the center of the footing

Anchor type: M16 Steel J-bolts, 300mm length embedded and 100mm exposed
If the bolt is zinc-plated, it must be of a minimum property class 8.8
If the bolt is stainless, it must be of alloy A2-70.
*Consider thickness of leveling mortar and baseplate

END FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 150 km/h
Snow: 65 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	-0.003	0.004	0.529	-0.003	-0.699	0.000
V1	-0.032	0.003	0.345	-0.003	-0.586	0.000
V2	0.030	-0.003	-0.327	0.003	0.555	0.000
V3	-0.040	0.004	0.436	-0.004	-0.741	0.000
V4	0.017	-0.002	-0.182	0.001	0.309	0.000
V5	-0.008	0.001	0.091	-0.001	-0.154	0.000
V6	0.053	-0.006	-0.582	0.005	0,987	0.000
N1	-0.005	0.008	0.766	-0.006	-1.138	0.000
Q1	-0.005	0.007	0.730	-0.006	-1.084	0.000

CENTRE FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 150 km/h
Snow: 65 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	0.000	0.000	0.648	0.000	-0.866	0.000
V1	-0.040	0.000	0.454	0.000	-0.765	0.000
V2	0.037	0.000	-0.430	0.000	0.725	0.000
V3	-0.050	0.000	0.574	0.000	-0.967	0.000
V4	0.021	0.000	-0.239	0.000	0.403	0.000
V5	-0.010	0.000	0.120	0.000	-0.201	0.000
V6	0.067	0.000	-0.765	0.000	1.289	0.000
N1	0.000	0.000	1.008	0.000	-1.478	0.000
Q1	0.000	0.000	0.960	0.000	-1.408	0.000

CALCULATION CHARACTERISTICS:

- Overload = 40 Kg/m²*
- Max allowable bearing stress of soil = 2 Kg/cm²

The CTE dictates that Project Management must conduct a study to check that the soil's allowable bearing stress is equal to or greater than that of the design

*Overload not concurrent

REINFORCED CONCRETE CHARACTERISTICS:

- Class of concrete = C25/30
- Consistency = Class S2 (5-9 cm)
- Max mesh of aggregate = 30mm
- Designation of environment type = XC2
- Calculation coefficient Yc= 1.5
- Reinforcement = B400S Steel rebar
- Steel elastic limit Ys= 1.15

NECESSARY CHECKS:

- Stresses on the soil
- Sinking of the footing
- Bending in the footing
- Shear in the footing
- Oblique compression in the footing
- Minimum depth
- Minimum rebar:concrete ratio
- Minimum rebar:concrete ratio for bending
- Minimum rebar diameter
- Maximum separaction between rebar
- Minimum separaction between rebar
- Anchor length

Calculations carried out using Cype 3D, accounting for integral metal structure, loads and allowable bearing stress of soil.

SUNFER certifies that that the PR1-EN foundation meets or exceeds all criteria for the ground conditions, materials, dimensions, and reactions mentioned in this document.

END FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 130 km/h
Snow: 70 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	-0.003	0.004	0.529	-0.003	-0.699	0.000
V1	-0.023	0.003	0.255	-0.002	-0.432	0.000
V2	0.023	-0.003	-0.255	0.002	0.432	0.000
V3	-0.030	0.003	0.327	-0.003	-0.555	0.000
V4	0.013	-0.001	-0.145	0.001	0.247	0.000
V5	-0.008	0.001	0.091	-0.001	-0.154	0.000
V6	0.007	-0.001	-0.073	0.001	0.123	0.000
N1	-0.006	0.008	0.821	-0.007	-1.220	0.000
Q1	-0.005	0.007	0.730	-0.006	-1.084	0.000

CENTRE FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 130 km/h
Snow: 70 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	0.000	0.000	0.648	0.000	-0.866	0.000
V1	-0.029	0.000	0.335	0.000	-0.564	0.000
V2	0.029	0.000	-0.335	0.000	0.564	0.000
V3	-0.037	0.000	0.430	0.000	-0.725	0.000
V4	0.017	0.000	-0.191	0.000	0.322	0.000
V5	-0.010	0.000	0.120	0.000	-0.201	0.000
V6	0.008	0.000	-0.096	0.000	0.161	0.000
N1	0.000	0.000	1.080	0.000	-1.584	0.000
Q1	0.000	0.000	0.960	0.000	-1.408	0.000

CALCULATION CHARACTERISTICS:

- Overload = 40 Kg/m²*
- Max allowable bearing stress of soil = 2 Kg/cm²

The CTE dictates that Project Management must conduct a study to check that the soil's allowable bearing stress is equal to or greater than that of the design

*Overload not concurrent

REINFORCED CONCRETE CHARACTERISTICS:

- Class of concrete = C25/30
- Consistency = Class S2 (5-9 cm)
- Max mesh of aggregate = 30mm
- Designation of environment type = XC2
- Calculation coefficient Yc= 1.5
- Reinforcement = B400S Steel rebar
- Steel elastic limit Ys= 1.15

NECESSARY CHECKS:

- Stresses on the soil
- Sinking of the footing
- Bending in the footing
- Shear in the footing
- Oblique compression in the footing
- Minimum depth
- Minimum rebar:concrete ratio
- Minimum rebar:concrete ratio for bending
- Minimum rebar diameter
- Maximum separaction between rebar
- Minimum separaction between rebar
- Anchor length

Calculations carried out using Cype 3D, accounting for integral metal structure, loads and allowable bearing stress of soil.

SUNFER certifies that that the PR1-EN foundation meets or exceeds all criteria for the ground conditions, materials, dimensions, and reactions mentioned in this document.

END FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 110 km/h
Snow: 80 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	-0.003	0.004	0.529	-0.003	-0.699	0.000
V1	-0.017	0.002	0.182	-0.001	-0.309	0.000
V2	0.015	-0.002	-0.164	0.001	0.278	0.000
V3	-0.022	0.002	0.236	-0.002	-0.401	0.000
V4	0.008	-0.001	-0.091	0.001	0.154	0.000
V5	-0.003	0.000	0.036	0.000	-0.062	0.000
V6	0.030	-0.003	-0.327	0.003	0.555	0.000
N1	-0.007	0.010	0.949	-0.008	-1.409	0.000
Q1	-0.005	0.007	0.730	-0.006	-1.084	0.000

CENTRE FOOTINGS

REACTIONS
As-calculated,
No increase

Wind: 110 km/h
Snow: 80 kg/m²

Hypothesis	Rx (t)	Ry (t)	Rz (t)	Mx (tm)	My (tm)	Mz (tm)
PP	0.000	0.000	0.648	0.000	-0.866	0.000
V1	-0.021	0.000	0.239	0.000	-0.403	0.000
V2	0.019	0.000	-0.215	0.000	0.362	0.000
V3	-0.027	0.000	0.311	0.000	-0.524	0.000
V4	0.010	0.000	-0.120	0.000	0.201	0.000
V5	-0.004	0.000	0.048	0.000	-0.081	0.000
V6	0.037	0.000	-0.430	0.000	0.725	0.000
N1	0.000	0.000	1.248	0.000	-1.830	0.000
Q1	0.000	0.000	0.960	0.000	-1.408	0.000

CALCULATION CHARACTERISTICS:

- Overload = 40 Kg/m²*
- Max allowable bearing stress of soil = 2 Kg/cm²

The CTE dictates that Project Management must conduct a study to check that the soil's allowable bearing stress is equal to or greater than that of the design

