Project:	**3 x 3 m, 4 x 4 m, and 5 x 5 m Pagoda tent**
Content:	**Structural Analysis**
Client:	**TentVerkoop B.V.**
Document code:	**1604605_05_RA01**
Author:	**ir. A.J. Oostra**
Date:	**23-05-2016**

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Project:	3x3 m, 4x4 m and 5x5 m Pagoda tent
Document code:	1604605_05_RA01
Client:	TentVerkoop B.V. Herenweg 117 2402 ND Alphen aan den Rijn t +31 (0) 172-241206 info@tentverkoop.nl www.tentverkoop.nl
Engineering:	Tentech BV Ontwerp en advies voor lichtgewicht bouwen Postbus 85190 3508 AD Utrecht t +31 (0)30 252 1869 f +31 (0)30 254 1239 www.tentech.nl
Date:	23-05-2016

Author:	ir. A.J. Oostra
Authorized by:	Dipl-ing. Julia Schönwälder

Introduction

In this documentation a 3x3 m, 4x4 m and 5x5 m aluminum pagoda tent structure is verified on strength and stability. The tent consists of a self-supporting aluminum frame with a pagoda roof. The stability is ensured by the corner connections.

The tents are validated according to NEN-EN 13782 (Temporary structures – Tents - Safety). The elements are checked according to the respective Eurocode norm of the material.

The 3x3 m and 4x4 m pagoda tents are designed with the same profiles as the 5x5 m tent and are verified on safety against overturning, sliding and lifting. The required amount of counterweight and number of ground anchors is determined for the following cases:

5x5 m:

- without floor system
- with a heavy-load floor
- with a cassette floor

4x4 m & 3x3 m:

- without floor system
- with a cassette floor

The required amount of counterweight and number of ground anchors is also determined for the cases above when these tents are coupled and placed in fourfold.

Utrecht, 20 May 2016.

Arjen Oostra

Summary

Producer of tents:	TentVerkoop B.V. Herenweg 117 2402 ND Alphen aan den Rijn t +31 (0) 172-241206 info@tentverkoop.nl www.tentverkoop.nl			
Main dimensions:		5x5 m	4x4 m	3x3 m
	Width:	5 m	4 m	3 m
	Depth:	5 m	4 m	3 m
	Wall height:	2.3 m	2.3 m	2.3 m
	Top diagonal height:	3.36 m	3.10 m	2.85 m
	Total height:	5.29 m	5.03 m	4.77 m
Wind load:	wind pressure of 0.30 kN/m^2 the structure is calculated as closed			
Snow load:	Snow is not taken into account (see paragraph 1.3.2)			
Heavy-load floor	Dimensions: Weight:	2x 2.5 x 5 m 2 x 420 = 840 kg	not designed	not designed
Cassette floor	Dimensions:	5 x 5 m	4 x 4 m	3 x 3 m
	Weight:	590 kg	352 kg	198 kg
Counterweight	**friction coefficient $\mu = 0.6$* for wood/rubber on concrete/asphalt**			
		5x5 m	4x4 m	3x3 m
	Without floor system	445 kg/corner	355 kg/corner	259 kg/corner
	Heavy-load floor	107 kg/corner	not designed	not designed
	Cassette floor	150 kg/corner	138 kg/corner	103 kg/corner
Anchors d = 25 mm, l' = 80 mm	**friction coefficient $\mu = 0.7 \times 0.6 = 0.42$***			
		5x5 m	4x4 m	3x3 m
	Without floor system	1 / corner	1 / corner	1 / corner
	Heavy-load floor	1 / corner	not designed	not designed
	Cassette floor	1 / corner	1 / corner	1 / corner

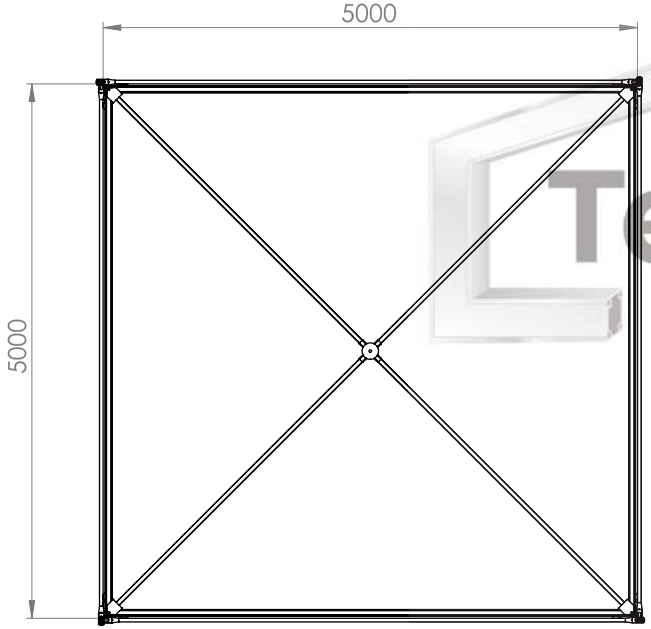
*see precondition paragraph 1.3.1

Counterweight	**friction coefficient $\mu = 0.6$* for wood/rubber on concrete/asphalt**			
		5x5 m 4x	4x4 m 4x	3x3 m 4x
	Without floor system	397 kg / OMC** 340 kg / OCC*** 229 kg / IC****	319 kg / OMC** 270 kg / OCC*** 174 kg / IC****	234 kg / OMC** 193 kg / OCC*** 125 kg / IC****
	Heavy-load floor	no CW required	not designed	not designed
	Cassette floor	171 kg / OCC***	208 kg / OCC***	171 kg / OCC***
Anchors d = 25 mm, l' = 80 mm	**friction coefficient $\mu = 0.7 \times 0.6 = 0.42$***			
		5x5 m 4x	4x4 m 4x	3x3 m 4x
	Without floor system	1 / column	1 / column	1 / column
	Heavy-load floor	1 / OMC**	not designed	not designed
	Cassette floor	1 / OCC***	1 / OCC***	1 / OCC***

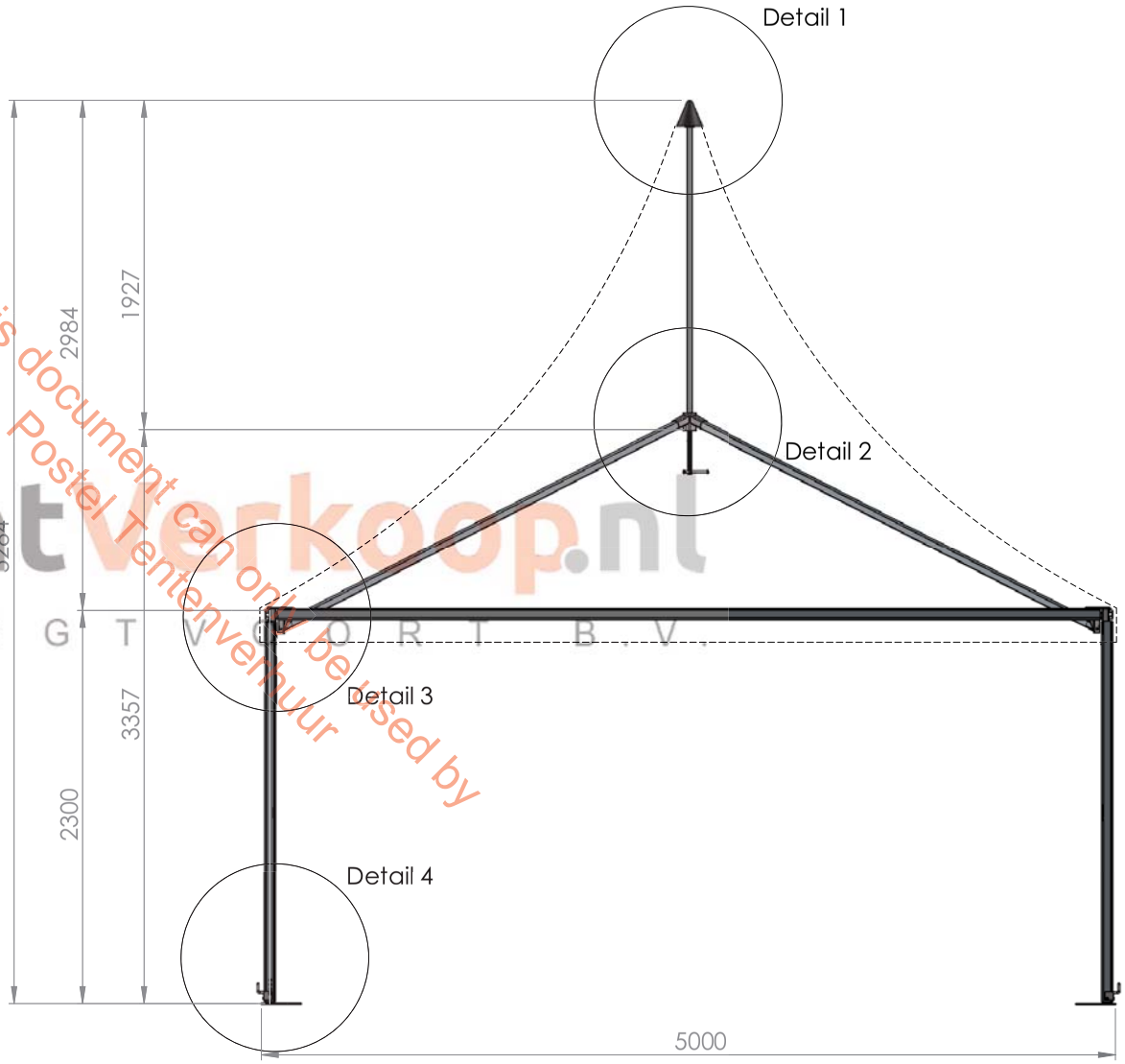
**OMC = outer middle column (8x)
***OCC = outer corner column (4x)
****IC = inner column (4x)

*see precondition paragraph 1.3.1

Drawings



For anchorage see:
Summary page 3



TentVerkoop.nl REGTVOORT B.V.
Herenweg 117
2402 ND Alphen aan den Rijn
The Netherlands

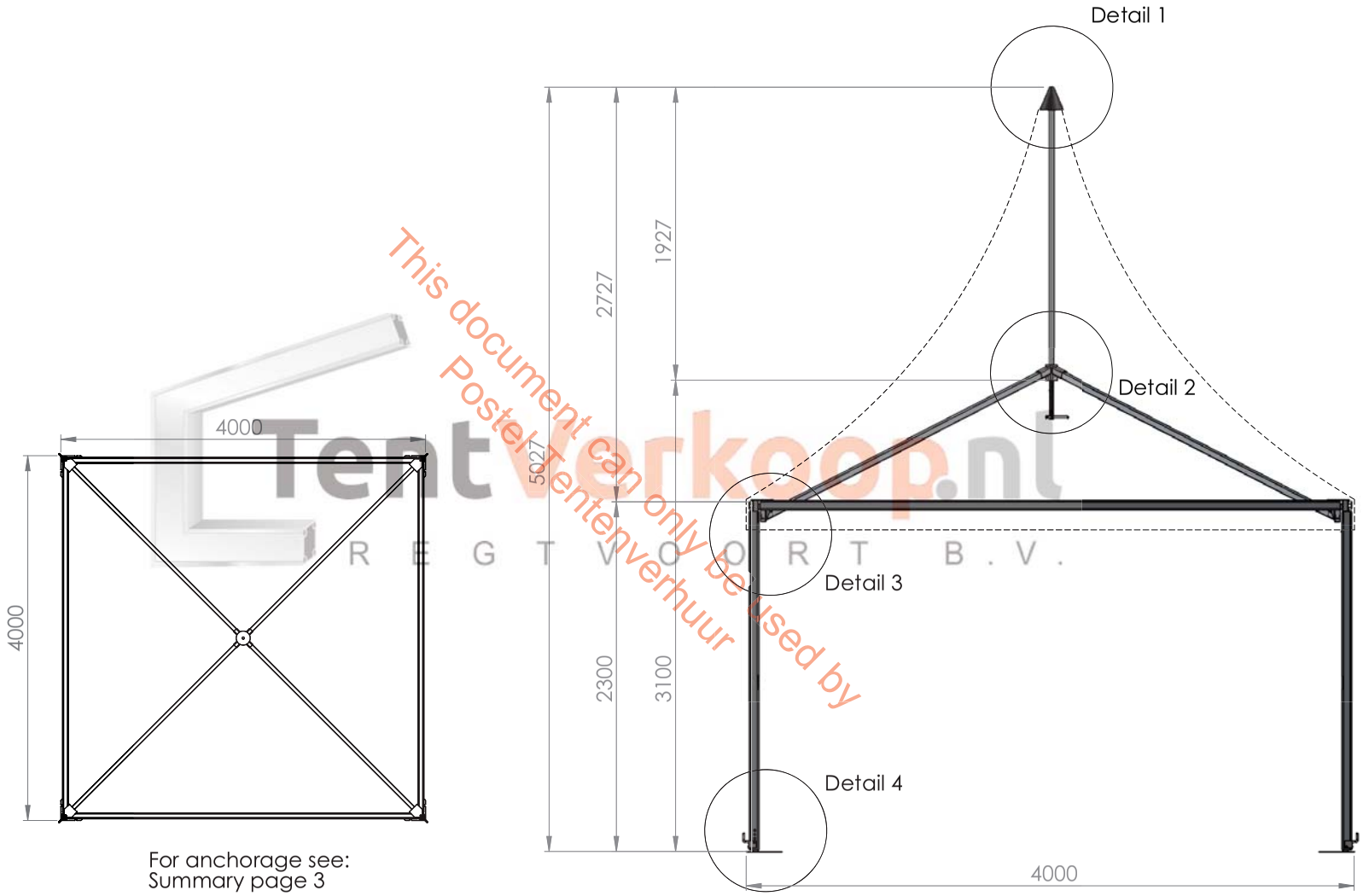
21-5-2016

TITLE: Pagoda Event Serie 64 5m x 5m

DWG NO. Assembly

A3

MP SCALE:1:1



For anchorage see:
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MP

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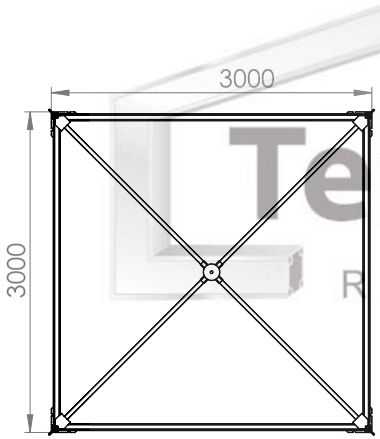

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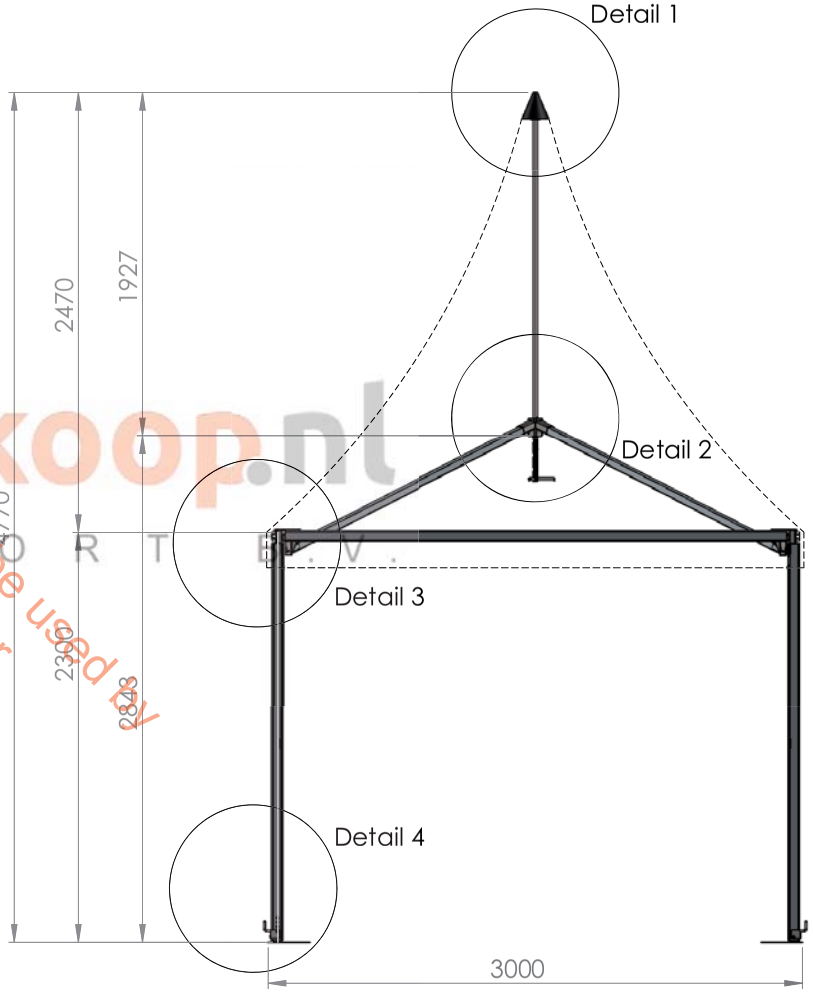

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21-5-2016	TITLE: Pagoda Event Serie 64 3m x 3m		
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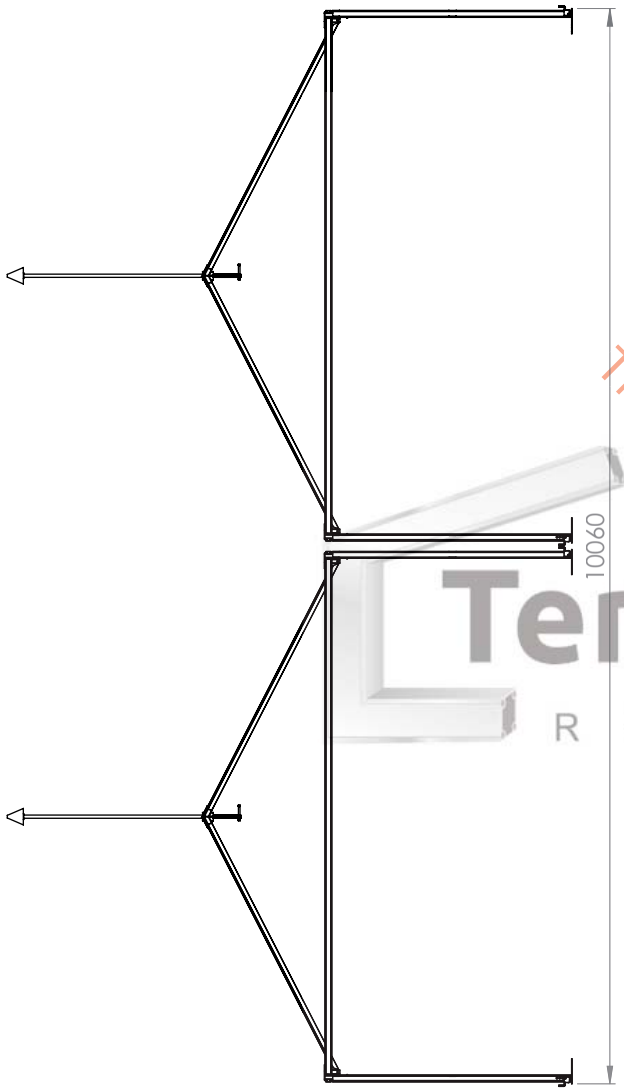

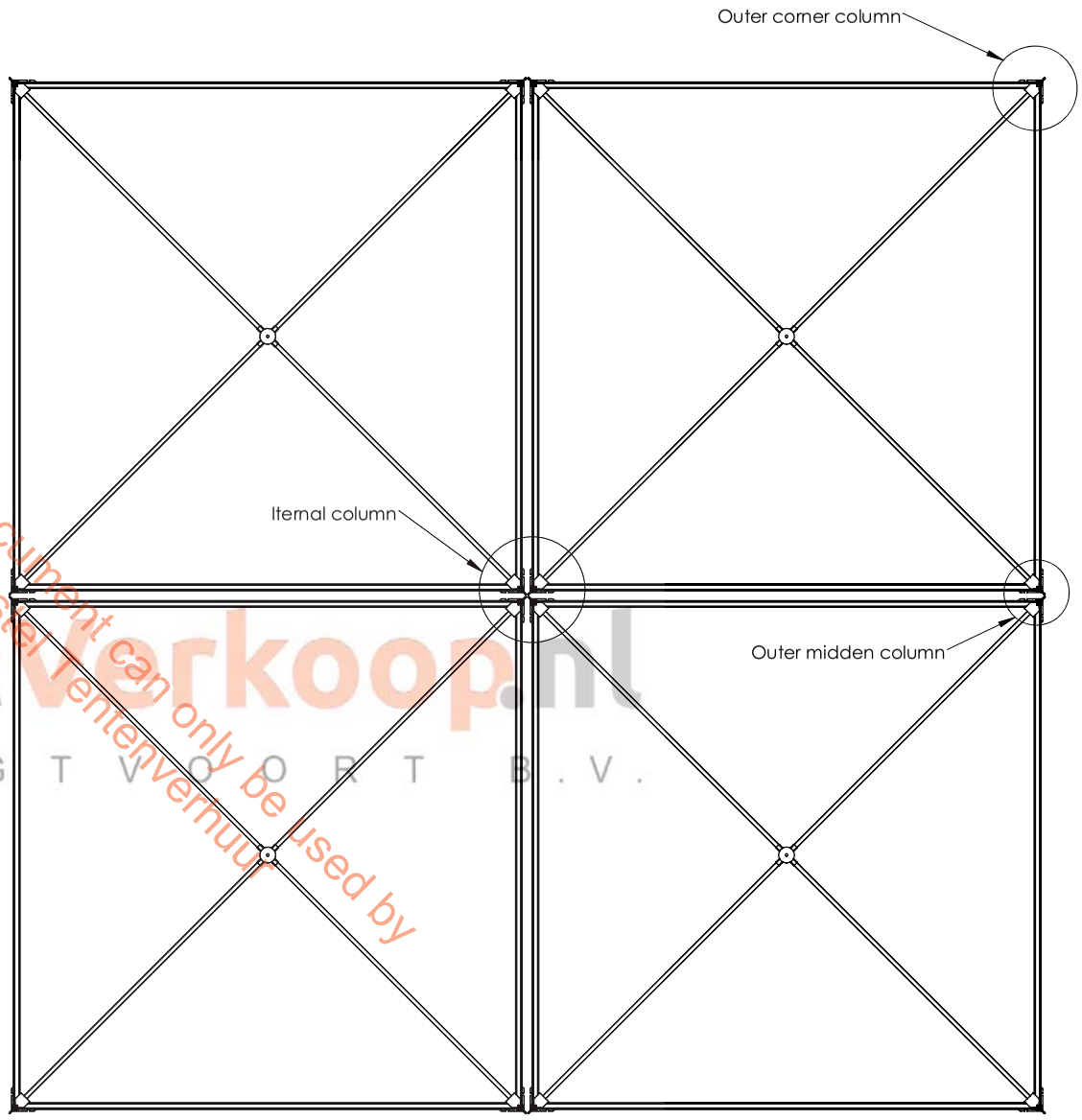

For anchorage see:
Summary page 3

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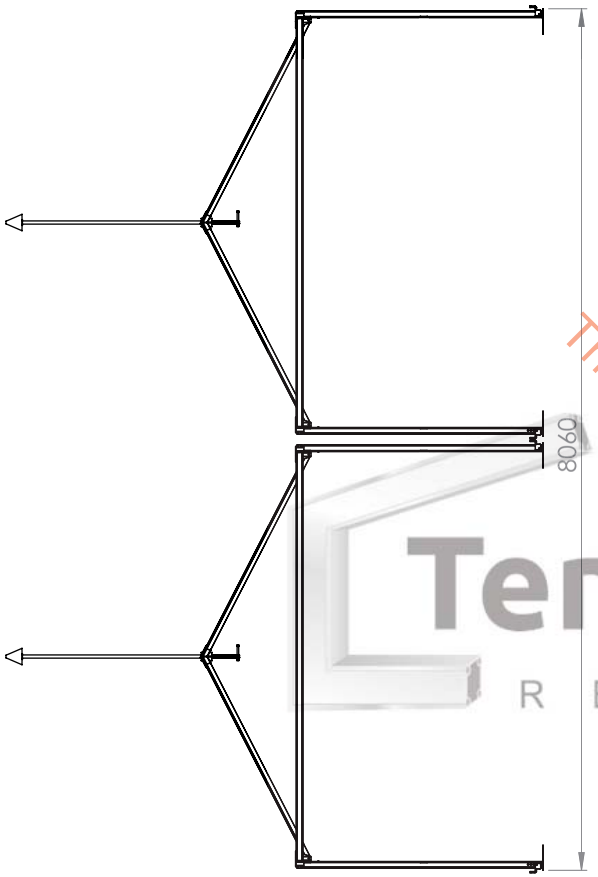
2402 ND Alphen aan den Rijn
The Netherlands

3-5-2016	TITLE: Pagoda Event Serie 64 4x Pagoda 5m x 5m		
	DWG NO. Assembly	A3	
		WJ	SCALE:1:1



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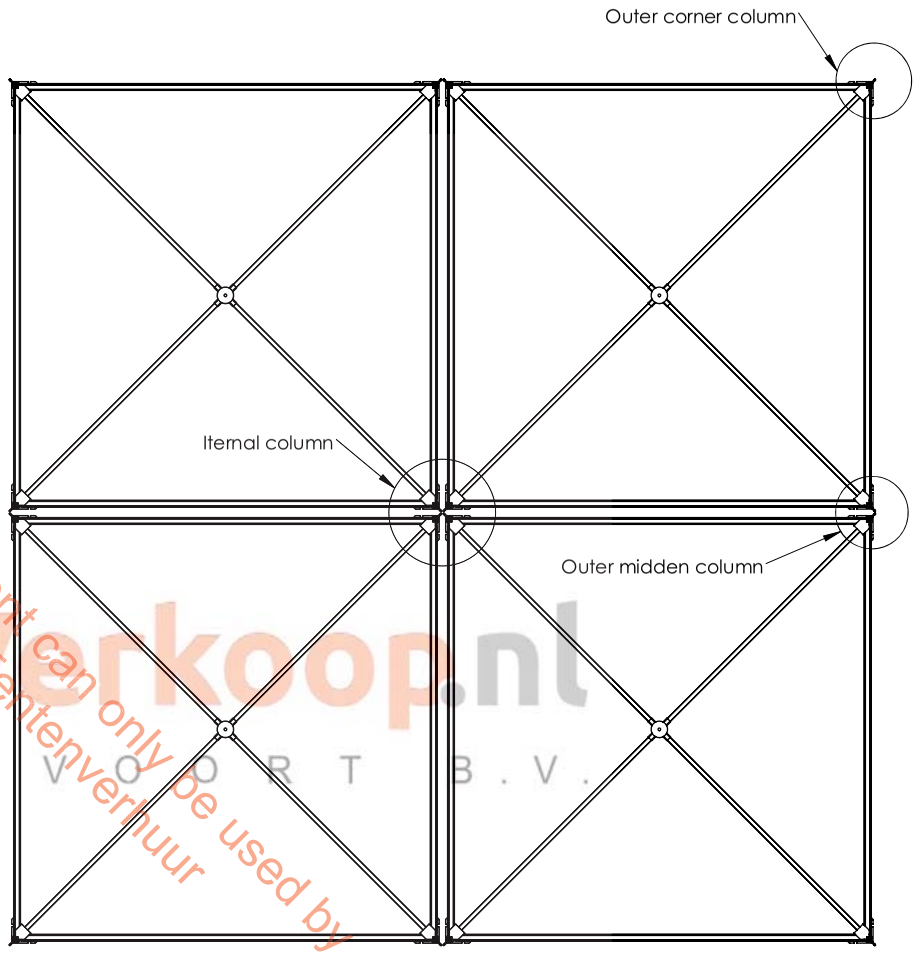
Summary page 3



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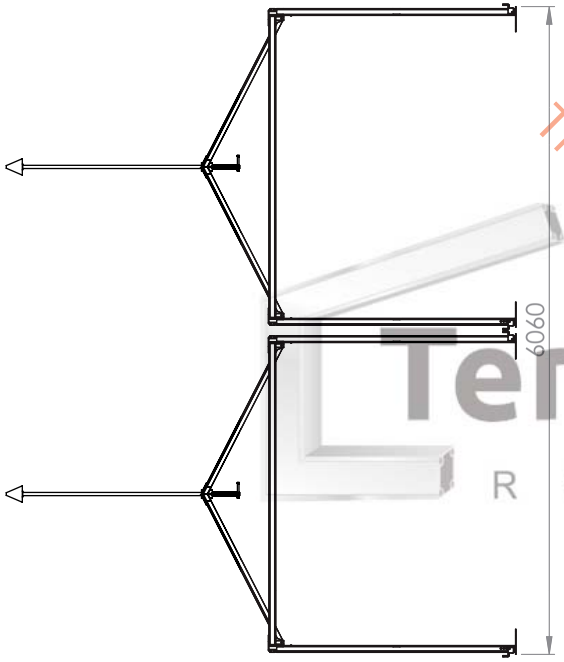
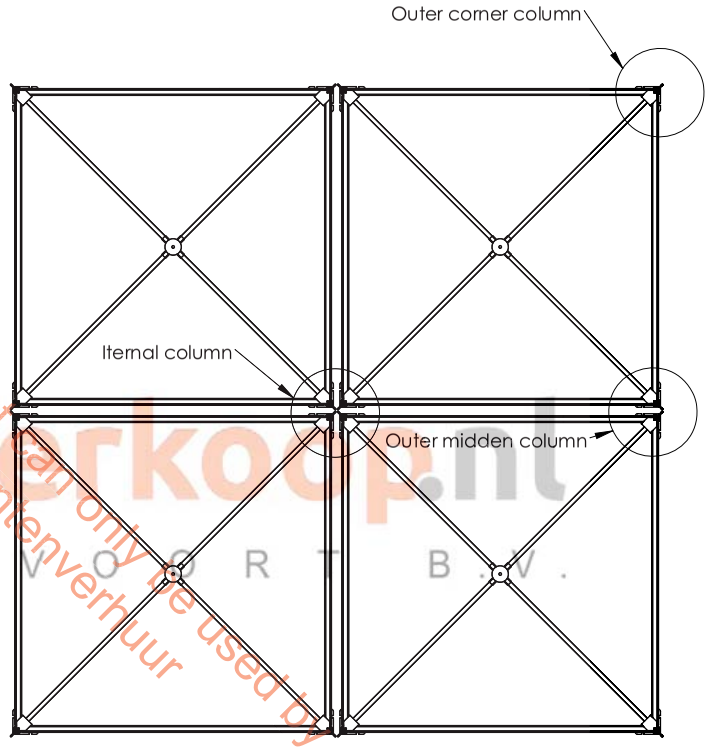
	TITLE:	Pagoda Event Serie 64 4x Pagoda 4m x 4m	
3-5-2016	DWG NO.	Assembly	A3
	WJ		SCALE:1:1





For anchorage see:
Summary page 3

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REGTVOORT B.V.
Herenweg 117
2402 ND Alphen aan den Rijn
The Netherlands

3-5-2016

TITLE: Pagoda Event Serie 64
4x Pagoda 3m x 3m

DWG NO. Assembly

A3

WJ

SCALE:1:1

Codes and standards

The following codes and standards are used in this report

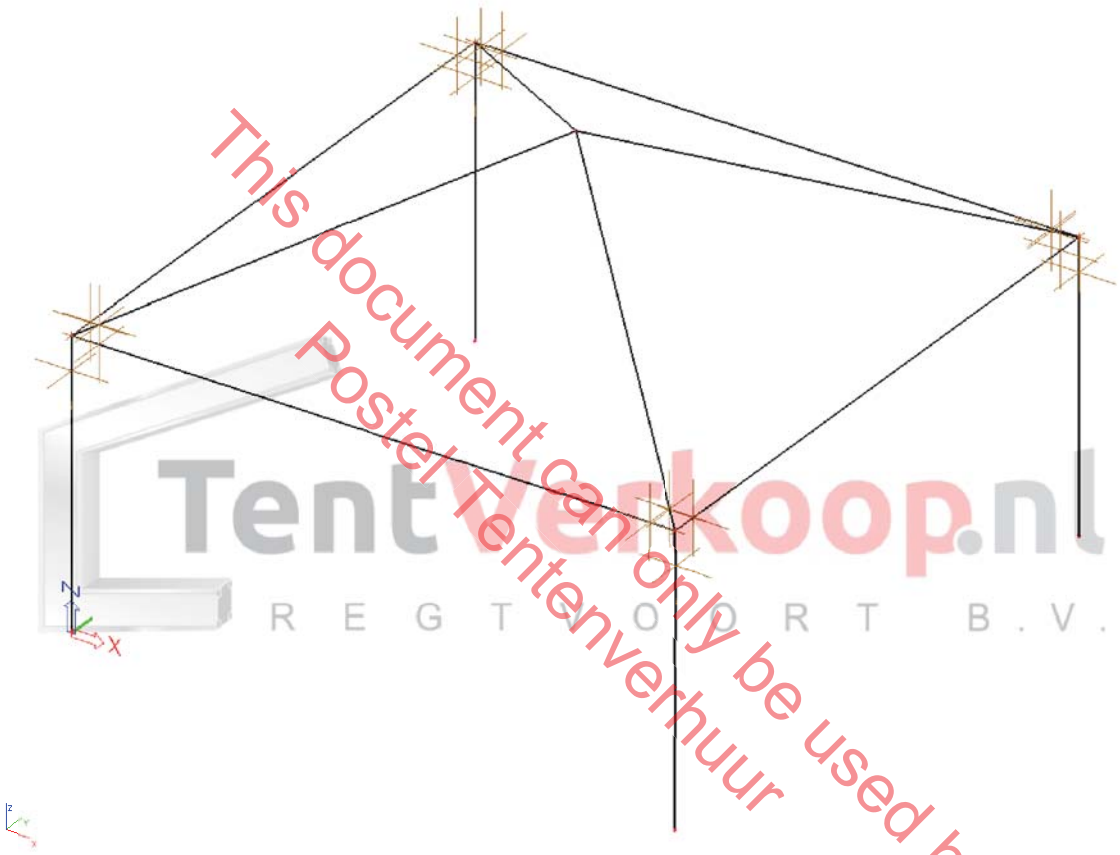
- NEN-EN 13782 Temporary structures – Tents – Safety
- NEN-EN 1990:2002 Basis of Structural Design
- NEN-EN 1991-1 Actions on structures
- NEN-EN 1993-1-1 Design of steel structures – Part 1-1: General rules and rules for buildings
- NEN-EN 1993-1-8 Design of steel structures – Part 1-8: Design of joints
- NEN-EN 1999-1-1 Design of aluminum structures – Part 1-1: General structural

Contents

1. Project description

1.1. Description

The tent consists of a self-supporting aluminum frame with a pagoda roof. All bars are aluminum extrusion profiles. In the corners the bars are connected by steel parts for quick and easy installation. The stability is ensured by the corner connections.



1.2. Geometry

	5x5 m	4x4 m	3x3 m
Width	5 m	4 m	3 m
Depth	5 m	4 m	3 m
Wall height	2.3 m	2.3 m	2.3 m
Top diagonal height	3.36 m	3.10 m	2.85 m
Total height	5.29 m	5.03 m	4.77 m

1.3. Preconditions for construction

1.3.1 General

- This calculation is valid for aluminum structures which comply with the provided geometry, cross-sections and connection-detailing.
- Nature of use of the structure comprises a temporary function.
- Ground anchors are based on dense, cohesionless soil. When the tents are built on other soil types, additional anchors must be applied or anchor tests must be carried out.
- A friction coefficient of $\mu = 0.6$ is used for the verification against overturning, sliding and lifting. This friction coefficient yields for **wood/rubber on concrete/asphalt** and can only be applied if the columns and floors are supported on rubber mats or wooden sheets. This means that the connection between the columns/floors and the rubber mats / wooden sheets must ensure that **slip cannot occur between column/floor and rubber mat / wooden sheet**, so **slip only occurs between rubber mat / wooden sheet and concrete / asphalt**. For other types of surfaces, the stability is not verified and additional counterweight or anchors may be required.
- The structure is calculated as closed*; the gable and bay walls always have to be closed by either textile or stiff wall-elements.

** No internal pressure is taken into account; to prevent the need of applying internal pressure according to NEN-EN1991-1-4 art. 7.3 and 7.4, not more than 30% of the area of at most two sides may be opened.*

1.3.2 Snow

Snow load is not taken into account for the strength and stability verification; this means the structure has to meet the following requirements (according NEN-EN 13782 - article 6.4.3.2):

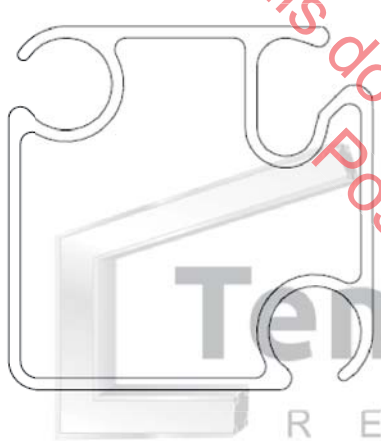
- The tent is erected in areas, where there is no likelihood of snow.
- The tent is operated at a time of the year, where the likelihood of snow can be discounted.
- Pre-planned operation action prevents snow settling on the tent:
    - sufficient heating equipment is installed and is ready for use.
    - heating is started prior to snow fall and is heated in such a way, that the whole roof cladding has an outside air temperature of more than + 2 °C.
    - cladding is made and tensioned in such a way, that pounding of water or any other deformations of the cladding cannot take place.

1.4. Materials

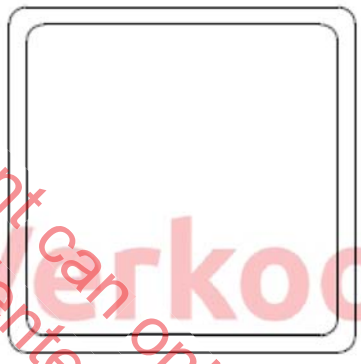
type	material	weight	E-modulus	fy	fu
AL 6082 T6	aluminum	2700 kg/m^3	70000 N/mm^2	250 N/mm^2	290 N/mm^2
AL 6005A T6	aluminum	2700 kg/m^3	70000 N/mm^2	215 N/mm^2	255 N/mm^2
S235	steel	7850 kg/m^3	210000 N/mm^2	235 N/mm^2	360 N/mm^2
S355	steel	7850 kg/m^3	210000 N/mm^2	355 N/mm^2	510 N/mm^2

1.5. Cross-sections

profile		material	b	h	t	G	A	Iy	Iz	Wel;y	Wel;z	Wpl;y	Wpl;z
			mm	mm	mm	kg/m^1	mm^2	mm^4	mm^4	mm^3	mm^3	mm^3	mm^3
1	columns	AL 6082 T6	64	64	2.4	1.99	737	377650	371680	12222	12028	19220	20359
2	beams	AL 6082 T6	64	64	2.4	1.99	737	377650	371680	12222	12028	19220	20359
3	diagonal	AL 6005A T6	40	40	2	0.82	294	69400	69400	3470	3470	4130	4130
4	corner	S355	40	40	5	5.42	690	142917	142917	7146	7146	9065	9065
5	foot	S235	40	40	2	2.31	294	69400	69400	3470	3470	4130	4130



profile 1 & 2: columns and beams



profile 3: diagonals, profile 4: corner & profile 5: foot

2. Calculation method

2.1. Modeling

The finite element software SCIA-Engineer is used to perform the static analysis of the aluminum structure. A non-linear calculation is carried out in which 2nd order effects taken into account. The load on the frame due to the wind pressure on the roof membrane is determined with EASY.

2.2. Load combinations

2.2.1 Strength

For the purpose of determination and check of elements and connections.

	One variable load	Multiple variable loads
Unfavorable permanent load	$1.35 \times G + 1.5 \times Q$	$1.35 \times G + \sum 1.35 \times Q_i$
Favorable permanent load	$1.0 \times G + 1.5 \times Q$	$1.0 \times G + \sum 1.35 \times Q_i$

Table 1. Load combinations according to NEN-EN 13782

This means the following load combinations must be checked:

1. 1.0 x self-weight + 1.5 x wind load
2. 1.35 x self-weight + 1.35 x equivalent load

2.2.2 Safety against overturning, sliding and uplifting

For the purpose of determination and check of required counterweight and/or anchor pins.

	One or multiple variable loads
Unfavorable permanent load	$1.1 \times G + 1.2 \times Q_{wind} + \sum 1.3 \times Q_i$
Favorable permanent load	$1.0 \times G + 1.2 \times Q_{wind} + \sum 1.3 \times Q_i$

Table 2. Load combinations according to NEN-EN 13782

This means the following load combination must be checked:

1. 1.0 x self-weight + 1.2 x wind load

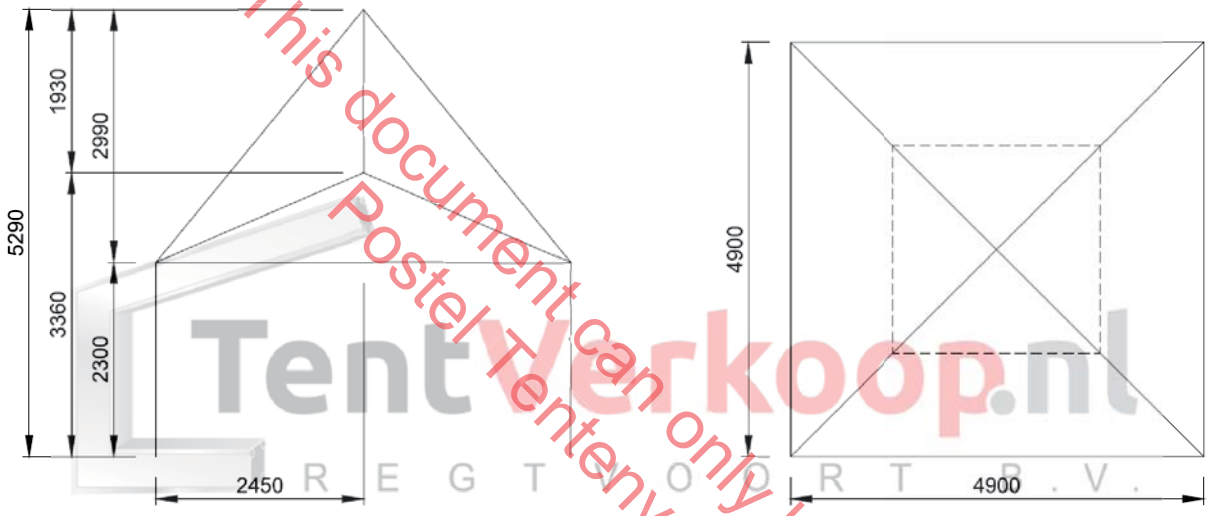
3. Design loads

3.1. Self-weight

The self-weight of the aluminum frame is calculated by the software based on the cross-sectional properties of the members in load case 1.

3.1.1 Membrane

The self-weight of the membrane is taken into account separately and calculated with the figures below. These figures illustrate the dimensions of the cross-section and top view of the 5x5 m pagoda tent.



5x5 m

$\sqrt{2.45^2 + 3.39^2} = 3.87\ m$

Area large triangle:

$\frac{1}{2} \times 3.87 \times 4.9 = 9.48\ m^2$

Area small triangle:

$\frac{1}{2} \times 1.94 \times 2.45 = 2.38\ m^2$

The area of the inner dashed square is modeled as a point load of $2.38 \times 4 \times 0.008 = 0.08\ kN$ on the top of the frame.

The remaining part is divided over the four horizontal roof beams and modeled as a line load per roof beam of:

$$0.008 \times \frac{(9.48 - 2.38)}{4.9} = 11.6 \times 10^{-3}\ kN/m$$

Membrane area wall:

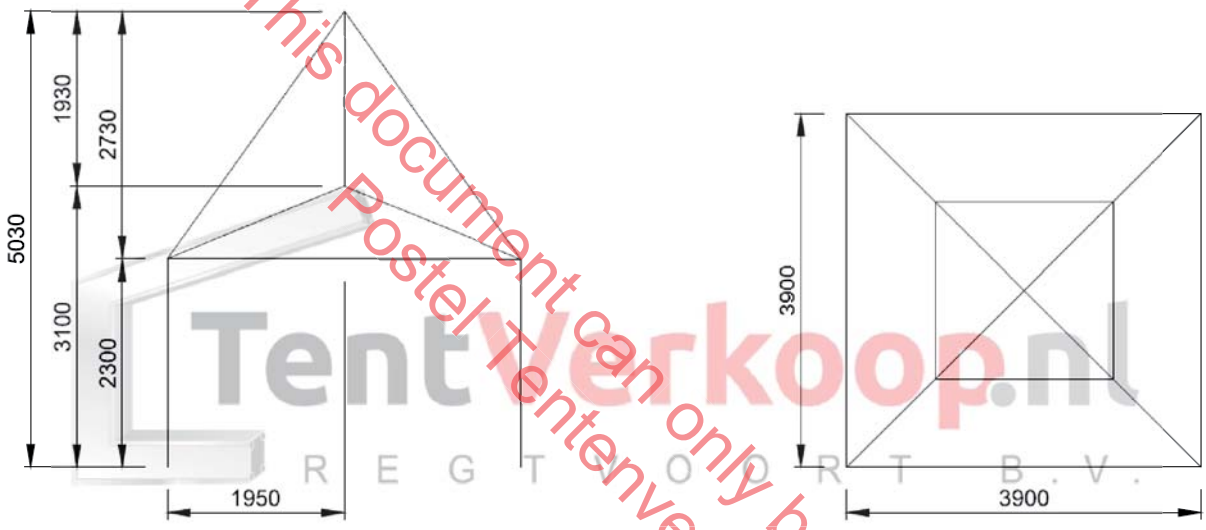
$4.9 \times 2.3 = 11.27\ m^2$

Additionally, the roof beams are subject to a line load of:

$$0.008 \times \frac{11.27}{4.9} = 18.4 \times 10^{-3}\ kN/m$$

Total line load on horizontal roof beams: $11.6 \times 10^{-3} + 18.4 \times 10^{-3} = 0.03\ kN/m$

4x4 m



$\sqrt{1.95^2 + 2.73^2} = 3.35\ m$

Area large triangle:

$\frac{1}{2} \times 3.35 \times 3.9 = 6.53\ m^2$

Area small triangle:

$\frac{1}{2} \times 1.68 \times 1.95 = 1.64\ m^2$

The area of the inner dashed square is modeled as a point load of $1.64 \times 4 \times 0.008 = 0.05\ kN$ on the top of the frame.