*Overload not concurrent

REINFORCED CONCRETE CHARACTERISTICS:

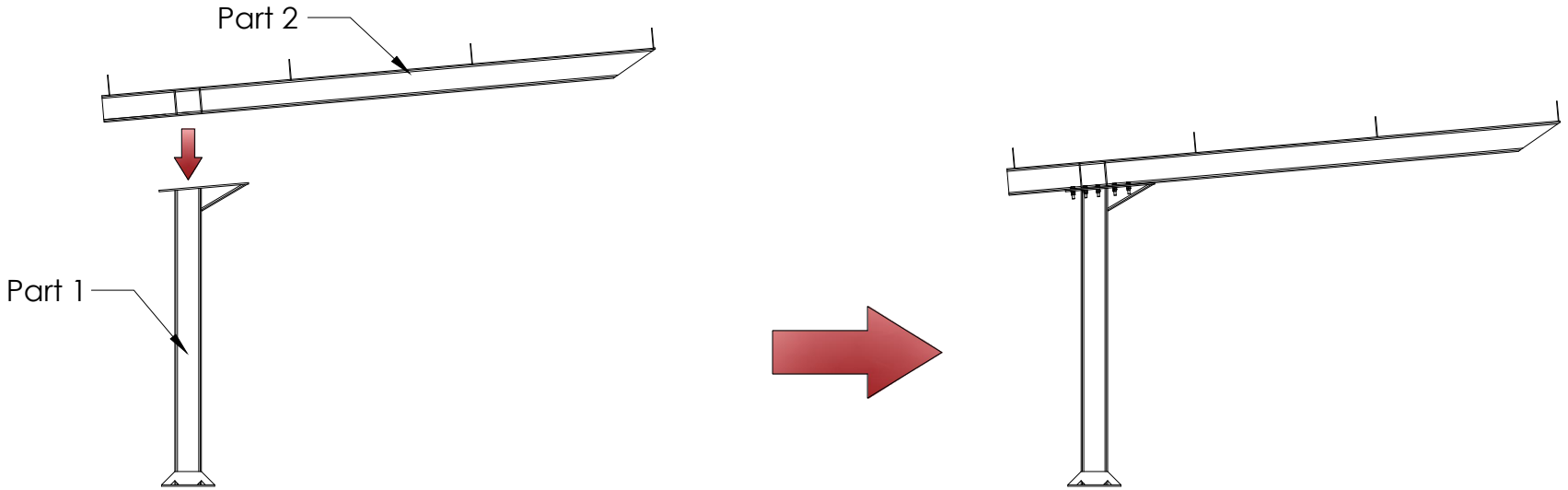
- Class of concrete = C25/30
- Consistency = Class S2 (5-9 cm)
- Max mesh of aggregate = 30mm
- Designation of environment type = XC2
- Calculation coefficient Yc= 1.5
- Reinforcement = B400S Steel rebar
- Steel elastic limit Ys= 1.15

NECESSARY CHECKS:

- Stresses on the soil
- Sinking of the footing
- Bending in the footing
- Shear in the footing
- Oblique compression in the footing
- Minimum depth
- Minimum rebar:concrete ratio
- Minimum rebar:concrete ratio for bending
- Minimum rebar diameter
- Maximum separaction between rebar
- Minimum separaction between rebar
- Anchor length

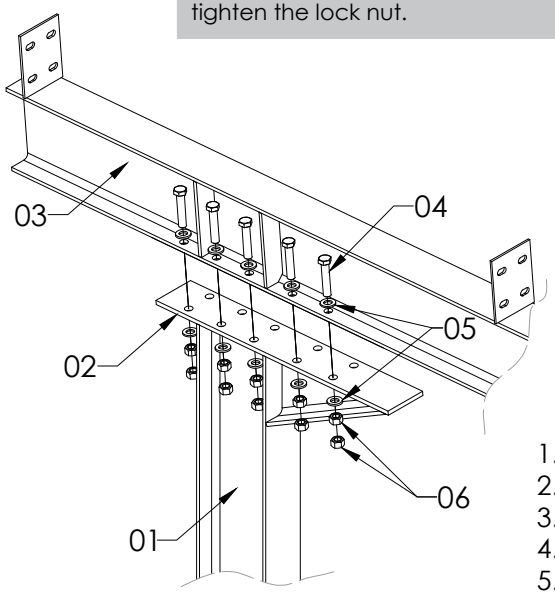
Calculations carried out using Cype 3D, accounting for integral metal structure, loads and allowable bearing stress of soil.

SUNFER certifies that that the PR1-EN foundation meets or exceeds all criteria for the ground conditions, materials, dimensions, and reactions mentioned in this document.

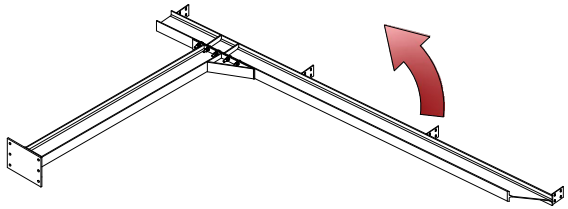


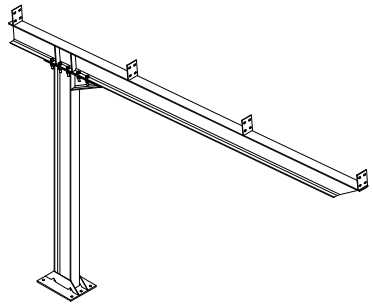
STEP 1: The PR1-EN car park supports are supplied in two parts. Both parts are connected by means of connecting plates with 10 bolts, 5 on each side of the beam.

First tighten the nut to the marked torque and then tighten the lock nut.



1. IPE Pillar 200
2. Connecting plate pillar-beam)
3. Beam IPE 200
4. Hexagonal screw M16x60 (x10)
5. Flat Washer M16 (x20)
6. Hexagonal nut M16 (x20)





To facilitate assembly, it is recommended that this step is carried out on the ground and, once the connection has been made, lift the completed support.

Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

PR1-EN

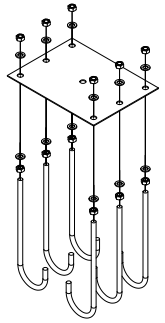
SUNFER

CP1 ANCHOR ASSEMBLY

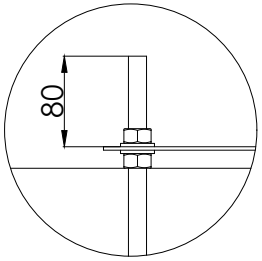
PARKING CANOPY

NOT INCLUDED

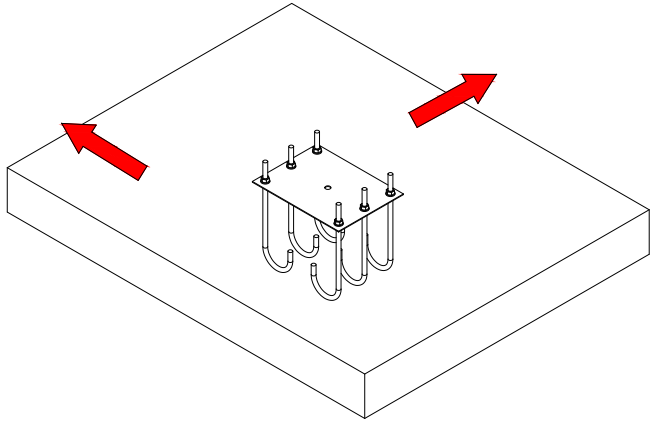
1. Use 1 nut and 1 washer beneath each side to position the bolts on the plate prior to concreting.