The remaining part is divided over the four horizontal roof beams and modeled as a line load per roof beam of:

$$0.008 \times \frac{(6.53 - 1.64)}{3.9} = 10.0 \times 10^{-3}\ kN/m$$

Membrane area wall:

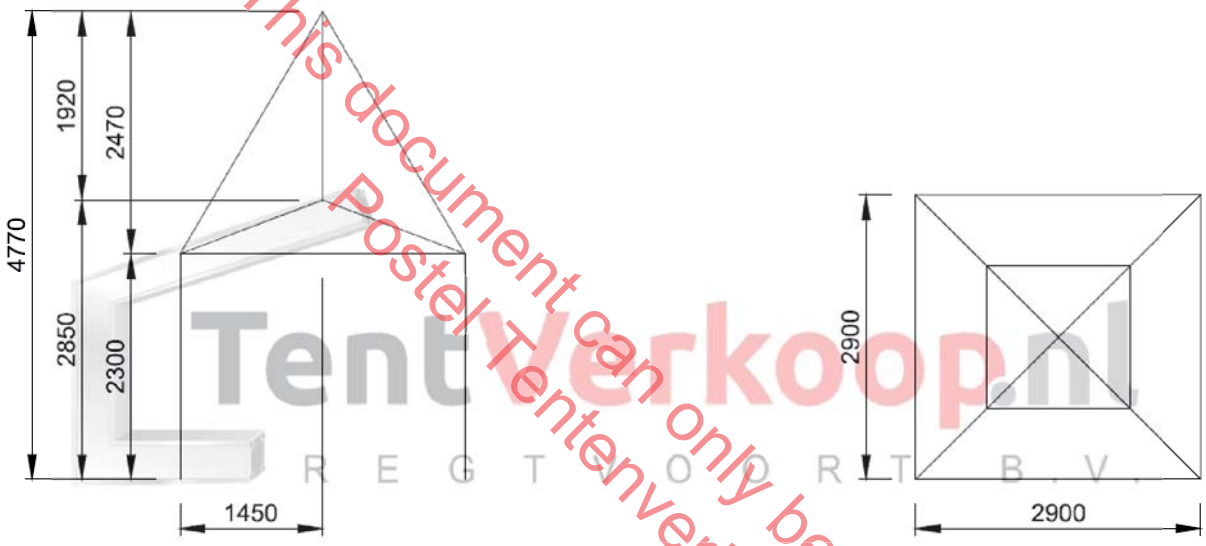
$3.9 \times 2.3 = 8.97\ m^2$

Additionally, the roof beams are subject to a line load of:

$$0.008 \times \frac{8.97}{3.9} = 18.4 \times 10^{-3}\ kN/m$$

Total line load on horizontal roof beams: $10.0 \times 10^{-3} + 18.4 \times 10^{-3} = 0.03\ kN/m$

3x3 m



$\sqrt{1.45^2 + 2.47^2} = 2.86\ m$

Area large triangle:

$\frac{1}{2} \times 2.86 \times 2.9 = 4.15\ m^2$

Area small triangle:

$\frac{1}{2} \times 1.43 \times 1.45 = 1.04\ m^2$

The area of the inner dashed square is modeled as a point load of $1.04 \times 4 \times 0.008 = 0.03\ kN$ on the top of the frame.

The remaining part is divided over the four horizontal roof beams and modeled as a line load per roof beam of:

$$0.008 \times \frac{(4.15 - 1.04)}{3.9} = 6.38 \times 10^{-3}\ kN/m$$

Membrane area wall:

$2.9 \times 2.3 = 6.67\ m^2$

Additionally, the roof beams are subject to a line load of:

$0.008 \times \frac{6.67}{2.9} = 18.4 \times 10^{-3}\ kN/m$

Total line load on horizontal roof beams: $6.38 \times 10^{-3} + 18.4 \times 10^{-3} = 0.025\ kN/m$

3.1.2 Middle pole

The self-weight of the CHS 30x2 middle pole is equal to: $G \times l$ and is modeled as a point load at the top of the frame.

5x5 m: $1.381 \times 1.93 = 2.67\ kg = 0.025\ kN$
4x4 m: $1.381 \times 1.93 = 2.67\ kg = 0.025\ kN$
3x3 m: $1.381 \times 1.92 = 2.65\ kg = 0.025\ kN$

Load case 2 input:

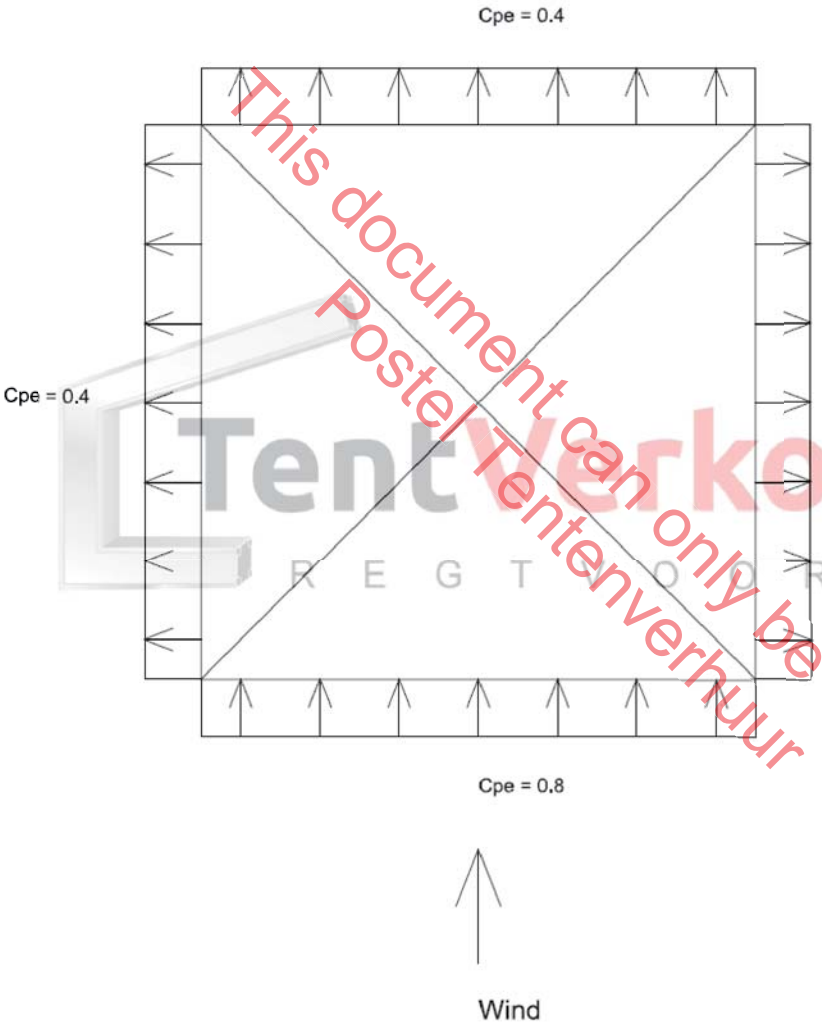
5x5 m:	point load: $0.08 + 0.025 = 0.11\ kN$	line load: $0.03\ kN/m$
4x4 m:	point load: $0.05 + 0.025 = 0.075\ kN$	line load: $0.03\ kN/m$
3x3 m:	point load: $0.03 + 0.025 = 0.055\ kN$	line load: $0.025\ kN/m$

3.2. Wind load

The wind pressure according to NEN-EN 13782 – article 7.4: $q_p = 0.3\ kN/m^2$ for tents with a width of 10 m or less and a height of 5 m or less. As the structure is symmetric, only wind perpendicular to one wall is considered.

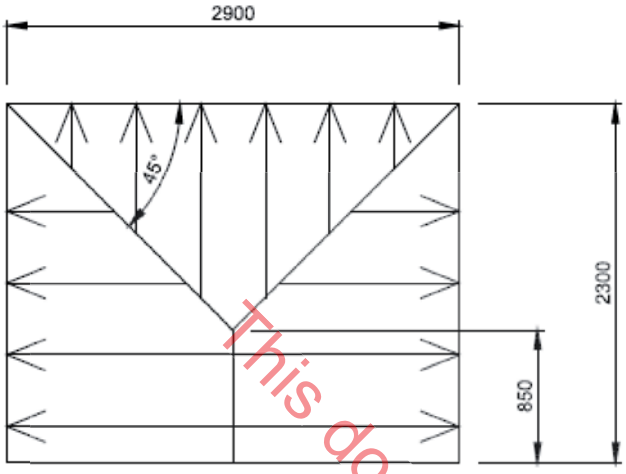
3.2.1 Wind coefficients for the walls

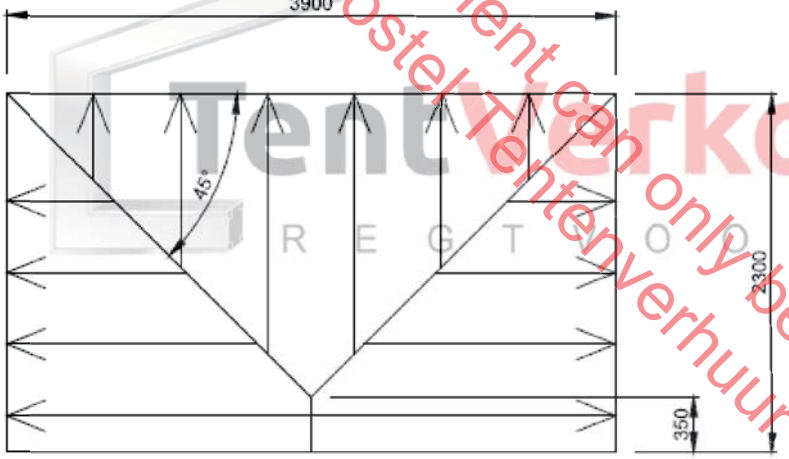
The wind coefficients for wind pressure on the walls according to NEN-EN 13782 article 7.4.2.2:

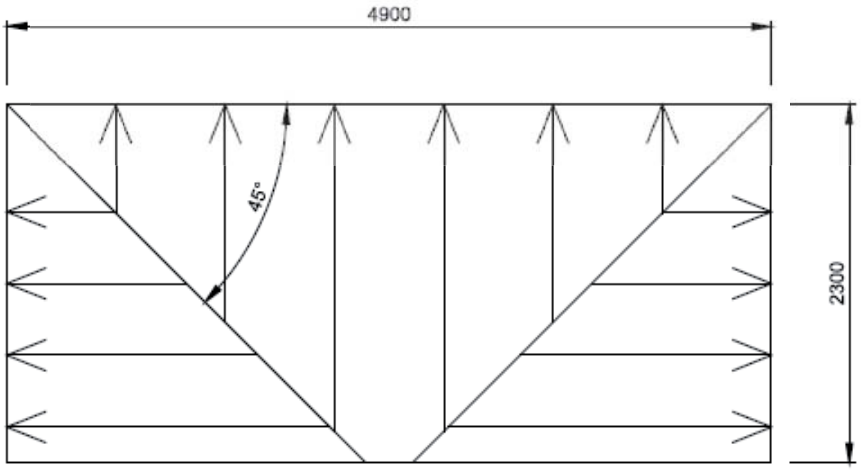


3.2.2 Wind load on the walls

Load distribution over columns and roof beams for 3x3, 4x4 and 5x5 m structure:







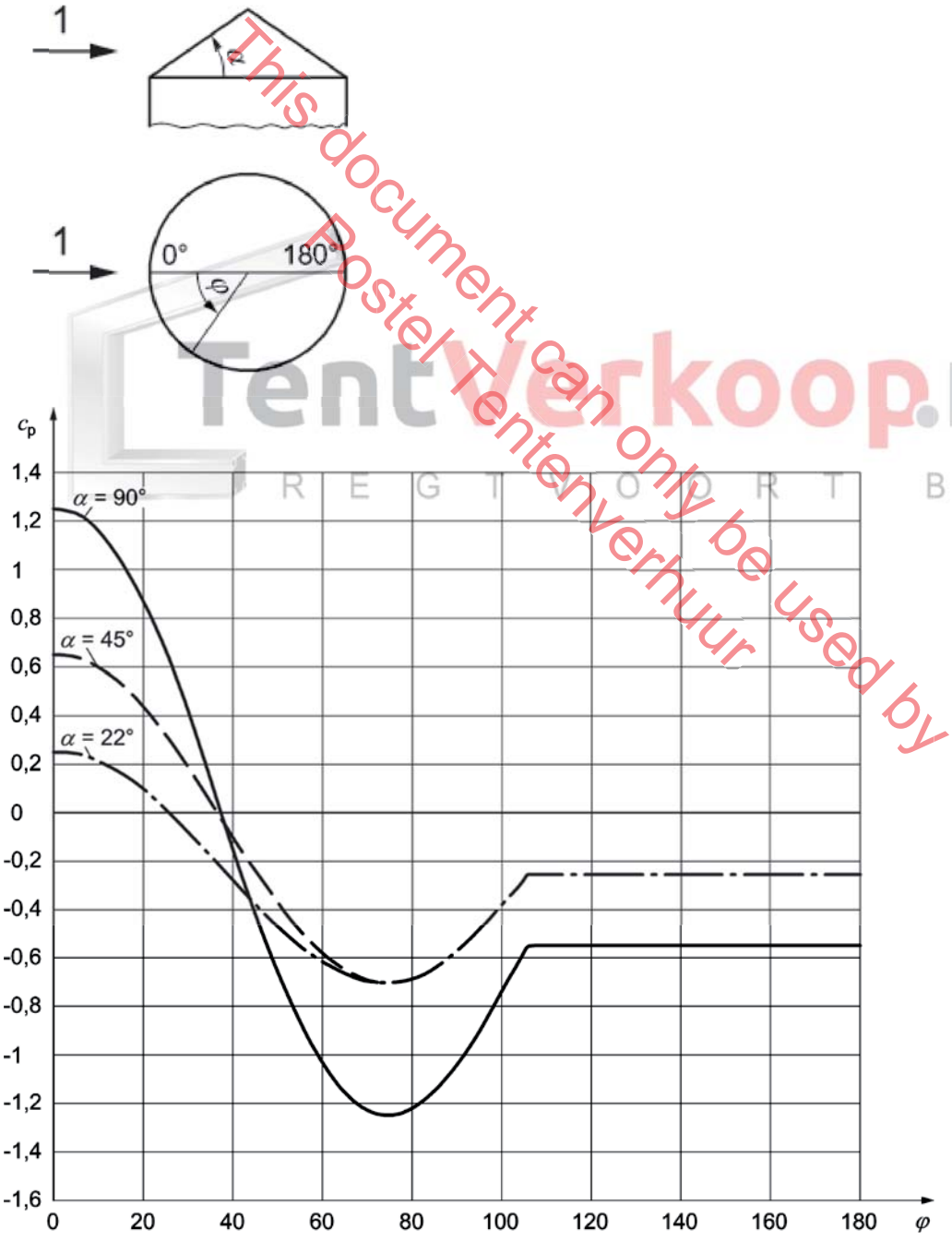
The load on the columns and horizontal roof beams due to the wind pressure on the walls is equal to:

$Q_w = C_{pe} \times q_p \times w$, with:

w: the distance to the column or roof beam according to the load distribution figure on the previous page.

3.2.3 Wind coefficients for the roof

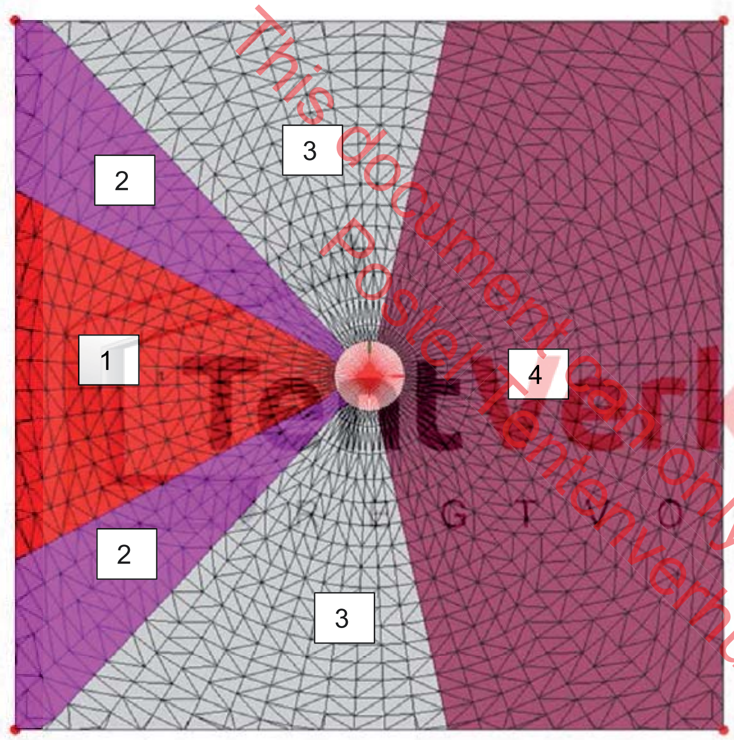
The wind coefficients for wind pressure on a closed tent of round shape according to NEN-EN 13782 Annex A2:



These wind pressure coefficients include a constant internal pressure coefficient $c_{pi} = -0.25$. The roof is split up into four different areas (see also the next figure) where the following wind coefficients are used: ($\alpha = 35°$)

area1: $0 < \varphi < 22.5° \rightarrow C_{p1} = 0.35$
area2: $22.5° < \varphi < 45° \rightarrow C_{p2} = 0.05$
area3: $45° < \varphi < 112.5° \rightarrow C_{p3} = -0.70$
area4: $112.5° < \varphi < 180° \rightarrow C_{p4} = -0.50$

These are the wind coefficients without the internal pressure coefficient that is included in the previous figure.



3.2.4 Wind load on the roof

Input in EASY:

```
* DATASET FOR LOAD GENERATED BY EASY Version 2016.0.6.31
*
* Format Description:
* ===================
* Column 1: '*' means comment, '!' means load is inactive
*         A: Group number
*         B: Type of load:
*                          SCHNEE       = Snow
*                          EIGENGEWICHT = Selfweight
*                          WIND         = Wind
*                          NORMAL       = Normal
*                          SEILE        = Selfweight (Line)
*                          TEMPERATUR   = Temperature
*                          SEILS        = Snow (Line)
*                          PUNKT        = Point
*
*    If type = TEMPERATUR
*         C: Temperature change
*         D: Temperature expansion coefficient
*         E: not used
*         F: not used
*
*    If type = PUNKT
*         C: X value
*         D: Y value
*         E: Z value
*         F: not used
*
*    All other types
*         C: Load factor
*         D: X value
*         E: Y value
*         F: Z value
*
*<    A   ><      B       ><         C         ><         D         ><         E         ><         F         >12345<         >
         1           WIND    0.300000000    0.000000000    0.000000000    0.000000000             1.00    -0.3500
         2           WIND    0.300000000    0.000000000    0.000000000    0.000000000             1.00    -0.0500
         3           WIND    0.300000000    0.000000000    0.000000000    0.000000000             1.00     0.7000
         4           WIND    0.300000000    0.000000000    0.000000000    0.000000000             1.00     0.5000
```

EXTERNAL LOADS (AREA-DEPENDENT)
ORDERED BY LOADGROUPS

LOADGROUP	LOADMODE	LOAD	FACTOR	SUM_X	SUM_Y	SUM_Z	LOADED AREA
1	WIND	-0.1050	1.00	0.2687	0.0000	-0.3396	4.25
SUM				0.2687	0.0000	-0.3396	
2	WIND	-0.0150	1.00	0.0246	0.0000	-0.0522	4.17
SUM				0.0246	0.0000	-0.0522	
3	WIND	0.2100	1.00	-0.2260	0.0005	1.4840	9.06
SUM				-0.2260	0.0005	1.4840	
4	WIND	0.1500	1.00	0.7911	0.0000	1.6533	13.78
SUM				0.7911	0.0000	1.6533	

EXTERNAL LOADS (AREA-DEPENDENT)
ORDERED BY LOADMODES

	LOADMODE	SUM_X	SUM_Y	SUM_Z
SUM	WIND	0.8584	0.0006	2.7456
SUM	AREA-LOADS	0.8584	0.0006	2.7456

EXTERNAL LOADS: SUM OF ALL EXTERNAL LOADS

SUM_X	SUM_Y	SUM_Z
0.8584	0.0006	2.7456

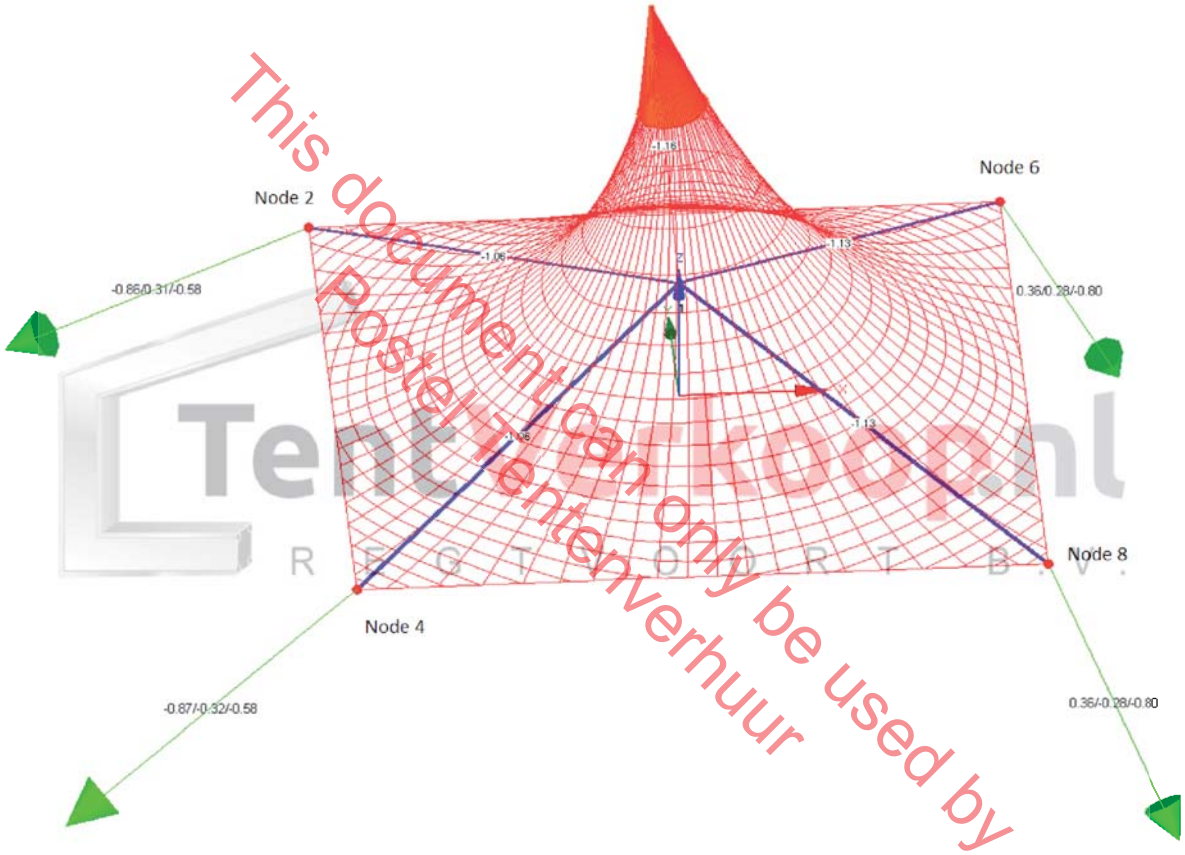
Reactions:

99000001	-0.865723	-0.319730	-0.580730
99000002	0.362064	-0.278842	-0.797396
99000003	0.364625	0.280165	-0.797637
99000004	-0.857623	0.307335	-0.578093

The wind load on the roof membrane is put into EASY resulting in the following reaction forces on the corners of the roof:

Reaction forces EASY	x	y	z
Node 2	-0.86	0.31	-0.58
Node 4	-0.87	-0.32	-0.58
Node 6	0.36	0.28	-0.80
Node 8	0.36	-0.28	-0.80

Also, internal forces occur in the middle pole and diagonals (see the next figure).



These reaction forces and internal forces are input for the SCIA model. However, when the internal force in the middle pole $F = 1.16\ kN$ is applied as an external force on the frame in SCIA, additional action forces are introduced in the nodes:

Additional action forces	x	y	z
Node 2	-0.73	0.73	-0.29
Node 4	-0.73	-0.73	-0.29
Node 6	0.73	0.73	-0.29
Node 8	0.73	-0.73	-0.29

The reaction forces due to the applied point load in the top have to be in equilibrium with the overall reaction forces received with EASY. Therefore, the resulting action forces are:

Resulting action forces	x	y	z
Node 2	1.59	-1.04	0.87
Node 4	1.60	1.05	0.87
Node 6	-1.09	-1.01	1.09
Node 8	-1.09	1.01	1.09

The resulting reaction forces are put on the frame in SCIA Engineer in load case 3 to verify the strength and stability of the structure. However, they are not applied as point loads in the nodes only. They are split up into a line load part on the horizontal roof beams and a point load part on the nodes.

Point loads SCIA [kN]	x	y	z
Node 2	0.80	1.22	0.38
Node 4	-0.81	1.23	0.38
Node 6	0.77	-0.72	0.60
Node 8	-0.77	-0.72	0.60

Line loads SCIA [kN/m]	x	y	z
B6		0.15	0.1
B7	-0.1		0.1
B8	0.1		0.1
B9		-0.15	0.1

4x4 m

The roof area of the 5x5 m tent is $4 \times 10.24 = 40.96\ m^2$ (see paragraph 3.1.1). The roof area of the 4x4 m tent is $4 \times 6.53 = 26.1\ m^2$, which is $(26.1/40.96) \times 100 = 64\%$ of the 5x5 m tent. The next table contains the point loads that are obtained when the forces on the 5x5 m frame due to the wind pressure on the roof are reduced by $100 - 64 = 36\%$. These are applied in the SCIA 4x4 m model.

Point loads SCIA [kN]	x	y	z
Node 2	0.51	0.78	0.24
Node 4	-0.52	0.79	0.24
Node 6	0.49	-0.46	0.38
Node 8	-0.49	-0.46	0.38

3x3 m

The roof area of the 5x5 m tent is $4 \times 10.24 = 40.96\ m^2$ (see paragraph 3.1.1). The roof area of the 3x3 m tent is $4 \times 4.15 = 16.6\ m^2$, which is $(16.6/40.96) \times 100 = 41\%$ of the 5x5 m tent. The next table contains the point loads that are obtained when the forces on the 5x5 m frame due to the wind pressure on the roof are reduced by $100 - 41 = 59\%$. These are applied in the SCIA 3x3 m model.

Point loads SCIA [kN]	x	y	z
Node 2	0.33	0.50	0.16
Node 4	-0.33	0.50	0.16
Node 6	0.32	-0.30	0.25
Node 8	-0.32	-0.30	0.25

3.3. Equivalent load

An equivalent load of 0.1 kN/m^2 according to NEN-EN 13782 - article 7.3 is applied on the roof in load case 4.

4. Element check

The in- and output file of the FE analysis with SCIA is given appendix A.

4.1. Column

Profile: 64 x 64 x 2.4 mm, material: AL 6082 T6.

Governing position: element B1 section SB1, load case: NC1 (see appendix A: SCIA report 5 x 5 m chapter 11).

Normal force: N = 1.96 kN
Bending moment y-direction: My = 2.90 kNm
Bending moment z-direction: Mz = 0.34 kNm

Governing check: bending moment y-axis (NEN-EN 1991-1-1: article 6.2.5 eq. 6.24).

$$\frac{M_{yEd}}{M_{yRd}} \leq 1 \rightarrow \frac{M_{yEd}}{W_{y,el} \times \frac{f_u}{\gamma_{M2}}} = \frac{2.90 \times 10^6}{12222 \times \frac{290}{1.25}} = 1.02 \approx 1 \text{ (result acceptable)}$$

For full check see appendix Annex B: Element check.

4.2. Horizontal roof beam

Profile: 64 x 64 x 2.4 mm, material: AL 6082 T6.

Governing position: element B8 section SB8, load case: NC1 (see appendix A: SCIA report 5 x 5 m chapter 11).

Normal force: N = -1.22 kN
Bending moment y-direction: My = 2.93 kNm
Bending moment z-direction: Mz = 0.91 kNm

Governing check: bending moment y-axis (NEN-EN 1991-1-1: article 6.2.5 eq. 6.24).

$$\frac{M_{yEd}}{M_{yRd}} \leq 1 \rightarrow \frac{M_{yEd}}{W_{y,el} \times \frac{f_u}{\gamma_{M2}}} = \frac{2.93 \times 10^6}{12222 \times \frac{290}{1.25}} = 1.03 \approx 1 \text{ (result acceptable)}$$

For full check see appendix Annex B: Element check.

4.3. Diagonal

Profile: 40 x 40 x 2 mm, material: AL 6005A T6, length: 3.65 m.

Governing position: element B10 section SB10, load case: NC2 (see appendix A: SCIA report 5 x 5 m chapter 18).

Normal force: N = -2.76 kN
Bending moment y-direction: My = 0.01 kNm
Bending moment z-direction: Mz = 0 kNm

Governing check: buckling (compression) (NEN-EN 1999-1-1: article 6.3.1.1 eq. 6.48).

$$\frac{N_{Ed}}{N_{b,Rd}} \leq 1 \rightarrow \frac{N_{Ed}}{\kappa \times \chi \times A_{eff} \times \frac{f_o}{\gamma_{M1}}} = \frac{2760}{1 \times 0.05 \times 294 \times \frac{215}{1.1}} = 0.91 < 1$$

For full check see appendix Annex B: Element check.

4.4. Middle pole

Profile: $\emptyset 30 \times 2$ mm, material: S235, length: 1.93 m.

Self-weight membrane and pole: 0.11 kN.
Internal force in pole due to wind load (EASY): 1.16 kN.

Normal force: N = 1.0 x 0.11 + 1.5 x 1.16 = 1.85 kN.

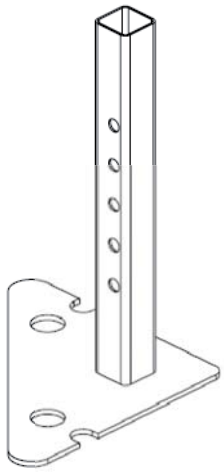
Governing check: buckling (compression) (NEN-EN 1993-1-1: article 6.3.1.1 eq. 6.47)

$$\frac{N_{Ed}}{N_{b,Rd}} \leq 1 \rightarrow \frac{N_{Ed}}{\chi \times A \times \frac{f_y}{\gamma_{M1}}} = \frac{1850}{1 \times 0.18 \times 176 \times \frac{235}{1}} = 0.24 < 1.0$$

For full check see appendix Annex B: Element check.

5. Connection check

5.1. Base plate – Column



Governing position: element B1 node N1, load case: NC1 (see appendix A: SCIA report 5 x 5 m chapter 11).

Normal force: N = 2.28 kN
Shear force y-direction: Vy = 1.96 kN
Shear force z-direction: Vz = 0.08 kN

$$V_{Ed} = \sqrt{V_y^2 + V_z^2} = \sqrt{1.96^2 + 0.08^2} = 1.96\ kN$$

The normal force is transferred by the bolt to the foot profile.
Bolt: $\emptyset 8\ S235$.

Failure mechanism: shear in bolt (NEN-EN 1993-1-8: article 3.6.1 table 3.4)

Two sections:

$$F_{vEd} = \frac{N}{2} = \frac{2.28}{2} = 1.14\ kN$$

Check:

$$\frac{F_{vEd}}{F_{vRd}} = \frac{F_{vEd}}{\frac{\alpha_v \times f_{ub} \times A}{\gamma_{M2}}} = \frac{1140}{\frac{0.6 \times 360 \times 50}{1.25}} = 0.13 < 1$$

Failure mechanism: bearing capacity aluminum profile (NEN-EN 1999-1-1: article 8.5.5 table 8.5)

$$\frac{F_{bEd}}{F_{bRd}} = \frac{F_{bEd}}{\frac{k_1 \times \alpha_b \times f_u \times d \times t}{\gamma_{M2}}} = \frac{1140}{\frac{2.5 \times 1.0 \times 290 \times 8 \times 2.4}{1.25}} = 0.10 < 1$$

The shear force is transferred by contact pressure to the foot profile.

Contact length: $l = 350 - 256 + 20 = 114\ mm$

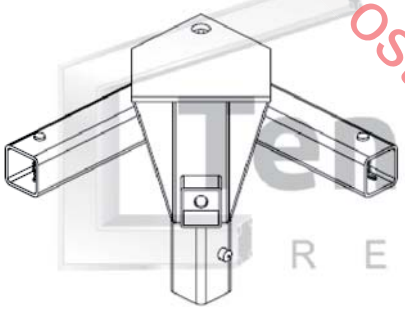
$$q_{max} = \frac{V_{Ed}}{l} = \frac{1960}{114} = 17.2\ N/mm$$

$$\tau = \frac{q_{max}}{2 \times t} = \frac{17.2}{2 \times 2.4} = 3.6\ N/mm^2$$

Failure mechanism: resistance of cross-section (NEN-EN 1999-1-1: article 6.2.1 eq. 6.15c)

$$\frac{\sqrt{3} \times \tau}{\frac{f_o}{\gamma_{M1}}} = \frac{\sqrt{3} \times 3.6}{\frac{250}{1.1}} = 0.03 \leq 1$$

5.2. Corner connection



Governing position: element B8 node N2, load case: NC1 (see appendix A: SCIA report 5 x 5 m chapter 11).

Normal force: N = -1.25 kN
Shear force y-direction: Vy = 0.04 kN
Shear force z-direction: Vz = 1.40 kN
Bending moment y-direction: My = 3.24 kNm
Bending moment z-direction: Mz = 0.92 kNm

$$V_{Ed} = \sqrt{V_y^2 + V_z^2} = \sqrt{0.04^2 + 1.40^2} = 1.40\ kN$$

Corner profile: 40x40x5 S355.

Failure mechanism: resistance of cross-section (NEN-EN 1993-1-1: article 6.2.5 eq. 6.12).

$$\frac{M_{y,Ed}}{M_{y,Rd}} = \frac{M_{y,Ed}}{\frac{W_{pl} \times f_y}{\gamma_{M0}}} = \frac{3.24 \times 10^6}{\frac{9065 \times 355}{1}} = 1.01 \approx 1$$

The bending moment and shear force in the horizontal roof beams are transferred to the corner connection by contact pressure.

Contact length: $l = 200\ mm$.

$$q_{max} = \frac{M_{Ed} \times 6}{l^2} + \frac{V_{Ed}}{l} = \frac{3.24 \times 10^6 \times 6}{200^2} + \frac{1.40 \times 10^3}{200} = 493\ N/mm$$

$$\tau = \frac{q_{max}}{2 \times t} = \frac{493}{2 \times 2.4} = 103\ N/mm^2$$

Failure mechanism: resistance of cross-section (NEN-EN 1999-1-1: article 6.2.1 eq. 6.15c)

$$\frac{\sqrt{3} \times \tau}{\frac{f_o}{\gamma_{M1}}} = \frac{\sqrt{3} \times 103}{\frac{250}{1.1}} = 0.78 < 1$$

The normal force is transferred by the bolt to the corner profile.
Bolt: $\emptyset 8\ S235$.

Failure mechanism: shear in bolt (NEN-EN 1993-1-8: article 3.6.1 table 3.4)

Two sections:

$$F_{vEd} = \frac{N}{2} = \frac{1.25}{2} = 0.63\ kN$$

Check:

$$\frac{F_{vEd}}{F_{vRd}} = \frac{F_{vEd}}{\frac{\alpha_v \times f_{ub} \times A}{\gamma_{M2}}} = \frac{630}{\frac{0.6 \times 360 \times 50}{1.25}} = 0.07 < 1$$

6. Safety against overturning, sliding and uplifting

The verification against overturning, sliding and lifting is determined according to NEN-EN 13782 (Temporary structures – Tents - Safety). A load combination factor of 1.2 is applied on the wind load.

6.1. Reaction forces

6.1.1 5x5 m frame

		Rx [kN]	Ry [kN]	Rxy [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	ST1	0.21	-1.92	1.93	-1.37	-1.23
Sn2/N3	ST1	-0.21	-1.90	1.91	-1.38	-1.24
Sn3/N7	ST1	-0.22	-1.27	1.29	0.43	0.58
Sn4/N5	ST1	0.22	-1.26	1.28	0.42	0.57

$$R_{xy} = \sqrt{R_x^2 + R_y^2}$$

Rx, Ry and Rz are the reaction forces obtained in SCIA-Engineer due to the self-weight of the frame, the self-weight of the membrane, the self-weight of the middle pole and the wind load. However, the resultant of reaction forces of the self-weight of the frame, the membrane and middle pole is equal to:

		Resultant [kN]
Self-weight frame	LC1	0.72
Self-weight membrane and middle pole	LC2	0.70

This means their total weight used for strength analysis is equal to 142 kg. However, information provided by Tentverkoop tells us that the 5x5 m pagoda tent has a total self-weight of 200 kg. The difference of $200 - 142 = 58\ kg$ is available for counterweight. This weight is evenly distributed over the four supports, so $58/4 \times 10^{-2} = 0.145\ kN$ per support.

Rz*: the resultant of vertical reaction forces including the additional available weight mentioned in paragraph 6.1: Rz* = Rz + 0.145.

6.1.2 4x4 m frame

		Rx [kN]	Ry [kN]	Rxy [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	ST1	0.22	-1.47	1.49	-1.18	-1.06
Sn2/N3	ST1	-0.21	-1.47	1.48	-1.2	-1.08
Sn3/N7	ST1	-0.22	-0.99	1.01	0.53	0.65
Sn4/N5	ST1	0.23	-0.98	1.01	0.53	0.65

The resultant of reaction forces of the self-weight of the frame, the membrane and middle pole is equal to:

		Resultant [kN]
Self-weight frame	LC1	0.61
Self-weight membrane and middle pole	LC2	0.54

This means their total weight used for strength analysis is equal to 115 kg. However, information provided by Tentverkoop tells us that the 4x4 m pagoda tent has a total self-weight of 163 kg. The difference of $163 - 115 = 48\ kg$ is available for counterweight. This weight is evenly distributed over the four supports, so $48/4 \times 10^{-2} = 0.12\ kN$ per support.

Rz*: the resultant of vertical reaction forces including the additional available weight mentioned in paragraph 6.1: Rz* = Rz + 0.12.

6.1.3 3x3 m frame

		Rx [kN]	Ry [kN]	Rxy [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	ST1	0.18	-1.00	1.02	-1.00	-0.88
Sn2/N3	ST1	-0.18	-1.00	1.02	-1.01	-0.89
Sn3/N7	ST1	-0.18	-0.69	0.71	0.53	0.65
Sn4/N5	ST1	0.18	-0.68	0.70	0.52	0.64

The resultant of reaction forces of the self-weight of the frame, the membrane and middle pole is equal to:

		Resultant [kN]
Self-weight frame	LC1	0.50
Self-weight membrane and middle pole	LC2	0.35

This means their total weight used for strength analysis is equal to 85 kg. However, information provided by Tentverkoop tells us that the 4x4 m pagoda tent has a total self-weight of 132.5 kg. The difference of $132.5 - 85 = 47.5\ kg$ is available for counterweight. This weight is evenly distributed over the four supports, so $47.5/4 \times 10^{-2} = 0.119\ kN$ per support.

Rz*: the resultant of vertical reaction forces including the additional available weight mentioned in paragraph 6.1: Rz* = Rz + 0.119.

6.2. Floor system

6.2.1 Heavy-load floor

The 5x5 m pagoda tent can be designed with two 2.5x5 m heavy-load floors. Together they have a self-weight of 840 kg. Both floors are not coupled to work as one plate to withstand the vertical reaction force. However, horizontally, the two heavy-load floors are considered to work as one plate. This means that for the vertical forces the floor needs to be verified locally, but for the horizontal forces the floor can be verified globally.

The friction coefficient $\mu = 0.6$ for a heavy-load floor on a concrete or asphalt subsurface. When the floor is combined with ground anchors this factor has to be reduced according to NEN-EN 13782 and becomes $\mu = 0.7 \times 0.6 = 0.42$.

6.2.2 Cassette floor

The 5x5 m pagoda tent can be designed with a 5x5 m cassette floor, which has a self-weight of 590 kg. This weight is used for counterweight. The 4x4 m and 3x3 m tents can also be designed with cassette floors ($G = 0.22\ kN/m^2$). These have a self-weight of:

4x4 m: $0.22 \times 16 \times 100 = 352\ kg$.
3x3 m: $0.22 \times 9 \times 100 = 198\ kg$.

The friction coefficient $\mu = 0.6$ for a cassette floor on a concrete or asphalt subsurface. When the floor is combined with ground anchors this factor has to be reduced according to NEN-EN 13782 and becomes $\mu = 0.7 \times 0.6 = 0.42$.

The cassette floor is constructed in such a way, that the floor works a one entire plate. Overall reaction forces may be applied.

6.3. Required amount of counterweight

The amount of concrete to provide sufficient counterweight is determined according to NEN-EN 13782 – paragraph 8.2.

The friction coefficient $\mu = 0.6$ for wood on concrete.

6.3.1 5x5 m pagoda tent without floor system

Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	μ	Gcxy [kg]	Gcz [kg]	Gctot [kg]
Sn1/N1	1.93	-1.37	-1.23	0.6	322	123	445

Gcxy: the required weight of concrete to prevent the tent from sliding.
Gcz: the required weight of concrete to prevent the tent from uplifting.
Gctot: the total required weight of concrete for the tent to stay in place.

The tent needs at least 445 kg of concrete on every corner to stay in place when standing on loam.

6.3.2 5x5 m pagoda tent with floor system

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.21	-1.92	-1.37	-1.23
Sn2/N3	-0.21	-1.90	-1.38	-1.24
Sn3/N7	-0.22	-1.27	0.43	0.58
Sn4/N5	0.22	-1.26	0.42	0.57
Total	0	-6.35	-1.90	-1.32

Heavy-load floor

The self-weight of the heavy-load floor is 840 kg. This means there is $840/8 = 105\ kg$ per corner available as counterweight for the vertical and horizontal reaction force. The required counterweight to balance the vertical reaction force is 132 kg. This means $840 - 132 = 708\ kg$ is available as counterweight for the horizontal reaction force, but as the governing support requires 124 kg counterweight to balance the vertical reaction force and only 105 kg is available there still is additional counterweight required.

The self-weight of the heavy-load floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.6 \times \frac{708}{100} = 4.25 < 6.35\ kN$$

The required additional weight of concrete to balance the horizontal reaction force is equal to:

$$G_y = 100 \times \frac{R_y}{\mu} = 100 \times \frac{6.35 - 4.25}{0.6} = 350\ kg$$

This weight must be evenly distributed over the four corners, so $350/4 = 88\ kg$ per corner to resist the horizontal reaction force. Additionally, $124 - 105 = 19\ kg$ counterweight per corner is required for the vertical reaction force, so in total $88 + 19 = 107\ kg$ counterweight must be placed at every corner for the tent to stay in place.

Cassette floor

The self-weight of the cassette floor is 590 kg. The required counterweight to balance the vertical reaction force is 132 kg. This means $590 - 132 = 458\ kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.6 \times \frac{458}{100} = 2.75 < 6.35\ kN$$

The required additional weight of concrete to balance the horizontal reaction force is equal to:

$$G_y = 100 \times \frac{R_y}{\mu} = 100 \times \frac{6.35 - 2.75}{0.6} = 600\ kg$$

This weight must be evenly distributed over the four corners, so $600/4 = 150\ kg$ per corner.

6.3.3 4x4 m pagoda tent without floor system

Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	μ	Gcxy [kg]	Gcz [kg]	Gctot [kg]
Sn2/N3	1.48	-1.20	-1.08	0.6	247	108	355

Gcxy: the required weight of concrete to prevent the tent from sliding.
Gcz: the required weight of concrete to prevent the tent from uplifting.
Gctot: the total required weight of concrete for the tent to stay in place.

The tent needs at least 355 kg of concrete on every corner to stay in place when standing on loam.

6.3.4 4x4 m pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.22	-1.47	-1.18	-1.06
Sn2/N3	-0.21	-1.47	-1.20	-1.08
Sn3/N7	-0.22	-0.99	0.53	0.65
Sn4/N5	0.23	-0.98	0.53	0.65
Total	0	-4.91	-1.32	-0.84

The self-weight of the cassette floor is 352 kg. The required counterweight to balance the vertical reaction force is 84 kg. This means $352 - 84 = 268\ kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.6 \times \frac{268}{100} = 1.61 < 4.91\ kN$$

The required additional weight of concrete to balance the horizontal reaction force is equal to:

$$G_y = 100 \times \frac{R_y}{\mu} = 100 \times \frac{4.91 - 1.61}{0.6} = 550\ kg$$

This weight must be evenly distributed over the four corners, so $550/4 = 138\ kg$ per corner.

6.3.5 3x3 m pagoda tent without floor system

Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	μ	Gcxy [kg]	Gcz [kg]	Gctot [kg]
Sn2/N3	1.02	-1.01	-0.89	0.6	170	89	259

Gcxy: the required weight of concrete to prevent the tent from sliding.
Gcz: the required weight of concrete to prevent the tent from uplifting.
Gctot: the total required weight of concrete for the tent to stay in place.

The tent needs at least 259 kg of concrete on every corner to stay in place when standing on loam.

6.3.6 3x3 m pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.18	-1.00	-1.00	-0.88
Sn2/N3	-0.18	-1.00	-1.01	-0.89
Sn3/N7	-0.18	-0.69	0.53	0.65
Sn4/N5	0.18	-0.68	0.52	0.64
Total	0	-3.37	-0.96	-0.48

The self-weight of the cassette floor is 198 kg. The required counterweight to balance the vertical reaction force is 48 kg. This means $198 - 48 = 150\ kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.6 \times \frac{150}{100} = 0.9 < 3.37\ kN$$

The required additional weight of concrete to balance the horizontal reaction force is equal to:

$$G_y = 100 \times \frac{R_y}{\mu} = 100 \times \frac{3.37 - 0.9}{0.6} = 412\ kg$$

This weight must be evenly distributed over the four corners, so $412/4 = 103\ kg$ per corner.

6.3.7 5x5 m 4x pagoda tent without floor system

Column	Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	μ	Gcxy [kg]	Gcz [kg]	Gctot [kg]
Out middle	Sn9/N19	1.63	-1.39	-1.25	0.6	272	125	397
Out corner	Sn1/N1	1.62	-0.84	-0.70	0.6	270	70	340
Inner	Sn6/N12	0.78	-1.13	0.99	0.6	130	99	229

Gcxy: the required weight of concrete to prevent the tent from sliding.
Gcz: the required weight of concrete to prevent the tent from uplifting.
Gctot: the total required weight of concrete for the tent to stay in place.

The tent needs at least 397 kg counterweight at every outer middle column, 340 kg at every outer corner column and 229 kg at every inner column to stay in place.

6.3.8 5x5 m 4x pagoda tent with floor system

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.52	-1.53	-0.84	-0.70
Sn2/N3	0.39	-1.57	-1.39	-1.25
Sn3/N7	0.33	-0.80	-0.07	0.08
Sn4/N5	0.48	-0.73	0.41	0.56
Sn5/N10	0.52	-0.66	-0.59	-0.45
Sn6/N12	0.37	-0.69	-1.13	-0.99
Sn7/N14	0.49	-0.77	0.16	0.31
Sn8/N16	0.34	-0.80	-0.33	-0.19
Sn9/N19	-0.39	-1.58	-1.39	-1.25
Sn10/N21	-0.52	-1.51	-0.85	-0.71
Sn11/N23	-0.31	-0.79	-0.07	0.08
Sn12/N25	-0.47	-0.75	0.41	0.56
Sn13/N28	-0.37	-0.69	-1.13	-0.99
Sn14/N30	-0.52	-0.66	-0.60	-0.46
Sn15/N32	-0.33	-0.80	-0.33	-0.19
Sn16/N34	-0.48	-0.77	0.16	0.31
Total	0	-15.10	-7.58	-5.26

Heavy-load floor

The self-weight of the heavy-load floor is 840 kg. This means there is $840/8 = 105\ kg$ per corner available as counterweight for the vertical and horizontal reaction force. The required counterweight to balance the vertical reaction force is 526 kg. This means $4 \times 840 - 526 = 2834\ kg$ is available as counterweight for the horizontal reaction force, but as the governing support requires 125 kg counterweight to balance the vertical reaction force and only 105 kg is available there still is additional counterweight required.

The self-weight of the heavy-load floors is sufficient to prevent horizontal movement:

$$R_y = \gamma \times \frac{G_y}{100} = 0.6 \times \frac{2834}{100} = 17.00 > 15.10\ kN$$

The outer middle supports are governing for the vertical reaction forces. At all these supports, $125 - 105 = 20\ kg$ counterweight must be placed.

This 20 kg counterweight is negligible.

Cassette floor

The self-weight of the cassette floor is 590 kg. The required counterweight to balance the vertical reaction force is 526 kg. This means $4 \times 590 - 526 = 1834\ kg$ is available as counterweight for the horizontal reaction force. The required counterweight to prevent horizontal movement is:

$$\frac{15.10}{0.6} \times 100 = 2517\ kg$$

So $2517 - 1834 = 683\ kg$ additional counterweight is required to prevent horizontal movement, which must be evenly distributed over the supports.

6.3.9 4x4 m 4x pagoda tent without floor system

Column	Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	μ	Gcxy [kg]	Gcz [kg]	Gctot [kg]
Out middle	Sn2/N3	1.26	-1.21	-1.09	0.6	210	109	319
Out corner	Sn1/N1	1.28	-0.69	-0.57	0.6	213	57	270
Inner	Sn6/N12	0.54	-0.96	-0.84	0.6	90	84	174

Gcxy: the required weight of concrete to prevent the tent from sliding.
Gcz: the required weight of concrete to prevent the tent from uplifting.
Gctot: the total required weight of concrete for the tent to stay in place.

The tent needs at least 319 kg counterweight at every outer middle column, 270 kg at every outer corner column and 174 kg at every inner column to stay in place.

6.3.10 4x4 m 4x pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.45	-1.20	-0.69	-0.57
Sn2/N3	0.28	-1.23	-1.21	-1.09
Sn3/N7	0.24	-0.58	0.06	0.18
Sn4/N5	0.42	-0.54	0.52	0.64
Sn5/N10	0.45	-0.45	-0.45	-0.33
Sn6/N12	0.27	-0.47	-0.96	-0.84
Sn7/N14	0.43	-0.61	0.28	0.40
Sn8/N16	0.25	-0.63	-0.19	-0.07
Sn9/N19	-0.27	-1.23	-1.20	-1.08
Sn10/N21	-0.45	-1.19	-0.70	-0.58
Sn11/N23	-0.23	-0.58	0.06	0.18
Sn12/N25	-0.41	-0.55	0.52	0.64
Sn13/N28	-0.26	-0.47	-0.95	-0.83
Sn14/N30	-0.44	-0.45	-0.46	-0.34
Sn15/N32	-0.24	-0.63	-0.18	-0.06
Sn16/N34	-0.42	-0.61	0.28	0.40
Total	0	-11.42	-5.27	-3.35

The self-weight of the cassette floor is 352 kg. The required counterweight to balance the vertical reaction force is 335 kg. This means $4 \times 352 - 335 = 1073\ kg$ is available as counterweight for the horizontal reaction force. The required counterweight to prevent horizontal movement is:

$$\frac{11.42}{0.6} \times 100 = 1903\ kg$$

So $1903 - 1073 = 830\ kg$ additional counterweight is required to prevent horizontal movement, which must be evenly distributed over the supports

6.3.11 3x3 m 4x pagoda tent without floor system

Column	Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	μ	Gcxy [kg]	Gcz [kg]	Gctot [kg]
Out middle	Sn2/N3	0.87	-1.01	-0.89	0.6	145	89	234
Out corner	Sn10/N21	0.89	-0.57	-0.45	0.6	148	45	193
Inner	Sn6/N12	0.34	-0.80	-0.68	0.6	57	68	125

Gcxy: the required weight of concrete to prevent the tent from sliding.
Gcz: the required weight of concrete to prevent the tent from uplifting.
Gctot: the total required weight of concrete for the tent to stay in place.

The tent needs at least 234 kg counterweight at every outer middle column, 193 kg at every outer corner column and 125 kg at every inner column to stay in place.

6.3.12 3x3 m 4x pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.33	-0.83	-0.57	-0.45
Sn2/N3	0.17	-0.85	-1.01	-0.89
Sn3/N7	0.15	-0.38	0.11	0.23
Sn4/N5	0.31	-0.36	0.52	0.64
Sn5/N10	0.33	-0.28	-0.36	-0.24
Sn6/N12	0.17	-0.29	-0.80	-0.68
Sn7/N14	0.31	-0.43	0.31	0.43
Sn8/N16	0.16	-0.44	-0.10	0.02
Sn9/N19	-0.17	-0.85	-1.01	-0.89
Sn10/N21	-0.33	-0.83	-0.57	-0.45
Sn11/N23	-0.15	-0.38	0.11	0.23
Sn12/N25	-0.31	-0.36	0.52	0.64
Sn13/N28	-0.17	-0.29	-0.79	-0.67
Sn14/N30	-0.33	-0.28	-0.37	-0.25
Sn15/N32	-0.16	-0.44	-0.10	0.02
Sn16/N34	-0.32	-0.43	0.31	0.43
Total	0.00	-7.72	-3.80	-1.90

The self-weight of the cassette floor is 198 kg. The required counterweight to balance the vertical reaction force is 190 kg. This means $4 \times 198 - 190 = 602\ kg$ is available as counterweight for the horizontal reaction force. The required counterweight to prevent horizontal movement is:

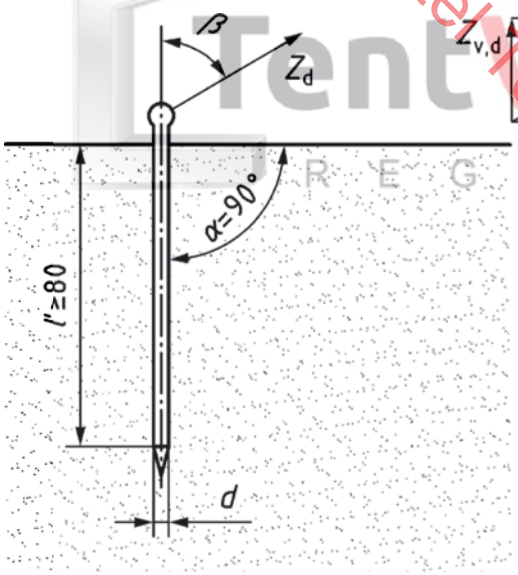
$$\frac{7.72}{0.6} \times 100 = 1287\ kg$$

So $1287 - 602 = 685\ kg$ additional counterweight is required to prevent horizontal movement.

6.4. Required number of ground anchors

The number of required ground anchors is determined according to NEN-EN 13782 – chapter 9. Rod anchors with a diameter of 25 and a depth of penetration of 0.8 m are used in the calculation. The soil is assumed to be dense but cohesionless.

$\beta = 0° \rightarrow Z_d = f_0 \times d \times l' = 6.5 \times d \times l'$
$\beta \geq 45° \rightarrow Z_d = f_{45} \times d \times l' = 17 \times d \times l'$
$0° < \beta < 45° \rightarrow Z_d = f_0 + \frac{f_{45} - f_0}{45} \times \beta$



6.4.1 5x5 m pagoda tent without floor system

Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
Sn1/N1	1.93	-1.37	-1.23	2.29	57	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground on every corner to provide sufficient counterweight for the 5x5 pagoda tent.

6.4.2 5x5 m pagoda tent with floor system

	Rx [kN]	Ry [kN]	Rxy [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.21	-1.92	1.93	-1.37	-1.23
Sn2/N3	-0.21	-1.90	1.91	-1.38	-1.24
Sn3/N7	-0.22	-1.27	1.29	0.43	0.58
Sn4/N5	0.22	-1.26	1.28	0.42	0.57
Total	0	-6.35	6.41	-1.90	-1.32

Heavy-load floor

The self-weight of the heavy-load floor is 840 kg. This means there is $840/8 = 105\ kg$ per corner available as counterweight for the vertical and horizontal reaction force. The required counterweight to balance the vertical reaction force is 132 kg. This means $840 - 132 = 708\ kg$ is available as counterweight for the horizontal reaction force, but as the governing support requires 124 kg counterweight to balance the vertical reaction force and only 105 kg is available the remaining part $(124 - 105 = 19\ kg)$ must be resisted by anchors.

The self-weight of the heavy-load floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{708}{100} = 2.97 < 6.35\ kN$$

This means a total horizontal force of $6.35 - 2.97 = 3.38\ kN$ must be withstand by anchors.

Fh [kN]	Fv [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
0.85	0.19	0.87	77	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground on every corner to provide sufficient counterweight for the 5x5 m pagoda tent.

Cassette floor

The self-weight of the cassette floor is 590 kg. The required counterweight to balance the vertical reaction force is 132 kg. This means $590 - 132 = 458\ kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{458}{100} = 1.92 < 6.35\ kN$$

This means a total horizontal force of $6.35 - 1.92 = 4.43\ kN$ must be withstand by anchors.

Ftot [kN]	β [°]	f	Zd [kN]	# anchors
1.17	90	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground on every corner to provide sufficient counterweight for the 5x5 m pagoda tent.

6.4.3 4x4 m pagoda tent without floor system

Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
Sn2/N3	1.48	-1.20	-108	1.91	51	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground on every corner to provide sufficient counterweight for the 4x4 m pagoda tent.

6.4.4 4x4 m pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rxy [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.22	-1.47	1.49	-1.18	-1.06
Sn2/N3	-0.21	-1.47	1.48	-1.20	-1.08
Sn3/N7	-0.22	-0.99	1.01	0.53	0.65
Sn4/N5	0.23	-0.98	1.01	0.53	0.65
Total	0.02	-4.91	4.99	-1.32	-0.84

The self-weight of the cassette floor is 352 kg. The required counterweight to balance the vertical reaction force is 84 kg. This means $352 - 84 = 268 kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{268}{100} = 1.13 < 4.91\ kN$$

This means a total horizontal force of $4.91 - 1.13 = 3.78\ kN$ must be withstand by anchors.

Ftot [kN]	β [°]	f	Zd [kN]	# anchors
0.95	90	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground on every corner to provide sufficient counterweight for the 4x4 m pagoda tent.

6.4.5 3x3 m pagoda tent without floor system

Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
Sn2/N3	1.02	-1.01	-0.89	1.35	49	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground on every corner to provide sufficient counterweight for the 3x3 m pagoda tent.

6.4.6 3x3 m pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rxy [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.18	-1.00	1.02	-1.00	-0.88
Sn2/N3	-0.18	-1.00	1.02	-1.01	-0.89
Sn3/N7	-0.18	-0.69	0.71	0.53	0.65
Sn4/N5	0.18	-0.68	0.70	0.52	0.64
Total	0.00	-3.37	3.45	-0.96	-0.48

The self-weight of the cassette floor is 198 kg. The required counterweight to balance the vertical reaction force is 48 kg. This means $198 - 48 = 150\ kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floor is not sufficient to hold the tent in place:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{150}{100} = 0.63 < 3.37\ kN$$

This means a total horizontal force of $3.37 - 0.63 = 2.74\ kN$ must be withstand by anchors.

Ftot [kN]	β [°]	f	Zd [kN]	# anchors
0.69	90	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground on every corner to provide sufficient counterweight for the 3x3 m pagoda tent.

6.4.7 5x5 m 4x pagoda tent without floor system

Column	Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
Out middle	Sn9/N19	1.63	-1.39	-1.25	2.05	53	17	3.40	1
Out corner	Sn1/N1	1.62	-0.84	-0.70	1.76	67	17	3.40	1
Inner	Sn6/N12	0.57	-0.93	-0.79	0.97	36	15	3.00	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground at every column to provide sufficient counterweight for the tent.

6.4.8 5x5 m 4x pagoda tent with floor system

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.52	-1.53	-0.84	-0.70
Sn2/N3	0.39	-1.57	-1.39	-1.25
Sn3/N7	0.33	-0.80	-0.07	0.08
Sn4/N5	0.48	-0.73	0.41	0.56
Sn5/N10	0.52	-0.66	-0.59	-0.45
Sn6/N12	0.37	-0.69	-1.13	-0.99
Sn7/N14	0.49	-0.77	0.16	0.31
Sn8/N16	0.34	-0.80	-0.33	-0.19
Sn9/N19	-0.39	-1.58	-1.39	-1.25
Sn10/N21	-0.52	-1.51	-0.85	-0.71
Sn11/N23	-0.31	-0.79	-0.07	0.08
Sn12/N25	-0.47	-0.75	0.41	0.56
Sn13/N28	-0.37	-0.69	-1.13	-0.99
Sn14/N30	-0.52	-0.66	-0.60	-0.46
Sn15/N32	-0.33	-0.80	-0.33	-0.19
Sn16/N34	-0.48	-0.77	0.16	0.31
Total	0	-15.10	-7.58	-5.26

Heavy-load floor

The self-weight of the heavy-load floor is 840 kg. This means there is $840/8 = 105\ kg$ per corner available as counterweight for the vertical and horizontal reaction force. The required counterweight to balance the vertical reaction force is 526 kg. This means $4 \times 840 - 526 = 2834\ kg$ is available as counterweight for the horizontal reaction force, but as the governing support requires 125 kg counterweight to balance the vertical reaction force and only 105 kg is available the remaining part $(125 - 105 = 19\ kg)$ must be resisted by anchors.

The self-weight of the heavy-load floors is not sufficient to prevent horizontal movement:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{2834}{100} = 11.90 < 15.10\ kN$$

This means a total horizontal force of $15.10 - 11.90 = 3.20\ kN$ must be withstand by anchors.

The outer middle supports are governing for the vertical reaction forces and the heavy-load floor does not prevent vertical movement: $1.25 - 1.05 = 0.2\ kN$ must be withstand by anchors.

Fh [kN]	Fv [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
0.8	0.2	0.82	76	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground at every outer middle support.

Cassette floor

The self-weight of the cassette floor is 590 kg. The required counterweight to balance the vertical reaction force is 526 kg. This means $4 \times 590 - 526 = 1834\ kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floors is not sufficient to prevent horizontal movement:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{1834}{100} = 7.70 < 15.10\ kN$$

This means a total horizontal force of $15.10 - 7.70 = 7.4\ kN$ must be withstand by anchors.

Ftot [kN]	β [°]	f	Zd [kN]	# anchors
1.85	90	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground at every outer corner column.

6.4.9 4x4 m 4x pagoda tent without floor system

Column	Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
Out middle	Sn2/N3	1.26	-1.21	-1.09	1.67	49	17	3.40	1
Out corner	Sn1/N1	1.28	-0.69	-0.57	1.40	66	17	3.40	1
Inner	Sn6/N12	0.54	-0.96	-0.84	1.00	33	14	2.8	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground at every column to provide sufficient counterweight for the tent.

6.4.10 4x4 m 4x pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.45	-1.20	-0.69	-0.57
Sn2/N3	0.28	-1.23	-1.21	-1.09
Sn3/N7	0.24	-0.58	0.06	0.18
Sn4/N5	0.42	-0.54	0.52	0.64
Sn5/N10	0.45	-0.45	-0.45	-0.33
Sn6/N12	0.27	-0.47	-0.96	-0.84
Sn7/N14	0.43	-0.61	0.28	0.40
Sn8/N16	0.25	-0.63	-0.19	-0.07
Sn9/N19	-0.27	-1.23	-1.20	-1.08
Sn10/N21	-0.45	-1.19	-0.70	-0.58
Sn11/N23	-0.23	-0.58	0.06	0.18
Sn12/N25	-0.41	-0.55	0.52	0.64
Sn13/N28	-0.26	-0.47	-0.95	-0.83
Sn14/N30	-0.44	-0.45	-0.46	-0.34
Sn15/N32	-0.24	-0.63	-0.18	-0.06
Sn16/N34	-0.42	-0.61	0.28	0.40
Total	0	-11.42	-5.27	-3.35

The self-weight of the cassette floor is 352 kg. The required counterweight to balance the vertical reaction force is 335 kg. This means $4 \times 352 - 335 = 1073\ kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floors is not sufficient to prevent horizontal movement:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{1073}{100} = 4.51 < 11.42\ kN$$

This means a total horizontal force of $11.42 - 4.51 = 6.91\ kN$ must be withstand by anchors.

Ftot [kN]	β [°]	f	Zd [kN]	# anchors
1.73	90	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground at every outer corner column.

6.4.11 3x3 m 4x pagoda tent without floor system

Column	Governing support	Rxy [kN]	Rz [kN]	Rz* [kN]	Ftot [kN]	β [°]	f	Zd [kN]	# anchors
Out middle	Sn2/N3	0.87	-1.01	-0.89	1.24	44	17	3.4	1
Out corner	Sn10/N21	0.89	-0.57	-0.45	1.00	63	17	3.4	1
Inner	Sn6/N12	0.34	-0.80	-0.68	0.76	27	13	2.6	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground at every column to provide sufficient counterweight for the 4x4 m pagoda tent.

6.4.12 3x3 m 4x pagoda tent with cassette floor

	Rx [kN]	Ry [kN]	Rz [kN]	Rz* [kN]
Sn1/N1	0.33	-0.83	-0.57	-0.45
Sn2/N3	0.17	-0.85	-1.01	-0.89
Sn3/N7	0.15	-0.38	0.11	0.23
Sn4/N5	0.31	-0.36	0.52	0.64
Sn5/N10	0.33	-0.28	-0.36	-0.24
Sn6/N12	0.17	-0.29	-0.80	-0.68
Sn7/N14	0.31	-0.43	0.31	0.43
Sn8/N16	0.16	-0.44	-0.10	0.02
Sn9/N19	-0.17	-0.85	-1.01	-0.89
Sn10/N21	-0.33	-0.83	-0.57	-0.45
Sn11/N23	-0.15	-0.38	0.11	0.23
Sn12/N25	-0.31	-0.36	0.52	0.64
Sn13/N28	-0.17	-0.29	-0.79	-0.67
Sn14/N30	-0.33	-0.28	-0.37	-0.25
Sn15/N32	-0.16	-0.44	-0.10	0.02
Sn16/N34	-0.32	-0.43	0.31	0.43
Total	0.00	-7.72	-3.80	-1.90

The self-weight of the cassette floor is 198 kg. The required counterweight to balance the vertical reaction force is 190 kg. This means $4 \times 198 - 190 = 602\,kg$ is available as counterweight for the horizontal reaction force.

The self-weight of the cassette floors is not sufficient to prevent horizontal movement:

$$R_y = \gamma \times \frac{G_y}{100} = 0.42 \times \frac{602}{100} = 2.53 < 7.72\ kN$$

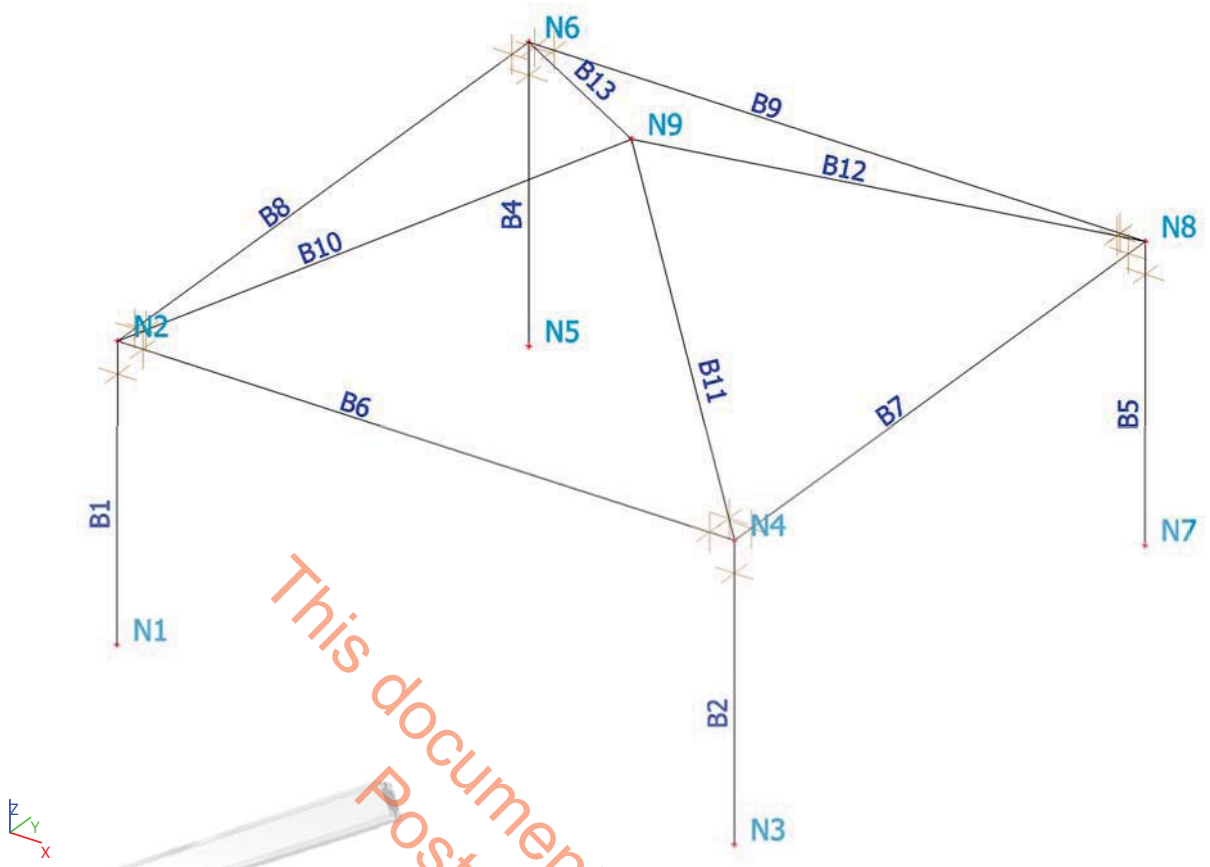
This means a total horizontal force of $7.72 - 2.53 = 5.19\ kN$ must be withstand by anchors.

Ftot [kN]	β [°]	f	Zd [kN]	# anchors
1.30	90	17	3.40	1

A single rod anchor with a diameter of 25 mm must be penetrated at least 0.8 m into the ground at every outer corner column.

Annex A: SCIA-Engineer results

1. Geometry 5x5 m



2. Nodes

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N1	0.000	0.000	0.000
N2	0.000	0.000	2.300
N3	4.900	0.000	0.000
N4	4.900	0.000	2.300
N5	0.000	4.900	0.000
N6	0.000	4.900	2.300
N7	4.900	4.900	0.000
N8	4.900	4.900	2.300
N9	2.450	2.450	3.500

3. Members

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B1	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N1	N2	column (100)
B2	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N3	N4	column (100)
B4	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N5	N6	column (100)
B5	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N7	N8	column (100)
B6	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N2	N4	beam (80)
B7	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N4	N8	beam (80)
B8	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N2	N6	beam (80)
B9	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N6	N8	beam (80)
B10	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N2	N9	beam (80)
B11	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N4	N9	beam (80)
B12	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N9	N8	beam (80)
B13	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N9	N6	beam (80)

4. Nodal supports

Name	Node	System	Type	X	Y	Z	Rx	Ry	Rz
Sn1	N1	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn2	N3	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn3	N7	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn4	N5	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free

5. Hinges

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H1	B10	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H2	B11	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H3	B12	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H4	B13	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

6. Section on beam

Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB1	B1	Abso	0.270	From end	1
SB2	B2	Abso	0.270	From end	1
SB3	B5	Abso	0.270	From end	1
SB4	B4	Abso	0.270	From end	1
SB5	B6	Abso	0.220	From end	1
SB6	B7	Abso	0.220	From end	1
SB7	B9	Abso	0.220	From end	1
SB8	B8	Abso	0.220	From end	1
SB9	B6	Abso	0.220	From start	1
SB10	B7	Abso	0.220	From start	1
SB11	B9	Abso	0.220	From start	1
SB12	B8	Abso	0.220	From start	1
SB13	B10	Abso	0.200	From start	1
SB14	B11	Abso	0.200	From start	1
SB15	B12	Abso	0.200	From end	1
SB16	B13	Abso	0.200	From end	1

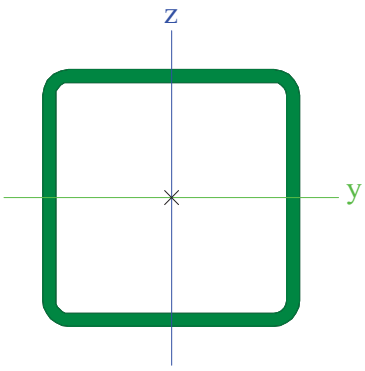
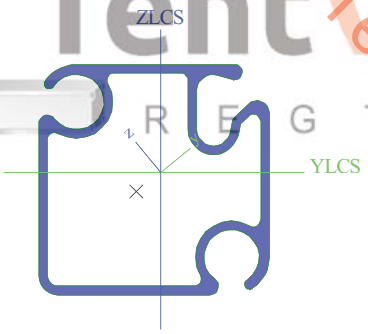
7. Materials

Aluminium

Name Type	ρ [kg/m³]	E_{mod} [MPa] G_{mod} [MPa]	μ α [m/mK]	0.2% proof strength (fo) [MPa] 0.2% proof strength (fo,haz) [MPa] n-value for plastic analysis (np)
EN-AW 6005A (EP/H,ET) T6 (0-5) Aluminium	2700.0	7.0000e+04 2.6923e+04	0.3 0.00	215.0 115.0 26
EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5) Aluminium	2700.0	7.0000e+04 2.6923e+04	0.3 0.00	250.0 125.0 32

8. Cross-sections

CS4		
Type	CFRHS40X40X2	
Formcode	2 - Rectangular hollow sections	
Shape type	Thin-walled	
Item material	EN-AW 6005A (EP/H,ET) T6 (0-5)	
Fabrication	cold formed	
Colour		
A [m^2]	2.9400e-04	
A_y [m^2], A_z [m^2]	1.4675e-04	1.4675e-04
A_L [m^2/m], A_D [m^2/m]	1.5300e-01	2.9365e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	20	20
α [deg]	0.00	
I_y [m^4], I_z [m^4]	6.9400e-08	6.9400e-08
i_y [mm], i_z [mm]	15	15
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	3.4700e-06	3.4700e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	4.1300e-06	4.1300e-06
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	8.88e+02	8.88e+02
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	8.88e+02	8.88e+02
d_y [mm], d_z [mm]	0	0
I_t [m^4], I_w [m^6]	1.1280e-07	1.7067e-11
β_y [mm], β_z [mm]	0	0

Picture		
CS5_2.4 buiten		
Type	General cross-section	
Shape type	Thin-walled	
Item material	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	
Fabrication	general	
Colour		
A [m^2]	7.9433e-04	
A_y [m^2], A_z [m^2]	6.8131e-04	5.6117e-04
A_L [m^2/m], A_D [m^2/m]	3.5566e-01	5.9812e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	2	2
$I_{Y.LCS}$ [m^4], $I_{Z.LCS}$ [m^4]	4.0241e-07	3.9486e-07
$I_{YZ.LCS}$ [m^4]	-1.7580e-08	
α [deg]	38.94	
I_y [m^4], I_z [m^4]	4.1661e-07	3.8065e-07
i_y [mm], i_z [mm]	23	22
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	1.0154e-05	8.4242e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	1.5959e-05	1.4593e-05
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	3.99e+03	3.99e+03
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	3.65e+03	3.65e+03
d_y [mm], d_z [mm]	-8	0
I_t [m^4], I_w [m^6]	2.9911e-07	4.0979e-11
β_y [mm], β_z [mm]	-1	8
Picture		

Explanations of symbols	
Formcode	h - Height b - Width s - Thickness r - Outer radius r1 - Inner radius
A	Area
A_y	Shear Area in principal y-direction
A_z	Shear Area in principal z-direction
A_L	Circumference per unit length
A_D	Drying surface per unit length
$c_{Y.UCS}$	Centroid coordinate in Y-direction of Input axis system
$c_{Z.UCS}$	Centroid coordinate in Z-direction of Input axis system
$I_{Y.LCS}$	Second moment of area about the YLCS axis
$I_{Z.LCS}$	Second moment of area about the ZLCS axis
$I_{YZ.LCS}$	Product moment of area in the LCS system
α	Rotation angle of the principal axis system
I_y	Second moment of area about the principal y-axis
I_z	Second moment of area about the principal z-axis

Explanations of symbols	
i_y	Radius of gyration about the principal y-axis
i_z	Radius of gyration about the principal z-axis
$W_{el.y}$	Elastic section modulus about the principal y-axis
$W_{el.z}$	Elastic section modulus about the principal z-axis
$W_{pl.y}$	Plastic section modulus about the principal y-axis
$W_{pl.z}$	Plastic section modulus about the principal z-axis
$M_{pl.y.+}$	Plastic moment about the principal y-axis for a positive My moment
$M_{pl.y.-}$	Plastic moment about the principal y-axis for a negative My moment
$M_{pl.z.+}$	Plastic moment about the principal z-axis for a positive Mz moment
$M_{pl.z.-}$	Plastic moment about the principal z-axis for a negative Mz moment
d_y	Shear center coordinate in principal y-direction measured from the centroid
d_z	Shear center coordinate in principal z-direction measured from the centroid

Explanations of symbols	
I_t	Torsional constant

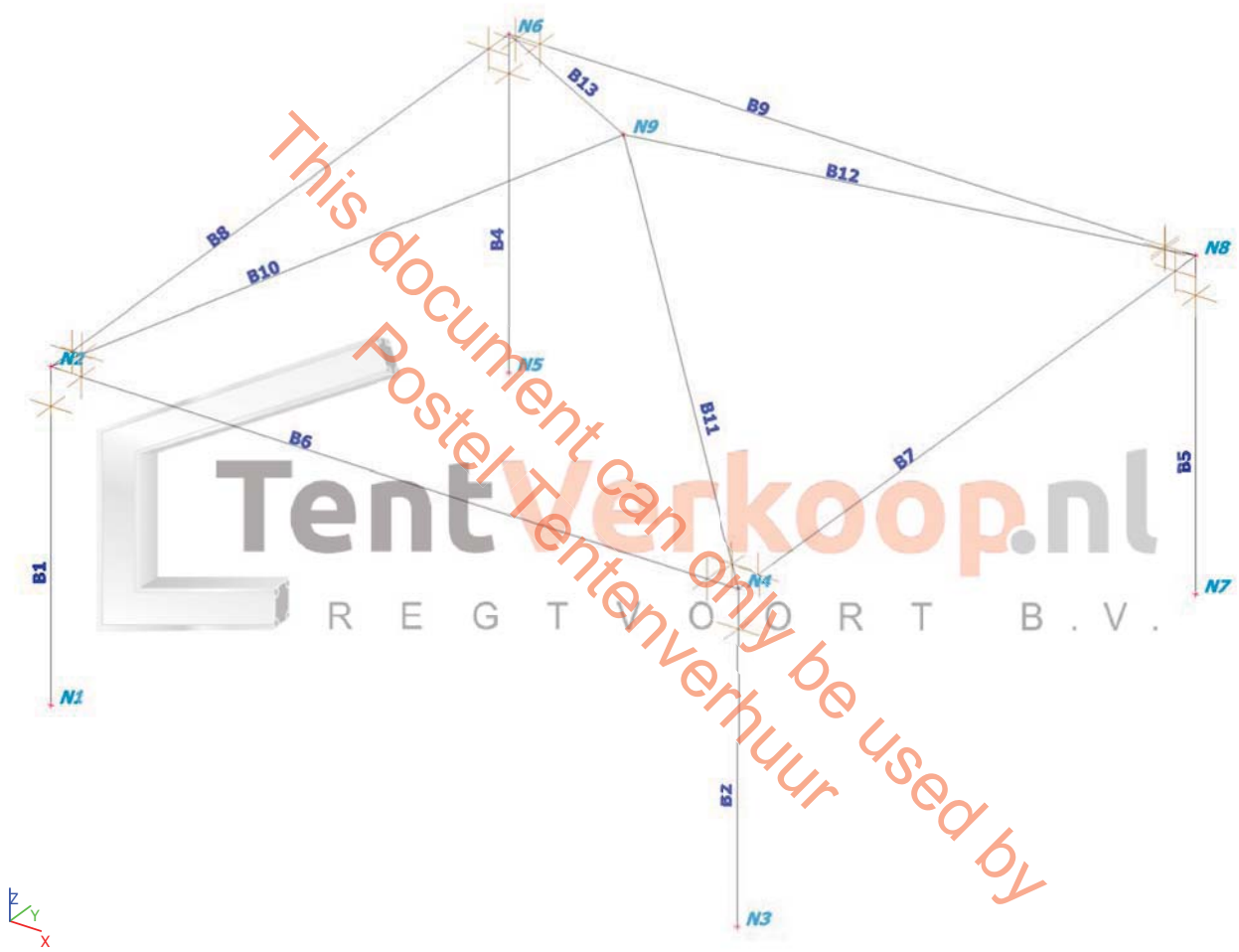
Explanations of symbols	
I_w	Warping constant
β_y	Mono-symmetry constant about the principal y-axis
β_z	Mono-symmetry constant about the principal z-axis

9. Load cases

9.1. Load cases - LC1

Name	Description	Action type	LoadGroup	Direction
	Spec	Load type		
LC1	self weight	Permanent	LG1	-Z
		Self weight		

9.1.1. Load picture



9.2. Load cases - LC2

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC2	membrane self weight	Variable	LG3	Short	None
	Standard	Static			

9.2.1. Line force

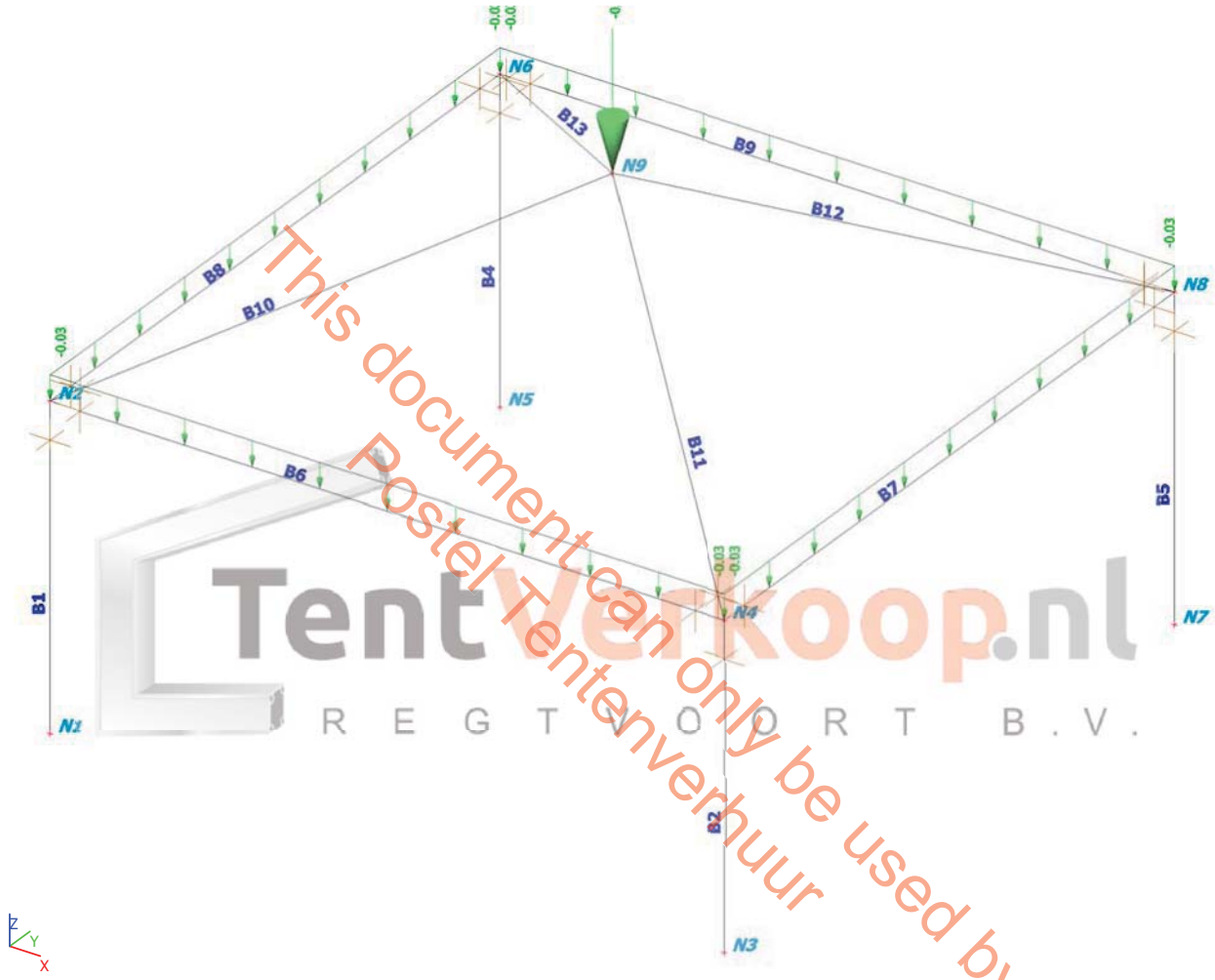
Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF42	B6	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF43	B7	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF44	B9	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF45	B8	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000

9.2.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F2	N9	LC2 - membrane self weight	GCS	Z	Force	-0.11

9.2.3. Load picture



9.3. Load cases - LC3

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC3	wind and prestress	Variable	LG3	Short	None
	Standard	Static			

9.3.1. Line force

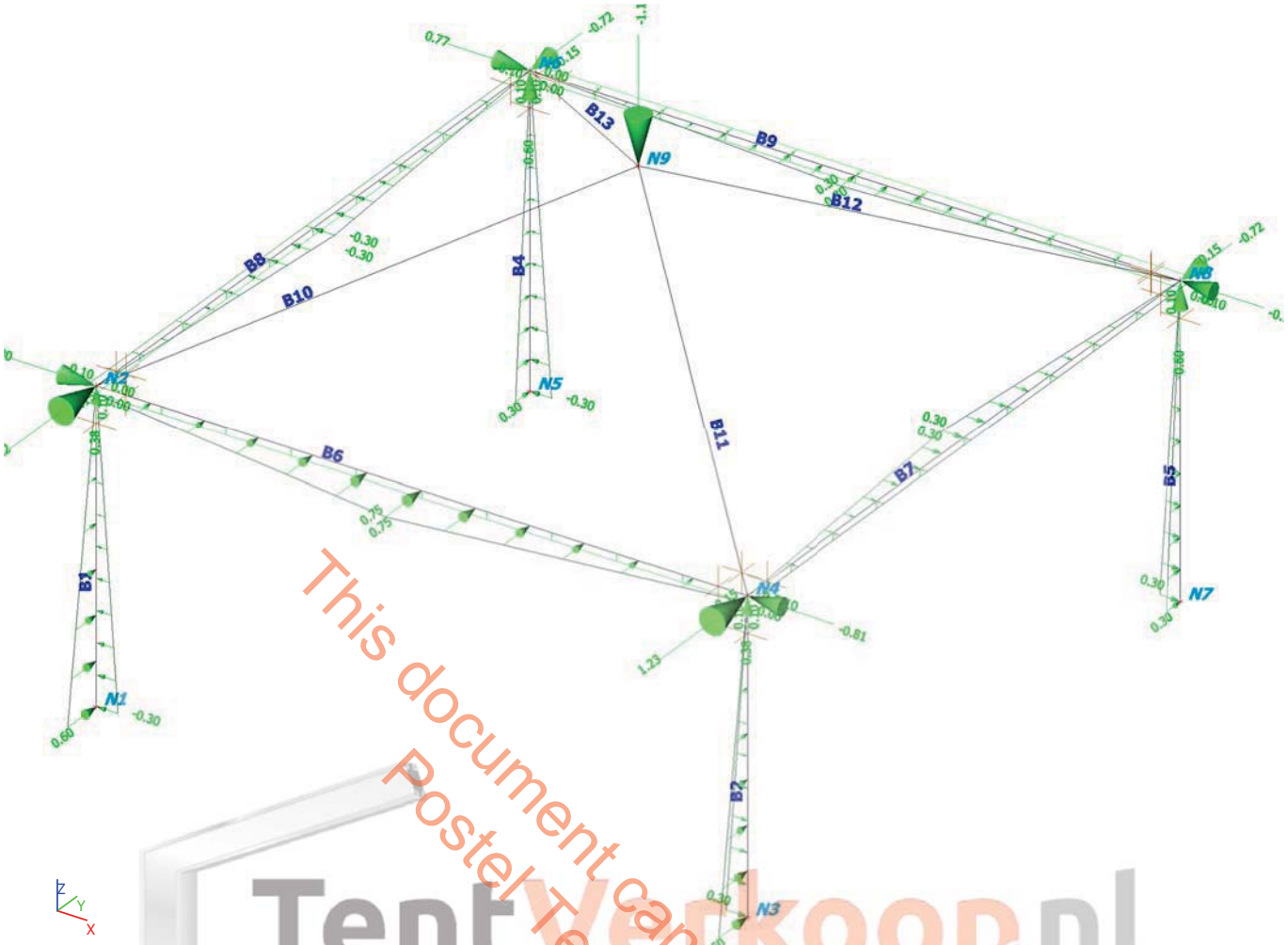
Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF17	B1	Force	Y	0.60	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF18	B2	Force	Y	0.60	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF19	B4	Force	Y	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF20	B5	Force	Y	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF21	B2	Force	X	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF22	B5	Force	X	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF23	B1	Force	X	-0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF24	B4	Force	X	-0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF25	B8	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.30	0.500	Length		0.000
LF26	B7	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF27	B6	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.75	0.500	Length		0.000
LF29	B7	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF31	B8	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF32	B6	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF33	B8	Force	X	-0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF34	B7	Force	X	0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF35	B7	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.30	0.500	Length		0.000
LF36	B6	Force	Y	0.75	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF37	B9	Force	Y	0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF38	B9	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.30	0.500	Length		0.000
LF39	B9	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF40	B8	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF41	B9	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000

9.3.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F4	N4	LC3 - wind and prestress	GCS	Z	Force	0.38
F5	N2	LC3 - wind and prestress	GCS	Z	Force	0.38
F6	N8	LC3 - wind and prestress	GCS	Z	Force	0.60
F7	N6	LC3 - wind and prestress	GCS	Z	Force	0.60
F8	N2	LC3 - wind and prestress	GCS	Y	Force	1.22
F9	N4	LC3 - wind and prestress	GCS	Y	Force	1.23
F10	N6	LC3 - wind and prestress	GCS	Y	Force	-0.72
F11	N8	LC3 - wind and prestress	GCS	Y	Force	-0.72
F12	N2	LC3 - wind and prestress	GCS	X	Force	0.80
F13	N6	LC3 - wind and prestress	GCS	X	Force	0.77
F14	N4	LC3 - wind and prestress	GCS	X	Force	-0.81
F15	N8	LC3 - wind and prestress	GCS	X	Force	-0.77
F16	N9	LC3 - wind and prestress	GCS	Z	Force	-1.16

9.3.3. Load picture



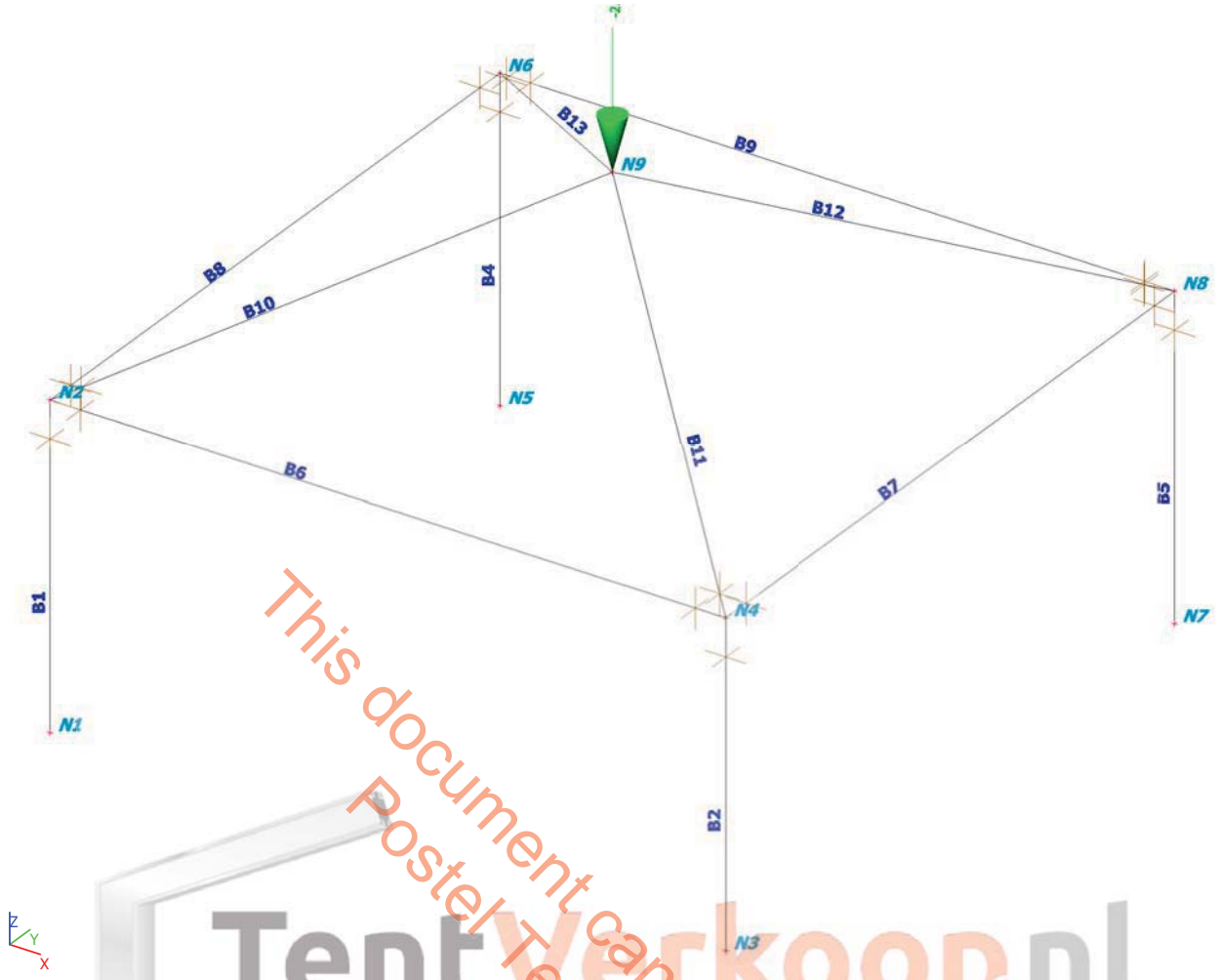
9.4. Load cases - LC4

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC4	equivalent load	Variable	LG3	Short	None
	Standard	Static			