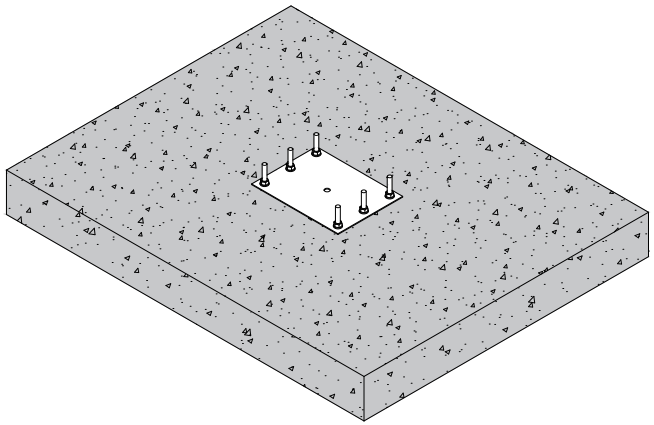
2. Leave 80 mm of rod protruding from the plate.



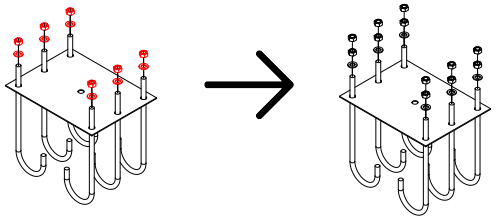
3. Level the plate with it in place. Make certain that it is level about both axes to ensure correct installation. Do not use screws for leveling.

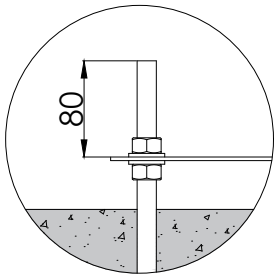


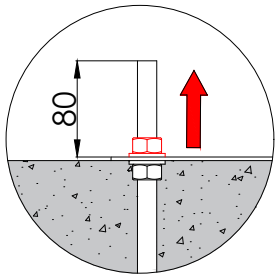
4. Once concrete is poured, plate will be fixed in place.

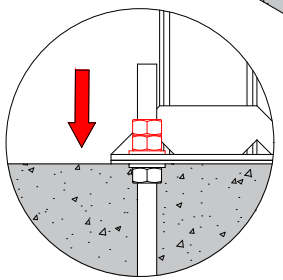


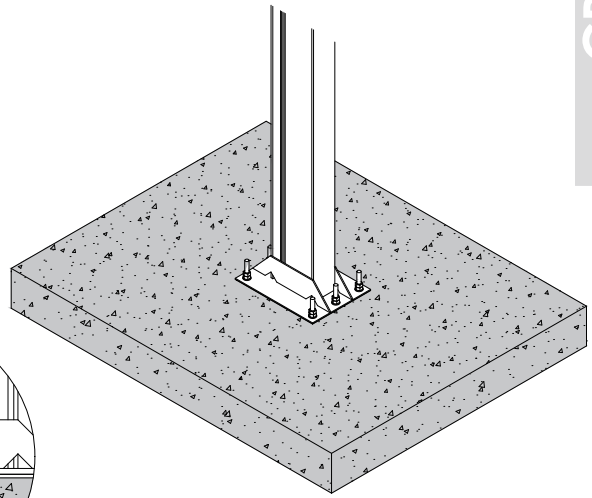
5. Remove the nuts and washers from the exposed side (Red) and place the pillar with the correct fasteners.