9.4.1. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F1	N9	LC4 - equivalent load	GCS	Z	Force	-2.50

9.4.2. Load picture



10. Nonlinear combinations

Name	Type	Load cases	Coeff. [-]
NC1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.50
NC2	Ultimate	LC1 - self weight	1.35
		LC2 - membrane self weight	1.35
		LC4 - equivalent load	1.35
ST1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.20

11. Internal forces on member

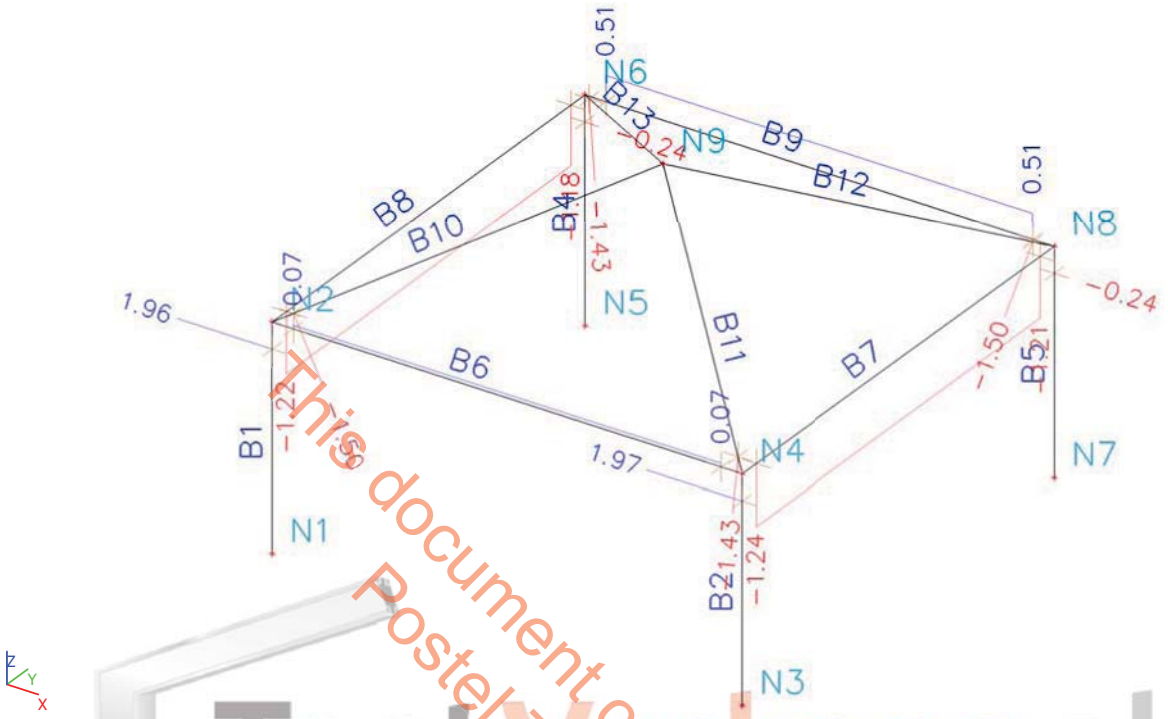
Nonlinear calculation, Extreme : Section, System : LCS
Selection : All
Nonlinear combinations : NC1

Member	css	dx [m]	Case	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
B1	CS5_2.4 buiten - General cross-section	0.000	NC1	**2.28**	**-1.96**	**-0.08**	**0.00**	**0.00**	**0.00**
B1	CS5_2.4 buiten - General cross-section	2.030	NC1	**1.96**	**-1.16**	**0.36**	**0.03**	**0.34**	**-2.90**
B1	CS5_2.4 buiten - General cross-section	2.030	NC1	**1.96**	**-1.16**	**0.36**	**0.03**	**0.34**	**-2.90**
B1	CS5_2.4 buiten - General cross-section	2.300	NC1	**1.92**	**-1.21**	**0.36**	**0.03**	**0.43**	**-3.22**
B2	CS5_2.4 buiten - General cross-section	0.000	NC1	**2.28**	**-1.94**	**0.11**	**0.00**	**0.00**	**0.00**
B2	CS5_2.4 buiten - General cross-section	2.030	NC1	**1.97**	**-1.14**	**-0.34**	**0.00**	**-0.32**	**-2.86**
B2	CS5_2.4 buiten - General cross-section	2.030	NC1	**1.97**	**-1.14**	**-0.34**	**0.00**	**-0.32**	**-2.86**
B2	CS5_2.4 buiten -	2.300	NC1	**1.94**	**-1.19**	**-0.37**	**-0.03**	**-0.41**	**-3.18**

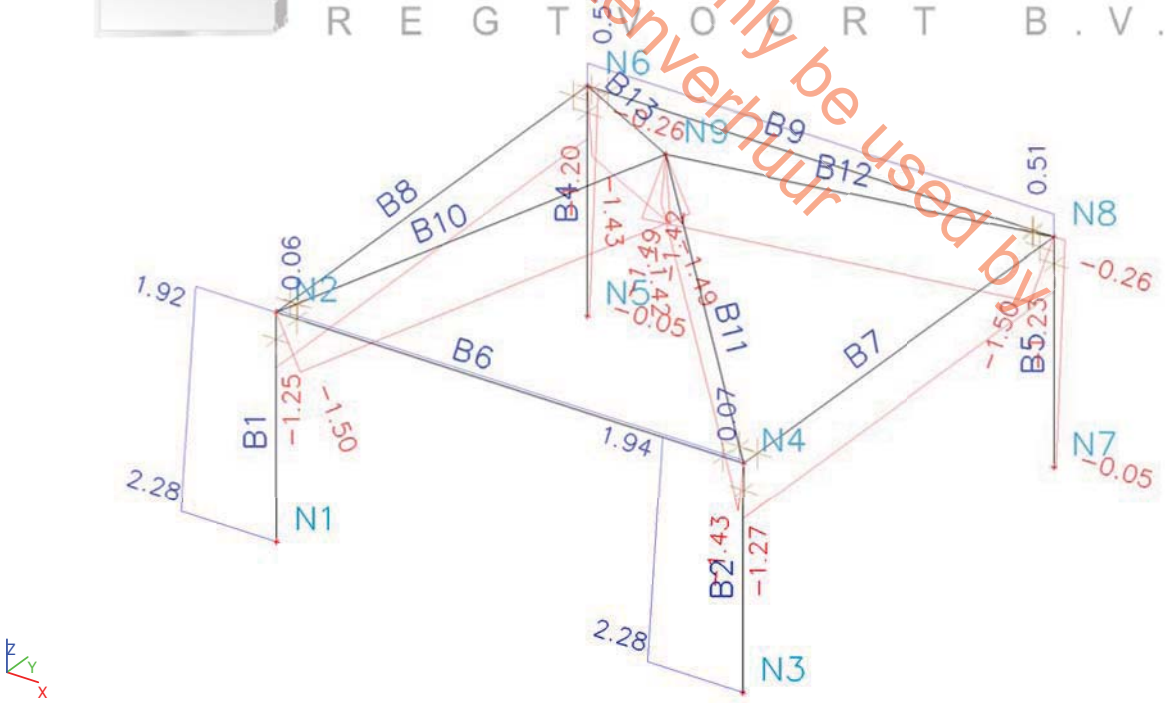
Member	css	dx [m]	Case	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
	General cross-section								
B4	CS5_2.4 buiten - General cross-section	0.000	NC1	**-0.05**	**-1.59**	**-0.32**	**0.00**	**0.00**	**0.00**
B4	CS5_2.4 buiten - General cross-section	2.030	NC1	**-0.24**	**-1.08**	**0.21**	**0.02**	**0.02**	**-2.63**
B4	CS5_2.4 buiten - General cross-section	2.030	NC1	**-0.24**	**-1.08**	**0.21**	**0.02**	**0.02**	**-2.63**
B4	CS5_2.4 buiten - General cross-section	2.300	NC1	**-0.26**	**-1.06**	**0.21**	**0.02**	**0.08**	**-2.92**
B5	CS5_2.4 buiten - General cross-section	0.000	NC1	**-0.05**	**-1.60**	**0.30**	**0.00**	**0.00**	**0.00**
B5	CS5_2.4 buiten - General cross-section	2.030	NC1	**-0.24**	**-1.09**	**-0.22**	**-0.01**	**-0.06**	**-2.66**
B5	CS5_2.4 buiten - General cross-section	2.030	NC1	**-0.24**	**-1.09**	**-0.22**	**-0.01**	**-0.06**	**-2.66**
B5	CS5_2.4 buiten - General cross-section	2.300	NC1	**-0.26**	**-1.07**	**-0.23**	**-0.02**	**-0.12**	**-2.95**
B6	CS5_2.4 buiten - General cross-section	0.000	NC1	**0.06**	**-1.65**	**-0.39**	**0.01**	**0.29**	**0.89**
B6	CS5_2.4 buiten - General cross-section	0.220	NC1	**0.07**	**-1.60**	**-0.36**	**0.01**	**0.21**	**0.53**
B6	CS5_2.4 buiten - General cross-section	0.220	NC1	**0.07**	**-1.60**	**-0.36**	**0.01**	**0.21**	**0.53**
B6	CS5_2.4 buiten - General cross-section	4.680	NC1	**0.07**	**1.54**	**0.35**	**0.00**	**0.18**	**0.41**
B6	CS5_2.4 buiten - General cross-section	4.680	NC1	**0.07**	**1.54**	**0.35**	**0.00**	**0.18**	**0.41**
B6	CS5_2.4 buiten - General cross-section	4.900	NC1	**0.07**	**1.60**	**0.38**	**-0.01**	**0.26**	**0.76**
B7	CS5_2.4 buiten - General cross-section	0.000	NC1	**-1.27**	**0.02**	**-1.39**	**-0.14**	**3.19**	**0.79**
B7	CS5_2.4 buiten - General cross-section	0.220	NC1	**-1.24**	**0.04**	**-1.40**	**-0.12**	**2.89**	**0.79**
B7	CS5_2.4 buiten - General cross-section	0.220	NC1	**-1.24**	**0.04**	**-1.40**	**-0.12**	**2.89**	**0.79**
B7	CS5_2.4 buiten - General cross-section	4.680	NC1	**-1.21**	**-0.48**	**-0.94**	**-0.09**	**-2.73**	**-0.26**
B7	CS5_2.4 buiten - General cross-section	4.680	NC1	**-1.21**	**-0.48**	**-0.94**	**-0.09**	**-2.73**	**-0.26**
B7	CS5_2.4 buiten - General cross-section	4.900	NC1	**-1.23**	**-0.45**	**-0.90**	**-0.11**	**-2.93**	**-0.36**
B8	CS5_2.4 buiten - General cross-section	0.000	NC1	**-1.25**	**0.04**	**-1.40**	**0.13**	**3.24**	**-0.92**
B8	CS5_2.4 buiten - General cross-section	0.220	NC1	**-1.22**	**0.02**	**-1.41**	**0.11**	**2.93**	**-0.91**
B8	CS5_2.4 buiten - General cross-section	0.220	NC1	**-1.22**	**0.02**	**-1.41**	**0.11**	**2.93**	**-0.91**
B8	CS5_2.4 buiten - General cross-section	4.680	NC1	**-1.18**	**0.54**	**-0.95**	**0.11**	**-2.70**	**0.39**
B8	CS5_2.4 buiten - General cross-section	4.680	NC1	**-1.18**	**0.54**	**-0.95**	**0.11**	**-2.70**	**0.39**
B8	CS5_2.4 buiten - General cross-section	4.900	NC1	**-1.20**	**0.51**	**-0.90**	**0.13**	**-2.91**	**0.50**
B9	CS5_2.4 buiten - General cross-section	0.000	NC1	**0.51**	**-0.02**	**-0.24**	**0.00**	**0.20**	**0.48**
B9	CS5_2.4 buiten - General cross-section	0.220	NC1	**0.51**	**-0.07**	**-0.22**	**0.00**	**0.15**	**0.47**
B9	CS5_2.4 buiten - General cross-section	0.220	NC1	**0.51**	**-0.07**	**-0.22**	**0.00**	**0.15**	**0.47**
B9	CS5_2.4 buiten - General cross-section	4.680	NC1	**0.51**	**0.01**	**0.23**	**0.00**	**0.17**	**0.34**
B9	CS5_2.4 buiten - General cross-section	4.680	NC1	**0.51**	**0.01**	**0.23**	**0.00**	**0.17**	**0.34**
B9	CS5_2.4 buiten - General cross-section	4.900	NC1	**0.51**	**-0.04**	**0.24**	**0.01**	**0.22**	**0.33**
B10	CS4 - CFRHS40X40X2	0.000	NC1	**-1.50**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**
B10	CS4 - CFRHS40X40X2	0.200	NC1	**-1.50**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**
B10	CS4 - CFRHS40X40X2	0.200	NC1	**-1.50**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**
B10	CS4 - CFRHS40X40X2	3.667	NC1	**-1.49**	**0.00**	**-0.02**	**0.01**	**0.00**	**0.00**
B11	CS4 - CFRHS40X40X2	0.000	NC1	**-1.43**	**0.00**	**0.02**	**-0.01**	**0.00**	**0.00**
B11	CS4 - CFRHS40X40X2	0.200	NC1	**-1.43**	**0.00**	**0.02**	**-0.01**	**0.00**	**0.00**
B11	CS4 - CFRHS40X40X2	0.200	NC1	**-1.43**	**0.00**	**0.02**	**-0.01**	**0.00**	**0.00**
B11	CS4 - CFRHS40X40X2	3.667	NC1	**-1.42**	**0.00**	**-0.02**	**-0.01**	**0.00**	**0.00**
B12	CS4 - CFRHS40X40X2	0.000	NC1	**-1.49**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**
B12	CS4 - CFRHS40X40X2	3.467	NC1	**-1.50**	**0.00**	**-0.02**	**0.01**	**0.00**	**0.00**
B12	CS4 - CFRHS40X40X2	3.467	NC1	**-1.50**	**0.00**	**-0.02**	**0.01**	**0.00**	**0.00**

Member	css	dx [m]	Case	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
B12	CS4 - CFRHS40X40X2	3.667	NC1	**-1.50**	**0.00**	**-0.02**	**0.01**	**0.00**	**0.00**
B13	CS4 - CFRHS40X40X2	0.000	NC1	**-1.42**	**0.00**	**0.02**	**-0.01**	**0.00**	**0.00**
B13	CS4 - CFRHS40X40X2	3.467	NC1	**-1.43**	**0.00**	**-0.02**	**-0.01**	**0.00**	**0.00**
B13	CS4 - CFRHS40X40X2	3.467	NC1	**-1.43**	**0.00**	**-0.02**	**-0.01**	**0.00**	**0.00**
B13	CS4 - CFRHS40X40X2	3.667	NC1	**-1.43**	**0.00**	**-0.02**	**-0.01**	**0.00**	**0.00**

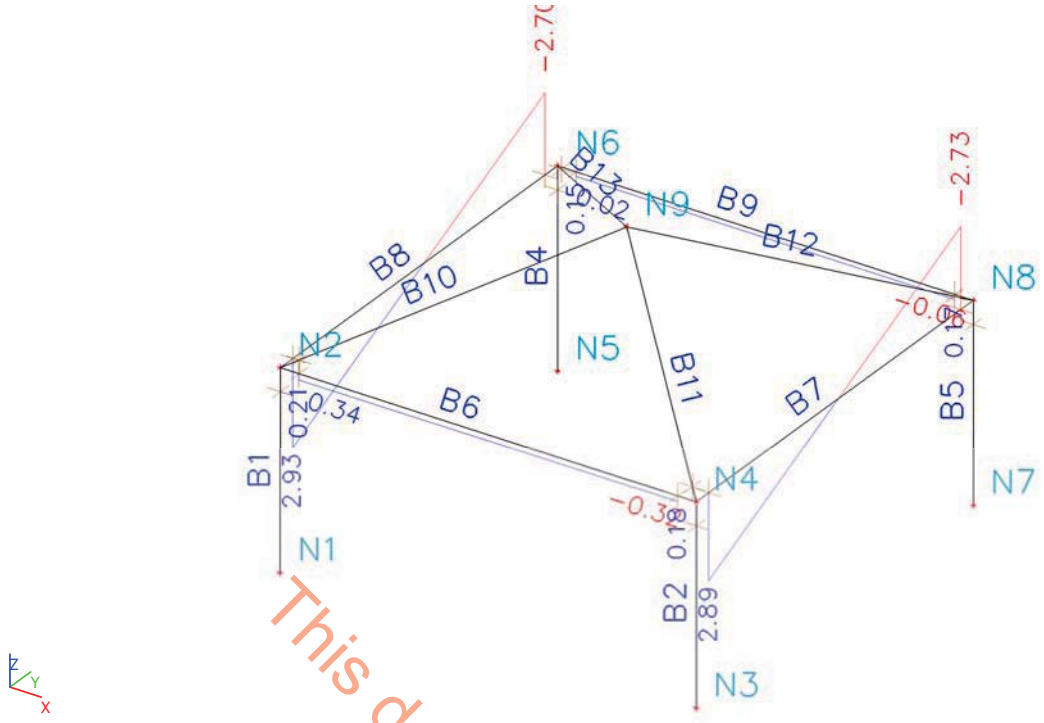
12. Internal forces on member; N



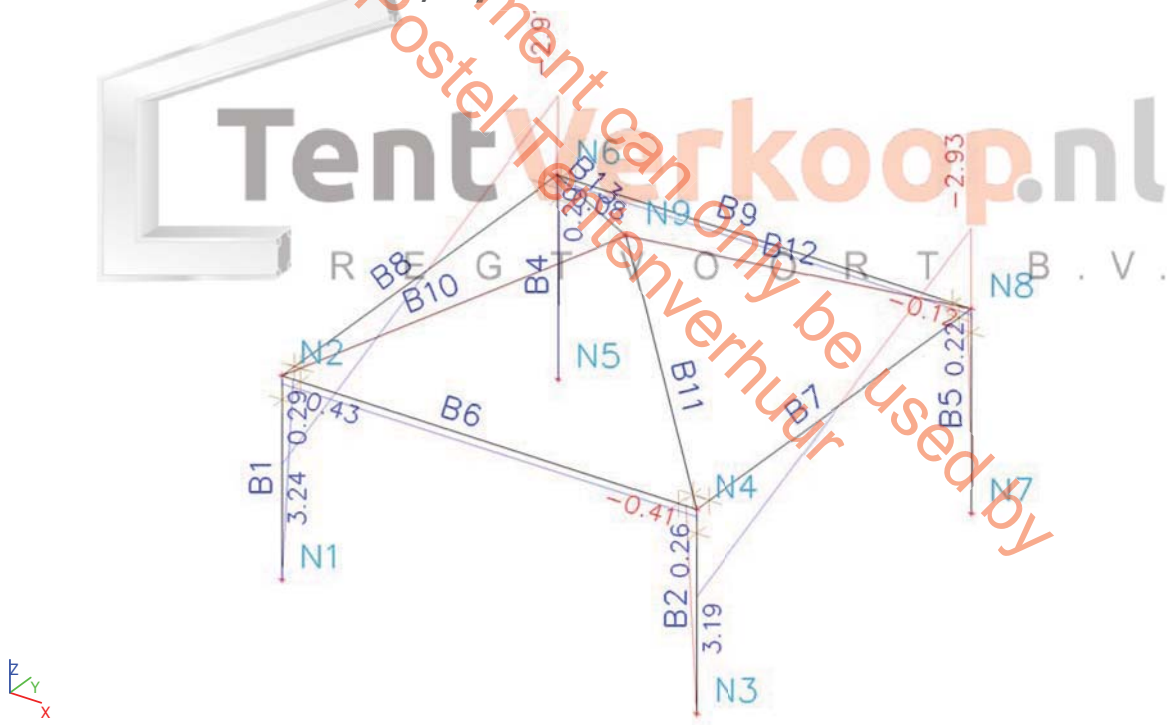
13. Internal forces on member; N



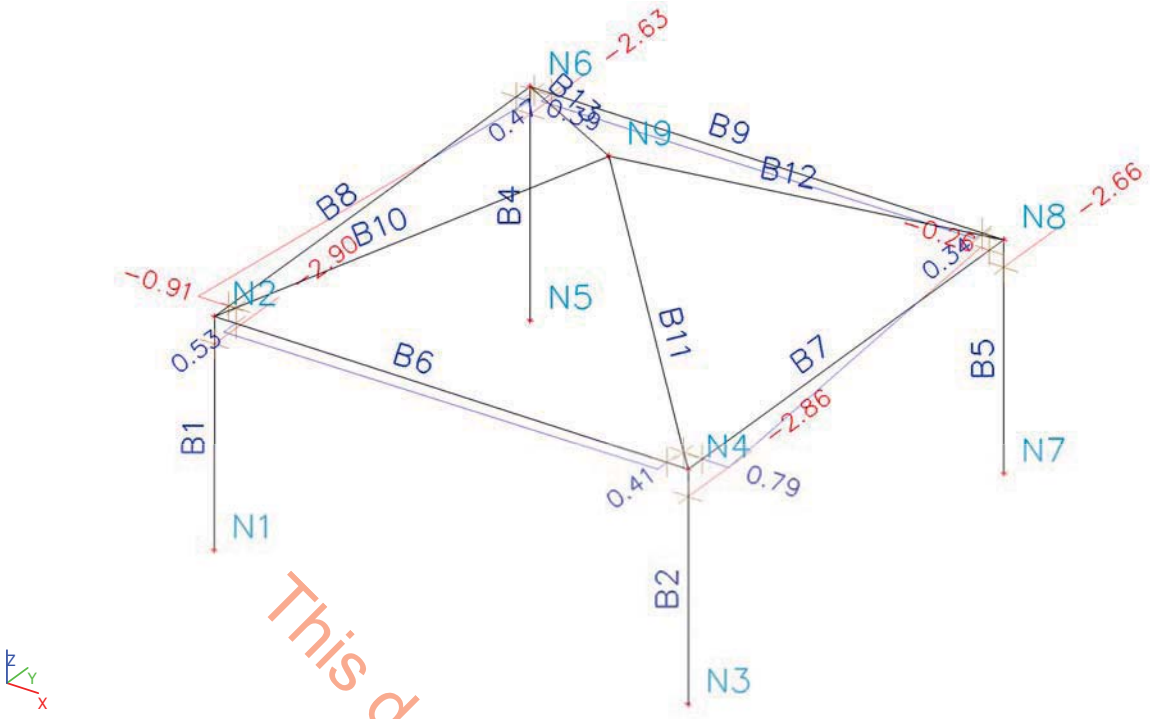
14. Internal forces on member; My



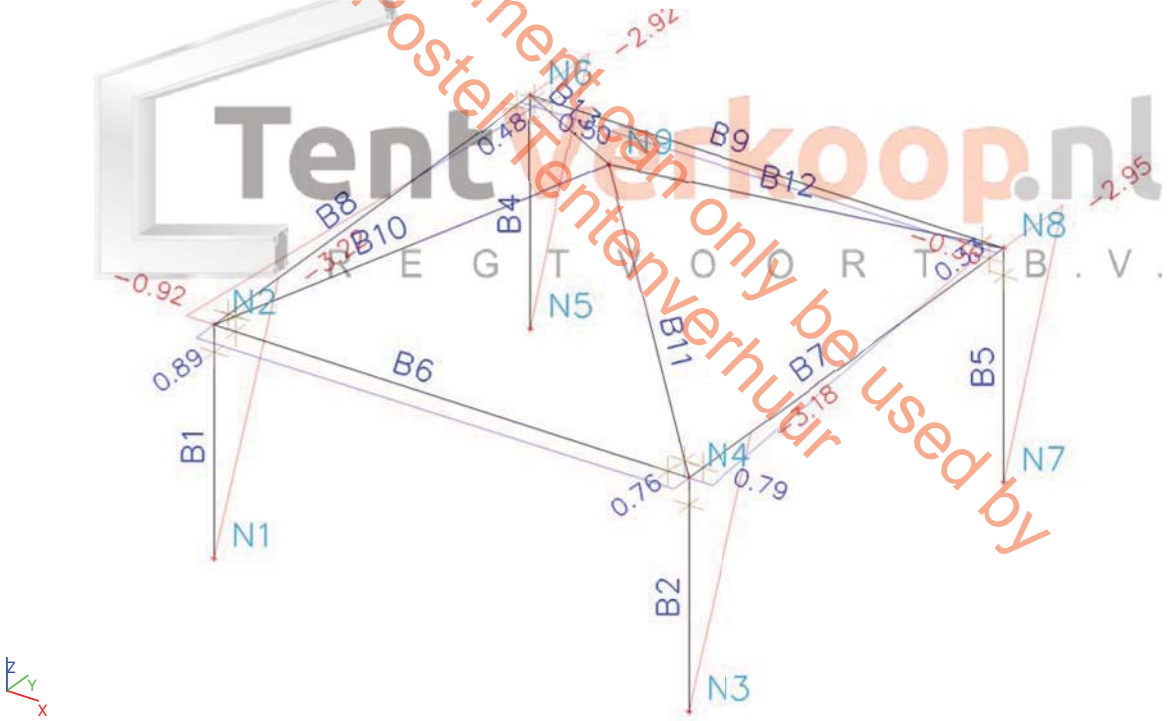
15. Internal forces on member; My



16. Internal forces on member; Mz



17. Internal forces on member; Mz



18. Internal forces on member

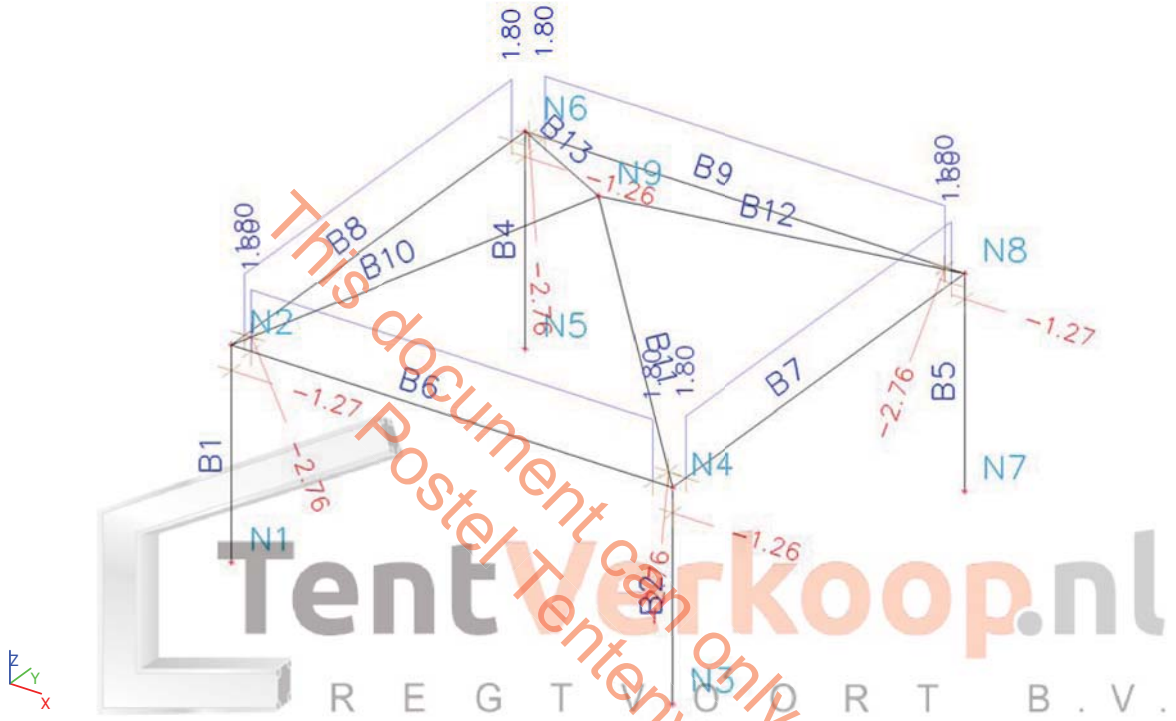
Nonlinear calculation, Extreme : Section, System : LCS
Selection : All
Nonlinear combinations : NC2

Member	css	dx [m]	Case	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
B1	CS5_2.4 buiten - General cross-section	0.000	NC2	**-1.32**	**0.05**	**-0.05**	**0.00**	**0.00**	**0.00**
B1	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.27**	**0.04**	**-0.04**	**0.00**	**-0.09**	**0.09**
B1	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.27**	**0.04**	**-0.04**	**0.00**	**-0.09**	**0.09**
B1	CS5_2.4 buiten - General cross-section	2.300	NC2	**-1.26**	**0.04**	**-0.04**	**0.00**	**-0.10**	**0.10**
B2	CS5_2.4 buiten -	0.000	NC2	**-1.32**	**0.04**	**0.04**	**0.00**	**0.00**	**0.00**

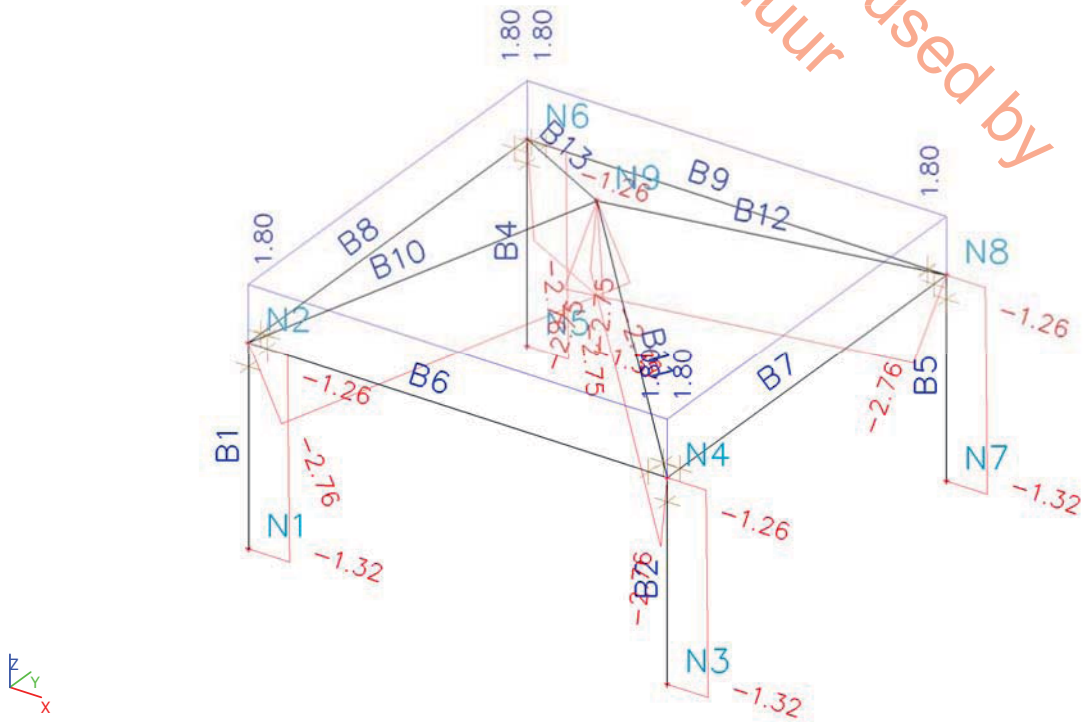
Member	css	dx [m]	Case	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
	General cross-section								
B2	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.26**	**0.04**	**0.04**	**0.00**	**0.09**	**0.09**
B2	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.26**	**0.04**	**0.04**	**0.00**	**0.09**	**0.09**
B2	CS5_2.4 buiten - General cross-section	2.300	NC2	**-1.26**	**0.04**	**0.04**	**0.00**	**0.10**	**0.10**
B4	CS5_2.4 buiten - General cross-section	0.000	NC2	**-1.32**	**-0.04**	**-0.04**	**0.00**	**0.00**	**0.00**
B4	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.26**	**-0.04**	**-0.04**	**0.00**	**-0.09**	**-0.09**
B4	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.26**	**-0.04**	**-0.04**	**0.00**	**-0.09**	**-0.09**
B4	CS5_2.4 buiten - General cross-section	2.300	NC2	**-1.26**	**-0.04**	**-0.04**	**0.00**	**-0.10**	**-0.10**
B5	CS5_2.4 buiten - General cross-section	0.000	NC2	**-1.32**	**-0.05**	**0.05**	**0.00**	**0.00**	**0.00**
B5	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.27**	**-0.04**	**0.04**	**0.00**	**0.09**	**-0.09**
B5	CS5_2.4 buiten - General cross-section	2.030	NC2	**-1.27**	**-0.04**	**0.04**	**0.00**	**0.09**	**-0.09**
B5	CS5_2.4 buiten - General cross-section	2.300	NC2	**-1.26**	**-0.04**	**0.04**	**0.00**	**0.10**	**-0.10**
B6	CS5_2.4 buiten - General cross-section	0.000	NC2	**1.80**	**0.00**	**0.16**	**0.00**	**-0.10**	**0.00**
B6	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.07**	**0.00**
B6	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.07**	**0.00**
B6	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.06**	**0.00**
B6	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.06**	**0.00**
B6	CS5_2.4 buiten - General cross-section	4.900	NC2	**1.80**	**0.00**	**-0.16**	**0.00**	**-0.10**	**0.00**
B7	CS5_2.4 buiten - General cross-section	0.000	NC2	**1.80**	**0.00**	**0.16**	**0.00**	**-0.10**	**0.00**
B7	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.06**	**0.00**
B7	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.06**	**0.00**
B7	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.07**	**0.00**
B7	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.07**	**0.00**
B7	CS5_2.4 buiten - General cross-section	4.900	NC2	**1.80**	**0.00**	**-0.16**	**0.00**	**-0.10**	**0.00**
B8	CS5_2.4 buiten - General cross-section	0.000	NC2	**1.80**	**0.00**	**0.16**	**0.00**	**-0.10**	**0.00**
B8	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.07**	**0.00**
B8	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.07**	**0.00**
B8	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.06**	**0.00**
B8	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.06**	**0.00**
B8	CS5_2.4 buiten - General cross-section	4.900	NC2	**1.80**	**0.00**	**-0.16**	**0.00**	**-0.10**	**0.00**
B9	CS5_2.4 buiten - General cross-section	0.000	NC2	**1.80**	**0.00**	**0.16**	**0.00**	**-0.10**	**0.00**
B9	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.06**	**0.00**
B9	CS5_2.4 buiten - General cross-section	0.220	NC2	**1.80**	**0.00**	**0.15**	**0.00**	**-0.06**	**0.00**
B9	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.07**	**0.00**
B9	CS5_2.4 buiten - General cross-section	4.680	NC2	**1.80**	**0.00**	**-0.15**	**0.00**	**-0.07**	**0.00**
B9	CS5_2.4 buiten - General cross-section	4.900	NC2	**1.80**	**0.00**	**-0.16**	**0.00**	**-0.10**	**0.00**
B10	CS4 - CFRHS40X40X2	0.000	NC2	**-2.76**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**
B10	CS4 - CFRHS40X40X2	0.200	NC2	**-2.76**	**0.00**	**0.05**	**0.00**	**0.01**	**0.00**
B10	CS4 - CFRHS40X40X2	0.200	NC2	**-2.76**	**0.00**	**0.05**	**0.00**	**0.01**	**0.00**
B10	CS4 - CFRHS40X40X2	3.667	NC2	**-2.75**	**0.00**	**-0.06**	**0.00**	**0.00**	**0.00**
B11	CS4 - CFRHS40X40X2	0.000	NC2	**-2.76**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**

Member	css	dx [m]	Case	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
B11	CS4 - CFRHS40X40X2	0.200	NC2	**-2.76**	**0.00**	**0.05**	**0.00**	**0.01**	**0.00**
B11	CS4 - CFRHS40X40X2	0.200	NC2	**-2.76**	**0.00**	**0.05**	**0.00**	**0.01**	**0.00**
B11	CS4 - CFRHS40X40X2	3.667	NC2	**-2.75**	**0.00**	**-0.06**	**0.00**	**0.00**	**0.00**
B12	CS4 - CFRHS40X40X2	0.000	NC2	**-2.75**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**
B12	CS4 - CFRHS40X40X2	3.467	NC2	**-2.76**	**0.00**	**-0.05**	**0.00**	**0.01**	**0.00**
B12	CS4 - CFRHS40X40X2	3.467	NC2	**-2.76**	**0.00**	**-0.05**	**0.00**	**0.01**	**0.00**
B12	CS4 - CFRHS40X40X2	3.667	NC2	**-2.76**	**0.00**	**-0.06**	**0.00**	**0.00**	**0.00**
B13	CS4 - CFRHS40X40X2	0.000	NC2	**-2.75**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**
B13	CS4 - CFRHS40X40X2	3.467	NC2	**-2.76**	**0.00**	**-0.05**	**0.00**	**0.01**	**0.00**
B13	CS4 - CFRHS40X40X2	3.467	NC2	**-2.76**	**0.00**	**-0.05**	**0.00**	**0.01**	**0.00**
B13	CS4 - CFRHS40X40X2	3.667	NC2	**-2.76**	**0.00**	**-0.06**	**0.00**	**0.00**	**0.00**

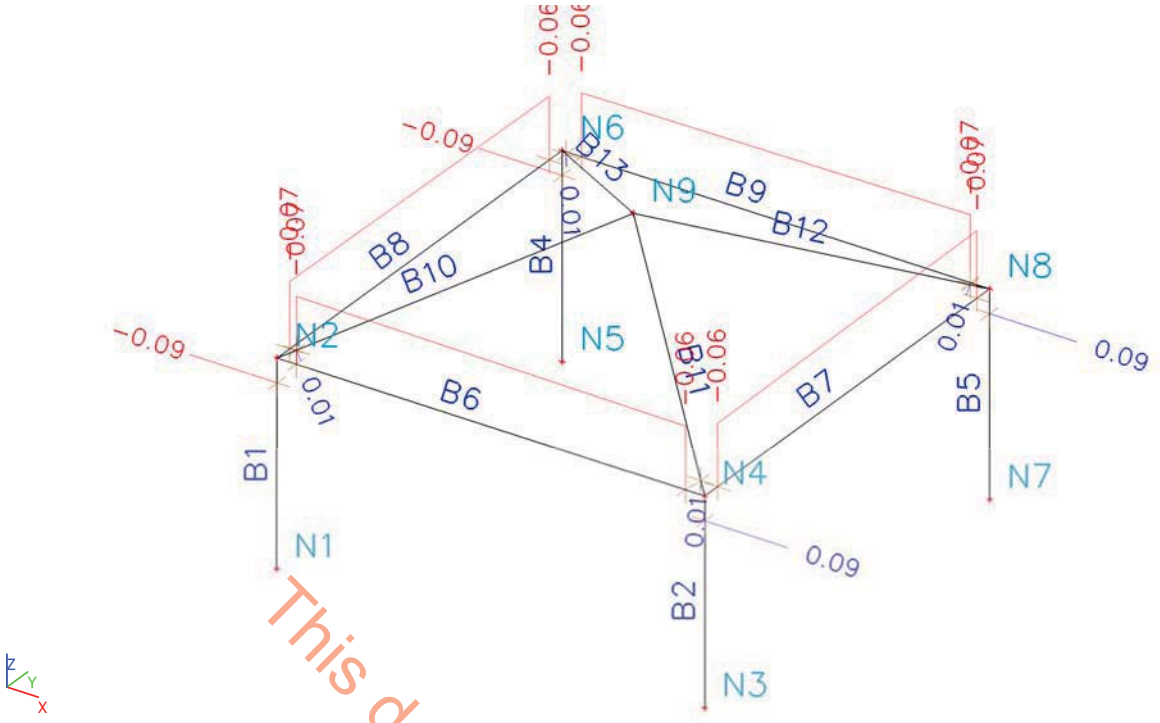
19. Internal forces on member; N



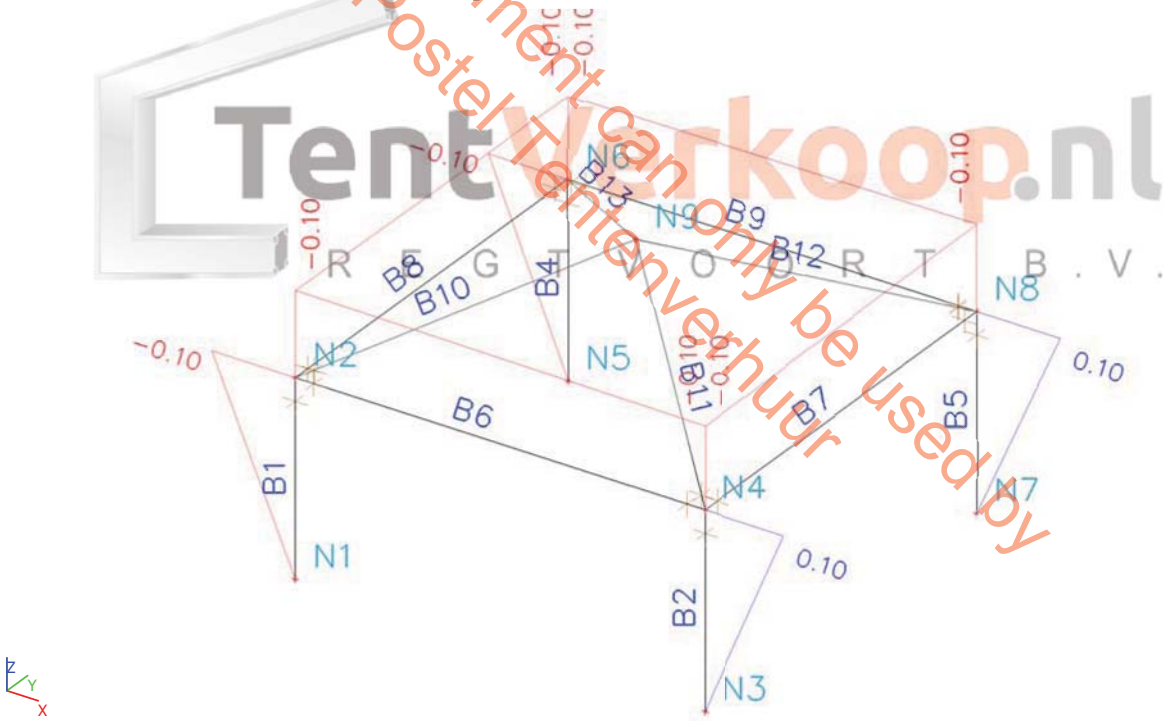
20. Internal forces on member; N



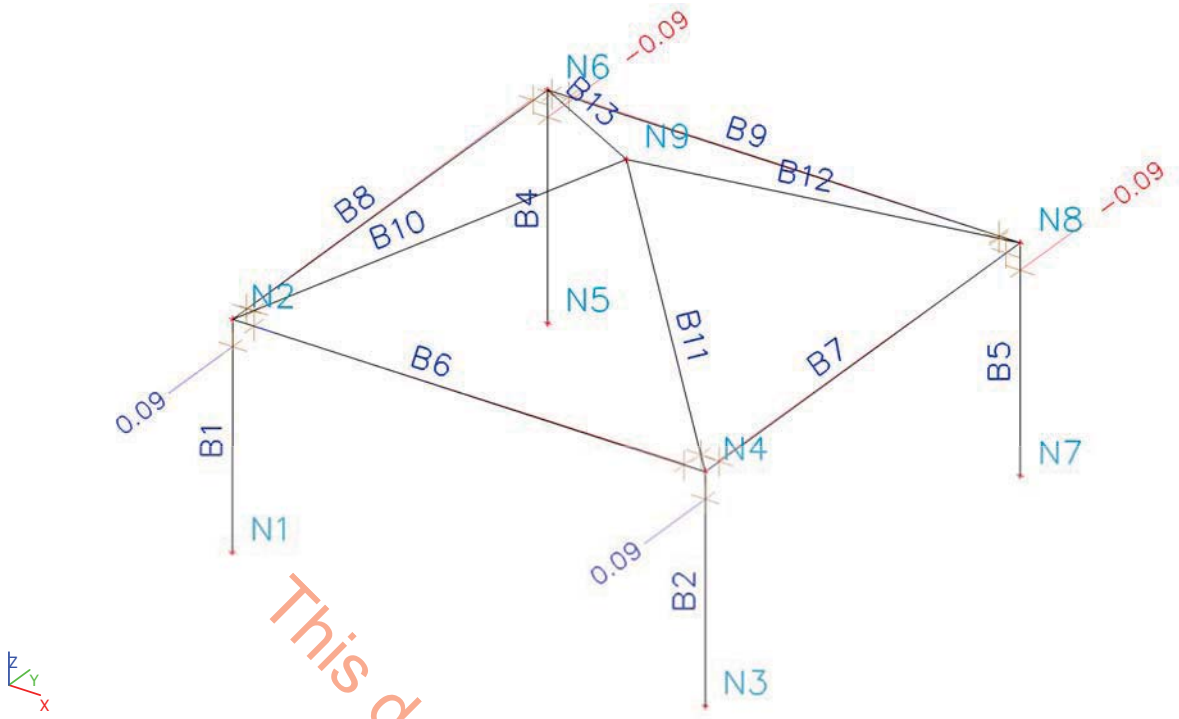
21. Internal forces on member; My



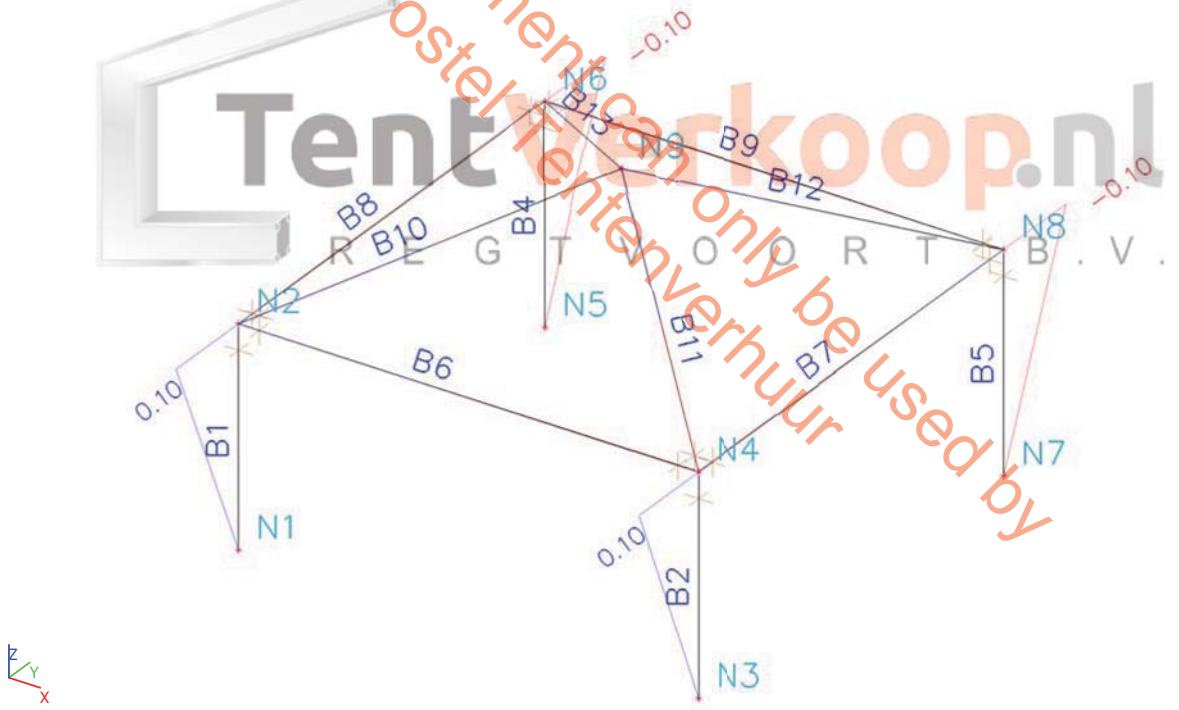
22. Internal forces on member; My



23. Internal forces on member; Mz



24. Internal forces on member; Mz

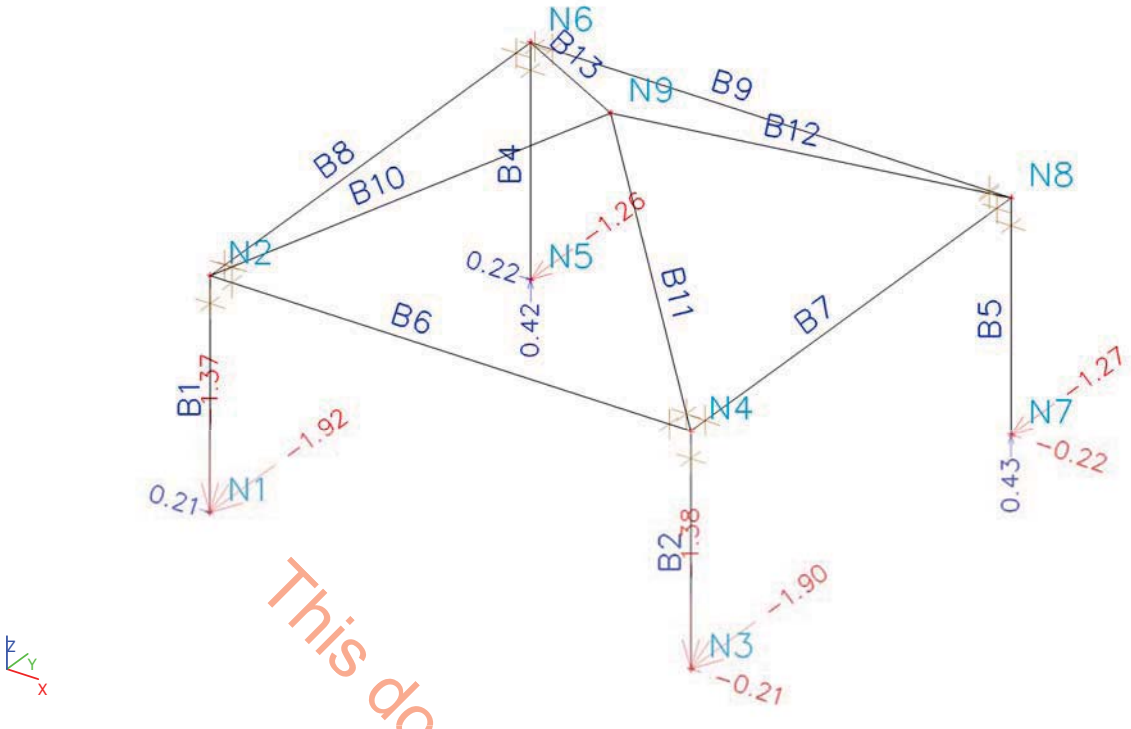


25. Reactions

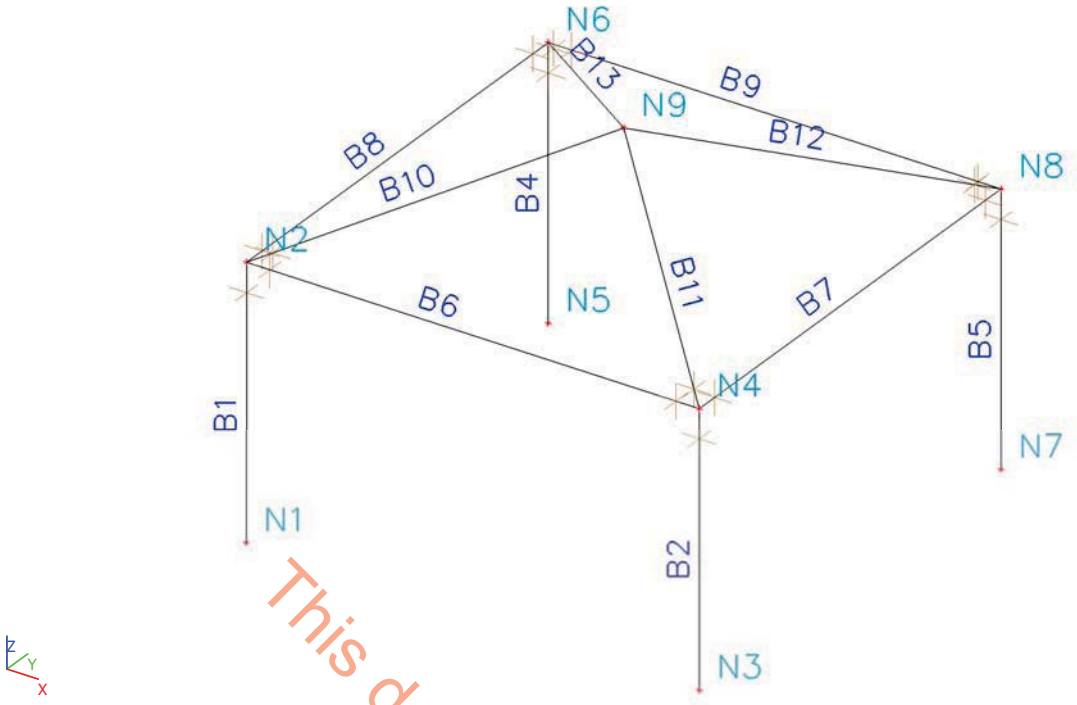
Nonlinear calculation, Extreme : No
Selection : All
Nonlinear combinations : ST1

Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn1/N1	ST1	0.21	-1.92	-1.37	0.00	0.00	0.00
Sn2/N3	ST1	-0.21	-1.90	-1.38	0.00	0.00	0.00
Sn3/N7	ST1	-0.22	-1.27	0.43	0.00	0.00	0.00
Sn4/N5	ST1	0.22	-1.26	0.42	0.00	0.00	0.00

26. Reactions; Rx, Ry, Rz



1. Geometry 4 x 4 m



2. Nodes

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N1	0.000	0.000	0.000
N2	0.000	0.000	2.300
N3	3.900	0.000	0.000
N4	3.900	0.000	2.300
N5	0.000	3.900	0.000
N6	0.000	3.900	2.300
N7	3.900	3.900	0.000
N8	3.900	3.900	2.300
N9	1.950	1.950	3.100

3. Members

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B1	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N1	N2	column (100)
B2	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N3	N4	column (100)
B4	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N5	N6	column (100)
B5	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N7	N8	column (100)
B6	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N2	N4	beam (80)
B7	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N4	N8	beam (80)
B8	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N2	N6	beam (80)
B9	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N6	N8	beam (80)
B10	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N2	N9	beam (80)
B11	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N4	N9	beam (80)
B12	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N9	N8	beam (80)
B13	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N9	N6	beam (80)

4. Nodal supports

Name	Node	System	Type	X	Y	Z	Rx	Ry	Rz
Sn1	N1	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn2	N3	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn3	N7	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn4	N5	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free

5. Hinges

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H1	B10	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H2	B11	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H3	B12	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H4	B13	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

6. Section on beam

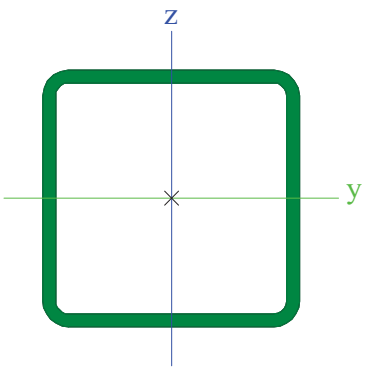
Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB1	B1	Abso	0.250	From end	1
SB2	B2	Abso	0.250	From end	1
SB3	B5	Abso	0.250	From end	1
SB4	B4	Abso	0.250	From end	1
SB5	B6	Abso	0.200	From end	1
SB6	B7	Abso	0.200	From end	1
SB7	B9	Abso	0.200	From end	1
SB8	B8	Abso	0.200	From end	1
SB9	B6	Abso	0.200	From start	1
SB10	B7	Abso	0.200	From start	1
SB11	B9	Abso	0.200	From start	1
SB12	B8	Abso	0.200	From start	1
SB13	B10	Abso	0.200	From start	1
SB14	B11	Abso	0.200	From start	1
SB15	B12	Abso	0.200	From end	1
SB16	B13	Abso	0.200	From end	1

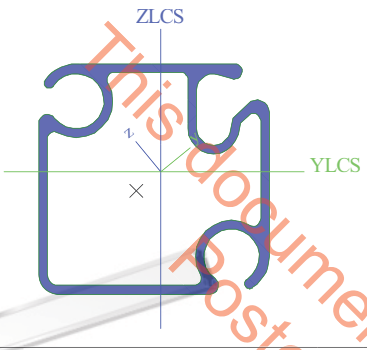
7. Materials

Aluminium

Name Type	ρ [kg/m³]	E_{mod} [MPa] G_{mod} [MPa]	μ α [m/mK]	0.2% proof strength (fo) [MPa] 0.2% proof strength (fo,haz) [MPa] n-value for plastic analysis (np)
EN-AW 6005A (EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	215.0
Aluminium		2.6923e+04	0.00	115.0
				26
EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	250.0
Aluminium		2.6923e+04	0.00	125.0
				32

8. Cross-sections

CS4		
Type	CFRHS40X40X2	
Formcode	2 - Rectangular hollow sections	
Shape type	Thin-walled	
Item material	EN-AW 6005A (EP/H,ET) T6 (0-5)	
Fabrication	cold formed	
Colour		
A [m^2]	2.9400e-04	
A_y [m^2], A_z [m^2]	1.4675e-04	1.4675e-04
A_L [m^2/m], A_D [m^2/m]	1.5300e-01	2.9365e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	20	20
α [deg]	0.00	
I_y [m^4], I_z [m^4]	6.9400e-08	6.9400e-08
i_y [mm], i_z [mm]	15	15
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	3.4700e-06	3.4700e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	4.1300e-06	4.1300e-06
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	8.88e+02	8.88e+02
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	8.88e+02	8.88e+02
d_y [mm], d_z [mm]	0	0
I_t [m^4], I_w [m^6]	1.1280e-07	1.7067e-11
β_y [mm], β_z [mm]	0	0
Picture		

CS5_2.4 buiten		
Type	General cross-section	
Shape type	Thin-walled	
Item material	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	
Fabrication	general	
Colour		
A [m^2]	7.9433e-04	
A_y [m^2], A_z [m^2]	6.8131e-04	5.6117e-04
A_L [m^2/m], A_D [m^2/m]	3.5566e-01	5.9812e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	2	2
$I_{Y.LCS}$ [m^4], $I_{Z.LCS}$ [m^4]	4.0241e-07	3.9486e-07
$I_{YZ.LCS}$ [m^4]	-1.7580e-08	
α [deg]	38.94	
I_y [m^4], I_z [m^4]	4.1661e-07	3.8065e-07
i_y [mm], i_z [mm]	23	22
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	1.0154e-05	8.4242e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	1.5959e-05	1.4593e-05
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	3.99e+03	3.99e+03
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	3.65e+03	3.65e+03
d_y [mm], d_z [mm]	-8	0
I_t [m^4], I_w [m^6]	2.9911e-07	4.0979e-11
β_y [mm], β_z [mm]	-1	8
Picture		

Explanations of symbols	
Formcode	h - Height b - Width s - Thickness r - Outer radius r1 - Inner radius
A	Area
A_y	Shear Area in principal y-direction
A_z	Shear Area in principal z-direction
A_L	Circumference per unit length
A_D	Drying surface per unit length
$c_{Y.UCS}$	Centroid coordinate in Y-direction of Input axis system
$c_{Z.UCS}$	Centroid coordinate in Z-direction of Input axis system
$I_{Y.LCS}$	Second moment of area about the YLCS axis
$I_{Z.LCS}$	Second moment of area about the ZLCS axis
$I_{YZ.LCS}$	Product moment of area in the LCS system
α	Rotation angle of the principal axis system
I_y	Second moment of area about the principal y-axis
I_z	Second moment of area about the principal z-axis
i_y	Radius of gyration about the principal y-axis

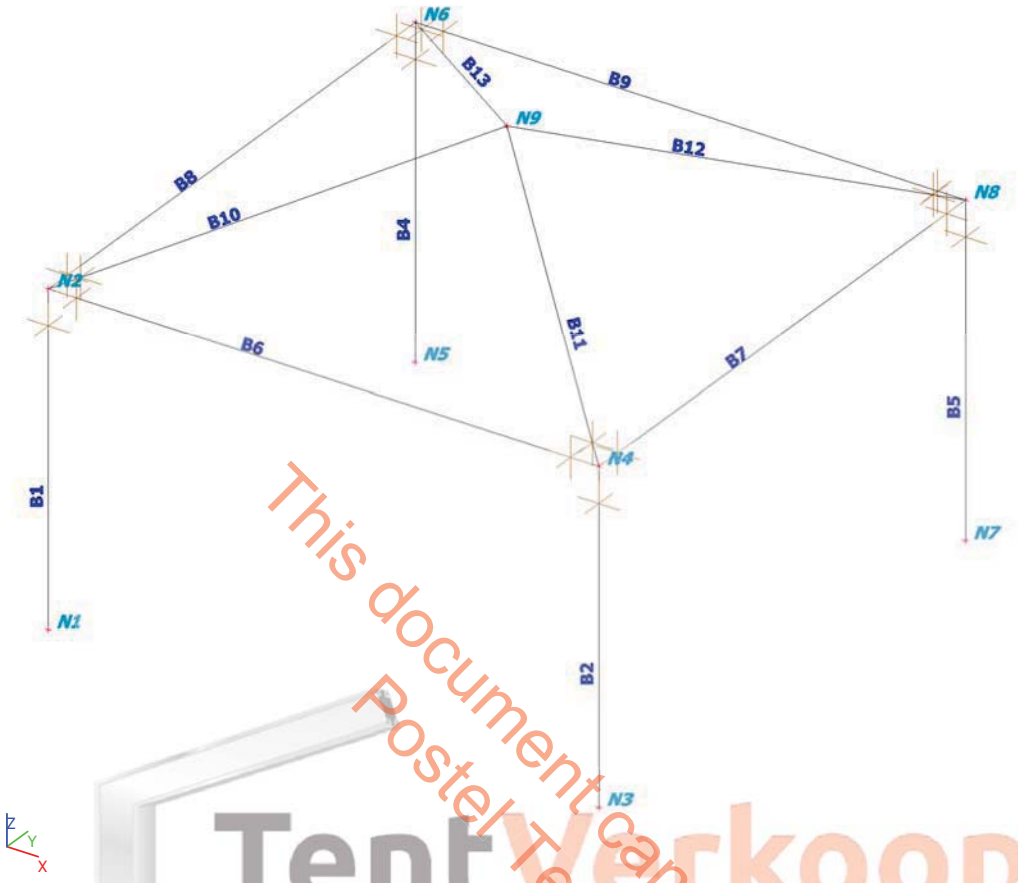
Explanations of symbols	
i_z	Radius of gyration about the principal z-axis
$W_{el.y}$	Elastic section modulus about the principal y-axis
$W_{el.z}$	Elastic section modulus about the principal z-axis
$W_{pl.y}$	Plastic section modulus about the principal y-axis
$W_{pl.z}$	Plastic section modulus about the principal z-axis
$M_{pl.y.+}$	Plastic moment about the principal y-axis for a positive My moment
$M_{pl.y.-}$	Plastic moment about the principal y-axis for a negative My moment
$M_{pl.z.+}$	Plastic moment about the principal z-axis for a positive Mz moment
$M_{pl.z.-}$	Plastic moment about the principal z-axis for a negative Mz moment
d_y	Shear center coordinate in principal y-direction measured from the centroid
d_z	Shear center coordinate in principal z-direction measured from the centroid
I_t	Torsional constant
I_w	Warping constant
β_y	Mono-symmetry constant about the principal y-axis
β_z	Mono-symmetry constant about the principal z-axis

9. Load cases

9.1. Load cases - LC1

Name	Description	Action type	LoadGroup	Direction
	Spec	Load type		
LC1	self weight	Permanent Self weight	LG1	-Z

9.1.1. Load picture



9.2. Load cases - LC2

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC2	membrane self weight	Variable	LG3	Short	None
	Standard	Static			

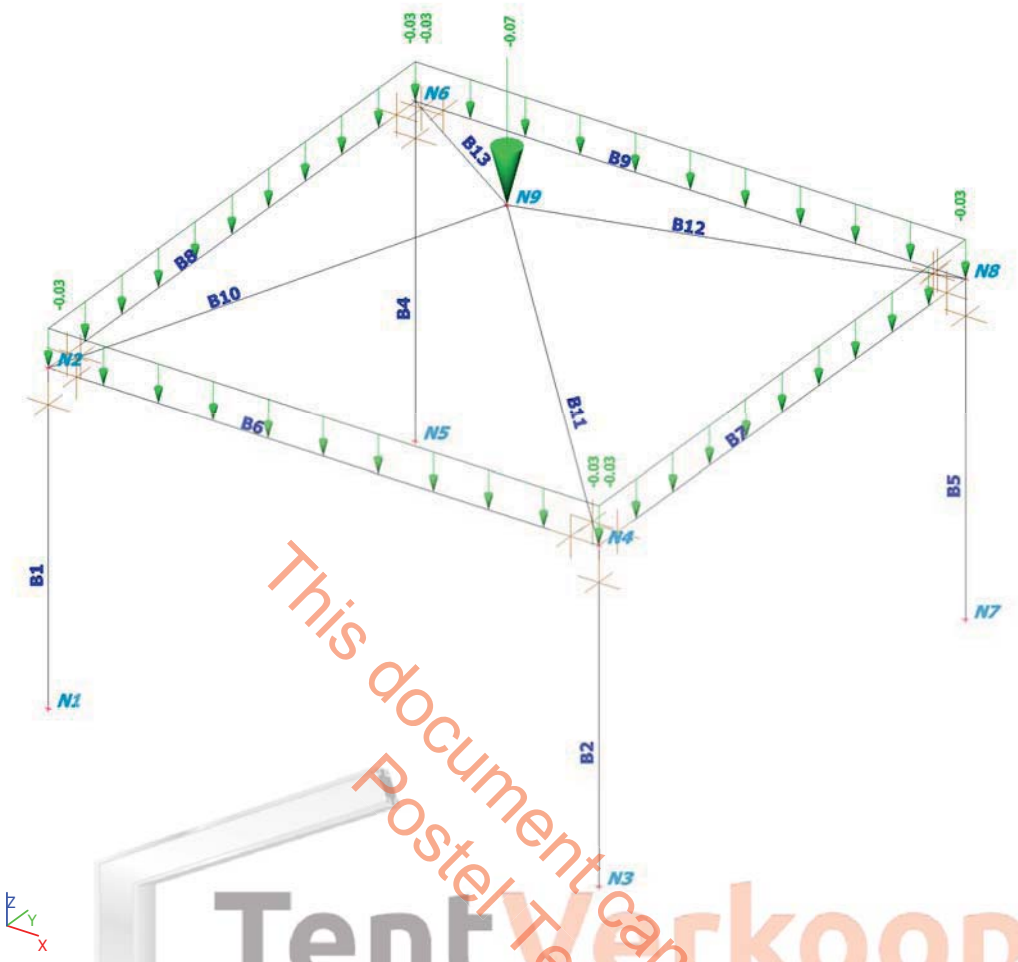
9.2.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF42	B6	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF43	B7	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF44	B9	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF45	B8	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000

9.2.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F2	N9	LC2 - membrane self weight	GCS	Z	Force	-0.07

9.2.3. Load picture



9.3. Load cases - LC3

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC3	wind and prestress	Variable	LG3	Short	None
	Standard	Static			

9.3.1. Line force

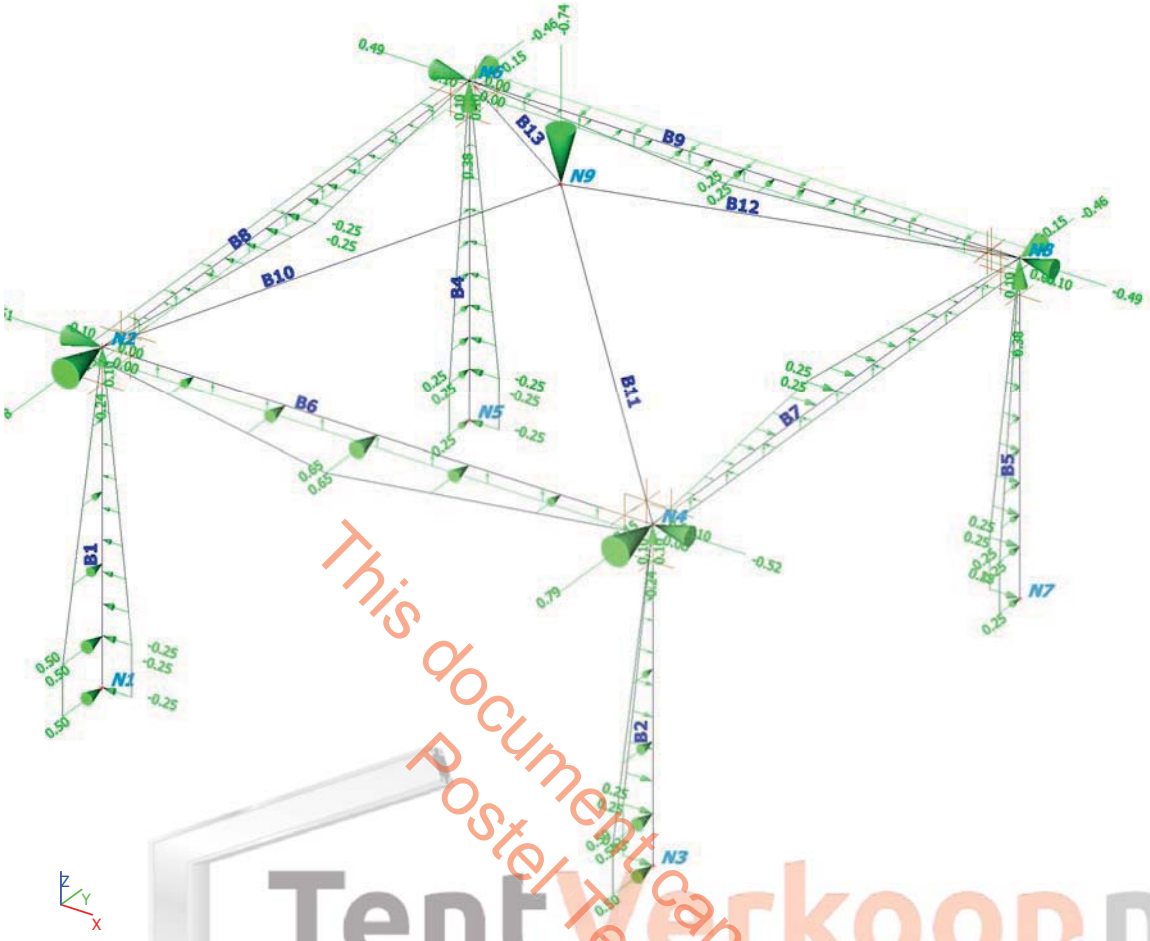
Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
LF17	B1	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	1.950	Length		0.000
LF18	B2	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	1.950	Length		0.000
LF19	B4	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF20	B5	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF21	B2	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF22	B5	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF23	B1	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	1.950	Length		0.000
LF24	B4	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	1.950	Length		0.000
LF25	B8	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	0.500	Length		0.000
LF26	B7	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF27	B6	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.65	0.500	Length		0.000
LF29	B7	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
LF31	B8	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF32	B6	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF33	B8	Force	X	-0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF34	B7	Force	X	0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF35	B7	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	0.500	Length		0.000
LF36	B6	Force	Y	0.65	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF37	B9	Force	Y	0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF38	B9	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	0.500	Length		0.000
LF39	B9	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF40	B8	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF41	B9	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF46	B1	Force	Y	0.50	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF47	B2	Force	Y	0.50	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF48	B4	Force	Y	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF49	B5	Force	Y	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF50	B1	Force	X	-0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF51	B4	Force	X	-0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF52	B2	Force	X	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF53	B5	Force	X	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000

9.3.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F4	N4	LC3 - wind and prestress	GCS	Z	Force	0.24
F5	N2	LC3 - wind and prestress	GCS	Z	Force	0.24
F6	N8	LC3 - wind and prestress	GCS	Z	Force	0.38
F7	N6	LC3 - wind and prestress	GCS	Z	Force	0.38
F8	N2	LC3 - wind and prestress	GCS	Y	Force	0.78
F9	N4	LC3 - wind and prestress	GCS	Y	Force	0.79
F10	N6	LC3 - wind and prestress	GCS	Y	Force	-0.46
F11	N8	LC3 - wind and prestress	GCS	Y	Force	-0.46
F12	N2	LC3 - wind and prestress	GCS	X	Force	0.51
F13	N6	LC3 - wind and prestress	GCS	X	Force	0.49
F14	N4	LC3 - wind and prestress	GCS	X	Force	-0.52
F15	N8	LC3 - wind and prestress	GCS	X	Force	-0.49
F16	N9	LC3 - wind and prestress	GCS	Z	Force	-0.74

9.3.3. Load picture



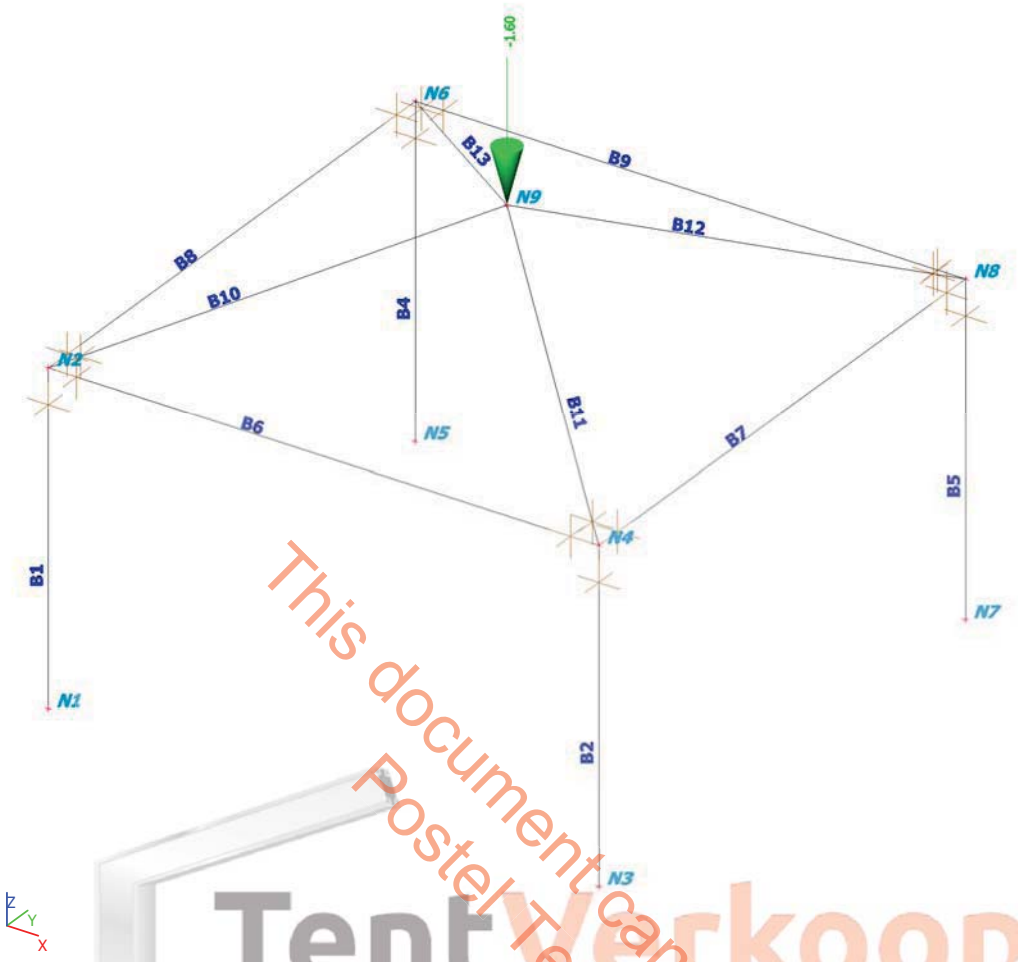
9.4. Load cases - LC4

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC4	equivalent load	Variable	LG3	Short	None
	Standard	Static			

9.4.1. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F1	N9	LC4 - equivalent load	GCS	Z	Force	-1.60

9.4.2. Load picture



10. Nonlinear combinations

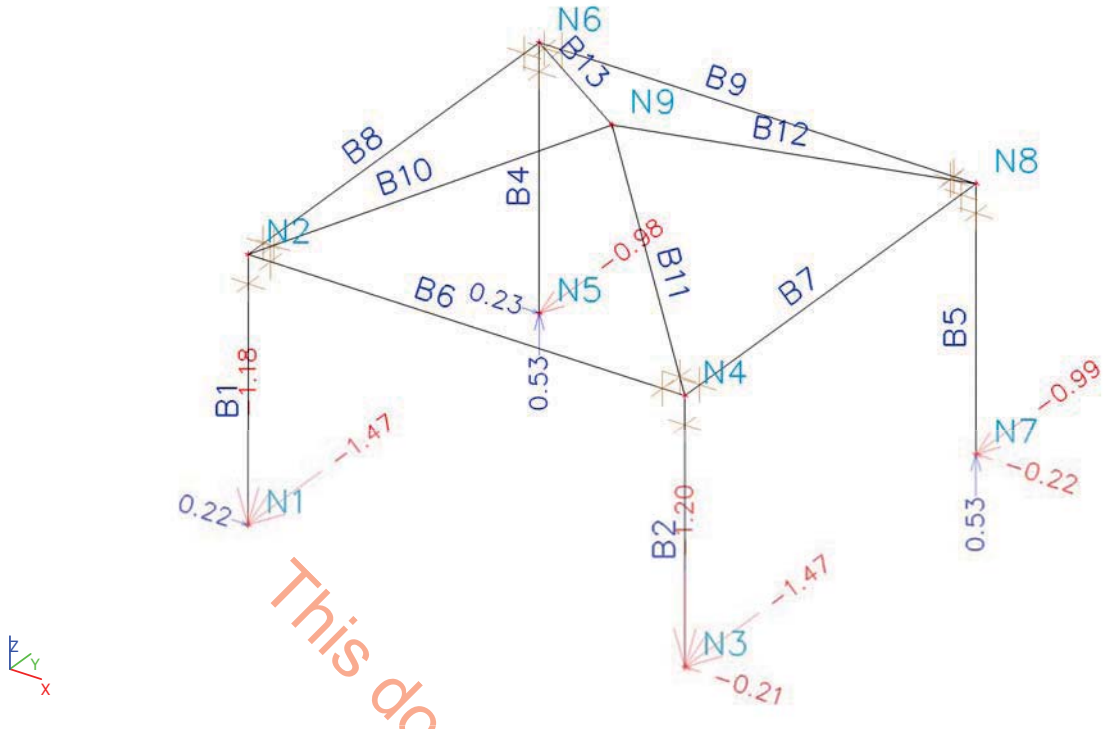
Name	Type	Load cases	Coeff. [-]
NC1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.50
NC2	Ultimate	LC1 - self weight	1.35
		LC2 - membrane self weight	1.35
		LC4 - equivalent load	1.35
ST1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.20

11. Reactions

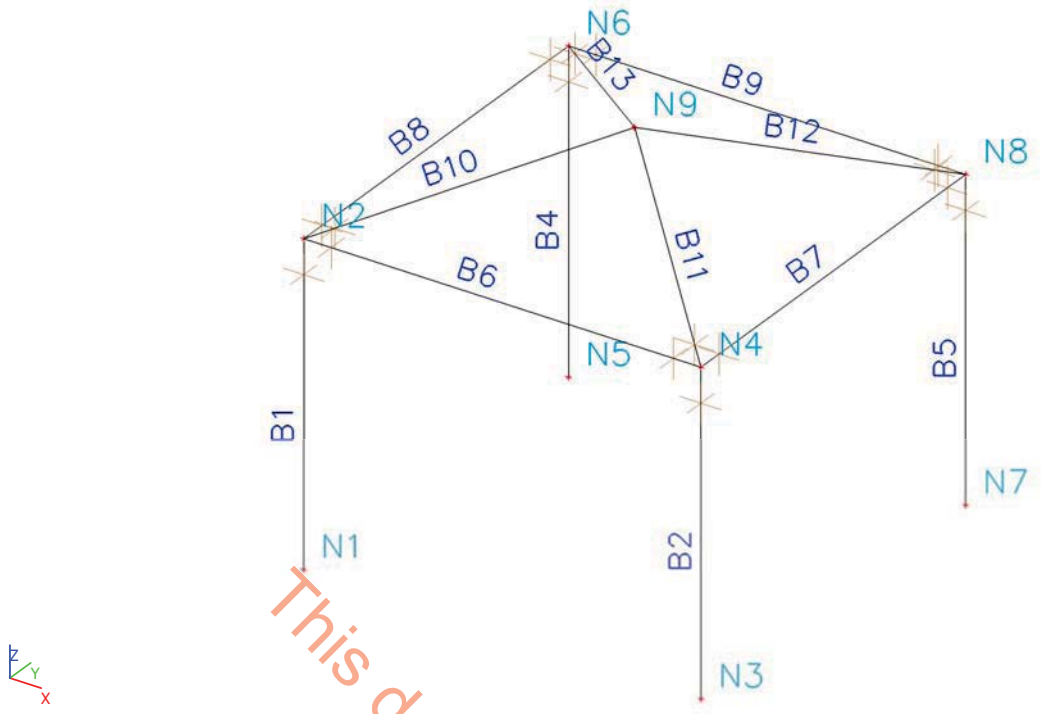
Nonlinear calculation, Extreme : No
Selection : All
Nonlinear combinations : ST1

Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn1/N1	ST1	0.22	-1.47	-1.18	0.00	0.00	0.00
Sn2/N3	ST1	-0.21	-1.47	-1.20	0.00	0.00	0.00
Sn3/N7	ST1	-0.22	-0.99	0.53	0.00	0.00	0.00
Sn4/N5	ST1	0.23	-0.98	0.53	0.00	0.00	0.00

12. Reactions; Rx, Ry, Rz



1. Geometry 3x3 m



2. Nodes

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N1	0.000	0.000	0.000
N2	0.000	0.000	2.300
N3	2.900	0.000	0.000
N4	2.900	0.000	2.300
N5	0.000	2.900	0.000
N6	0.000	2.900	2.300
N7	2.900	2.900	0.000
N8	2.900	2.900	2.300
N9	1.450	1.450	2.850

3. Members

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B1	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N1	N2	column (100)
B2	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N3	N4	column (100)
B4	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N5	N6	column (100)
B5	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N7	N8	column (100)
B6	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N2	N4	beam (80)
B7	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N4	N8	beam (80)
B8	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N2	N6	beam (80)
B9	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N6	N8	beam (80)
B10	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N2	N9	beam (80)
B11	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N4	N9	beam (80)
B12	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N9	N8	beam (80)
B13	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N9	N6	beam (80)

4. Nodal supports

Name	Node	System	Type	X	Y	Z	Rx	Ry	Rz
Sn1	N1	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn2	N3	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn3	N7	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn4	N5	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free

5. Hinges

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H1	B10	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H2	B11	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H3	B12	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H4	B13	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

6. Section on beam

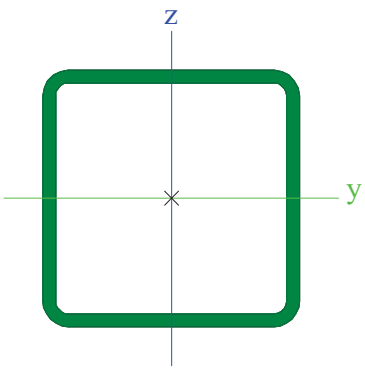
Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB1	B1	Abso	0.250	From end	1
SB2	B2	Abso	0.250	From end	1
SB3	B5	Abso	0.250	From end	1
SB4	B4	Abso	0.250	From end	1
SB5	B6	Abso	0.200	From end	1
SB6	B7	Abso	0.200	From end	1
SB7	B9	Abso	0.200	From end	1
SB8	B8	Abso	0.200	From end	1
SB9	B6	Abso	0.200	From start	1
SB10	B7	Abso	0.200	From start	1
SB11	B9	Abso	0.200	From start	1
SB12	B8	Abso	0.200	From start	1
SB13	B10	Abso	0.200	From start	1
SB14	B11	Abso	0.200	From start	1
SB15	B12	Abso	0.200	From end	1
SB16	B13	Abso	0.200	From end	1

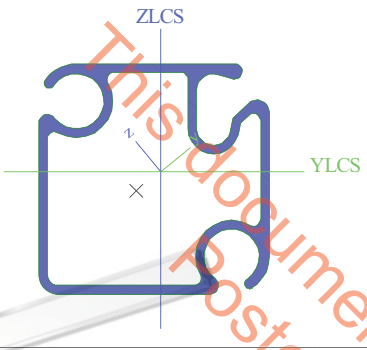
7. Materials

Aluminium

Name Type	ρ [kg/m³]	E_{mod} [MPa] G_{mod} [MPa]	μ α [m/mK]	0.2% proof strength (fo) [MPa] 0.2% proof strength (fo,haz) [MPa] n-value for plastic analysis (np)
EN-AW 6005A (EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	215.0
Aluminium		2.6923e+04	0.00	115.0
				26
EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	250.0
Aluminium		2.6923e+04	0.00	125.0
				32

8. Cross-sections

CS4		
Type	CFRHS40X40X2	
Formcode	2 - Rectangular hollow sections	
Shape type	Thin-walled	
Item material	EN-AW 6005A (EP/H,ET) T6 (0-5)	
Fabrication	cold formed	
Colour		
A [m^2]	2.9400e-04	
A_y [m^2], A_z [m^2]	1.4675e-04	1.4675e-04
A_L [m^2/m], A_D [m^2/m]	1.5300e-01	2.9365e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	20	20
α [deg]	0.00	
I_y [m^4], I_z [m^4]	6.9400e-08	6.9400e-08
i_y [mm], i_z [mm]	15	15
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	3.4700e-06	3.4700e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	4.1300e-06	4.1300e-06
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	8.88e+02	8.88e+02
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	8.88e+02	8.88e+02
d_y [mm], d_z [mm]	0	0
I_t [m^4], I_w [m^6]	1.1280e-07	1.7067e-11
β_y [mm], β_z [mm]	0	0
Picture		

CS5_2.4 buiten		
Type	General cross-section	
Shape type	Thin-walled	
Item material	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	
Fabrication	general	
Colour		
A [m^2]	7.9433e-04	
A_y [m^2], A_z [m^2]	6.8131e-04	5.6117e-04
A_L [m^2/m], A_D [m^2/m]	3.5566e-01	5.9812e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	2	2
$I_{Y.LCS}$ [m^4], $I_{Z.LCS}$ [m^4]	4.0241e-07	3.9486e-07
$I_{YZ.LCS}$ [m^4]	-1.7580e-08	
α [deg]	38.94	
I_y [m^4], I_z [m^4]	4.1661e-07	3.8065e-07
i_y [mm], i_z [mm]	23	22
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	1.0154e-05	8.4242e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	1.5959e-05	1.4593e-05
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	3.99e+03	3.99e+03
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	3.65e+03	3.65e+03
d_y [mm], d_z [mm]	-8	0
I_t [m^4], I_w [m^6]	2.9911e-07	4.0979e-11
β_y [mm], β_z [mm]	-1	8
Picture		

Explanations of symbols	
Formcode	h - Height b - Width s - Thickness r - Outer radius r1 - Inner radius
A	Area
A_y	Shear Area in principal y-direction
A_z	Shear Area in principal z-direction
A_L	Circumference per unit length
A_D	Drying surface per unit length
$c_{Y.UCS}$	Centroid coordinate in Y-direction of Input axis system
$c_{Z.UCS}$	Centroid coordinate in Z-direction of Input axis system
$I_{Y.LCS}$	Second moment of area about the YLCS axis
$I_{Z.LCS}$	Second moment of area about the ZLCS axis
$I_{YZ.LCS}$	Product moment of area in the LCS system
α	Rotation angle of the principal axis system
I_y	Second moment of area about the principal y-axis
I_z	Second moment of area about the principal z-axis
i_y	Radius of gyration about the principal y-axis

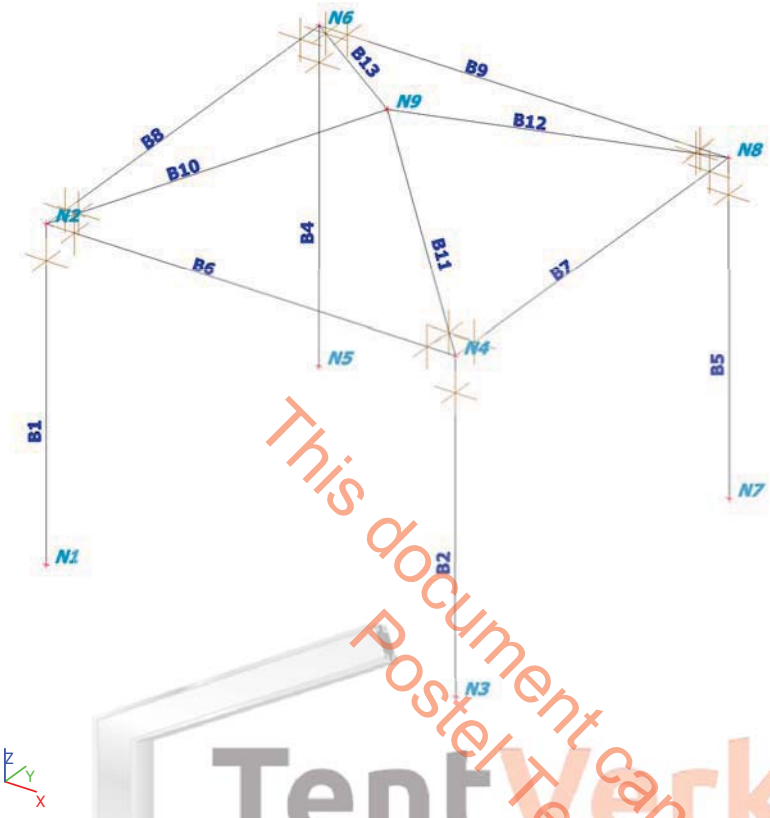
Explanations of symbols	
i_z	Radius of gyration about the principal z-axis
$W_{el.y}$	Elastic section modulus about the principal y-axis
$W_{el.z}$	Elastic section modulus about the principal z-axis
$W_{pl.y}$	Plastic section modulus about the principal y-axis
$W_{pl.z}$	Plastic section modulus about the principal z-axis
$M_{pl.y.+}$	Plastic moment about the principal y-axis for a positive My moment
$M_{pl.y.-}$	Plastic moment about the principal y-axis for a negative My moment
$M_{pl.z.+}$	Plastic moment about the principal z-axis for a positive Mz moment
$M_{pl.z.-}$	Plastic moment about the principal z-axis for a negative Mz moment
d_y	Shear center coordinate in principal y-direction measured from the centroid
d_z	Shear center coordinate in principal z-direction measured from the centroid
I_t	Torsional constant
I_w	Warping constant
β_y	Mono-symmetry constant about the principal y-axis
β_z	Mono-symmetry constant about the principal z-axis

9. Load cases

9.1. Load cases - LC1

Name	Description	Action type	LoadGroup	Direction
	Spec	Load type		
LC1	self weight	Permanent Self weight	LG1	-Z

9.1.1. Load picture



9.2. Load cases - LC2

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC2	membrane self weight	Variable	LG3	Short	None
	Standard	Static			

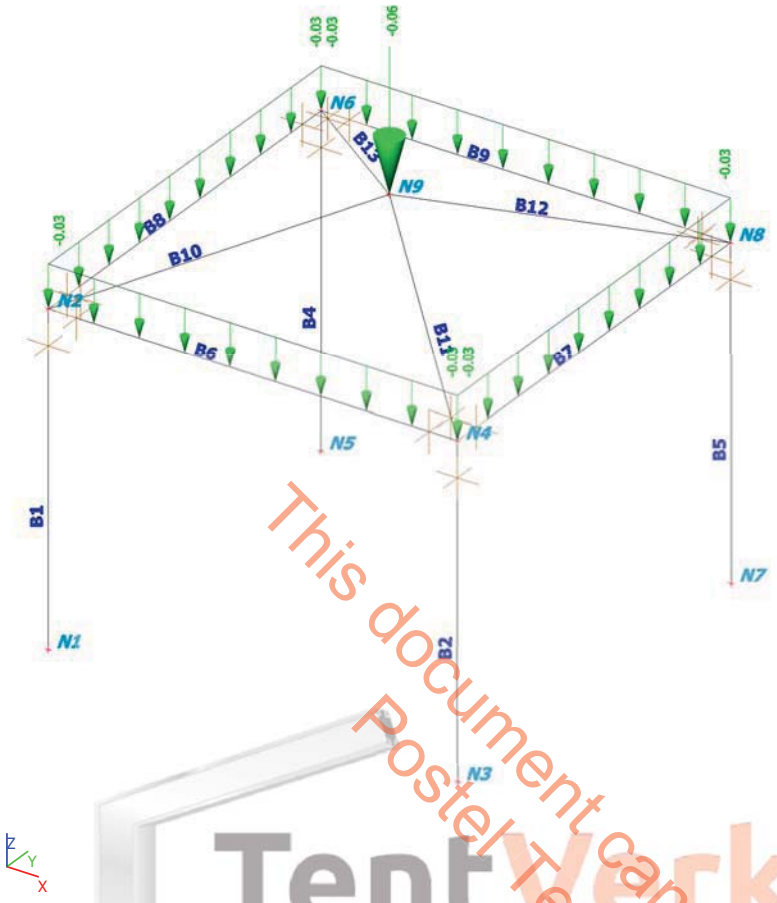
9.2.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF42	B6	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF43	B7	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF44	B9	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF45	B8	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000

9.2.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F2	N9	LC2 - membrane self weight	GCS	Z	Force	-0.06

9.2.3. Load picture



9.3. Load cases - LC3

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC3	wind and prestress	Variable	LG3	Short	None
	Standard	Static			