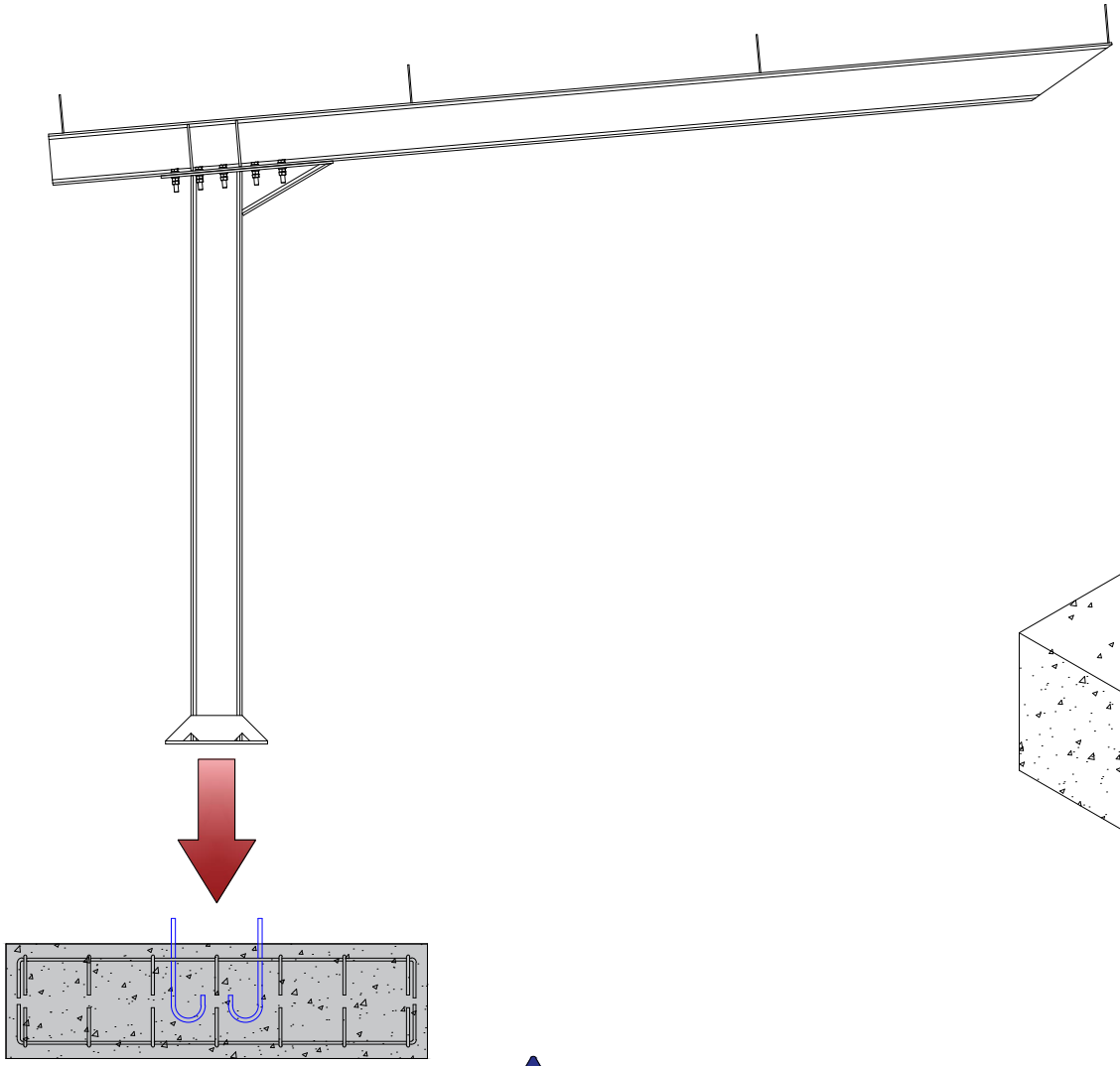


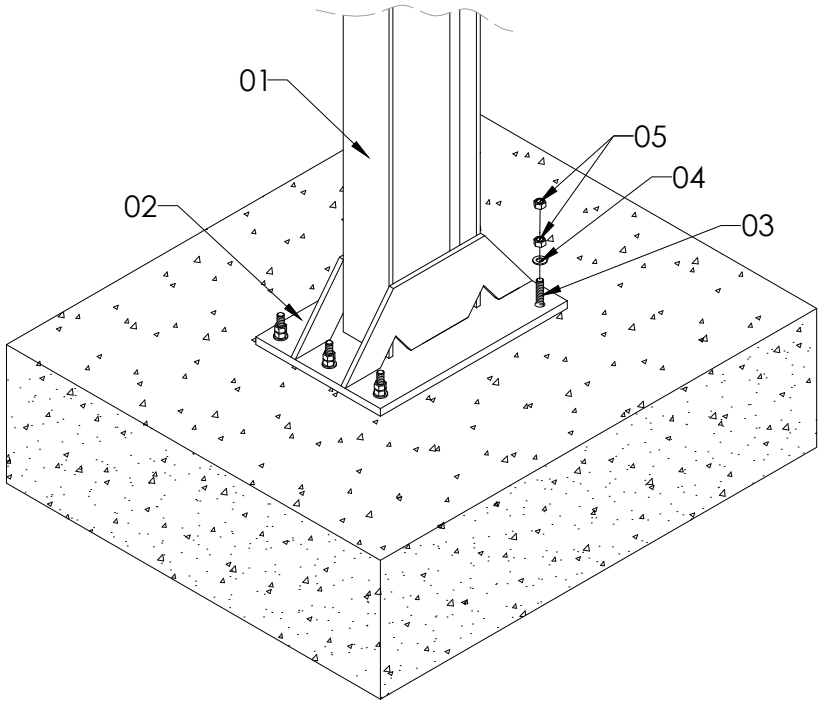








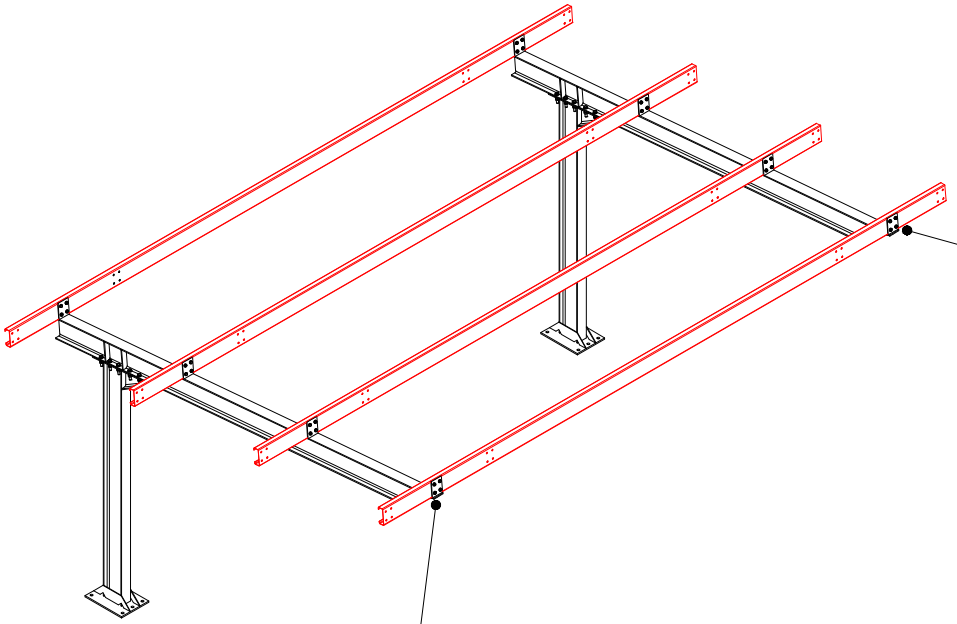


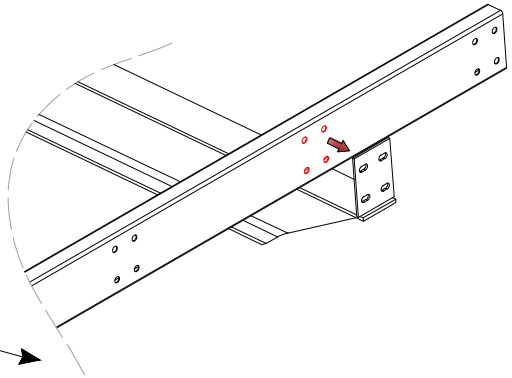


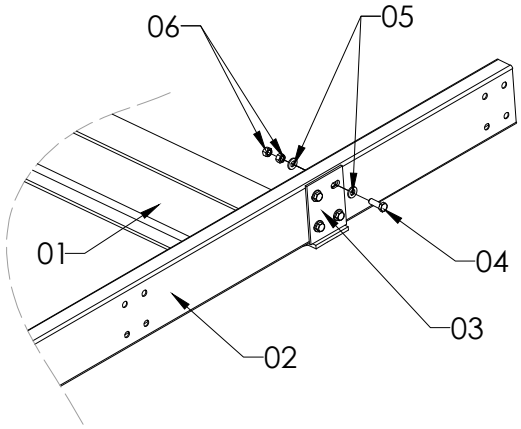
Tighten the nut first to the marked torque and then tighten the lock nut.

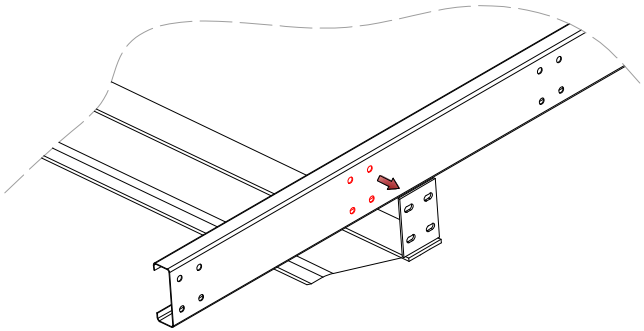
1. Pillar IPE 200
2. Base plate (400x300x12)
3. Anchor bolts M16 (NOT INCLUDED)
4. Flat washer M16 (NOT INCLUDED)
5. Nut M16 (NOT INCLUDED)

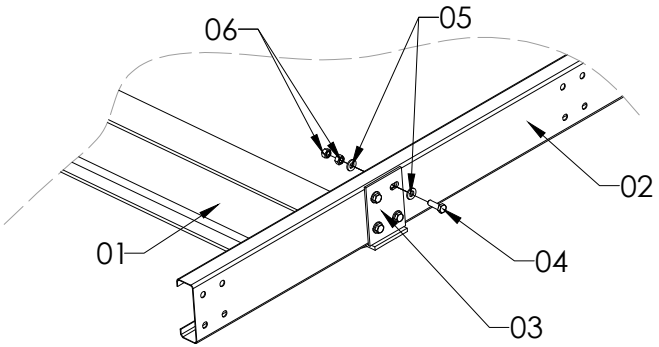
STEP 2: Connect the base plate to the pillar by matching the holes with the anchor bolts. Then insert the washers and nuts into the anchorage hook.











Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

01. Beam IPE 200
02. Purlin L=6167 mm
03. Cleat
04. Hexagonal screw M12x35
05. Flat washer M12
06. Hexagonal nut M12

First tighten the nut to the marked torque and then tighten the lock nut.

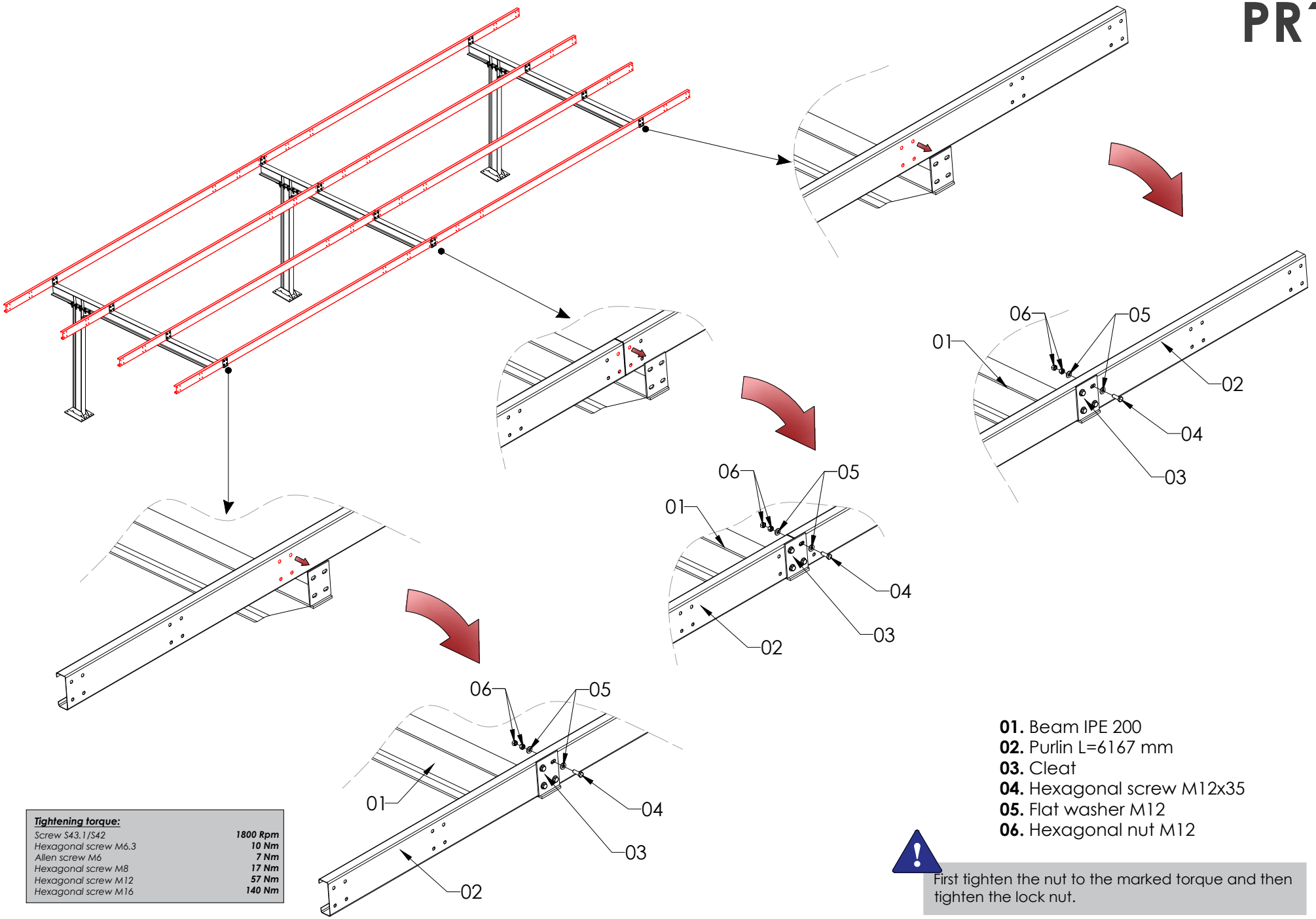
STEP 3: Place the purlin on the beams and match the red coloured holes of the purlin with the holes of the cleat. Screw the connection with 4 screws for each cleat.

PR1-EN

SUNFER

PURLINS ASSEMBLY - 3 PORTICOS

PARKING CANOPY

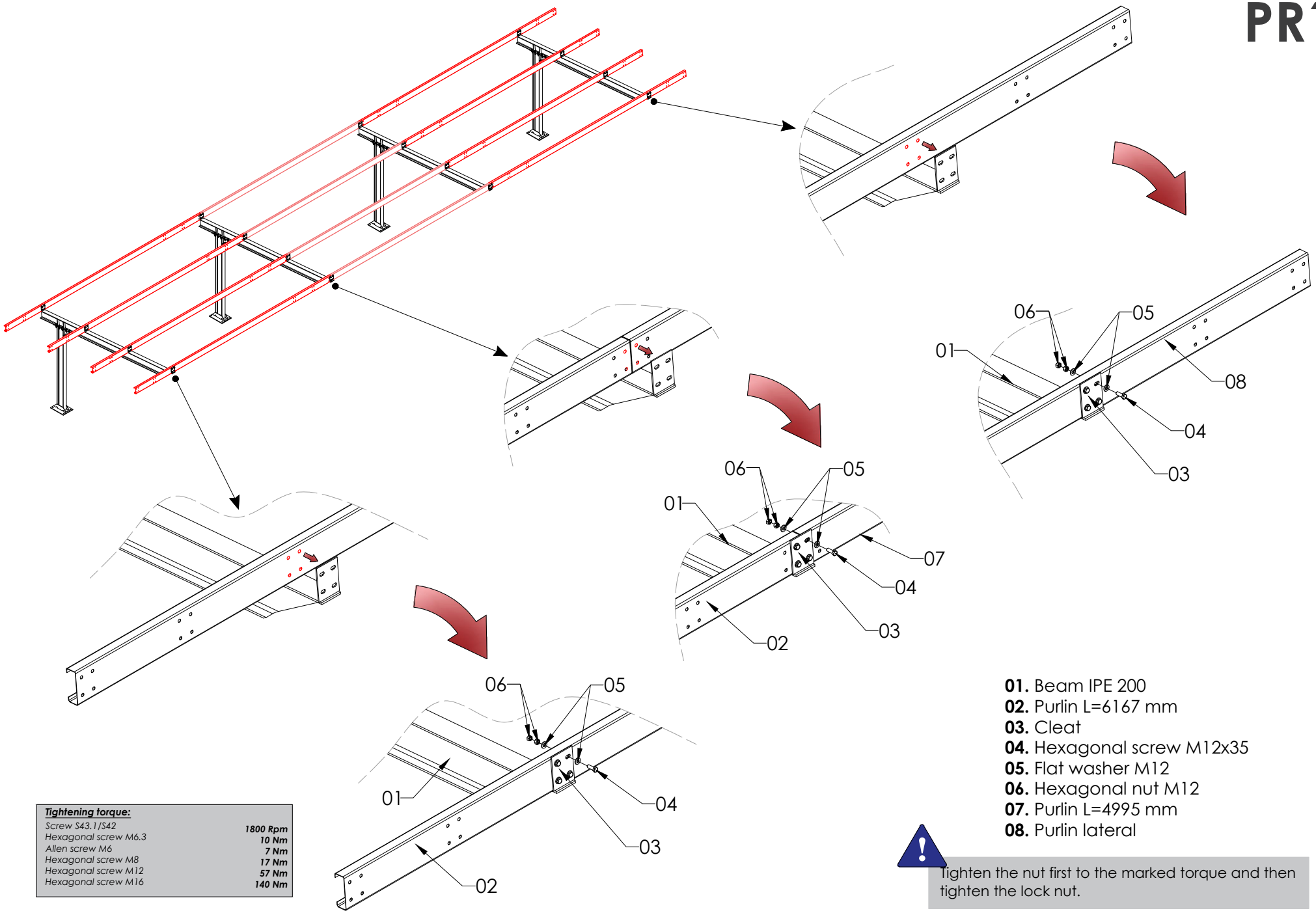


01. Beam IPE 200
02. Purlin L=6167 mm
03. Cleat
04. Hexagonal screw M12x35
05. Flat washer M12
06. Hexagonal nut M12

Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

First tighten the nut to the marked torque and then tighten the lock nut.