9.3.1. Line force

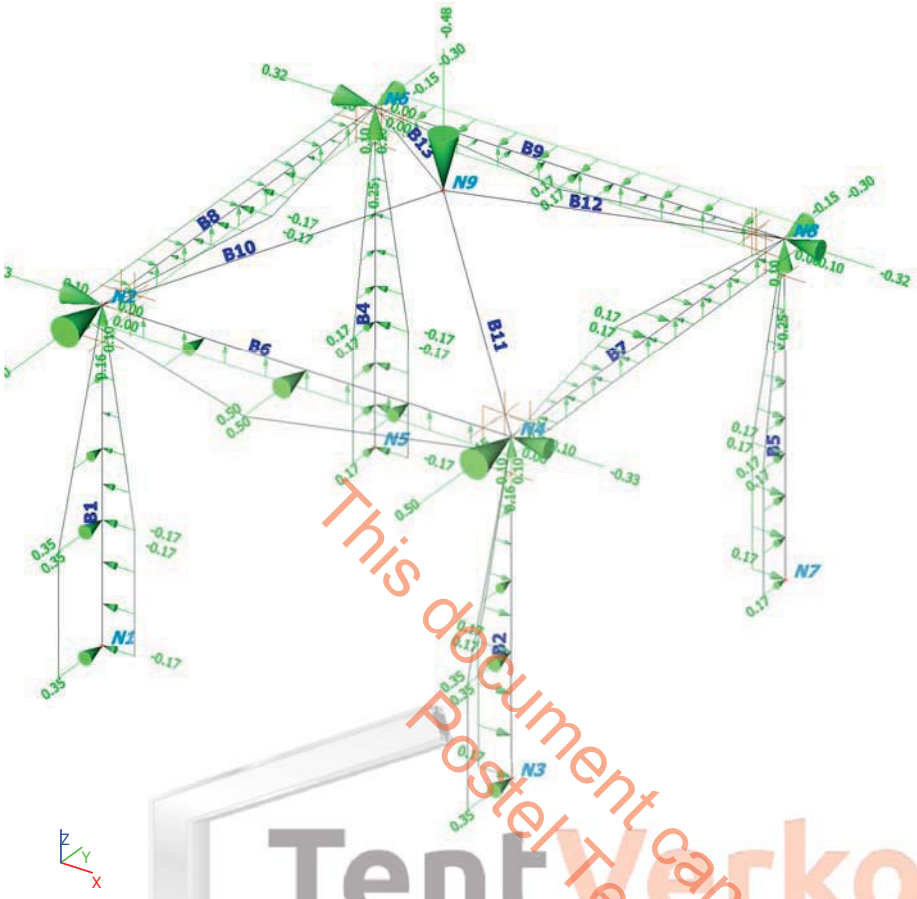
Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
LF17	B1	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.35	1.450	Length		0.000
LF18	B2	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.35	1.450	Length		0.000
LF19	B4	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF20	B5	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF21	B2	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF22	B5	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF23	B1	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	1.450	Length		0.000
LF24	B4	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	1.450	Length		0.000
LF25	B8	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	0.500	Length		0.000
LF26	B7	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF27	B6	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	0.500	Length		0.000
LF29	B7	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
LF31	B8	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF32	B6	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF33	B8	Force	X	-0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF34	B7	Force	X	0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF35	B7	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	0.500	Length		0.000
LF36	B6	Force	Y	0.50	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF37	B9	Force	Y	0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF38	B9	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	0.500	Length		0.000
LF39	B9	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF40	B8	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF41	B9	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF46	B1	Force	Y	0.35	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF47	B2	Force	Y	0.35	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF48	B4	Force	Y	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF49	B5	Force	Y	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF50	B1	Force	X	-0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF51	B4	Force	X	-0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF52	B2	Force	X	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF53	B5	Force	X	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000

9.3.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F4	N4	LC3 - wind and prestress	GCS	Z	Force	0.16
F5	N2	LC3 - wind and prestress	GCS	Z	Force	0.16
F6	N8	LC3 - wind and prestress	GCS	Z	Force	0.25
F7	N6	LC3 - wind and prestress	GCS	Z	Force	0.25
F8	N2	LC3 - wind and prestress	GCS	Y	Force	0.50
F9	N4	LC3 - wind and prestress	GCS	Y	Force	0.50
F10	N6	LC3 - wind and prestress	GCS	Y	Force	-0.30
F11	N8	LC3 - wind and prestress	GCS	Y	Force	-0.30
F12	N2	LC3 - wind and prestress	GCS	X	Force	0.33
F13	N6	LC3 - wind and prestress	GCS	X	Force	0.32
F14	N4	LC3 - wind and prestress	GCS	X	Force	-0.33
F15	N8	LC3 - wind and prestress	GCS	X	Force	-0.32
F16	N9	LC3 - wind and prestress	GCS	Z	Force	-0.48

9.3.3. Load picture



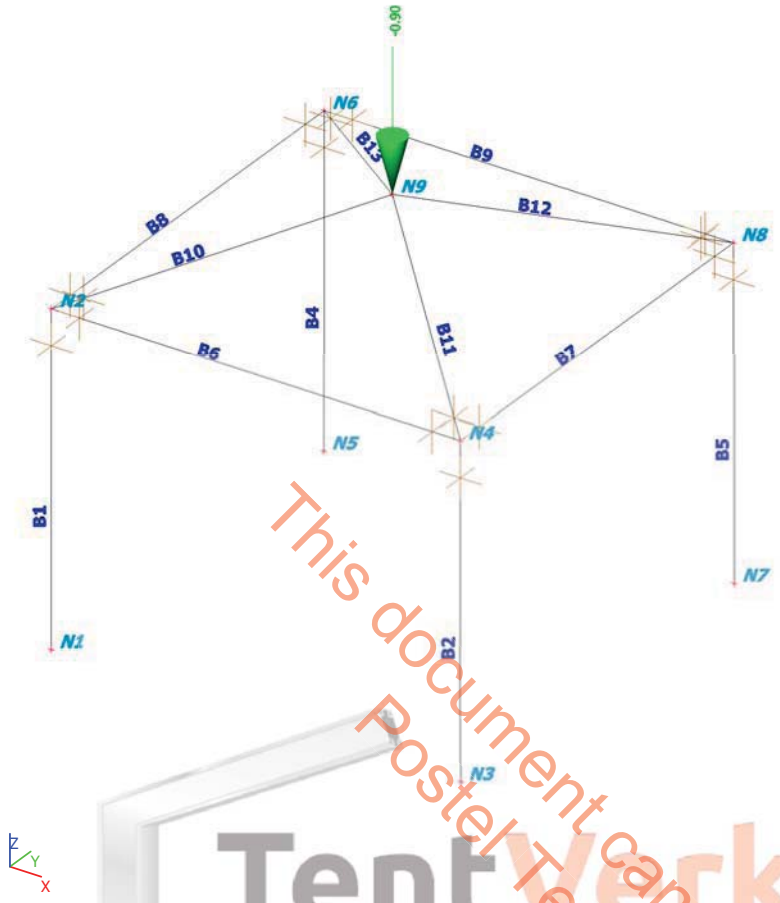
9.4. Load cases - LC4

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC4	equivalent load	Variable	LG3	Short	None
	Standard	Static			

9.4.1. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F1	N9	LC4 - equivalent load	GCS	Z	Force	-0.90

9.4.2. Load picture



10. Nonlinear combinations

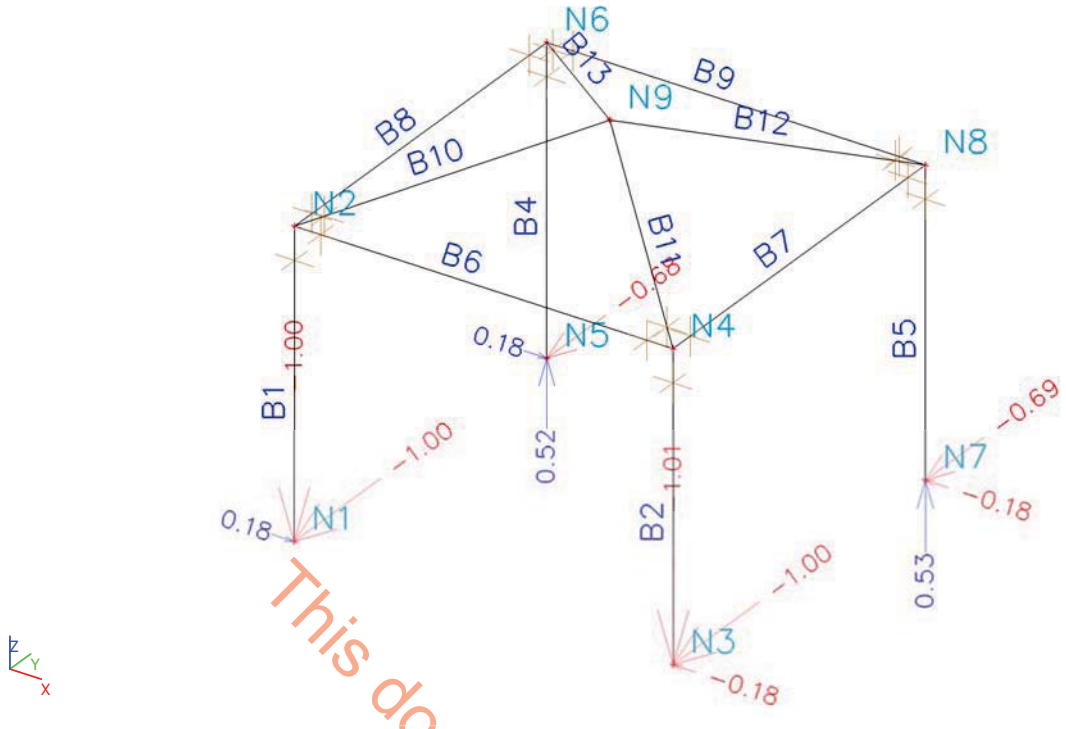
Name	Type	Load cases	Coeff. [-]
NC1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.50
NC2	Ultimate	LC1 - self weight	1.35
		LC2 - membrane self weight	1.35
		LC4 - equivalent load	1.35
ST1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.20

11. Reactions

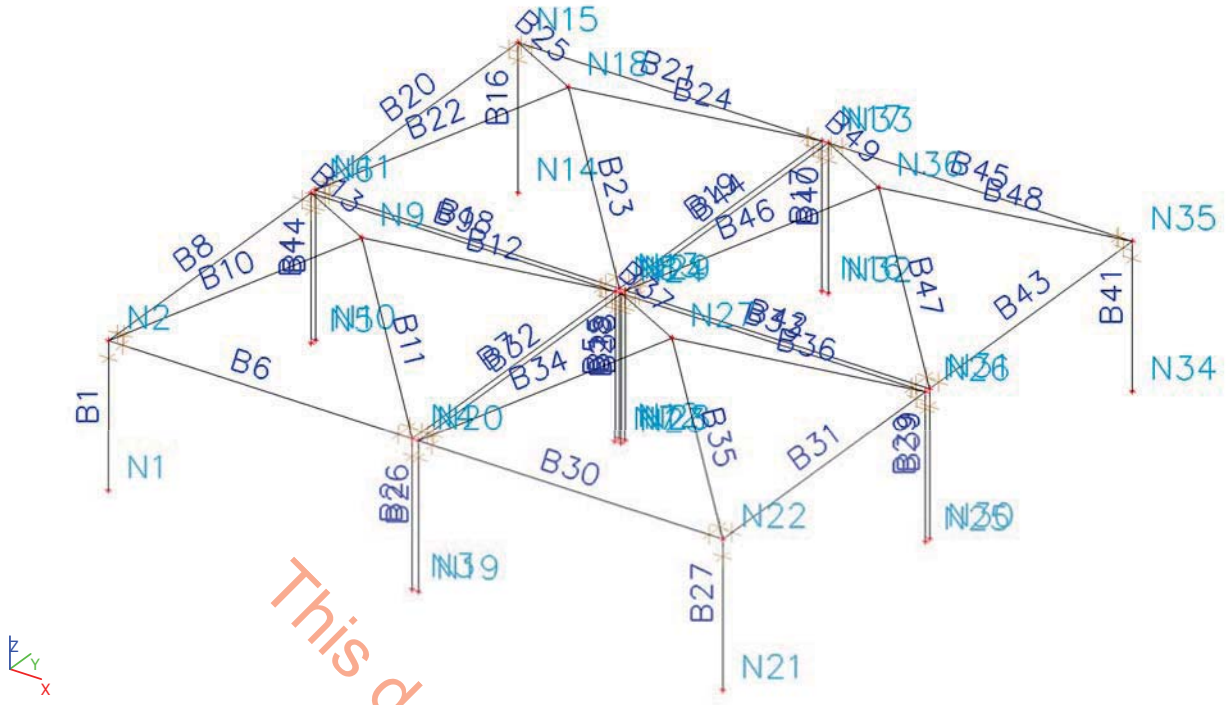
Nonlinear calculation, Extreme : No
Selection : All
Nonlinear combinations : ST1

Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn1/N1	ST1	0.18	-1.00	-1.00	0.00	0.00	0.00
Sn2/N3	ST1	-0.18	-1.00	-1.01	0.00	0.00	0.00
Sn3/N7	ST1	-0.18	-0.69	0.53	0.00	0.00	0.00
Sn4/N5	ST1	0.18	-0.68	0.52	0.00	0.00	0.00

12. Reactions; Rx, Ry, Rz



1. Geometry 5x5 m 4x



2. Nodes

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N1	0.000	0.000	0.000
N2	0.000	0.000	2.300
N3	4.900	0.000	0.000
N4	4.900	0.000	2.300
N5	0.000	4.900	0.000
N6	0.000	4.900	2.300
N7	4.900	4.900	0.000
N8	4.900	4.900	2.300
N9	2.450	2.450	3.500
N10	0.000	5.000	0.000
N11	0.000	5.000	2.300
N12	4.900	5.000	0.000

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N13	4.900	5.000	2.300
N14	0.000	9.900	0.000
N15	0.000	9.900	2.300
N16	4.900	9.900	0.000
N17	4.900	9.900	2.300
N18	2.450	7.450	3.500
N19	5.000	0.000	0.000
N20	5.000	0.000	2.300
N21	9.900	0.000	0.000
N22	9.900	0.000	2.300
N23	5.000	4.900	0.000
N24	5.000	4.900	2.300

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N25	9.900	4.900	0.000
N26	9.900	4.900	2.300
N27	7.450	2.450	3.500
N28	5.000	5.000	0.000
N29	5.000	5.000	2.300
N30	9.900	5.000	0.000
N31	9.900	5.000	2.300
N32	5.000	9.900	0.000
N33	5.000	9.900	2.300
N34	9.900	9.900	0.000
N35	9.900	9.900	2.300
N36	7.450	7.450	3.500

3. Members

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B1	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N1	N2	column (100)
B2	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N3	N4	column (100)
B4	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N5	N6	column (100)
B5	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N7	N8	column (100)
B6	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N2	N4	beam (80)
B7	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N4	N8	beam (80)
B8	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N2	N6	beam (80)
B9	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N6	N8	beam (80)
B10	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N2	N9	beam (80)
B11	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N4	N9	beam (80)
B12	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N9	N8	beam (80)
B13	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N9	N6	beam (80)
B14	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N10	N11	column (100)
B15	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N12	N13	column (100)
B16	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N14	N15	column (100)

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B17	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N16	N17	column (100)
B18	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N11	N13	beam (80)
B19	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N13	N17	beam (80)
B20	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N11	N15	beam (80)
B21	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N15	N17	beam (80)
B22	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N11	N18	beam (80)
B23	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N13	N18	beam (80)
B24	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N18	N17	beam (80)
B25	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N18	N15	beam (80)
B26	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N19	N20	column (100)
B27	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N21	N22	column (100)
B28	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N23	N24	column (100)
B29	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N25	N26	column (100)
B30	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N20	N22	beam (80)
B31	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N22	N26	beam (80)
B32	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N20	N24	beam (80)
B33	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N24	N26	beam (80)
B34	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N20	N27	beam (80)
B35	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N22	N27	beam (80)
B36	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N27	N26	beam (80)
B37	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N27	N24	beam (80)
B38	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N28	N29	column (100)
B39	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N30	N31	column (100)
B40	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N32	N33	column (100)
B41	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N34	N35	column (100)
B42	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N29	N31	beam (80)
B43	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N31	N35	beam (80)
B44	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N29	N33	beam (80)
B45	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	4.900	N33	N35	beam (80)
B46	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N29	N36	beam (80)
B47	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N31	N36	beam (80)
B48	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N36	N35	beam (80)
B49	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	3.667	N36	N33	beam (80)

4. Nodal supports

Name	Node	System	Type	X	Y	Z	Rx	Ry	Rz
Sn1	N1	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn2	N3	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn3	N7	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn4	N5	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn5	N10	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn6	N12	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn7	N14	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn8	N16	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn9	N19	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn10	N21	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn11	N23	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn12	N25	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn13	N28	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn14	N30	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn15	N32	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn16	N34	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free

5. Hinges

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H1	B10	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H2	B11	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H3	B12	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H4	B13	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H5	B22	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H6	B23	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H7	B24	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H8	B25	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H9	B34	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H10	B35	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H11	B36	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H12	B37	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H13	B46	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H14	B47	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H15	B48	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H16	B49	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

6. Section on beam

Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB1	B1	Abso	0.270	From end	1
SB2	B2	Abso	0.270	From end	1
SB3	B5	Abso	0.270	From end	1
SB4	B4	Abso	0.270	From end	1
SB5	B6	Abso	0.220	From end	1
SB6	B7	Abso	0.220	From end	1
SB7	B9	Abso	0.220	From end	1
SB8	B8	Abso	0.220	From end	1
SB9	B6	Abso	0.220	From start	1
SB10	B7	Abso	0.220	From start	1
SB11	B9	Abso	0.220	From start	1
SB12	B8	Abso	0.220	From start	1
SB13	B10	Abso	0.220	From start	1
SB14	B11	Abso	0.220	From start	1
SB15	B12	Abso	0.220	From end	1
SB16	B13	Abso	0.220	From end	1
SB17	B14	Abso	0.270	From end	1
SB18	B15	Abso	0.270	From end	1
SB19	B16	Abso	0.270	From end	1
SB20	B17	Abso	0.270	From end	1
SB21	B18	Abso	0.220	From end	1
SB22	B18	Abso	0.220	From start	1
SB23	B19	Abso	0.220	From end	1
SB24	B19	Abso	0.220	From start	1
SB25	B20	Abso	0.220	From end	1
SB26	B20	Abso	0.220	From start	1
SB27	B21	Abso	0.220	From end	1
SB28	B21	Abso	0.220	From start	1
SB29	B22	Abso	0.220	From start	1
SB30	B23	Abso	0.220	From start	1
SB31	B24	Abso	0.220	From end	1
SB32	B25	Abso	0.220	From end	1
SB33	B26	Abso	0.270	From end	1
SB34	B27	Abso	0.270	From end	1
SB35	B28	Abso	0.270	From end	1
SB36	B29	Abso	0.270	From end	1
SB37	B30	Abso	0.220	From end	1
SB38	B30	Abso	0.220	From start	1
SB39	B31	Abso	0.220	From end	1
SB40	B31	Abso	0.220	From start	1
SB41	B32	Abso	0.220	From end	1
SB42	B32	Abso	0.220	From start	1
SB43	B33	Abso	0.220	From end	1
SB44	B33	Abso	0.220	From start	1
SB45	B34	Abso	0.220	From start	1
SB46	B35	Abso	0.220	From start	1
SB47	B36	Abso	0.220	From end	1
SB48	B37	Abso	0.220	From end	1
SB49	B38	Abso	0.270	From end	1
SB50	B39	Abso	0.270	From end	1
SB51	B40	Abso	0.270	From end	1
SB52	B41	Abso	0.270	From end	1
SB53	B42	Abso	0.220	From end	1
SB54	B42	Abso	0.220	From start	1

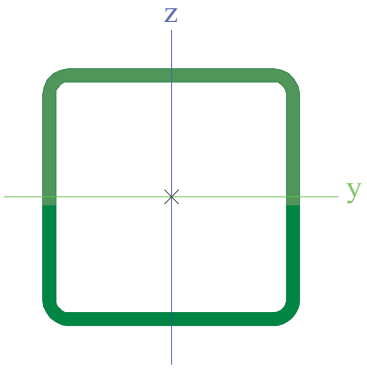
Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB55	B43	Abso	0.220	From end	1
SB56	B43	Abso	0.220	From start	1
SB57	B44	Abso	0.220	From end	1
SB58	B44	Abso	0.220	From start	1
SB59	B45	Abso	0.220	From end	1
SB60	B45	Abso	0.220	From start	1
SB61	B46	Abso	0.220	From start	1
SB62	B47	Abso	0.220	From start	1
SB63	B48	Abso	0.220	From end	1
SB64	B49	Abso	0.220	From end	1

7. Materials

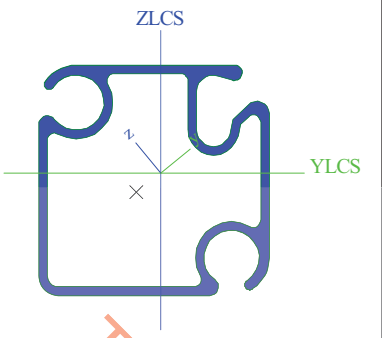
Aluminium

Name / Type	ρ [kg/m³]	E_{mod} [MPa] / G_{mod} [MPa]	μ / α [m/mK]	0.2% proof strength (fo) [MPa] / 0.2% proof strength (fo,haz) [MPa] / n-value for plastic analysis (np)
EN-AW 6005A (EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	215.0
Aluminium		2.6923e+04	0.00	115.0
				26
EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	250.0
Aluminium		2.6923e+04	0.00	125.0
				32

8. Cross-sections

CS4		
Type	CFRHS40X40X2	
Formcode	2 - Rectangular hollow sections	
Shape type	Thin-walled	
Item material	EN-AW 6005A (EP/H,ET) T6 (0-5)	
Fabrication	cold formed	
Colour		
A [m²]	2.9400e-04	
A_y [m²], A_z [m²]	1.4675e-04	1.4675e-04
A_L [m²/m], A_D [m²/m]	1.5300e-01	2.9365e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	20	20
α [deg]	0.00	
I_y [m⁴], I_z [m⁴]	6.9400e-08	6.9400e-08
i_y [mm], i_z [mm]	15	15
$W_{el.y}$ [m³], $W_{el.z}$ [m³]	3.4700e-06	3.4700e-06
$W_{pl.y}$ [m³], $W_{pl.z}$ [m³]	4.1300e-06	4.1300e-06
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	8.88e+02	8.88e+02
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	8.88e+02	8.88e+02
d_y [mm], d_z [mm]	0	0
I_t [m⁴], I_w [m⁶]	1.1280e-07	1.7067e-11
β_y [mm], β_z [mm]	0	0
Picture		

CS5_2.4 buiten		
Type	General cross-section	
Shape type	Thin-walled	
Item material	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	
Fabrication	general	
Colour		
A [m²]	7.9433e-04	
A_y [m²], A_z [m²]	6.8131e-04	5.6117e-04
A_L [m²/m], A_D [m²/m]	3.5566e-01	5.9812e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	2	2
$I_{Y.LCS}$ [m⁴], $I_{Z.LCS}$ [m⁴]	4.0241e-07	3.9486e-07

$I_{YZ.LCS}$ [m^4]	-1.7580e-08	
α [deg]	38.94	
I_y [m^4], I_z [m^4]	4.1661e-07	3.8065e-07
i_y [mm], i_z [mm]	23	22
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	1.0154e-05	8.4242e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	1.5959e-05	1.4593e-05
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	3.99e+03	3.99e+03
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	3.65e+03	3.65e+03
d_y [mm], d_z [mm]	-8	0
I_t [m^4], I_w [m^6]	2.9911e-07	4.0979e-11
β_y [mm], β_z [mm]	-1	8
Picture		

Explanations of symbols	
Formcode	h - Height b - Width s - Thickness r - Outer radius r1 - Inner radius
A	Area
A_y	Shear Area in principal y-direction
A_z	Shear Area in principal z-direction
A_L	Circumference per unit length
A_D	Drying surface per unit length
$c_{Y.UCS}$	Centroid coordinate in Y-direction of Input axis system
$c_{Z.UCS}$	Centroid coordinate in Z-direction of Input axis system
$I_{Y.LCS}$	Second moment of area about the YLCS axis
$I_{Z.LCS}$	Second moment of area about the ZLCS axis
$I_{YZ.LCS}$	Product moment of area in the LCS system
α	Rotation angle of the principal axis system
I_y	Second moment of area about the principal y-axis
I_z	Second moment of area about the principal z-axis
i_y	Radius of gyration about the principal y-axis

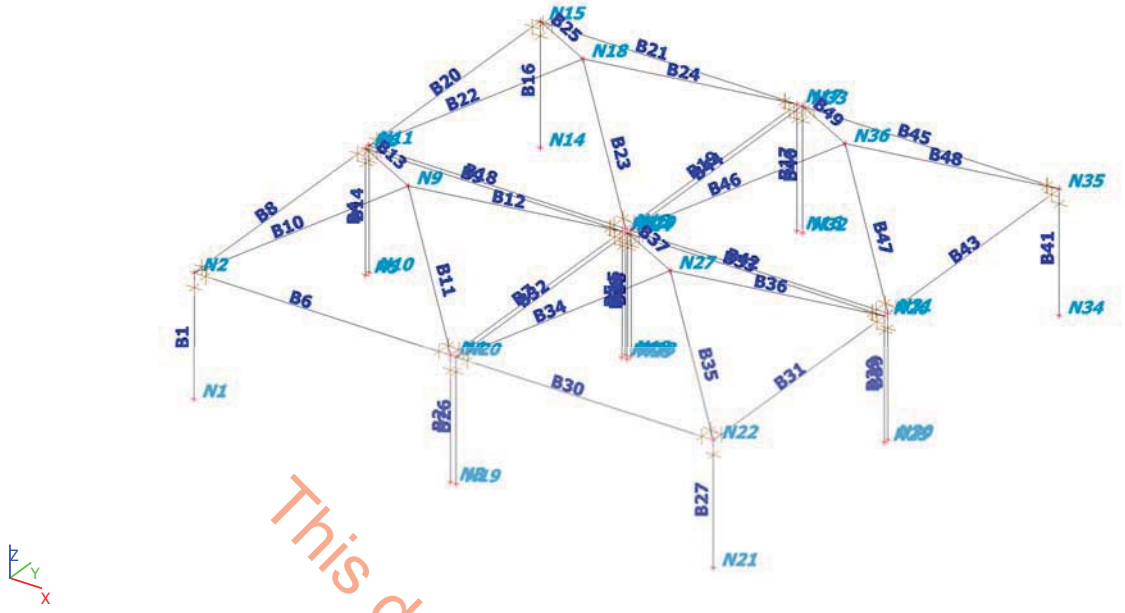
Explanations of symbols	
i_z	Radius of gyration about the principal z-axis
$W_{el.y}$	Elastic section modulus about the principal y-axis
$W_{el.z}$	Elastic section modulus about the principal z-axis
$W_{pl.y}$	Plastic section modulus about the principal y-axis
$W_{pl.z}$	Plastic section modulus about the principal z-axis
$M_{pl.y.+}$	Plastic moment about the principal y-axis for a positive My moment
$M_{pl.y.-}$	Plastic moment about the principal y-axis for a negative My moment
$M_{pl.z.+}$	Plastic moment about the principal z-axis for a positive Mz moment
$M_{pl.z.-}$	Plastic moment about the principal z-axis for a negative Mz moment
d_y	Shear center coordinate in principal y-direction measured from the centroid
d_z	Shear center coordinate in principal z-direction measured from the centroid
I_t	Torsional constant
I_w	Warping constant
β_y	Mono-symmetry constant about the principal y-axis
β_z	Mono-symmetry constant about the principal z-axis

9. Load cases

9.1. Load cases - LC1

Name	Description	Action type	LoadGroup	Direction
	Spec	Load type		
LC1	self weight	Permanent	LG1	-Z
		Self weight		

9.1.1. Load picture



9.2. Load cases - LC2

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC2	membrane self weight	Variable	LG3	Short	None
	Standard	Static			

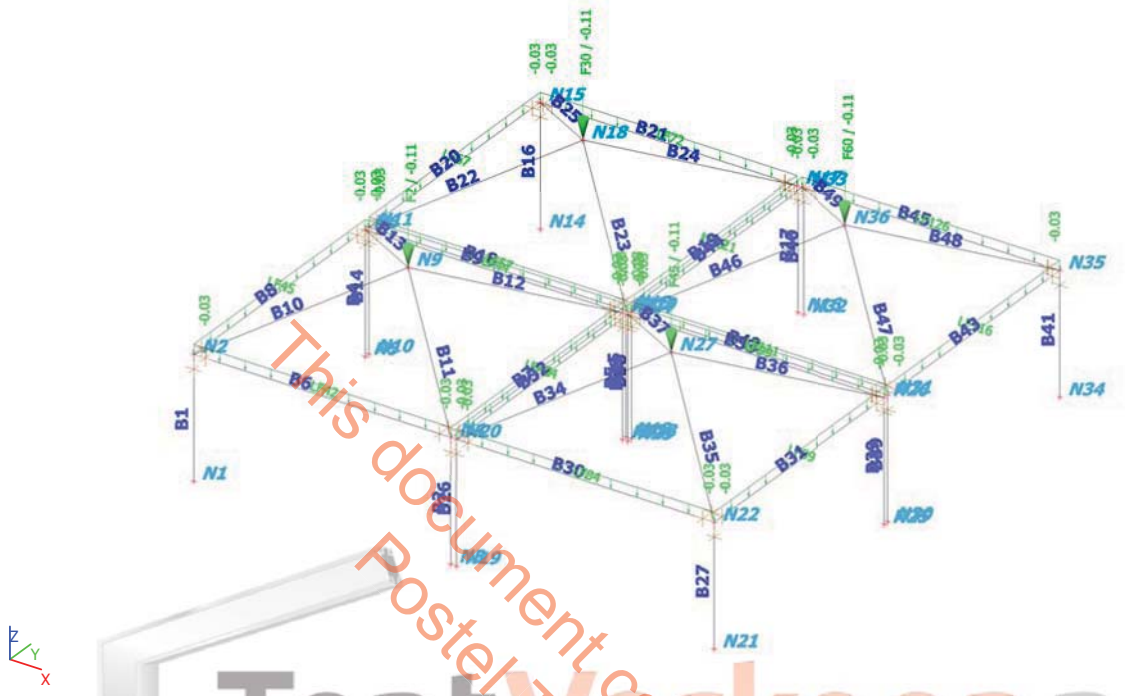
9.2.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF42	B6	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF43	B7	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF44	B9	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF45	B8	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF57	B18	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF62	B19	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF67	B20	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF72	B21	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF84	B30	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF89	B31	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF94	B32	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF99	B33	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF111	B42	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF116	B43	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF121	B44	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF126	B45	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000

9.2.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F2	N9	LC2 - membrane self weight	GCS	Z	Force	-0.11
F30	N18	LC2 - membrane self weight	GCS	Z	Force	-0.11
F45	N27	LC2 - membrane self weight	GCS	Z	Force	-0.11
F60	N36	LC2 - membrane self weight	GCS	Z	Force	-0.11

9.2.3. Load picture



9.3. Load cases - LC3

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC3	wind and prestress	Variable	LG3	Short	None
	Standard	Static			

9.3.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF17	B1	Force	Y	0.60	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF18	B2	Force	Y	0.60	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF23	B1	Force	X	-0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF24	B4	Force	X	-0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF25	B8	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.30	0.500	Length		0.000
LF26	B7	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF27	B6	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.75	0.500	Length		0.000
LF29	B7	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF31	B8	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF32	B6	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF33	B8	Force	X	-0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF36	B6	Force	Y	0.75	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF39	B9	Force	Y	-0.15	0.000	Rela	From start	0.000

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF40	B8	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF41	B9	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF47	B14	Force	X	-0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF50	B16	Force	Y	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF51	B16	Force	X	-0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF52	B17	Force	Y	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF55	B18	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF58	B19	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF59	B19	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF63	B20	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.30	0.500	Length		0.000
LF64	B20	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF65	B20	Force	X	-0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF66	B20	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF68	B21	Force	Y	0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF69	B21	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.30	0.500	Length		0.000
LF70	B21	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF71	B21	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF73	B26	Force	Y	0.60	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF75	B27	Force	Y	0.60	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF76	B27	Force	X	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF80	B29	Force	X	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF81	B30	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.75	0.500	Length		0.000
LF82	B30	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF83	B30	Force	Y	0.75	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF85	B31	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF86	B31	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF87	B31	Force	X	0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF88	B31	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.30	0.500	Length		0.000
LF91	B32	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF93	B32	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF97	B33	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF98	B33	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF103	B39	Force	X	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF104	B40	Force	Y	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF106	B41	Force	Y	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF107	B41	Force	X	0.30	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF109	B42	Force	Z	0.10	0.000	Rela	From start	0.000

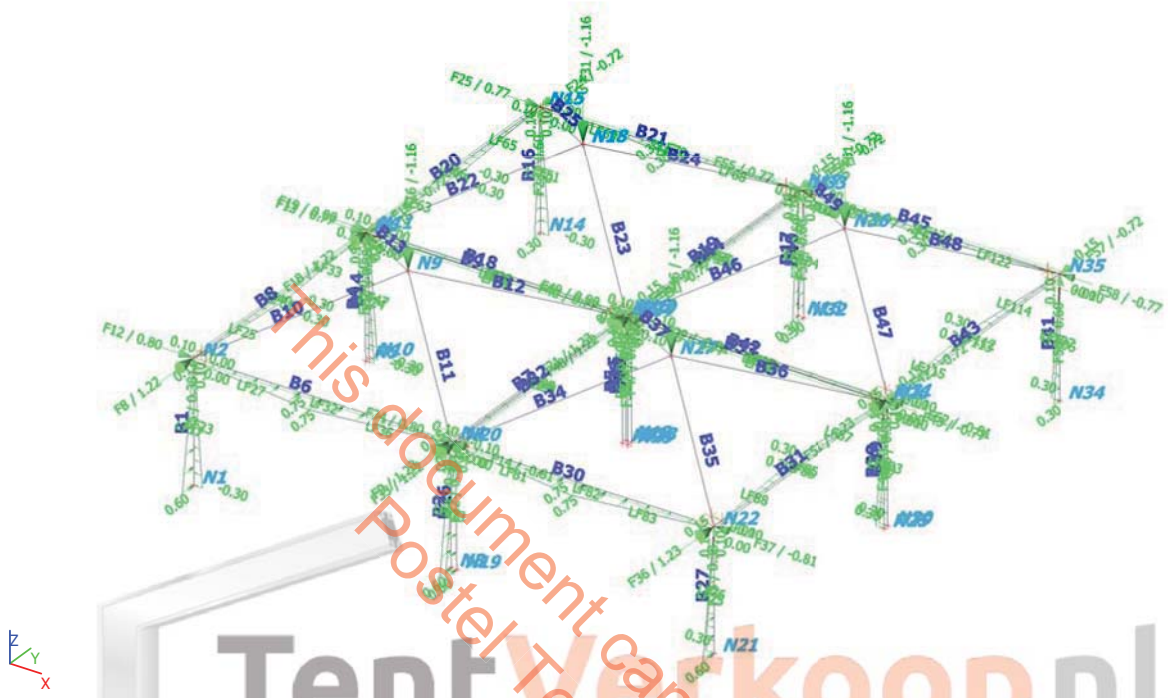
Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF112	B43	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF113	B43	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF114	B43	Force	X	0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF115	B43	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.30	0.500	Length		0.000
LF118	B44	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF120	B44	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF122	B45	Force	Y	0.30	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF123	B45	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.30	0.500	Length		0.000
LF124	B45	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF125	B45	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF127	B42	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF128	B18	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000

9.3.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F4	N4	LC3 - wind and prestress	GCS	Z	Force	0.38
F5	N2	LC3 - wind and prestress	GCS	Z	Force	0.38
F6	N8	LC3 - wind and prestress	GCS	Z	Force	0.60
F7	N6	LC3 - wind and prestress	GCS	Z	Force	0.60
F8	N2	LC3 - wind and prestress	GCS	Y	Force	1.22
F9	N4	LC3 - wind and prestress	GCS	Y	Force	1.23
F10	N6	LC3 - wind and prestress	GCS	Y	Force	-0.72
F11	N8	LC3 - wind and prestress	GCS	Y	Force	-0.72
F12	N2	LC3 - wind and prestress	GCS	X	Force	0.80
F13	N6	LC3 - wind and prestress	GCS	X	Force	0.77
F14	N4	LC3 - wind and prestress	GCS	X	Force	-0.81
F15	N8	LC3 - wind and prestress	GCS	X	Force	-0.77
F16	N9	LC3 - wind and prestress	GCS	Z	Force	-1.16
F17	N11	LC3 - wind and prestress	GCS	Z	Force	0.38
F18	N11	LC3 - wind and prestress	GCS	Y	Force	1.22
F19	N11	LC3 - wind and prestress	GCS	X	Force	0.80
F20	N13	LC3 - wind and prestress	GCS	Z	Force	0.38
F21	N13	LC3 - wind and prestress	GCS	Y	Force	1.23
F22	N13	LC3 - wind and prestress	GCS	X	Force	-0.81
F23	N15	LC3 - wind and prestress	GCS	Z	Force	0.60
F24	N15	LC3 - wind and prestress	GCS	Y	Force	-0.72
F25	N15	LC3 - wind and prestress	GCS	X	Force	0.77
F26	N17	LC3 - wind and prestress	GCS	Z	Force	0.60
F27	N17	LC3 - wind and prestress	GCS	Y	Force	-0.72
F28	N17	LC3 - wind and prestress	GCS	X	Force	-0.77
F31	N18	LC3 - wind and prestress	GCS	Z	Force	-1.16
F32	N20	LC3 - wind and prestress	GCS	Z	Force	0.38
F33	N20	LC3 - wind and prestress	GCS	Y	Force	1.22
F34	N20	LC3 - wind and prestress	GCS	X	Force	0.80
F35	N22	LC3 - wind and prestress	GCS	Z	Force	0.38
F36	N22	LC3 - wind and prestress	GCS	Y	Force	1.23
F37	N22	LC3 - wind and prestress	GCS	X	Force	-0.81
F38	N24	LC3 - wind and prestress	GCS	Z	Force	0.60
F39	N24	LC3 - wind and prestress	GCS	Y	Force	-0.72
F40	N24	LC3 - wind and prestress	GCS	X	Force	0.77
F41	N26	LC3 - wind and prestress	GCS	Z	Force	0.60
F42	N26	LC3 - wind and prestress	GCS	Y	Force	-0.72
F43	N26	LC3 - wind and prestress	GCS	X	Force	-0.77
F46	N27	LC3 - wind and prestress	GCS	Z	Force	-1.16
F47	N29	LC3 - wind and prestress	GCS	Z	Force	0.38
F48	N29	LC3 - wind and prestress	GCS	Y	Force	1.22
F49	N29	LC3 - wind and prestress	GCS	X	Force	0.80
F50	N31	LC3 - wind and prestress	GCS	Z	Force	0.38
F51	N31	LC3 - wind and prestress	GCS	Y	Force	1.23
F52	N31	LC3 - wind and prestress	GCS	X	Force	-0.81

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F53	N33	LC3 - wind and prestress	GCS	Z	Force	0.60
F54	N33	LC3 - wind and prestress	GCS	Y	Force	-0.72
F55	N33	LC3 - wind and prestress	GCS	X	Force	0.77
F56	N35	LC3 - wind and prestress	GCS	Z	Force	0.60
F57	N35	LC3 - wind and prestress	GCS	Y	Force	-0.72
F58	N35	LC3 - wind and prestress	GCS	X	Force	-0.77
F61	N36	LC3 - wind and prestress	GCS	Z	Force	-1.16

9.3.3. Load picture



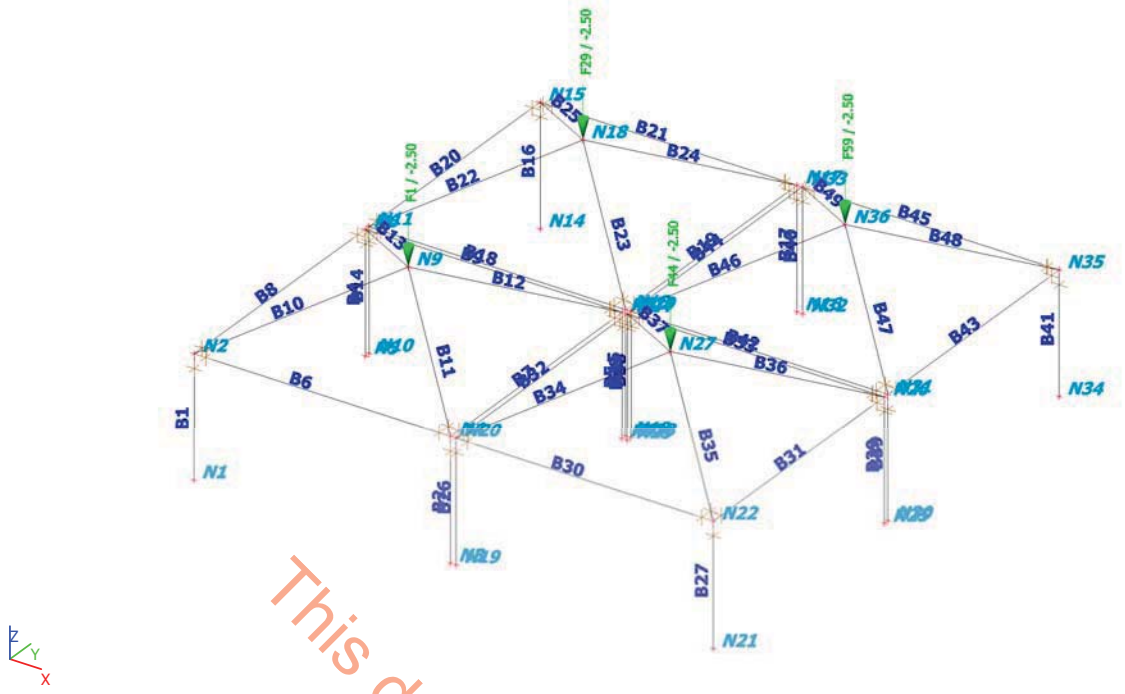
9.4. Load cases - LC4

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC4	equivalent load	Variable	LG3	Short	None
	Standard	Static			

9.4.1. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F1	N9	LC4 - equivalent load	GCS	Z	Force	-2.50
F29	N18	LC4 - equivalent load	GCS	Z	Force	-2.50
F44	N27	LC4 - equivalent load	GCS	Z	Force	-2.50
F59	N36	LC4 - equivalent load	GCS	Z	Force	-2.50

9.4.2. Load picture



10. Nonlinear combinations

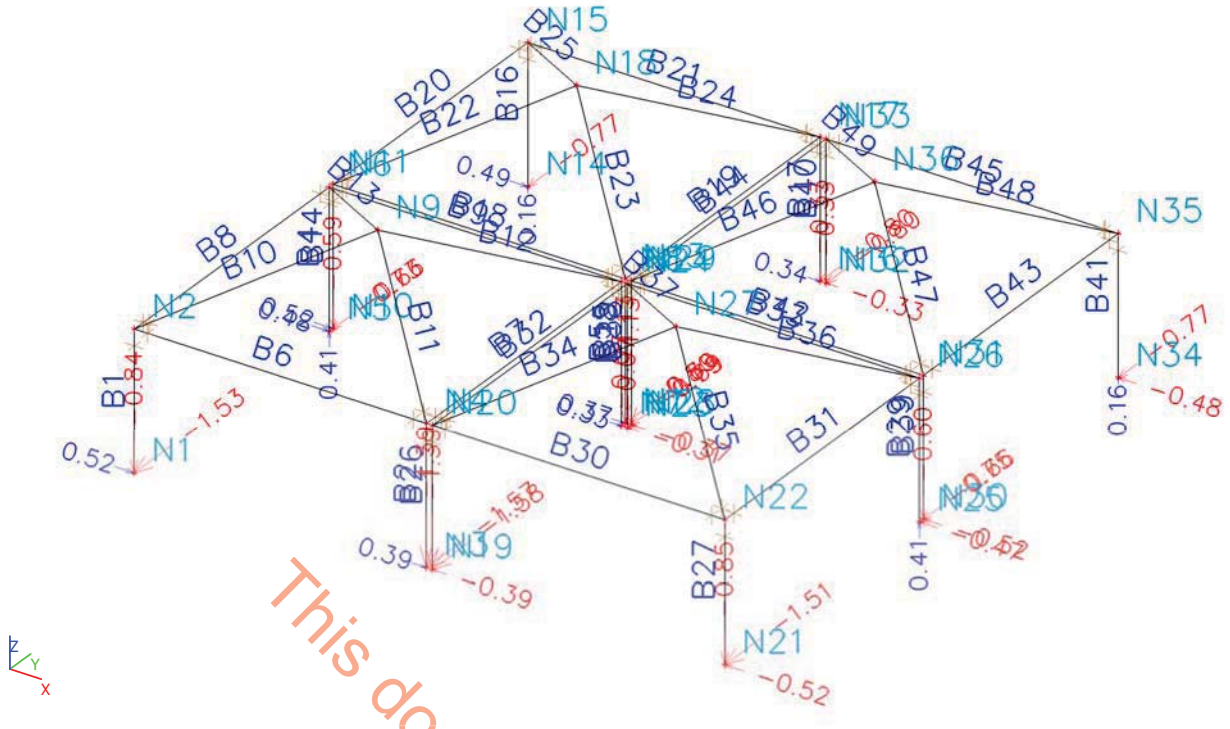
Name	Type	Load cases	Coeff. [-]
NC1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.50
NC2	Ultimate	LC1 - self weight	1.35
		LC2 - membrane self weight	1.35
		LC4 - equivalent load	1.35
ST1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.20

11. Reactions

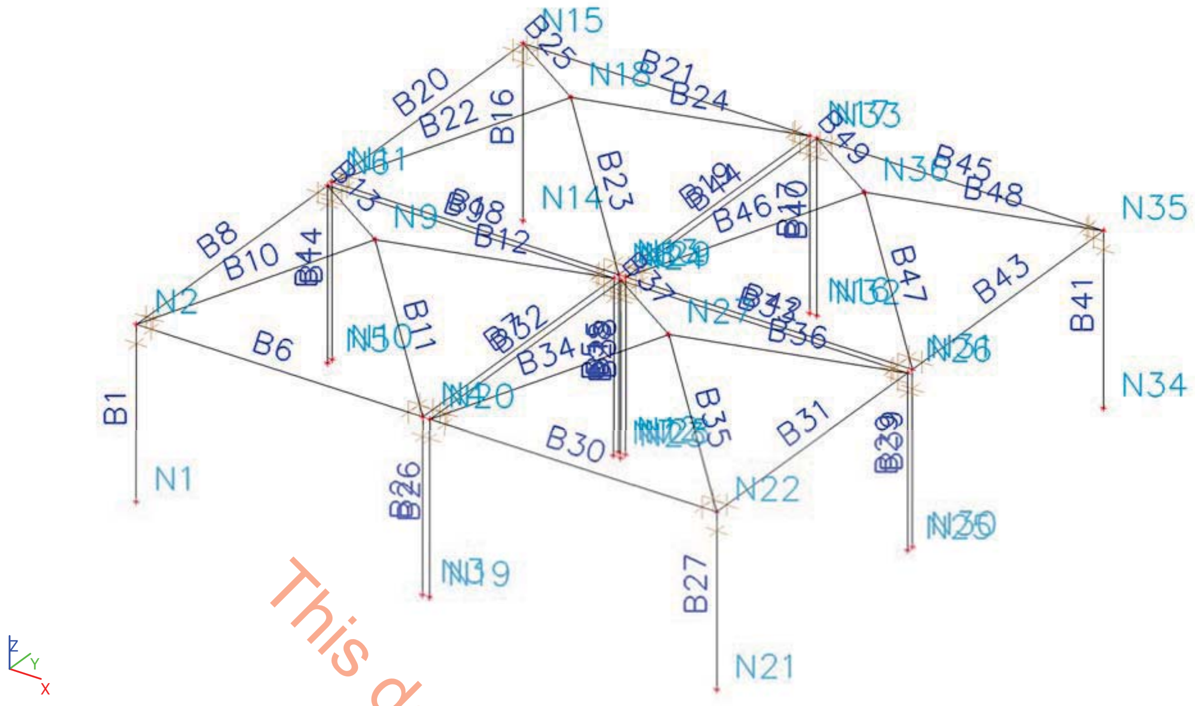
Nonlinear calculation, Extreme : No
Selection : All
Nonlinear combinations : ST1

Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn1/N1	ST1	0.52	-1.53	-0.84	0.00	0.00	0.00
Sn2/N3	ST1	0.39	-1.57	-1.39	0.00	0.00	0.00
Sn3/N7	ST1	0.33	-0.80	-0.07	0.00	0.00	0.00
Sn4/N5	ST1	0.48	-0.73	0.41	0.00	0.00	0.00
Sn5/N10	ST1	0.52	-0.66	-0.59	0.00	0.00	0.00
Sn6/N12	ST1	0.37	-0.69	-1.13	0.00	0.00	0.00
Sn7/N14	ST1	0.49	-0.77	0.16	0.00	0.00	0.00
Sn8/N16	ST1	0.34	-0.80	-0.33	0.00	0.00	0.00
Sn9/N19	ST1	-0.39	-1.58	-1.39	0.00	0.00	0.00
Sn10/N21	ST1	-0.52	-1.51	-0.85	0.00	0.00	0.00
Sn11/N23	ST1	-0.31	-0.79	-0.07	0.00	0.00	0.00
Sn12/N25	ST1	-0.47	-0.75	0.41	0.00	0.00	0.00
Sn13/N28	ST1	-0.37	-0.69	-1.13	0.00	0.00	0.00
Sn14/N30	ST1	-0.52	-0.66	-0.60	0.00	0.00	0.00
Sn15/N32	ST1	-0.33	-0.80	-0.33	0.00	0.00	0.00
Sn16/N34	ST1	-0.48	-0.77	0.16	0.00	0.00	0.00

12. Reactions; Rx, Ry, Rz



1. Geometry 4x4 m 4x



2. Nodes

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N1	0.000	0.000	0.000
N2	0.000	0.000	2.300
N3	3.900	0.000	0.000
N4	3.900	0.000	2.300
N5	0.000	3.900	0.000
N6	0.000	3.900	2.300
N7	3.900	3.900	0.000
N8	3.900	3.900	2.300
N9	1.950	1.950	3.100
N10	0.000	4.000	0.000
N11	0.000	4.000	2.300
N12	3.900	4.000	0.000

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N13	3.900	4.000	2.300
N14	0.000	7.900	0.000
N15	0.000	7.900	2.300
N16	3.900	7.900	0.000
N17	3.900	7.900	2.300
N18	1.950	5.950	3.100
N19	4.000	0.000	0.000
N20	4.000	0.000	2.300
N21	7.900	0.000	0.000
N22	7.900	0.000	2.300
N23	4.000	3.900	0.000
N24	4.000	3.900	2.300

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N25	7.900	3.900	0.000
N26	7.900	3.900	2.300
N27	5.950	1.950	3.100
N28	4.000	4.000	0.000
N29	4.000	4.000	2.300
N30	7.900	4.000	0.000
N31	7.900	4.000	2.300
N32	4.000	7.900	0.000
N33	4.000	7.900	2.300
N34	7.900	7.900	0.000
N35	7.900	7.900	2.300
N36	5.950	5.950	3.100

3. Members

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B1	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N1	N2	column (100)
B2	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N3	N4	column (100)
B4	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N5	N6	column (100)
B5	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N7	N8	column (100)
B6	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N2	N4	beam (80)
B7	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N4	N8	beam (80)
B8	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N2	N6	beam (80)
B9	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N6	N8	beam (80)
B10	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N2	N9	beam (80)
B11	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N4	N9	beam (80)
B12	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N9	N8	beam (80)
B13	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N9	N6	beam (80)
B14	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N10	N11	column (100)
B15	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N12	N13	column (100)
B16	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N14	N15	column (100)

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B17	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N16	N17	column (100)
B18	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N11	N13	beam (80)
B19	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N13	N17	beam (80)
B20	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N11	N15	beam (80)
B21	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N15	N17	beam (80)
B22	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N11	N18	beam (80)
B23	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N13	N18	beam (80)
B24	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N18	N17	beam (80)
B25	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N18	N15	beam (80)
B26	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N19	N20	column (100)
B27	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N21	N22	column (100)
B28	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N23	N24	column (100)
B29	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N25	N26	column (100)
B30	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N20	N22	beam (80)
B31	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N22	N26	beam (80)
B32	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N20	N24	beam (80)
B33	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N24	N26	beam (80)
B34	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N20	N27	beam (80)
B35	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N22	N27	beam (80)
B36	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N27	N26	beam (80)
B37	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N27	N24	beam (80)
B38	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N28	N29	column (100)
B39	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N30	N31	column (100)
B40	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N32	N33	column (100)
B41	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N34	N35	column (100)
B42	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N29	N31	beam (80)
B43	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N31	N35	beam (80)
B44	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N29	N33	beam (80)
B45	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	3.900	N33	N35	beam (80)
B46	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N29	N36	beam (80)
B47	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N31	N36	beam (80)
B48	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N36	N35	beam (80)
B49	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.871	N36	N33	beam (80)

4. Nodal supports

Name	Node	System	Type	X	Y	Z	Rx	Ry	Rz
Sn1	N1	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn2	N3	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn3	N7	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn4	N5	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn5	N10	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn6	N12	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn7	N14	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn8	N16	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn9	N19	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn10	N21	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn11	N23	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn12	N25	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn13	N28	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn14	N30	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn15	N32	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn16	N34	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free

5. Hinges

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H1	B10	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H2	B11	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H3	B12	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H4	B13	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H5	B22	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H6	B23	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H7	B24	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H8	B25	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H9	B34	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H10	B35	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H11	B36	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H12	B37	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H13	B46	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H14	B47	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H15	B48	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H16	B49	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

6. Section on beam

Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB1	B1	Abso	0.250	From end	1
SB2	B2	Abso	0.250	From end	1
SB3	B5	Abso	0.250	From end	1
SB4	B4	Abso	0.250	From end	1
SB5	B6	Abso	0.200	From end	1
SB6	B7	Abso	0.200	From end	1
SB7	B9	Abso	0.200	From end	1
SB8	B8	Abso	0.200	From end	1
SB9	B6	Abso	0.200	From start	1
SB10	B7	Abso	0.200	From start	1
SB11	B9	Abso	0.200	From start	1
SB12	B8	Abso	0.200	From start	1
SB13	B10	Abso	0.200	From start	1
SB14	B11	Abso	0.200	From start	1
SB15	B12	Abso	0.200	From end	1
SB16	B13	Abso	0.200	From end	1
SB17	B14	Abso	0.250	From end	1
SB18	B15	Abso	0.250	From end	1
SB19	B16	Abso	0.250	From end	1
SB20	B17	Abso	0.250	From end	1
SB21	B18	Abso	0.200	From end	1
SB22	B18	Abso	0.200	From start	1
SB23	B19	Abso	0.200	From end	1
SB24	B19	Abso	0.200	From start	1
SB25	B20	Abso	0.200	From end	1
SB26	B20	Abso	0.200	From start	1
SB27	B21	Abso	0.200	From end	1
SB28	B21	Abso	0.200	From start	1
SB29	B22	Abso	0.200	From start	1
SB30	B23	Abso	0.200	From start	1
SB31	B24	Abso	0.200	From end	1
SB32	B25	Abso	0.200	From end	1
SB33	B26	Abso	0.250	From end	1
SB34	B27	Abso	0.250	From end	1
SB35	B28	Abso	0.250	From end	1
SB36	B29	Abso	0.250	From end	1
SB37	B30	Abso	0.200	From end	1
SB38	B30	Abso	0.200	From start	1
SB39	B31	Abso	0.200	From end	1
SB40	B31	Abso	0.200	From start	1
SB41	B32	Abso	0.200	From end	1
SB42	B32	Abso	0.200	From start	1
SB43	B33	Abso	0.200	From end	1
SB44	B33	Abso	0.200	From start	1
SB45	B34	Abso	0.200	From start	1
SB46	B35	Abso	0.200	From start	1
SB47	B36	Abso	0.200	From end	1
SB48	B37	Abso	0.200	From end	1
SB49	B38	Abso	0.250	From end	1
SB50	B39	Abso	0.250	From end	1
SB51	B40	Abso	0.250	From end	1
SB52	B41	Abso	0.250	From end	1
SB53	B42	Abso	0.200	From end	1
SB54	B42	Abso	0.200	From start	1

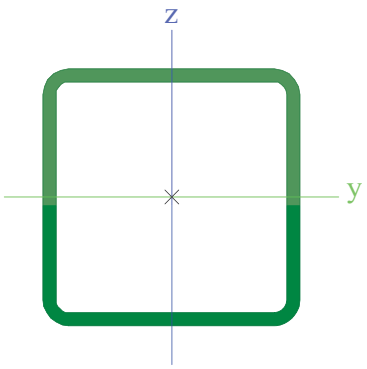
Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB55	B43	Abso	0.200	From end	1
SB56	B43	Abso	0.200	From start	1
SB57	B44	Abso	0.200	From end	1
SB58	B44	Abso	0.200	From start	1
SB59	B45	Abso	0.200	From end	1
SB60	B45	Abso	0.200	From start	1
SB61	B46	Abso	0.200	From start	1
SB62	B47	Abso	0.200	From start	1
SB63	B48	Abso	0.200	From end	1
SB64	B49	Abso	0.200	From end	1

7. Materials

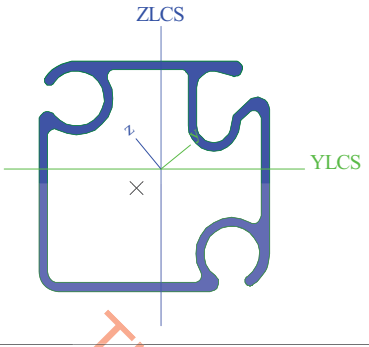
Aluminium

Name Type	ρ [kg/m³]	E_{mod} [MPa] G_{mod} [MPa]	μ α [m/mK]	0.2% proof strength (fo) [MPa] 0.2% proof strength (fo,haz) [MPa] n-value for plastic analysis (np)
EN-AW 6005A (EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	215.0
Aluminium		2.6923e+04	0.00	115.0
				26
EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	250.0
Aluminium		2.6923e+04	0.00	125.0
				32

8. Cross-sections

CS4		
Type	CFRHS40X40X2	
Formcode	2 - Rectangular hollow sections	
Shape type	Thin-walled	
Item material	EN-AW 6005A (EP/H,ET) T6 (0-5)	
Fabrication	cold formed	
Colour		
A [m²]	2.9400e-04	
A_y [m²], A_z [m²]	1.4675e-04	1.4675e-04
A_L [m²/m], A_D [m²/m]	1.5300e-01	2.9365e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	20	20
α [deg]	0.00	
I_y [m⁴], I_z [m⁴]	6.9400e-08	6.9400e-08
i_y [mm], i_z [mm]	15	15
$W_{el.y}$ [m³], $W_{el.z}$ [m³]	3.4700e-06	3.4700e-06
$W_{pl.y}$ [m³], $W_{pl.z}$ [m³]	4.1300e-06	4.1300e-06
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	8.88e+02	8.88e+02
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	8.88e+02	8.88e+02
d_y [mm], d_z [mm]	0	0
I_t [m⁴], I_w [m⁶]	1.1280e-07	1.7067e-11
β_y [mm], β_z [mm]	0	0
Picture		

CS5_2.4 buiten		
Type	General cross-section	
Shape type	Thin-walled	
Item material	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	
Fabrication	general	
Colour		
A [m²]	7.9433e-04	
A_y [m²], A_z [m²]	6.8131e-04	5.6117e-04
A_L [m²/m], A_D [m²/m]	3.5566e-01	5.9812e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	2	2
$I_{Y.LCS}$ [m⁴], $I_{Z.LCS}$ [m⁴]	4.0241e-07	3.9486e-07

$I_{YZ.LCS}$ [m^4]	-1.7580e-08	
α [deg]	38.94	
I_y [m^4], I_z [m^4]	4.1661e-07	3.8065e-07
i_y [mm], i_z [mm]	23	22
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	1.0154e-05	8.4242e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	1.5959e-05	1.4593e-05
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	3.99e+03	3.99e+03
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	3.65e+03	3.65e+03
d_y [mm], d_z [mm]	-8	0
I_t [m^4], I_w [m^6]	2.9911e-07	4.0979e-11
β_y [mm], β_z [mm]	-1	8
Picture		

Explanations of symbols	
Formcode	h - Height b - Width s - Thickness r - Outer radius r1 - Inner radius
A	Area
A_y	Shear Area in principal y-direction
A_z	Shear Area in principal z-direction
A_L	Circumference per unit length
A_D	Drying surface per unit length
$c_{Y.UCS}$	Centroid coordinate in Y-direction of Input axis system
$c_{Z.UCS}$	Centroid coordinate in Z-direction of Input axis system
$I_{Y.LCS}$	Second moment of area about the YLCS axis
$I_{Z.LCS}$	Second moment of area about the ZLCS axis
$I_{YZ.LCS}$	Product moment of area in the LCS system
α	Rotation angle of the principal axis system
I_y	Second moment of area about the principal y-axis
I_z	Second moment of area about the principal z-axis
i_y	Radius of gyration about the principal y-axis

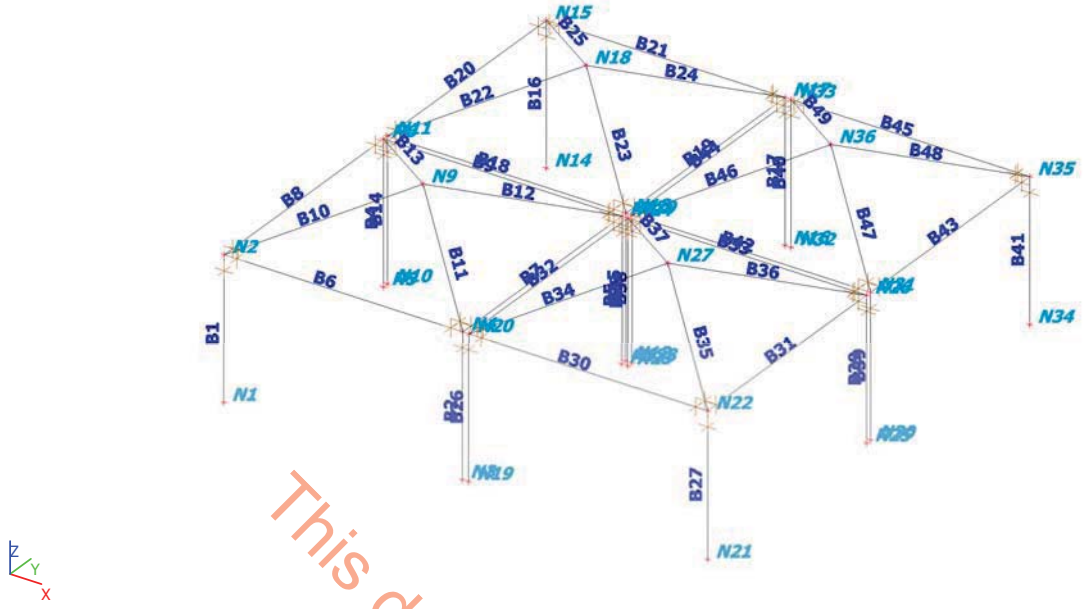
Explanations of symbols	
i_z	Radius of gyration about the principal z-axis
$W_{el.y}$	Elastic section modulus about the principal y-axis
$W_{el.z}$	Elastic section modulus about the principal z-axis
$W_{pl.y}$	Plastic section modulus about the principal y-axis
$W_{pl.z}$	Plastic section modulus about the principal z-axis
$M_{pl.y.+}$	Plastic moment about the principal y-axis for a positive My moment
$M_{pl.y.-}$	Plastic moment about the principal y-axis for a negative My moment
$M_{pl.z.+}$	Plastic moment about the principal z-axis for a positive Mz moment
$M_{pl.z.-}$	Plastic moment about the principal z-axis for a negative Mz moment
d_y	Shear center coordinate in principal y-direction measured from the centroid
d_z	Shear center coordinate in principal z-direction measured from the centroid
I_t	Torsional constant
I_w	Warping constant
β_y	Mono-symmetry constant about the principal y-axis
β_z	Mono-symmetry constant about the principal z-axis

9. Load cases

9.1. Load cases - LC1

Name	Description	Action type	LoadGroup	Direction
	Spec	Load type		
LC1	self weight	Permanent	LG1	-Z
		Self weight		

9.1.1. load picture



9.2. Load cases - LC2

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC2	membrane self weight	Variable	LG3	Short	None
	Standard	Static			

9.2.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF42	B6	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF43	B7	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF44	B9	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF45	B8	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF73	B18	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF78	B19	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF83	B20	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF88	B21	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF108	B30	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF113	B31	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF118	B32	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF123	B33	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF143	B42	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF148	B43	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF153	B44	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF158	B45	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000

9.2.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F2	N9	LC2 - membrane self weight	GCS	Z	Force	-0.07
F30	N18	LC2 - membrane self weight	GCS	Z	Force	-0.07
F45	N27	LC2 - membrane self weight	GCS	Z	Force	-0.07
F60	N36	LC2 - membrane self weight	GCS	Z	Force	-0.07

9.2.3. load picture

9.3. Load cases - LC3

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC3	wind and prestress	Variable	LG3	Short	None
	Standard	Static			

9.3.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
LF17	B1	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	1.950	Length		0.000
LF18	B2	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	1.950	Length		0.000
LF23	B1	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	1.950	Length		0.000
LF24	B4	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	1.950	Length		0.000
LF25	B8	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	0.500	Length		0.000
LF26	B7	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF27	B6	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.65	0.500	Length		0.000
LF29	B7	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF31	B8	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF32	B6	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF33	B8	Force	X	-0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF36	B6	Force	Y	0.65	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF39	B9	Force	Y	-0.15	0.000	Rela	From start	0.000

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF40	B8	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF41	B9	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF46	B1	Force	Y	0.50	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF47	B2	Force	Y	0.50	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF50	B1	Force	X	-0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF51	B4	Force	X	-0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF55	B14	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	1.950	Length		0.000
LF57	B14	Force	X	-0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF62	B16	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF63	B16	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	1.950	Length		0.000
LF64	B16	Force	Y	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF65	B16	Force	X	-0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF66	B17	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF68	B17	Force	Y	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF71	B18	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF74	B19	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF75	B19	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF79	B20	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.25	0.500	Length		0.000
LF80	B20	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF81	B20	Force	X	-0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF82	B20	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF84	B21	Force	Y	0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF85	B21	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	0.500	Length		0.000
LF86	B21	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF87	B21	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF89	B26	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	1.950	Length		0.000
LF91	B26	Force	Y	0.50	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF93	B27	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	1.950	Length		0.000
LF94	B27	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF95	B27	Force	Y	0.50	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF96	B27	Force	X	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF102	B29	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF104	B29	Force	X	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF105	B30	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.65	0.500	Length		0.000
LF106	B30	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF107	B30	Force	Y	0.65	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF109	B31	Force	X	-0.10	0.000	Rela	From start	0.000

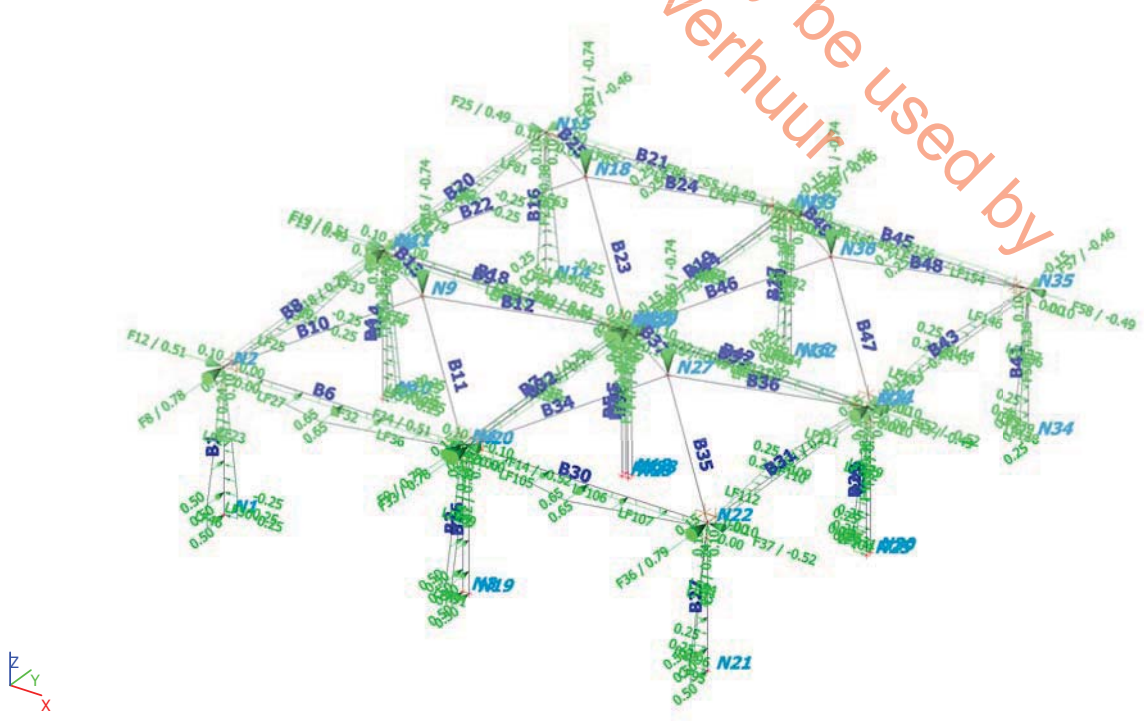
Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF110	B31	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF111	B31	Force	X	0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF112	B31	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	0.500	Length		0.000
LF115	B32	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF117	B32	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF121	B33	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF122	B33	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF129	B39	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF131	B39	Force	X	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF132	B40	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF134	B40	Force	Y	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF136	B41	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF137	B41	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	1.950	Length		0.000
LF138	B41	Force	Y	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF139	B41	Force	X	0.25	1.950	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF141	B42	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF144	B43	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF145	B43	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF146	B43	Force	X	0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF147	B43	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	0.500	Length		0.000
LF150	B44	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF152	B44	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF154	B45	Force	Y	0.25	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF155	B45	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.25	0.500	Length		0.000
LF156	B45	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF157	B45	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF159	B42	Force	Y	0.15	0.000	Rela	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF160	B18	Force	Y	0.15	0.000	Rela	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000

9.3.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F4	N4	LC3 - wind and prestress	GCS	Z	Force	0.24
F5	N2	LC3 - wind and prestress	GCS	Z	Force	0.24
F6	N8	LC3 - wind and prestress	GCS	Z	Force	0.38
F7	N6	LC3 - wind and prestress	GCS	Z	Force	0.38
F8	N2	LC3 - wind and prestress	GCS	Y	Force	0.78
F9	N4	LC3 - wind and prestress	GCS	Y	Force	0.79
F10	N6	LC3 - wind and prestress	GCS	Y	Force	-0.46
F11	N8	LC3 - wind and prestress	GCS	Y	Force	-0.46
F12	N2	LC3 - wind and prestress	GCS	X	Force	0.51
F13	N6	LC3 - wind and prestress	GCS	X	Force	0.49
F14	N4	LC3 - wind and prestress	GCS	X	Force	-0.52
F15	N8	LC3 - wind and prestress	GCS	X	Force	-0.49
F16	N9	LC3 - wind and prestress	GCS	Z	Force	-0.74

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F17	N11	LC3 - wind and prestress	GCS	Z	Force	0.24
F18	N11	LC3 - wind and prestress	GCS	Y	Force	0.78
F19	N11	LC3 - wind and prestress	GCS	X	Force	0.51
F20	N13	LC3 - wind and prestress	GCS	Z	Force	0.24
F21	N13	LC3 - wind and prestress	GCS	Y	Force	0.79
F22	N13	LC3 - wind and prestress	GCS	X	Force	-0.52
F23	N15	LC3 - wind and prestress	GCS	Z	Force	0.38
F24	N15	LC3 - wind and prestress	GCS	Y	Force	-0.46
F25	N15	LC3 - wind and prestress	GCS	X	Force	0.49
F26	N17	LC3 - wind and prestress	GCS	Z	Force	0.38
F27	N17	LC3 - wind and prestress	GCS	Y	Force	-0.46
F28	N17	LC3 - wind and prestress	GCS	X	Force	-0.49
F31	N18	LC3 - wind and prestress	GCS	Z	Force	-0.74
F32	N20	LC3 - wind and prestress	GCS	Z	Force	0.24
F33	N20	LC3 - wind and prestress	GCS	Y	Force	0.78
F34	N20	LC3 - wind and prestress	GCS	X	Force	0.51
F35	N22	LC3 - wind and prestress	GCS	Z	Force	0.24
F36	N22	LC3 - wind and prestress	GCS	Y	Force	0.79
F37	N22	LC3 - wind and prestress	GCS	X	Force	-0.52
F38	N24	LC3 - wind and prestress	GCS	Z	Force	0.38
F39	N24	LC3 - wind and prestress	GCS	Y	Force	-0.46
F40	N24	LC3 - wind and prestress	GCS	X	Force	0.49
F41	N26	LC3 - wind and prestress	GCS	Z	Force	0.38
F42	N26	LC3 - wind and prestress	GCS	Y	Force	-0.46
F43	N26	LC3 - wind and prestress	GCS	X	Force	-0.49
F46	N27	LC3 - wind and prestress	GCS	Z	Force	-0.74
F47	N29	LC3 - wind and prestress	GCS	Z	Force	0.24
F48	N29	LC3 - wind and prestress	GCS	Y	Force	0.78
F49	N29	LC3 - wind and prestress	GCS	X	Force	0.51
F50	N31	LC3 - wind and prestress	GCS	Z	Force	0.24
F51	N31	LC3 - wind and prestress	GCS	Y	Force	0.79
F52	N31	LC3 - wind and prestress	GCS	X	Force	-0.52
F53	N33	LC3 - wind and prestress	GCS	Z	Force	0.38
F54	N33	LC3 - wind and prestress	GCS	Y	Force	-0.46
F55	N33	LC3 - wind and prestress	GCS	X	Force	0.49
F56	N35	LC3 - wind and prestress	GCS	Z	Force	0.38
F57	N35	LC3 - wind and prestress	GCS	Y	Force	-0.46
F58	N35	LC3 - wind and prestress	GCS	X	Force	-0.49
F61	N36	LC3 - wind and prestress	GCS	Z	Force	-0.74

9.3.3. load picture



9.4. Load cases - LC4

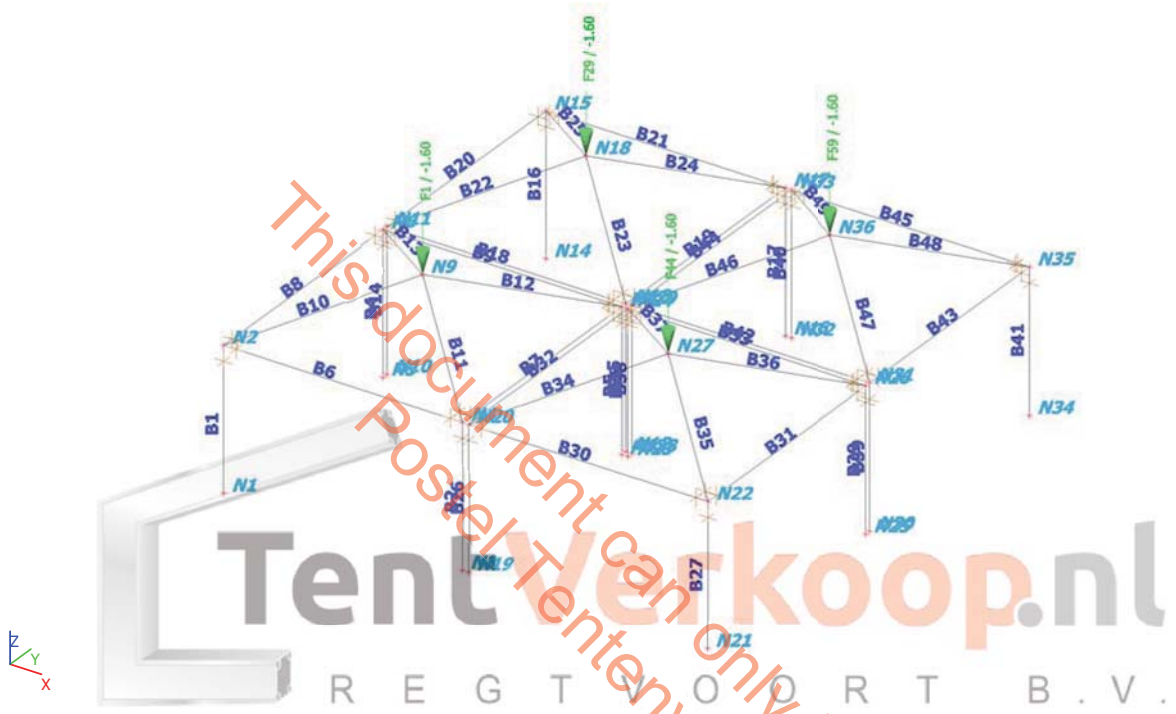
Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC4	equivalent load	Variable	LG3	Short	None

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
	Standard	Static			

9.4.1. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F1	N9	LC4 - equivalent load	GCS	Z	Force	-1.60
F29	N18	LC4 - equivalent load	GCS	Z	Force	-1.60
F44	N27	LC4 - equivalent load	GCS	Z	Force	-1.60
F59	N36	LC4 - equivalent load	GCS	Z	Force	-1.60

9.4.2. load picture



10. Nonlinear combinations

Name	Type	Load cases	Coeff. [-]
NC1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.50
NC2	Ultimate	LC1 - self weight	1.35
		LC2 - membrane self weight	1.35
		LC4 - equivalent load	1.35
ST1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.20

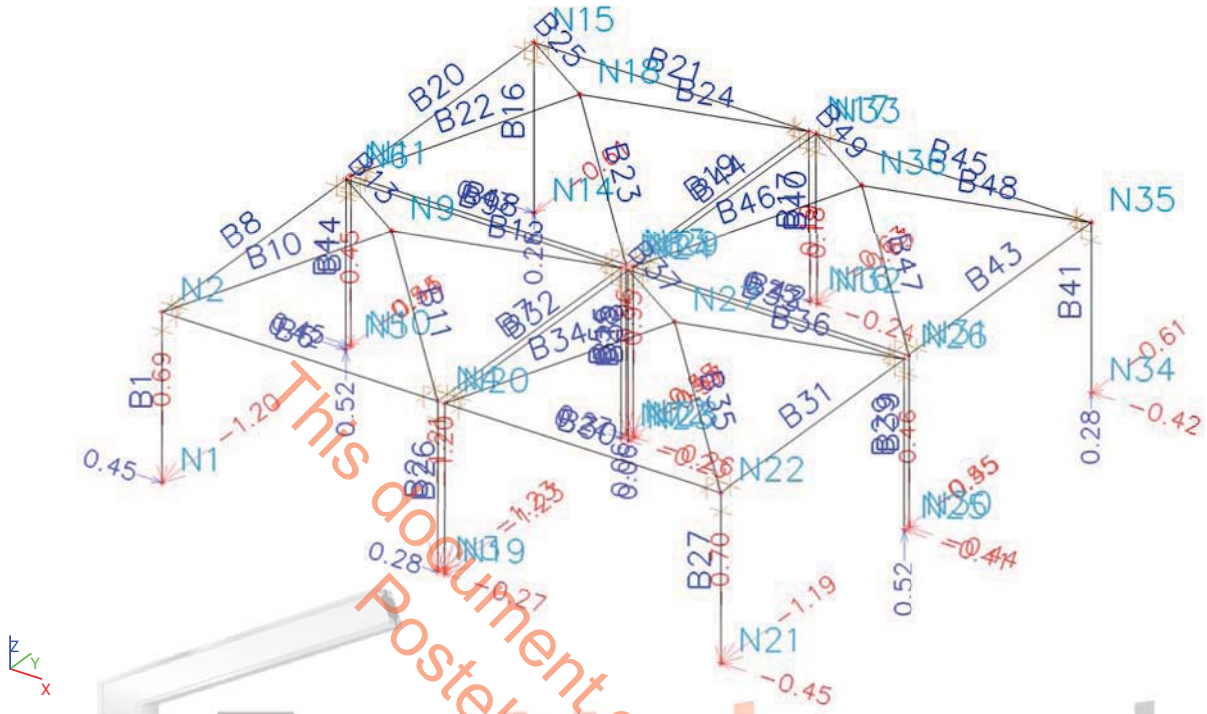
11. Reactions

Nonlinear calculation, Extreme : No
Selection : All
Nonlinear combinations : ST1

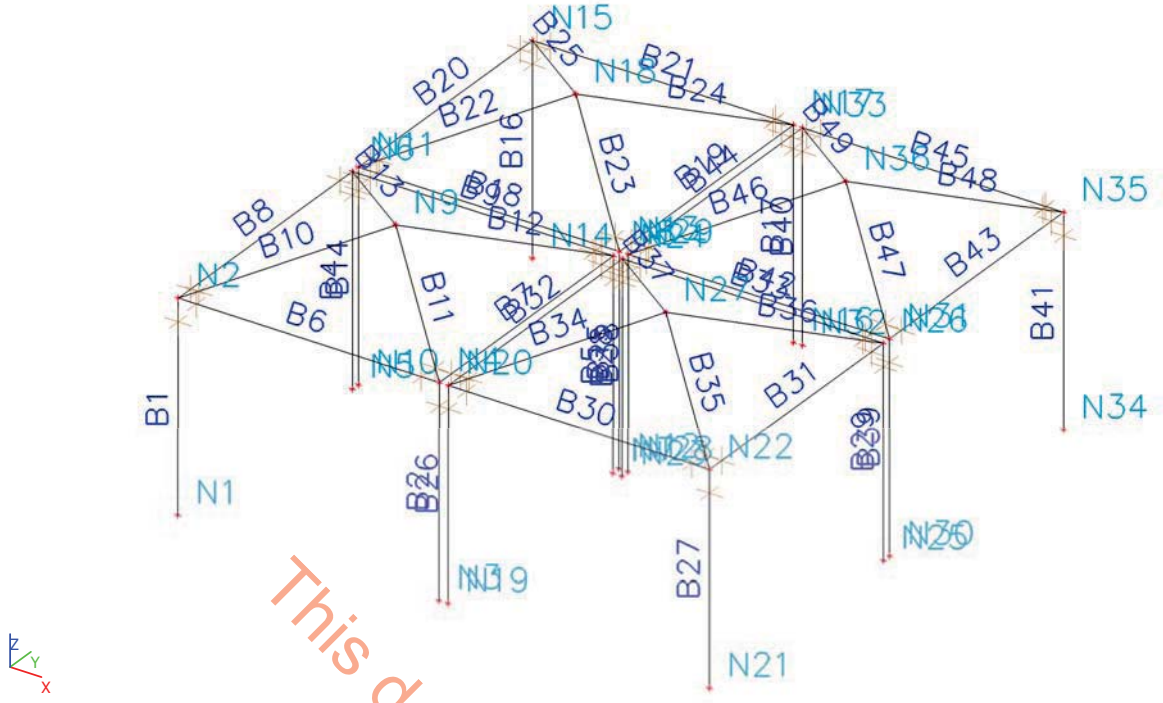
Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn1/N1	ST1	0.45	-1.20	-0.69	0.00	0.00	0.00
Sn2/N3	ST1	0.28	-1.23	-1.21	0.00	0.00	0.00
Sn3/N7	ST1	0.24	-0.58	0.06	0.00	0.00	0.00
Sn4/N5	ST1	0.42	-0.54	0.52	0.00	0.00	0.00
Sn5/N10	ST1	0.45	-0.45	-0.45	0.00	0.00	0.00
Sn6/N12	ST1	0.27	-0.47	-0.96	0.00	0.00	0.00
Sn7/N14	ST1	0.43	-0.61	0.28	0.00	0.00	0.00
Sn8/N16	ST1	0.25	-0.63	-0.19	0.00	0.00	0.00
Sn9/N19	ST1	-0.27	-1.23	-1.20	0.00	0.00	0.00
Sn10/N21	ST1	-0.45	-1.19	-0.70	0.00	0.00	0.00
Sn11/N23	ST1	-0.23	-0.58	0.06	0.00	0.00	0.00
Sn12/N25	ST1	-0.41	-0.55	0.52	0.00	0.00	0.00

Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn13/N28	ST1	-0.26	-0.47	-0.95	0.00	0.00	0.00
Sn14/N30	ST1	-0.44	-0.45	-0.46	0.00	0.00	0.00
Sn15/N32	ST1	-0.24	-0.63	-0.18	0.00	0.00	0.00
Sn16/N34	ST1	-0.42	-0.61	0.28	0.00	0.00	0.00

12. Reactions; Rx, Ry, Rz



1. Geometry 3x3 m 4x



2. Nodes

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N1	0.000	0.000	0.000
N2	0.000	0.000	2.300
N3	2.900	0.000	0.000
N4	2.900	0.000	2.300
N5	0.000	2.900	0.000
N6	0.000	2.900	2.300
N7	2.900	2.900	0.000
N8	2.900	2.900	2.300
N9	1.450	1.450	2.850
N10	0.000	3.000	0.000
N11	0.000	3.000	2.300
N12	2.900	3.000	0.000

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N13	2.900	3.000	2.300
N14	0.000	5.900	0.000
N15	0.000	5.900	2.300
N16	2.900	5.900	0.000
N17	2.900	5.900	2.300
N18	1.450	4.450	2.850
N19	3.000	0.000	0.000
N20	3.000	0.000	2.300
N21	5.900	0.000	0.000
N22	5.900	0.000	2.300
N23	3.000	2.900	0.000
N24	3.000	2.900	2.300

Name	Coord X [m]	Coord Y [m]	Coord Z [m]
N25	5.900	2.900	0.000
N26	5.900	2.900	2.300
N27	4.450	1.450	2.850
N28	3.000	3.000	0.000
N29	3.000	3.000	2.300
N30	5.900	3.000	0.000
N31	5.900	3.000	2.300
N32	3.000	5.900	0.000
N33	3.000	5.900	2.300
N34	5.900	5.900	0.000
N35	5.900	5.900	2.300
N36	4.450	4.450	2.850

3. Members

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B1	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N1	N2	column (100)
B2	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N3	N4	column (100)
B4	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N5	N6	column (100)
B5	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N7	N8	column (100)
B6	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N2	N4	beam (80)
B7	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N4	N8	beam (80)
B8	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N2	N6	beam (80)
B9	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N6	N8	beam (80)
B10	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N2	N9	beam (80)
B11	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N4	N9	beam (80)
B12	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N9	N8	beam (80)
B13	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N9	N6	beam (80)
B14	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N10	N11	column (100)
B15	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N12	N13	column (100)
B16	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N14	N15	column (100)

Name	CrossSection	Material	Length [m]	Beg. node	End node	Type
B17	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N16	N17	column (100)
B18	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N11	N13	beam (80)
B19	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N13	N17	beam (80)
B20	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N11	N15	beam (80)
B21	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N15	N17	beam (80)
B22	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N11	N18	beam (80)
B23	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N13	N18	beam (80)
B24	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N18	N17	beam (80)
B25	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N18	N15	beam (80)
B26	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N19	N20	column (100)
B27	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N21	N22	column (100)
B28	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N23	N24	column (100)
B29	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N25	N26	column (100)
B30	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N20	N22	beam (80)
B31	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N22	N26	beam (80)
B32	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N20	N24	beam (80)
B33	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N24	N26	beam (80)
B34	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N20	N27	beam (80)
B35	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N22	N27	beam (80)
B36	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N27	N26	beam (80)
B37	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N27	N24	beam (80)
B38	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N28	N29	column (100)
B39	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N30	N31	column (100)
B40	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N32	N33	column (100)
B41	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.300	N34	N35	column (100)
B42	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N29	N31	beam (80)
B43	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N31	N35	beam (80)
B44	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N29	N33	beam (80)
B45	CS5_2.4 buiten - General cross-section	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2.900	N33	N35	beam (80)
B46	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N29	N36	beam (80)
B47	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N31	N36	beam (80)
B48	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N36	N35	beam (80)
B49	CS4 - CFRHS40X40X2	EN-AW 6005A (EP/H,ET) T6 (0-5)	2.123	N36	N33	beam (80)

4. Nodal supports

Name	Node	System	Type	X	Y	Z	Rx	Ry	Rz
Sn1	N1	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn2	N3	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn3	N7	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn4	N5	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn5	N10	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn6	N12	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn7	N14	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn8	N16	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn9	N19	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn10	N21	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn11	N23	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn12	N25	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn13	N28	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn14	N30	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn15	N32	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free
Sn16	N34	GCS	Standard	Rigid	Rigid	Rigid	Free	Free	Free

5. Hinges

Name	Member	Position	ux	uy	uz	fix	fiy	fiz
H1	B10	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H2	B11	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H3	B12	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H4	B13	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H5	B22	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H6	B23	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H7	B24	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H8	B25	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H9	B34	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H10	B35	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H11	B36	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H12	B37	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H13	B46	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H14	B47	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H15	B48	Both	Rigid	Rigid	Rigid	Rigid	Free	Free
H16	B49	Both	Rigid	Rigid	Rigid	Rigid	Free	Free

6. Section on beam

Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB1	B1	Abso	0.250	From end	1
SB2	B2	Abso	0.250	From end	1
SB3	B5	Abso	0.250	From end	1
SB4	B4	Abso	0.250	From end	1
SB5	B6	Abso	0.200	From end	1
SB6	B7	Abso	0.200	From end	1
SB7	B9	Abso	0.200	From end	1
SB8	B8	Abso	0.200	From end	1
SB9	B6	Abso	0.200	From start	1
SB10	B7	Abso	0.200	From start	1
SB11	B9	Abso	0.200	From start	1
SB12	B8	Abso	0.200	From start	1
SB13	B10	Abso	0.200	From start	1
SB14	B11	Abso	0.200	From start	1
SB15	B12	Abso	0.200	From end	1
SB16	B13	Abso	0.200	From end	1
SB17	B14	Abso	0.250	From end	1
SB18	B15	Abso	0.250	From end	1
SB19	B16	Abso	0.250	From end	1
SB20	B17	Abso	0.250	From end	1
SB21	B18	Abso	0.200	From end	1
SB22	B18	Abso	0.200	From start	1
SB23	B19	Abso	0.200	From end	1
SB24	B19	Abso	0.200	From start	1
SB25	B20	Abso	0.200	From end	1
SB26	B20	Abso	0.200	From start	1
SB27	B21	Abso	0.200	From end	1
SB28	B21	Abso	0.200	From start	1
SB29	B22	Abso	0.200	From start	1
SB30	B23	Abso	0.200	From start	1
SB31	B24	Abso	0.200	From end	1
SB32	B25	Abso	0.200	From end	1
SB33	B26	Abso	0.250	From end	1
SB34	B27	Abso	0.250	From end	1
SB35	B28	Abso	0.250	From end	1
SB36	B29	Abso	0.250	From end	1
SB37	B30	Abso	0.200	From end	1
SB38	B30	Abso	0.200	From start	1
SB39	B31	Abso	0.200	From end	1
SB40	B31	Abso	0.200	From start	1
SB41	B32	Abso	0.200	From end	1
SB42	B32	Abso	0.200	From start	1
SB43	B33	Abso	0.200	From end	1
SB44	B33	Abso	0.200	From start	1
SB45	B34	Abso	0.200	From start	1
SB46	B35	Abso	0.200	From start	1
SB47	B36	Abso	0.200	From end	1
SB48	B37	Abso	0.200	From end	1
SB49	B38	Abso	0.250	From end	1
SB50	B39	Abso	0.250	From end	1
SB51	B40	Abso	0.250	From end	1
SB52	B41	Abso	0.250	From end	1
SB53	B42	Abso	0.200	From end	1
SB54	B42	Abso	0.200	From start	1

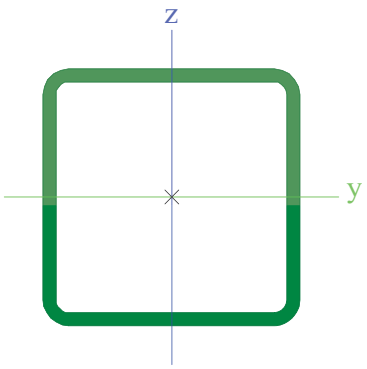
Name	Member	Coor	Pos x [m]	Orig	Rep (n)
SB55	B43	Abso	0.200	From end	1
SB56	B43	Abso	0.200	From start	1
SB57	B44	Abso	0.200	From end	1
SB58	B44	Abso	0.200	From start	1
SB59	B45	Abso	0.200	From end	1
SB60	B45	Abso	0.200	From start	1
SB61	B46	Abso	0.200	From start	1
SB62	B47	Abso	0.200	From start	1
SB63	B48	Abso	0.200	From end	1
SB64	B49	Abso	0.200	From end	1

7. Materials

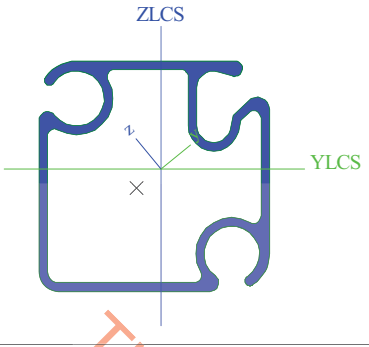
Aluminium

Name Type	ρ [kg/m³]	E_{mod} [MPa] G_{mod} [MPa]	μ α [m/mK]	0.2% proof strength (fo) [MPa] 0.2% proof strength (fo,haz) [MPa] n-value for plastic analysis (np)
EN-AW 6005A (EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	215.0
Aluminium		2.6923e+04	0.00	115.0
				26
EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	2700.0	7.0000e+04	0.3	250.0
Aluminium		2.6923e+04	0.00	125.0
				32

8. Cross-sections

CS4		
Type	CFRHS40X40X2	
Formcode	2 - Rectangular hollow sections	
Shape type	Thin-walled	
Item material	EN-AW 6005A (EP/H,ET) T6 (0-5)	
Fabrication	cold formed	
Colour		
A [m²]	2.9400e-04	
A_y [m²], A_z [m²]	1.4675e-04	1.4675e-04
A_L [m²/m], A_D [m²/m]	1.5300e-01	2.9365e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	20	20
α [deg]	0.00	
I_y [m⁴], I_z [m⁴]	6.9400e-08	6.9400e-08
i_y [mm], i_z [mm]	15	15
$W_{el.y}$ [m³], $W_{el.z}$ [m³]	3.4700e-06	3.4700e-06
$W_{pl.y}$ [m³], $W_{pl.z}$ [m³]	4.1300e-06	4.1300e-06
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	8.88e+02	8.88e+02
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	8.88e+02	8.88e+02
d_y [mm], d_z [mm]	0	0
I_t [m⁴], I_w [m⁶]	1.1280e-07	1.7067e-11
β_y [mm], β_z [mm]	0	0
Picture		