STEP 3: Place the purlin on the beams and match the red coloured holes of the purlin with the holes of the cleat. Screw the connection with 4 screws for each cleat.

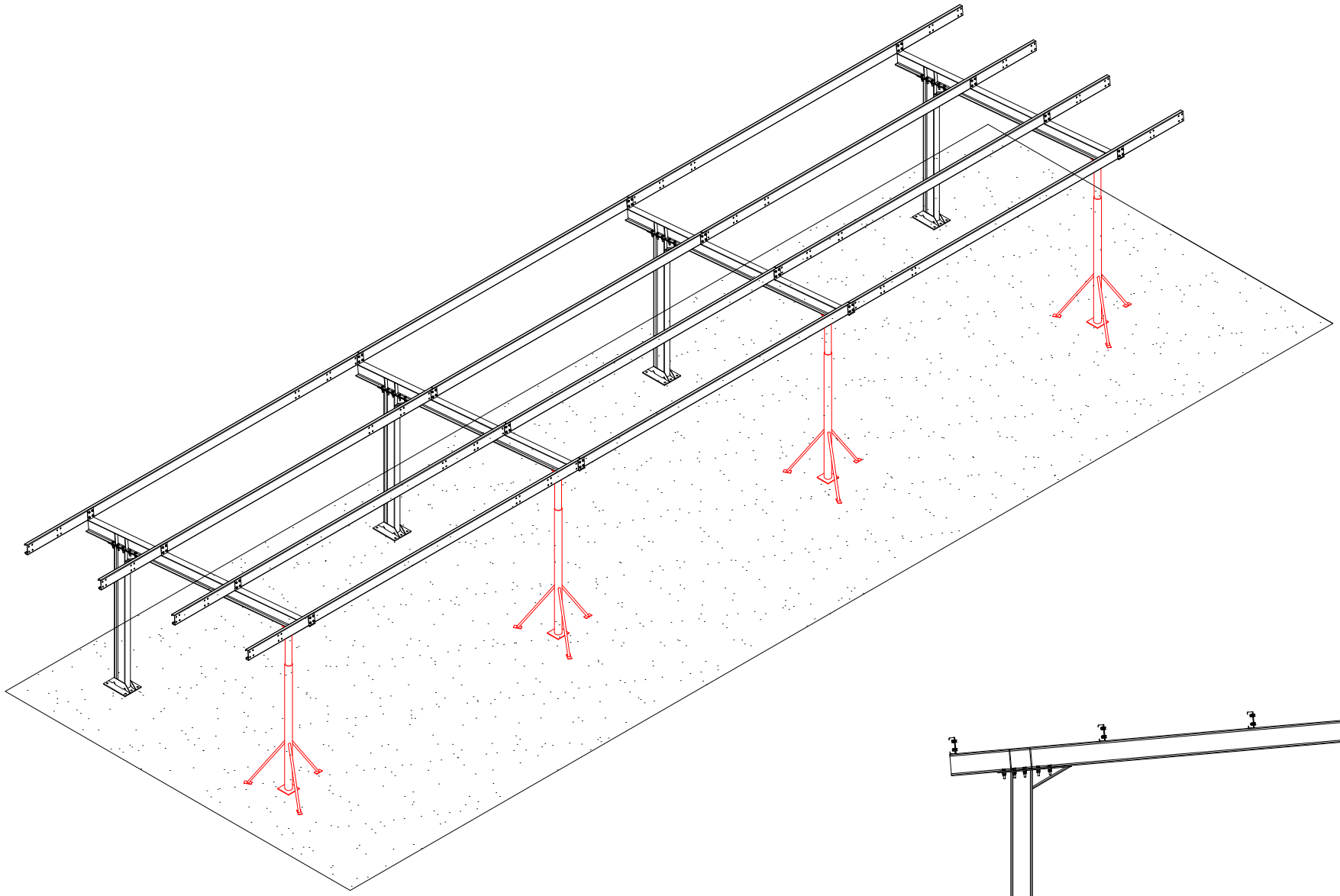


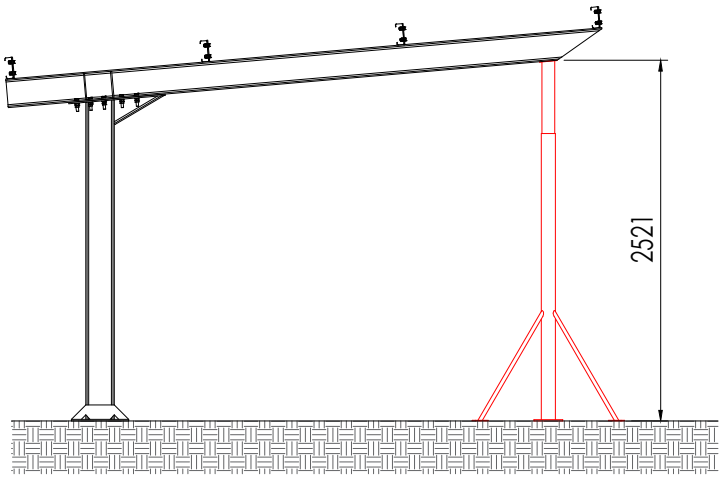
01. Beam IPE 200
02. Purlin L=6167 mm
03. Cleat
04. Hexagonal screw M12x35
05. Flat washer M12
06. Hexagonal nut M12
07. Purlin L=4995 mm
08. Purlin lateral

Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

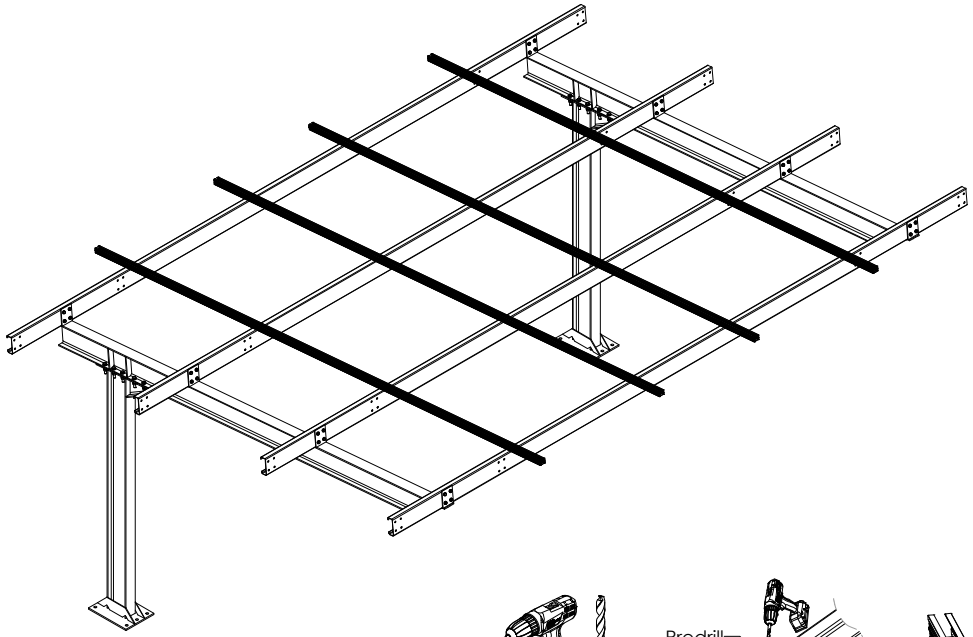
Tighten the nut first to the marked torque and then tighten the lock nut.

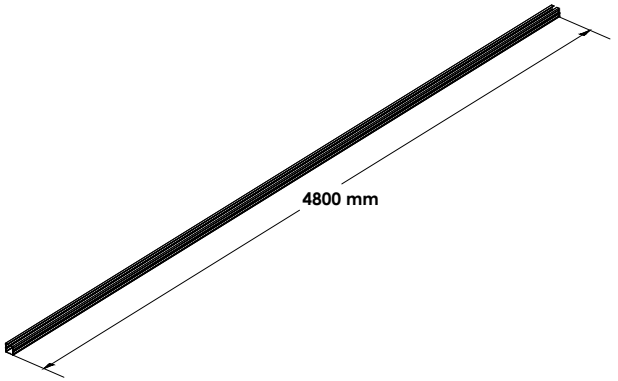
STEP 3: Place the purlin on the beams and match the red coloured holes in the purlin with the holes in the cleat. Screw the connection with 4 screws per cleat.

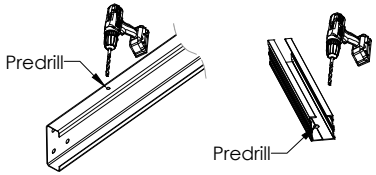


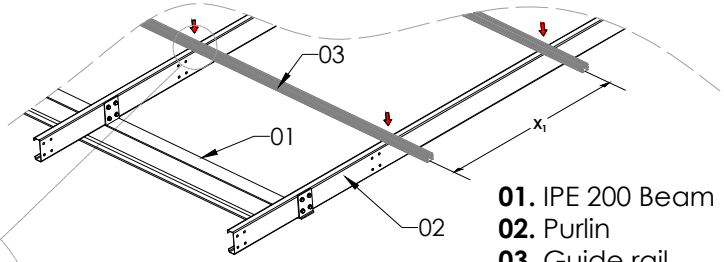


STEP 4: Once the purlins have been assembled, brace the porticos to prevent movement in any direction during the assembly of the rest of the car park.



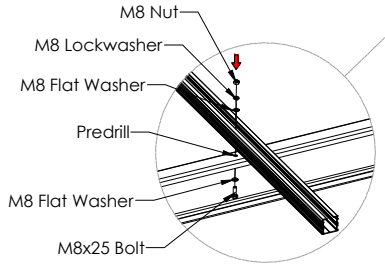




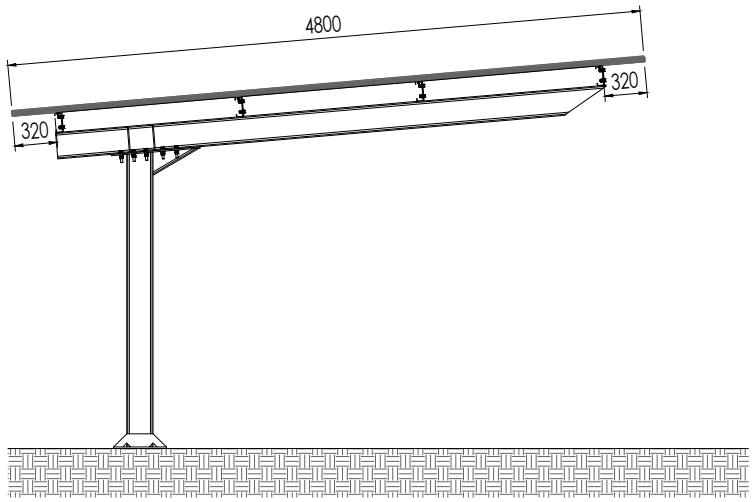


01. IPE 200 Beam
02. Purlin
03. Guide rail

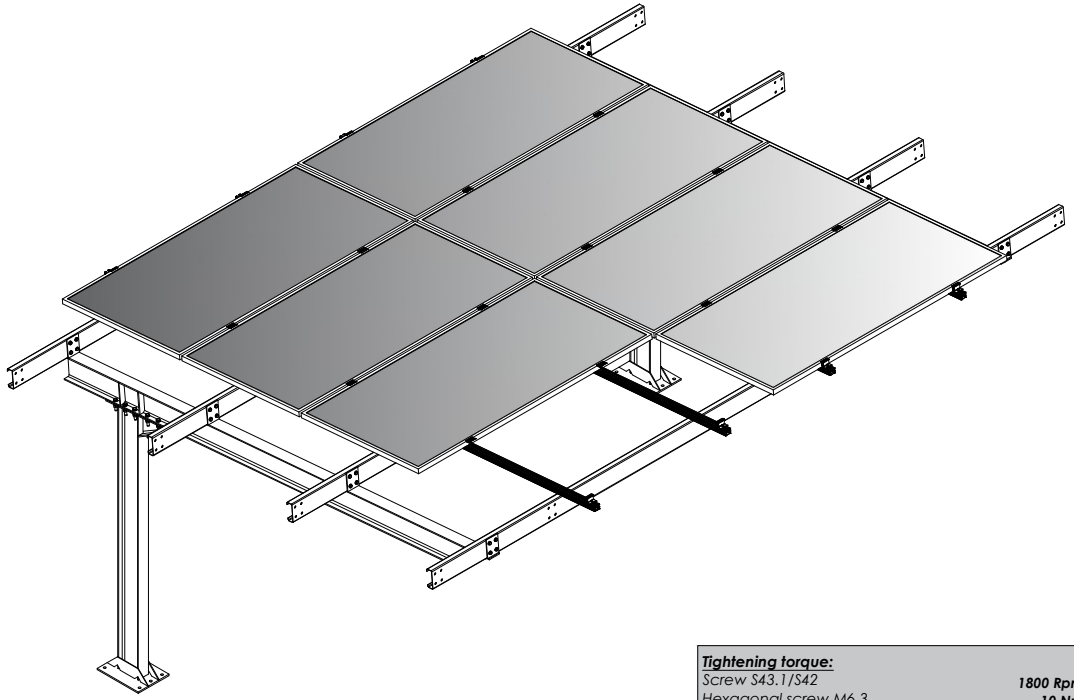
Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

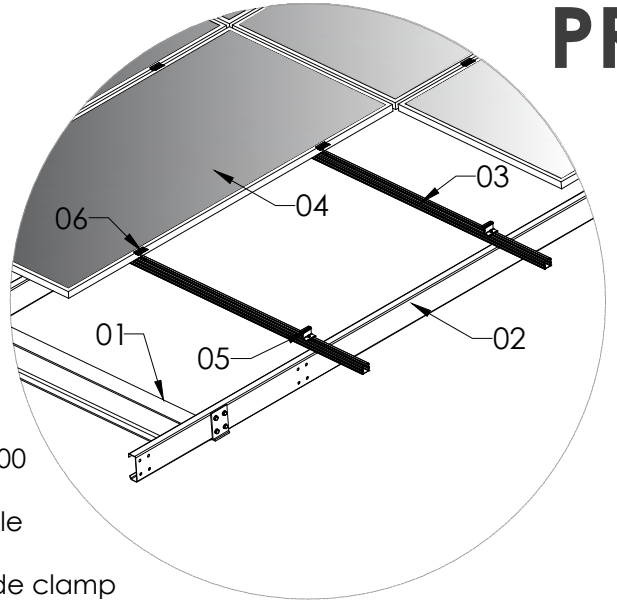


X_1 - The distance between guide profiles will be determined by the type of panel



STEP 5: To assemble the guide profiles to the purlins, drill a pre-drilled hole in both surfaces (profile and purlin) with an 8.5mm drill bit. The connection will be made by means of M8x25 screws.



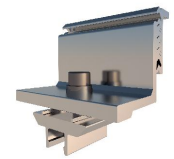


01. Beam IPE 200
02. Purlin
03. Guide profile
04. panel
05. S10.1-EN Side clamp
06. S11.1-EN Mid clamp

Tightening torque:	
Screw S43.1/S42	***1800 Rpm***
Hexagonal screw M6.3	***10 Nm***
Allen screw M6	***7 Nm***
Hexagonal screw M8	***17 Nm***
Hexagonal screw M12	***57 Nm***
Hexagonal screw M16	***140 Nm***

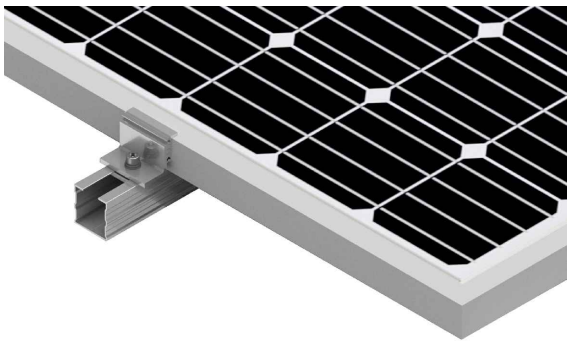
STEP 6: Place the panels and fix them with the S10.1-EN clamps on the sides and the S11.1-EN clamps in the central areas. The distance between the anchoring points of the panel will depend on the size of the panel. Consult the technical data sheet of the panel to be installed.

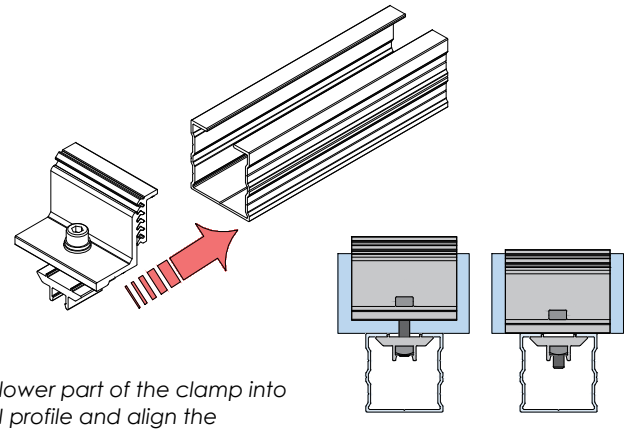
Presores compatibles con el perfil G3-EN:



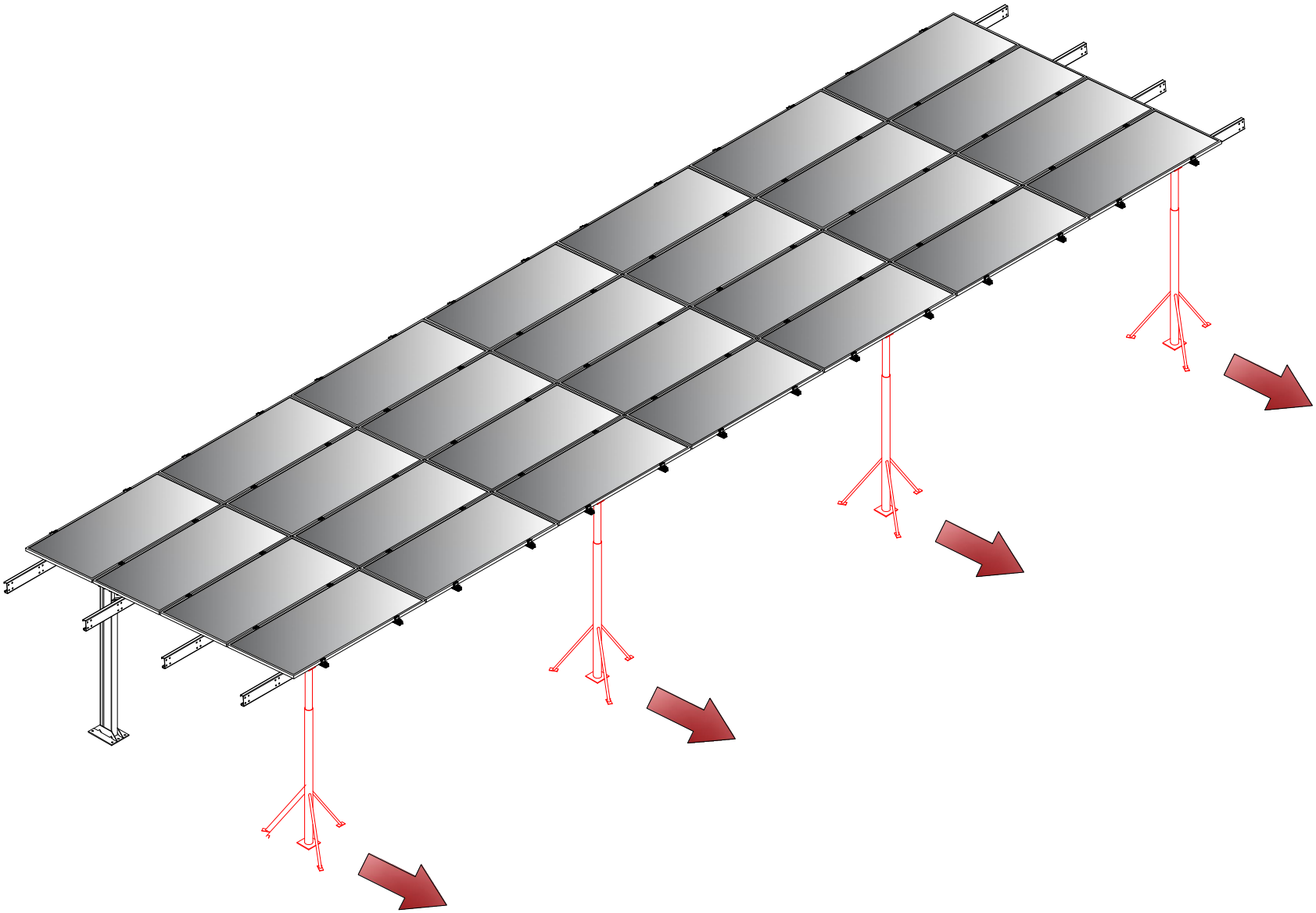
S10.1-EN

S11.1-EN





Insert the lower part of the clamp into the G3-EN profile and align the tongue-and-groove assembly.



STEP 7: Loosen the braces and remove them.