CS5_2.4 buiten		
Type	General cross-section	
Shape type	Thin-walled	
Item material	EN-AW 6082 (EP/O,EP/H,ET) T6 (0-5)	
Fabrication	general	
Colour		
A [m²]	7.9433e-04	
A_y [m²], A_z [m²]	6.8131e-04	5.6117e-04
A_L [m²/m], A_D [m²/m]	3.5566e-01	5.9812e-01
$c_{Y.UCS}$ [mm], $c_{Z.UCS}$ [mm]	2	2
$I_{Y.LCS}$ [m⁴], $I_{Z.LCS}$ [m⁴]	4.0241e-07	3.9486e-07

$I_{YZ.LCS}$ [m^4]	-1.7580e-08	
α [deg]	38.94	
I_y [m^4], I_z [m^4]	4.1661e-07	3.8065e-07
i_y [mm], i_z [mm]	23	22
$W_{el.y}$ [m^3], $W_{el.z}$ [m^3]	1.0154e-05	8.4242e-06
$W_{pl.y}$ [m^3], $W_{pl.z}$ [m^3]	1.5959e-05	1.4593e-05
$M_{pl.y.+}$ [Nm], $M_{pl.y.-}$ [Nm]	3.99e+03	3.99e+03
$M_{pl.z.+}$ [Nm], $M_{pl.z.-}$ [Nm]	3.65e+03	3.65e+03
d_y [mm], d_z [mm]	-8	0
I_t [m^4], I_w [m^6]	2.9911e-07	4.0979e-11
β_y [mm], β_z [mm]	-1	8
Picture		

Explanations of symbols	
Formcode	h - Height b - Width s - Thickness r - Outer radius r1 - Inner radius
A	Area
A_y	Shear Area in principal y-direction
A_z	Shear Area in principal z-direction
A_L	Circumference per unit length
A_D	Drying surface per unit length
$c_{Y.UCS}$	Centroid coordinate in Y-direction of Input axis system
$c_{Z.UCS}$	Centroid coordinate in Z-direction of Input axis system
$I_{Y.LCS}$	Second moment of area about the YLCS axis
$I_{Z.LCS}$	Second moment of area about the ZLCS axis
$I_{YZ.LCS}$	Product moment of area in the LCS system
α	Rotation angle of the principal axis system
I_y	Second moment of area about the principal y-axis
I_z	Second moment of area about the principal z-axis
i_y	Radius of gyration about the principal y-axis

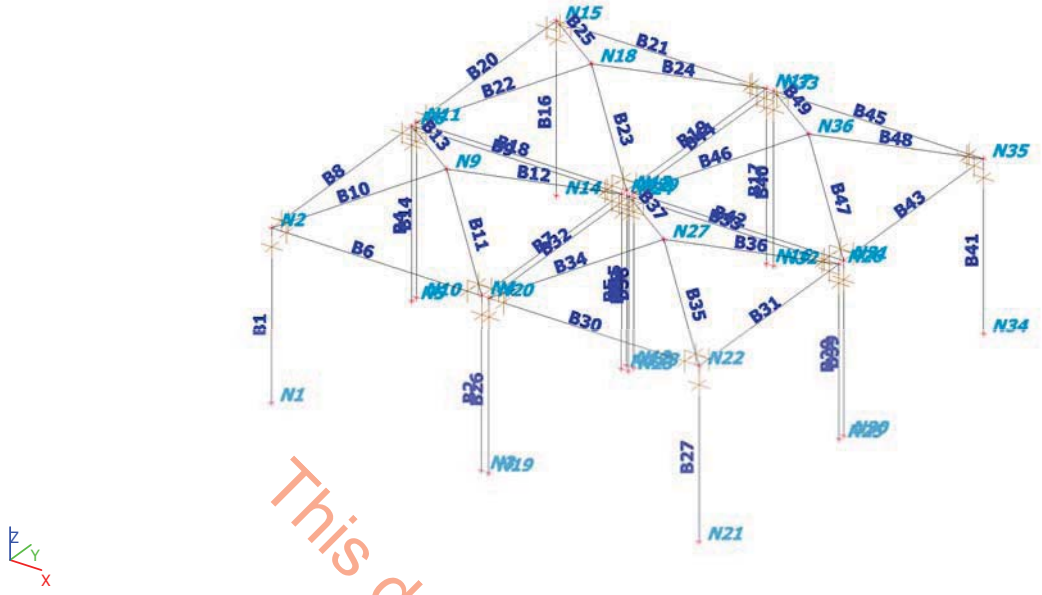
Explanations of symbols	
i_z	Radius of gyration about the principal z-axis
$W_{el.y}$	Elastic section modulus about the principal y-axis
$W_{el.z}$	Elastic section modulus about the principal z-axis
$W_{pl.y}$	Plastic section modulus about the principal y-axis
$W_{pl.z}$	Plastic section modulus about the principal z-axis
$M_{pl.y.+}$	Plastic moment about the principal y-axis for a positive My moment
$M_{pl.y.-}$	Plastic moment about the principal y-axis for a negative My moment
$M_{pl.z.+}$	Plastic moment about the principal z-axis for a positive Mz moment
$M_{pl.z.-}$	Plastic moment about the principal z-axis for a negative Mz moment
d_y	Shear center coordinate in principal y-direction measured from the centroid
d_z	Shear center coordinate in principal z-direction measured from the centroid
I_t	Torsional constant
I_w	Warping constant
β_y	Mono-symmetry constant about the principal y-axis
β_z	Mono-symmetry constant about the principal z-axis

9. Load cases

9.1. Load cases - LC1

Name	Description	Action type	LoadGroup	Direction
	Spec	Load type		
LC1	self weight	Permanent	LG1	-Z
		Self weight		

9.1.1. load picture



9.2. Load cases - LC2

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC2	membrane self weight	Variable	LG3	Short	None
	Standard	Static			

9.2.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2	Loc		Ecc ez [m]
LF42	B6	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF43	B7	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF44	B9	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF45	B8	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF73	B18	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF78	B19	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF83	B20	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF88	B21	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF108	B30	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF113	B31	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF118	B32	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF123	B33	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF143	B42	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF148	B43	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF153	B44	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000
LF158	B45	Force	Z	-0.03	0.000	Rela	From start	0.000
	LC2 - membrane self weight	GCS	Uniform		1.000	Length		0.000

9.2.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F2	N9	LC2 - membrane self weight	GCS	Z	Force	-0.06
F30	N18	LC2 - membrane self weight	GCS	Z	Force	-0.06
F45	N27	LC2 - membrane self weight	GCS	Z	Force	-0.06
F60	N36	LC2 - membrane self weight	GCS	Z	Force	-0.06

9.2.3. load picture

9.3. Load cases - LC3

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC3	wind and prestress	Variable	LG3	Short	None
	Standard	Static			

9.3.1. Line force

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
LF17	B1	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.35	1.450	Length		0.000
LF18	B2	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.35	1.450	Length		0.000
LF23	B1	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	1.450	Length		0.000
LF24	B4	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	1.450	Length		0.000
LF25	B8	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	0.500	Length		0.000
LF26	B7	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF27	B6	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	0.500	Length		0.000
LF29	B7	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF31	B8	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF32	B6	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF33	B8	Force	X	-0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF36	B6	Force	Y	0.50	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF39	B9	Force	Y	-0.15	0.000	Rela	From start	0.000

Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF40	B8	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF41	B9	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF46	B1	Force	Y	0.35	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF47	B2	Force	Y	0.35	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF50	B1	Force	X	-0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF51	B4	Force	X	-0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF55	B14	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	1.450	Length		0.000
LF57	B14	Force	X	-0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF62	B16	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF63	B16	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	1.450	Length		0.000
LF64	B16	Force	Y	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF65	B16	Force	X	-0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF66	B17	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF68	B17	Force	Y	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF71	B18	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF74	B19	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF75	B19	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF79	B20	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	-0.17	0.500	Length		0.000
LF80	B20	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF81	B20	Force	X	-0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF82	B20	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF84	B21	Force	Y	0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF85	B21	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	0.500	Length		0.000
LF86	B21	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF87	B21	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF89	B26	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.35	1.450	Length		0.000
LF91	B26	Force	Y	0.35	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF93	B27	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.35	1.450	Length		0.000
LF94	B27	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF95	B27	Force	Y	0.35	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF96	B27	Force	X	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF102	B29	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF104	B29	Force	X	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF105	B30	Force	Y	0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.50	0.500	Length		0.000
LF106	B30	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF107	B30	Force	Y	0.50	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.15	1.000	Length		0.000
LF109	B31	Force	X	-0.10	0.000	Rela	From start	0.000

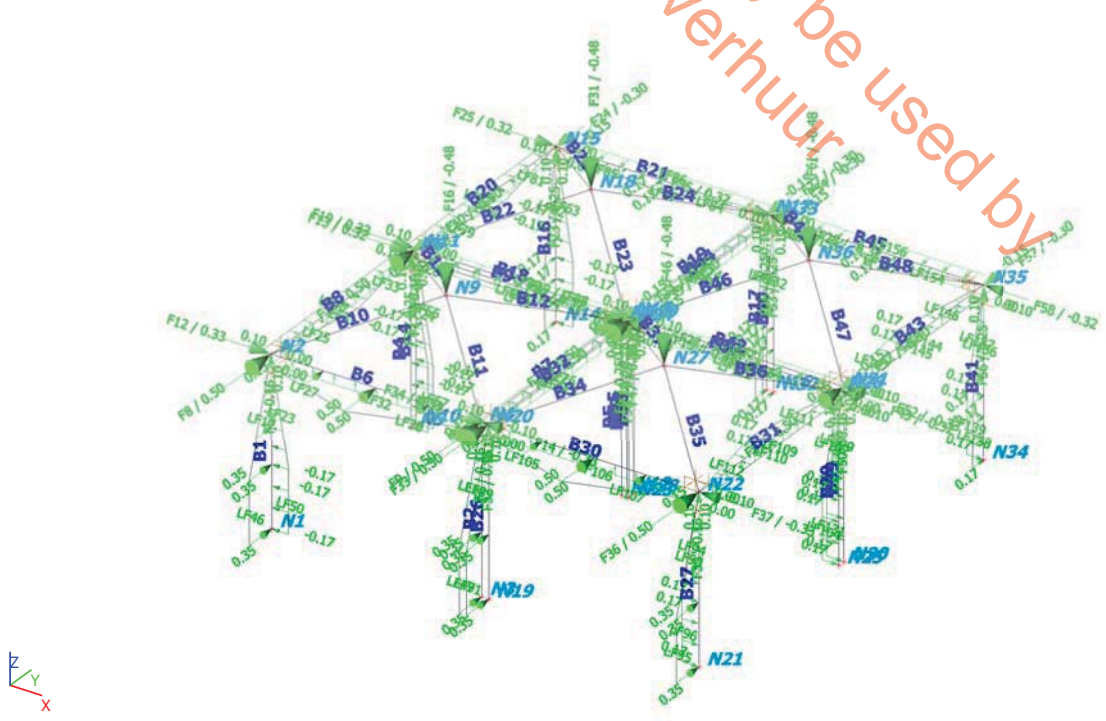
Name	Member	Type	Dir	Value - P_1 [kN/m]	Pos x_1 [m]	Coor	Orig	Ecc ey [m]
	Load case	System	Distribution	Value - P_2 [kN/m]	Pos x_2 [m]	Loc		Ecc ez [m]
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF110	B31	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF111	B31	Force	X	0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF112	B31	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	0.500	Length		0.000
LF115	B32	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF117	B32	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF121	B33	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF122	B33	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF129	B39	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF131	B39	Force	X	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF132	B40	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF134	B40	Force	Y	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF136	B41	Force	Y	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF137	B41	Force	X	0.00	0.000	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	1.450	Length		0.000
LF138	B41	Force	Y	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF139	B41	Force	X	0.17	1.450	Abso	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		2.300	Length		0.000
LF141	B42	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF144	B43	Force	X	-0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF145	B43	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF146	B43	Force	X	0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF147	B43	Force	X	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	0.500	Length		0.000
LF150	B44	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF152	B44	Force	X	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF154	B45	Force	Y	0.17	0.500	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.00	1.000	Length		0.000
LF155	B45	Force	Y	0.00	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Trapez	0.17	0.500	Length		0.000
LF156	B45	Force	Y	-0.15	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF157	B45	Force	Z	0.10	0.000	Rela	From start	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF159	B42	Force	Y	0.15	0.000	Rela	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000
LF160	B18	Force	Y	0.15	0.000	Rela	From end	0.000
	LC3 - wind and prestress	GCS	Uniform		1.000	Length		0.000

9.3.2. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F4	N4	LC3 - wind and prestress	GCS	Z	Force	0.16
F5	N2	LC3 - wind and prestress	GCS	Z	Force	0.16
F6	N8	LC3 - wind and prestress	GCS	Z	Force	0.25
F7	N6	LC3 - wind and prestress	GCS	Z	Force	0.25
F8	N2	LC3 - wind and prestress	GCS	Y	Force	0.50
F9	N4	LC3 - wind and prestress	GCS	Y	Force	0.50
F10	N6	LC3 - wind and prestress	GCS	Y	Force	-0.30
F11	N8	LC3 - wind and prestress	GCS	Y	Force	-0.30
F12	N2	LC3 - wind and prestress	GCS	X	Force	0.33
F13	N6	LC3 - wind and prestress	GCS	X	Force	0.32
F14	N4	LC3 - wind and prestress	GCS	X	Force	-0.33
F15	N8	LC3 - wind and prestress	GCS	X	Force	-0.32
F16	N9	LC3 - wind and prestress	GCS	Z	Force	-0.48

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F17	N11	LC3 - wind and prestress	GCS	Z	Force	0.16
F18	N11	LC3 - wind and prestress	GCS	Y	Force	0.50
F19	N11	LC3 - wind and prestress	GCS	X	Force	0.33
F20	N13	LC3 - wind and prestress	GCS	Z	Force	0.16
F21	N13	LC3 - wind and prestress	GCS	Y	Force	0.50
F22	N13	LC3 - wind and prestress	GCS	X	Force	-0.33
F23	N15	LC3 - wind and prestress	GCS	Z	Force	0.25
F24	N15	LC3 - wind and prestress	GCS	Y	Force	-0.30
F25	N15	LC3 - wind and prestress	GCS	X	Force	0.32
F26	N17	LC3 - wind and prestress	GCS	Z	Force	0.25
F27	N17	LC3 - wind and prestress	GCS	Y	Force	-0.30
F28	N17	LC3 - wind and prestress	GCS	X	Force	-0.32
F31	N18	LC3 - wind and prestress	GCS	Z	Force	-0.48
F32	N20	LC3 - wind and prestress	GCS	Z	Force	0.16
F33	N20	LC3 - wind and prestress	GCS	Y	Force	0.50
F34	N20	LC3 - wind and prestress	GCS	X	Force	0.33
F35	N22	LC3 - wind and prestress	GCS	Z	Force	0.16
F36	N22	LC3 - wind and prestress	GCS	Y	Force	0.50
F37	N22	LC3 - wind and prestress	GCS	X	Force	-0.33
F38	N24	LC3 - wind and prestress	GCS	Z	Force	0.25
F39	N24	LC3 - wind and prestress	GCS	Y	Force	-0.30
F40	N24	LC3 - wind and prestress	GCS	X	Force	0.32
F41	N26	LC3 - wind and prestress	GCS	Z	Force	0.25
F42	N26	LC3 - wind and prestress	GCS	Y	Force	-0.30
F43	N26	LC3 - wind and prestress	GCS	X	Force	-0.32
F46	N27	LC3 - wind and prestress	GCS	Z	Force	-0.48
F47	N29	LC3 - wind and prestress	GCS	Z	Force	0.16
F48	N29	LC3 - wind and prestress	GCS	Y	Force	0.50
F49	N29	LC3 - wind and prestress	GCS	X	Force	0.33
F50	N31	LC3 - wind and prestress	GCS	Z	Force	0.16
F51	N31	LC3 - wind and prestress	GCS	Y	Force	0.50
F52	N31	LC3 - wind and prestress	GCS	X	Force	-0.33
F53	N33	LC3 - wind and prestress	GCS	Z	Force	0.25
F54	N33	LC3 - wind and prestress	GCS	Y	Force	-0.30
F55	N33	LC3 - wind and prestress	GCS	X	Force	0.32
F56	N35	LC3 - wind and prestress	GCS	Z	Force	0.25
F57	N35	LC3 - wind and prestress	GCS	Y	Force	-0.30
F58	N35	LC3 - wind and prestress	GCS	X	Force	-0.32
F61	N36	LC3 - wind and prestress	GCS	Z	Force	-0.48

9.3.3. load picture



9.4. Load cases - LC4

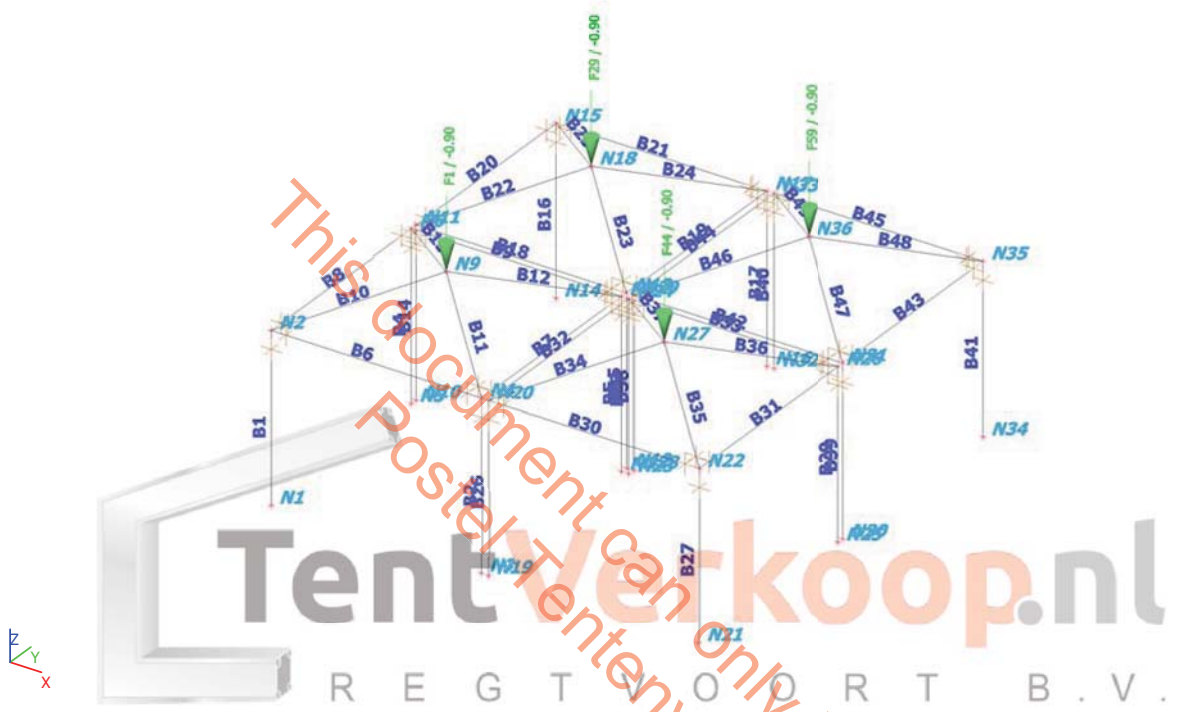
Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
LC4	equivalent load	Variable	LG3	Short	None

Name	Description	Action type	LoadGroup	Duration	Master load case
	Spec	Load type			
	Standard	Static			

9.4.1. Point force in node

Name	Node	Load case	System	Dir	Type	Value - F [kN]
F1	N9	LC4 - equivalent load	GCS	Z	Force	-0.90
F29	N18	LC4 - equivalent load	GCS	Z	Force	-0.90
F44	N27	LC4 - equivalent load	GCS	Z	Force	-0.90
F59	N36	LC4 - equivalent load	GCS	Z	Force	-0.90

9.4.2. load picture



10. Nonlinear combinations

Name	Type	Load cases	Coeff. [-]
NC1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.50
NC2	Ultimate	LC1 - self weight	1.35
		LC2 - membrane self weight	1.35
		LC4 - equivalent load	1.35
ST1	Ultimate	LC1 - self weight	1.00
		LC2 - membrane self weight	1.00
		LC3 - wind and prestress	1.20

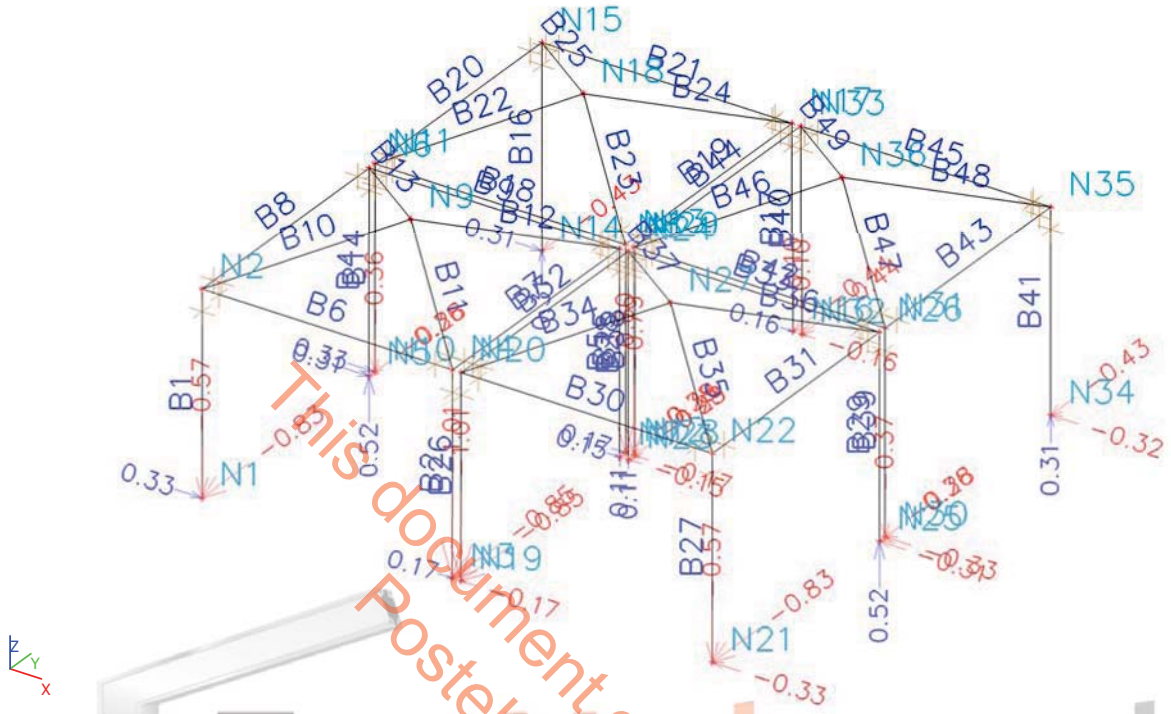
11. Reactions

Nonlinear calculation, Extreme : No
Selection : All
Nonlinear combinations : ST1

Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn1/N1	ST1	0.33	-0.83	-0.57	0.00	0.00	0.00
Sn2/N3	ST1	0.17	-0.85	-1.01	0.00	0.00	0.00
Sn3/N7	ST1	0.15	-0.38	0.11	0.00	0.00	0.00
Sn4/N5	ST1	0.31	-0.36	0.52	0.00	0.00	0.00
Sn5/N10	ST1	0.33	-0.28	-0.36	0.00	0.00	0.00
Sn6/N12	ST1	0.17	-0.29	-0.80	0.00	0.00	0.00
Sn7/N14	ST1	0.31	-0.43	0.31	0.00	0.00	0.00
Sn8/N16	ST1	0.16	-0.44	-0.10	0.00	0.00	0.00
Sn9/N19	ST1	-0.17	-0.85	-1.01	0.00	0.00	0.00
Sn10/N21	ST1	-0.33	-0.83	-0.57	0.00	0.00	0.00
Sn11/N23	ST1	-0.15	-0.38	0.11	0.00	0.00	0.00
Sn12/N25	ST1	-0.31	-0.36	0.52	0.00	0.00	0.00

Support	Case	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Sn13/N28	ST1	-0.17	-0.29	-0.79	0.00	0.00	0.00
Sn14/N30	ST1	-0.33	-0.28	-0.37	0.00	0.00	0.00
Sn15/N32	ST1	-0.16	-0.44	-0.10	0.00	0.00	0.00
Sn16/N34	ST1	-0.32	-0.43	0.31	0.00	0.00	0.00

12. Reactions; Rx, Ry, Rz



Annex B: Element check

Project: 1604605_05 | Element: B1 | Member: column | Combination: NC1

Parameters

fo	250	N/mm^2
fu	290	N/mm^2
E	70000	N/mm^2
N	-1.96	kN (- = tension)
My	2.90	kNm
Mz	0.34	kNm
Lcr;y	2300	mm
Lcr;z	2300	mm
Iy	377650	mm^4
Iz	371680	mm^4
ey	30.9	mm
ex	30.9	mm
Wyel	12222	mm^3
Wypl	19220	mm^3
Wzel	12028	mm^3
Wzpl	20359	mm^3
Aeff	737	mm^2
γm1	1.1	
γm2	1.25	

classification by wall parallel to y-axis

t	2.4	mm	
h	63.8	mm	
b	63.8	mm	
h;part	40	mm	
end:part	50	mm	
start:part	10	mm	
σ;63.8	-280.08	N/mm^2	
σ;50	-174.11	N/mm^2	
σ;10	133.05	N/mm^2	
σ;0	209.85	N/mm^2	
ψ	-0.76		figure (6.2)
ß	7.85		eq (6.6)
η	0.47		eq (6.4)(6.5)
ε	1.00		
class	1		table (6.2)

class overide Off

classification conditions - Table 6.2 - Slenderness parameters

	ß1	ß2	ß3
Class A	11.00	16.00	22.00
class 1		True	ß < ß1
class 2		False	ß1 < ß < ß2
class 3		False	ß2 < ß < ß3
class 4		False	ß3 < ß

Compression art. (6.2.4)

1 Ned / Nc,Rd < 1 — eq (6.22)
2 Ned / Nu,Rd < 1 — eq (6.21)

Ned	1.96	kN
Nc,Rd	167.59	kN
Nu,Rd	171.07	kN
UC1	✓	0.01
UC2	✓	0.01

Bending Moment art. (6.2.5)

1 Myed / Myc,Rd < 1 — eq (6.25)
2 Myed / Myu,Rd < 1 — eq (6.24)
3 Mzed / Mzc,Rd < 1 — eq (6.25)
4 Mzed / Mzu,Rd < 1 — eq (6.24)

Myed	2.90	kN	
Mzed	0.34	kN	
α;y	1.57		table (6.4)
α;z	1.69		table (6.4)
Myc,Rd	4.37	kNm	
Myu,Rd	2.84	kNm	
Mzc,Rd	4.63	kNm	
Mzu,Rd	2.79	kNm	
UC1-y	✓	0.66	
UC2-y	!	1.02	
UC3-z	✓	0.07	
UC4-z	✓	0.12	

Bending and Axial Force art. (6.2.9)

$$\left[\left(\frac{N_{Ed}}{\omega_0 N_{Rd}}\right)^{\psi} + \left[\left(\frac{M_{y,Ed}}{\omega_0 M_{y,Rd}}\right)^{1.7} + \left(\frac{M_{z,Ed}}{\omega_0 M_{z,Rd}}\right)^{1.7}\right]^{0.6}\right] \leq 1.00$$

eq. (6.43) - (ω0 = 1) - (ψ = 1.3)

UC ✓ 0.67

Buckling (compression) art. (6.3.1.1)

Ned / Nb,Rd < 1 — eq. (6.48)

Ned	-1.96 kN	
BC	B	
α	0.32	table (6.6)
λ_0	0.00	table (6.6)
χ	0.22	eq. (6.50)
ϕ	2.71 N	
λ	1.95	eq. (6.51)
Ncr	48541.29 (z-axis)	
Nb,Rd	167.59 kN	
UC	-	

No pressure - No buckling

Buckling (Bending and Axial Force) art. (6.3.3.1)

$$\left(\frac{N_{Ed}}{\chi_{min}\,\omega_x N_{Rd}}\right)^{\psi_c} + \frac{1}{\omega_0}\left[\left(\frac{M_{y,Ed}}{M_{y,Rd}}\right)^{1.7} + \left(\frac{M_{z,Ed}}{M_{z,Rd}}\right)^{1.7}\right]^{0.6} \leq 1.00$$

eq. (6.62) - (ω0 = 1) - (ωx = 1) - (ψ = 0.8)

UC -

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Project:	1604605_05	Element:	B8	Member:	beam	Combination:	NC1

Parameters

fo	250	N/mm^2
fu	290	N/mm^2
E	70000	N/mm^2
N	1.22	kN (- = tension)
My	2.93	kNm
Mz	0.91	kNm
Lcr;y	4900	mm
Lcr;z	4900	mm
Iy	377650	mm^4
Iz	371680	mm^4
ey	30.9	mm
ex	30.9	mm
Wyel	12222	mm^3
Wypl	19220	mm^3
Wzel	12028	mm^3
Wzpl	20359	mm^3
Aeff	737	mm^2
γm1	1.1	
γm2	1.25	

classification by wall parallel to y-axis

t	2.4	mm	
h	63.8	mm	
b	63.8	mm	
h;part	40	mm	
end:part	50	mm	
start:part	10	mm	
σ;63.8	-337.46	N/mm^2	
σ;50	-230.39	N/mm^2	
σ;10	79.95	N/mm^2	
σ;0	157.53	N/mm^2	
ψ	-0.35		figure (6.2)
ß	9.93		eq (6.6)
η	0.60		eq (6.4)(6.5)
ε	1.00		
class	1		table (6.2)

class overide *Off*

classification conditions - Table 6.2 - Slenderness parameters

	ß1	ß2	ß3
Class A	11.00	16.00	22.00
class 1		True	ß < ß1
class 2		False	ß1 < ß < ß2
class 3		False	ß2 < ß < ß3
class 4		False	ß3 < ß

Compression art. (6.2.4)

1 **Ned / Nc,Rd < 1**		eq (6.22)
2 **Ned / Nu,Rd < 1**		eq (6.21)
Ned	1.22 kN	
Nc,Rd	167.59 kN	
Nu,Rd	171.07 kN	
UC1 ✓	0.01	
UC2 ✓	0.01	

Bending Moment art. (6.2.5)

1 **Myed / Myc,Rd < 1**		eq (6.25)
2 **Myed / Myu,Rd < 1**		eq (6.24)
3 **Mzed / Mzc,Rd < 1**		eq (6.25)
4 **Mzed / Mzu,Rd < 1**		eq (6.24)
Myed	2.93 kN	
Mzed	0.91 kN	
α;y	1.57	table (6.4)
α;z	1.69	table (6.4)
Myc,Rd	4.37 kNm	
Myu,Rd	2.84 kNm	
Mzc,Rd	4.63 kNm	
Mzu,Rd	2.79 kNm	
UC1-y ✓	0.67	
UC2-y !	1.03	
UC3-z ✓	0.20	
UC4-z ✓	0.33	

Bending and Axial Force art. (6.2.9)

$$\left[\left(\frac{N_{Ed}}{\omega_0 N_{Rd}}\right)^{\psi} + \left[\left(\frac{M_{y,Ed}}{\omega_0 M_{y,Rd}}\right)^{1.7} + \left(\frac{M_{z,Ed}}{\omega_0 M_{z,Rd}}\right)^{1.7}\right]^{0.6}\right] \leq 1.00$$

eq. (6.43) - (ω0 = 1) - (ψ = 1.3)

UC ✓	0.72

Buckling (compression) art. (6.3.1.1)

Ned / Nb,Rd < 1		eq. (6.48)
Ned	1.22 kN	
BC	B	
α	0.32	table (6.6)
λ_0	0.00	table (6.6)
χ	0.05	eq. (6.50)
ϕ	9.78 N	
λ	4.15	eq. (6.51)
Ncr	10694.85 (z-axis)	
Nb,Rd	8.99 kN	
UC ✓	0.14	

Buckling (Bending and Axial Force) art. (6.3.3.1)

$$\left(\frac{N_{Ed}}{\chi_{min}\,\omega_x N_{Rd}}\right)^{\psi_c} + \frac{1}{\omega_0}\left[\left(\frac{M_{y,Ed}}{M_{y,Rd}}\right)^{1.7} + \left(\frac{M_{z,Ed}}{M_{z,Rd}}\right)^{1.7}\right]^{0.6} \leq 1.00$$

eq. (6.62) - (ω0 = 1) - (ωx = 1) - (ψ = 0.8)

UC ✓	0.92

Printdate:	19-5-2016 10:38	Filename:	controle_spant_ligger_t2.4b_ligger_B8_v2.xlsm	Location:	C:\Users\Arjen\Documents\

Project:	1604605_05	Element:	B10	Member:	diagonal	Combination:	NC2

Parameters

fo	215	N/mm^2
fu	255	N/mm^2
E	70000	N/mm^2
N	2.76	kN (- = tension)
My	0.01	kNm
Mz	0.00	kNm
Lcr;y	3650	mm
Lcr;z	3650	mm
Iy	69400	mm^4
Iz	69400	mm^4
ey	20	mm
ex	20	mm
Wyel	3470	mm^3
Wypl	4130	mm^3
Wzel	3470	mm^3
Wzpl	4130	mm^3
Aeff	294	mm^2
γm1	1.1	
γm2	1.25	

classification by wall parallel to y-axis

t	2	mm	
h	40	mm	
b	40	mm	
h;part	36	mm	
end:part	38	mm	
start:part	2	mm	
σ;40	-12.27	N/mm^2	
σ;38	-11.98	N/mm^2	
σ;2	-6.79	N/mm^2	
σ;0	-6.51	N/mm^2	
ψ	0.57		figure (6.2)
ß	15.66		eq (6.6)
η	0.87		eq (6.4)(6.5)
ε	1.08		
class	2		table (6.2)

class overide Off

classification conditions - Table 6.2 - Slenderness parameters

	ß1	ß2	ß3
Class A	11.86	17.25	23.72
class 1		False	ß < ß1
class 2		True	ß1 < ß < ß2
class 3		False	ß2 < ß < ß3
class 4		False	ß3 < ß

Compression art. (6.2.4)

1 **Ned / Nc,Rd < 1** eq (6.22)
2 **Ned / Nu,Rd < 1** eq (6.21)

Ned	2.76	kN
Nc,Rd	57.46	kN
Nu,Rd	59.98	kN
UC1 ✓	0.05	
UC2 ✓	0.05	

Bending Moment art. (6.2.5)

1 **Myed / Myc,Rd < 1** eq (6.25)
2 **Myed / Myu,Rd < 1** eq (6.24)
3 **Mzed / Mzc,Rd < 1** eq (6.25)
4 **Mzed / Mzu,Rd < 1** eq (6.24)

Myed	0.01	kN	
Mzed	0.00	kN	
α;y	1.19		table (6.4)
α;z	1.19		table (6.4)
Myc,Rd	0.81	kNm	
Myu,Rd	0.71	kNm	
Mzc,Rd	0.81	kNm	
Mzu,Rd	0.71	kNm	
UC1-y ✓	0.01		
UC2-y ✓	0.01		
UC3-z	-		
UC4-z	-		

Z Checks not necessary, no bending moments

Bending and Axial Force art. (6.2.9)

$$\left(\frac{N_{Ed}}{\omega_0 N_{Rd}}\right)^{\psi} + \left[\left(\frac{M_{y,Ed}}{\omega_0 M_{y,Rd}}\right)^{1.7} + \left(\frac{M_{z,Ed}}{\omega_0 M_{z,Rd}}\right)^{1.7}\right]^{0.6} \le 1.00$$

eq. (6.43) - (ω0 = 1) - (ψ = 1.3)

UC ✓	0.03

Buckling (compression) art. (6.3.1.1)

Ned / Nb,Rd < 1 eq. (6.48)

Ned	2.76	kN	
BC	B		
α	0.32		table (6.6)
λ_0	0.00		table (6.6)
χ	0.05		eq. (6.50)
ϕ	9.95	N	
λ	4.19		eq. (6.51)
Ncr	3598.91	(z-axis)	
Nb,Rd	3.03	kN	
UC ✓	0.91		

Buckling (Bending and Axial Force) art. (6.3.3.1)

$$\left(\frac{N_{Ed}}{\chi_{min}\,\omega_x N_{Rd}}\right)^{\psi_c} + \frac{1}{\omega_0}\left[\left(\frac{M_{y,Ed}}{M_{y,Rd}}\right)^{1.7} + \left(\frac{M_{z,Ed}}{M_{z,Rd}}\right)^{1.7}\right]^{0.6} \le 1.00$$

eq. (6.62) - (ω0 = 1) - (ωx = 1) - (ψ = 0.8)

UC ✓	0.28

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Informatie

Projectnummer	1604605_05
Onderdeel	middenpaal

Staaf
Belastinggeval/combinatie

Belastingen

N;d	-1.85	kN
My;d*	0	kNm
Mz;d*	0	kNm

Mx;d	0	kNm
Vy;d	0	kN
Vz;d	0	kN

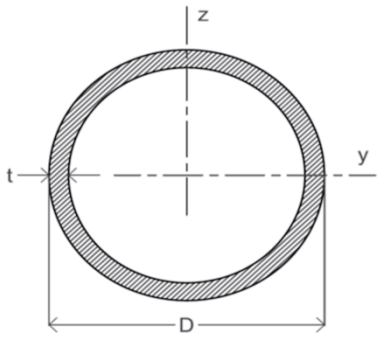
Profiel gegevens

Type	CHS
Profiel:	30 x 2
Fabricage:	koudgevormd
Classificatie:	1
Kipgevoelig:	Nee

staaflengte	1930 mm
kniklengte;y-as	1930 mm
kniklengte;z-as	1930 mm

Materiaal:	S235
Vloeigrens:	235 N/mm^2
Treksterkte	360 N/mm^2
E-modules	210000 N/mm^2

γ_{M0}	1 -
γ_{M1}	1



Iy	17329	mm^4
Iz	17329	mm^4
It	34658	mm^4
Iw	0	mm^6
Wy;el	1155	mm^3
Wz;el	1155	mm^3
Wy;pl	1571	mm^3
Wz;pl	1571	mm^3
A	176	mm^3
G	1.4	kg/m^1

Diameter	D	30 mm
Dikte	t	2 mm

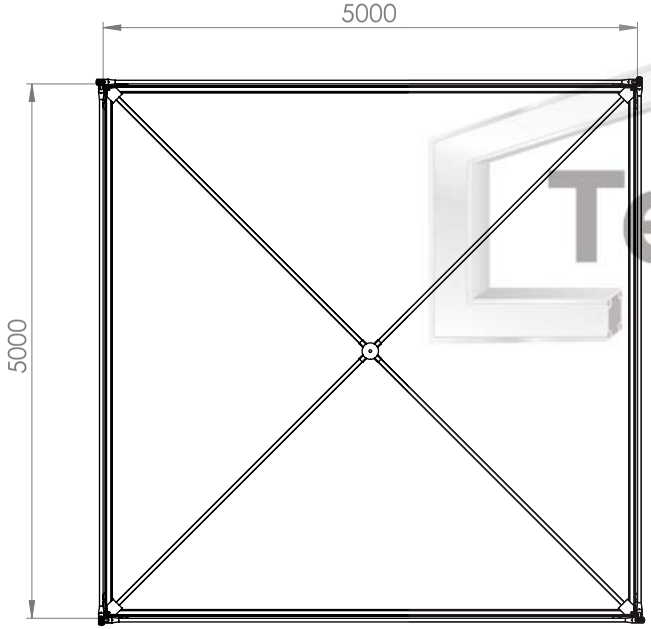
Controle strekte

Rekenweerstand trekbelasting	$N_{t,Rd}$	**41.34 kN**	(6.6) NEN-EN 1993-1-1
Controle axiale trek		geen trekbelasting	(6.5) NEN-EN 1993-1-1
Rekenweerstand drukbelasting	$N_{c,Rd}$	**41.34 kN**	(6.10) NEN-EN 1993-1-1
Controle axiale druk		0.04 < 1,0	(6.9) NEN-EN 1993-1-1
Rekenweerstand buigend moment (Y-as)	$My_{r_{c,Rd}}$	**0.37 kNm**	(6.13) NEN-EN 1993-1-1
Controle moment in Y-as		-	(6.12) NEN-EN 1993-1-1
Rekenweerstand buigend moment (Z-as)	$Mz_{c,Rd}$	**0.37 kNm**	(6.13) NEN-EN 1993-1-1
Controle moment in Z-as		geen moment (Z-as)	(6.12) NEN-EN 1993-1-1
Rekenweerstand dwarskracht (Y-as)	$Vy_{c,Rd}$	**15.20 kN**	(6.6) NEN-EN 1993-1-1
Afschuifoppervlak (Y-as)	A_v	112.00 mm^2	art. 6.2.6 (3) NEN-EN 1993-1-1
Controle dwarskracht in Y-as		geen dwarskracht (Y-as)	(6.12) NEN-EN 1993-1-1
Rekenweerstand dwarskracht (Z-as)	$Vz_{c,Rd}$	**15.20 kN**	(6.6) NEN-EN 1993-1-1
Afschuifoppervlak (Z-as)	A_v	112.00 mm^2	art. 6.2.6 (3) NEN-EN 1993-1-1
Controle dwarskracht in Z-as		geen dwarskracht (Z-as)	(6.12) NEN-EN 1993-1-1

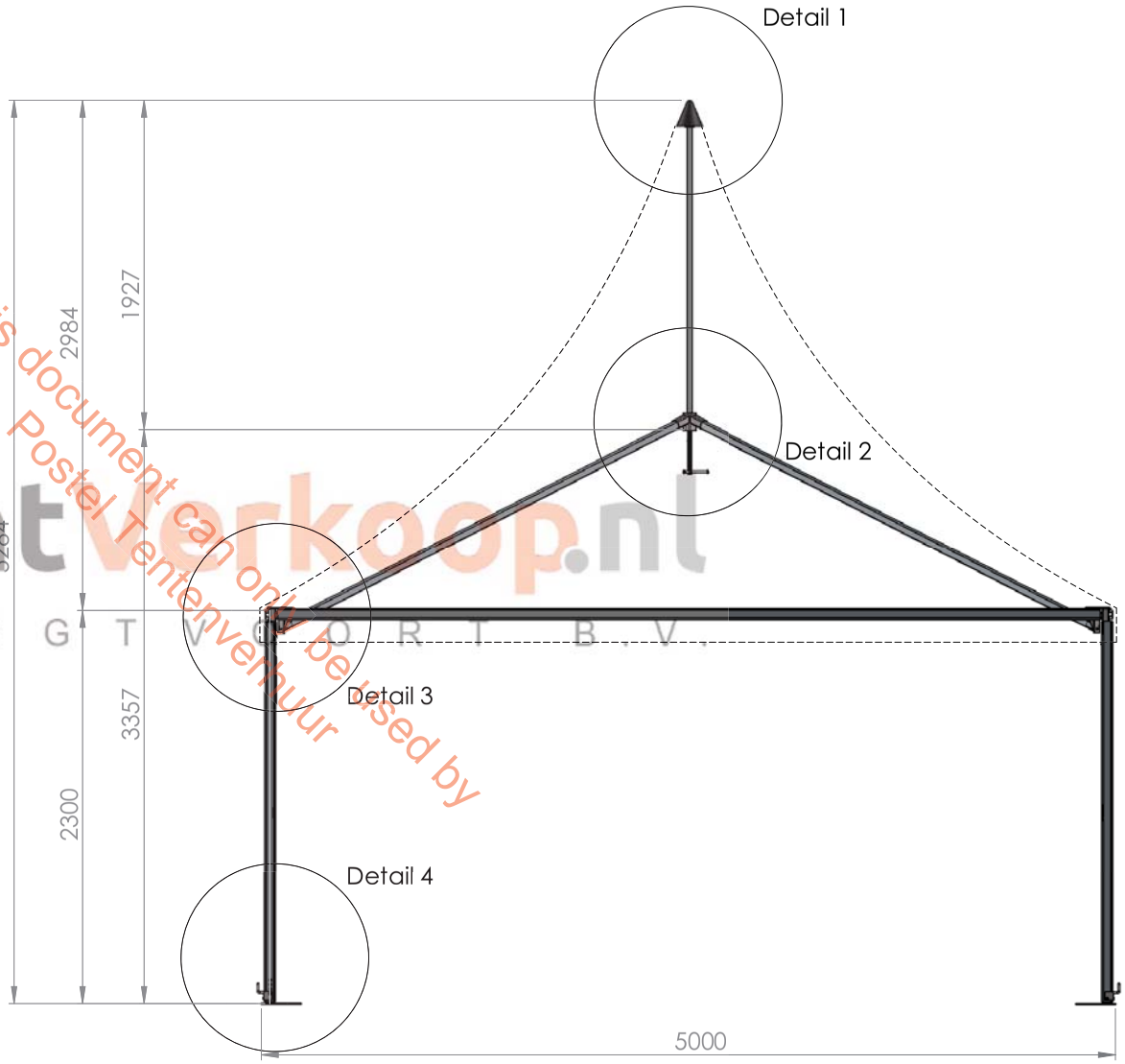
Controle stabiliteit

Rekenweerstand drukbelasting (knik sterke as)	$N_{b,y,Rd}$	**7.64 kN**	(6.47) NEN-EN 1993-1-1
knikkromme; y-as		c	
Imperfectiefactor;y-as		0.49	
Kritische knikkracht;y-as		9642 N	
Relatieve slankheid;y-as:		2.07	
Φ;y-as		3.10	
Knikfactor χy		0.18	
Controle knik (sterke as)		0.24 < 1,0	(6.46) NEN-EN 1993-1-1
Rekenweerstand drukbelasting (knik zwakke as)	$N_{b,z,Rd}$	**7.64 kN**	(6.47) NEN-EN 1993-1-1
knikkromme; z-as		c	
Imperfectiefactor;z-as		0.49	
Kritische knikkracht;z-as		9642 N	
Relatieve slankheid;z-as:		2.07	
Φ;z-as		3.10	
Knikfactor χz		0.18	
Controle knik (zwakke as)		0.24 < 1,0	(6.46) NEN-EN 1993-1-1
Rekenwaarde kipweerstand (Y-as)	$M_{y,b,Rd}$	**0.37 kNm**	(6.55) NEN-EN 1993-1-1
Controle kipweerstand		-	(6.54) NEN-EN 1993-1-1
interactiefactor	kyy	1.19	Bijlage B NEN-EN 1993-1-1
interactiefactor	kyz	0.72	Bijlage B NEN-EN 1993-1-1
interactiefactor	kzy	0.00	Bijlage B NEN-EN 1993-1-1
interactiefactor	kzz	1.19	Bijlage B NEN-EN 1993-1-1
Controle stabiliteit (dubbele) buiging + knik (sterke as)		-	(6.61) NEN-EN 1993-1-1
Controle stabiliteit (dubbele) buiging + knik (zwakke as)		-	(6.61) NEN-EN 1993-1-1

Annex C: Drawings



For anchorage see:
Summary page 3



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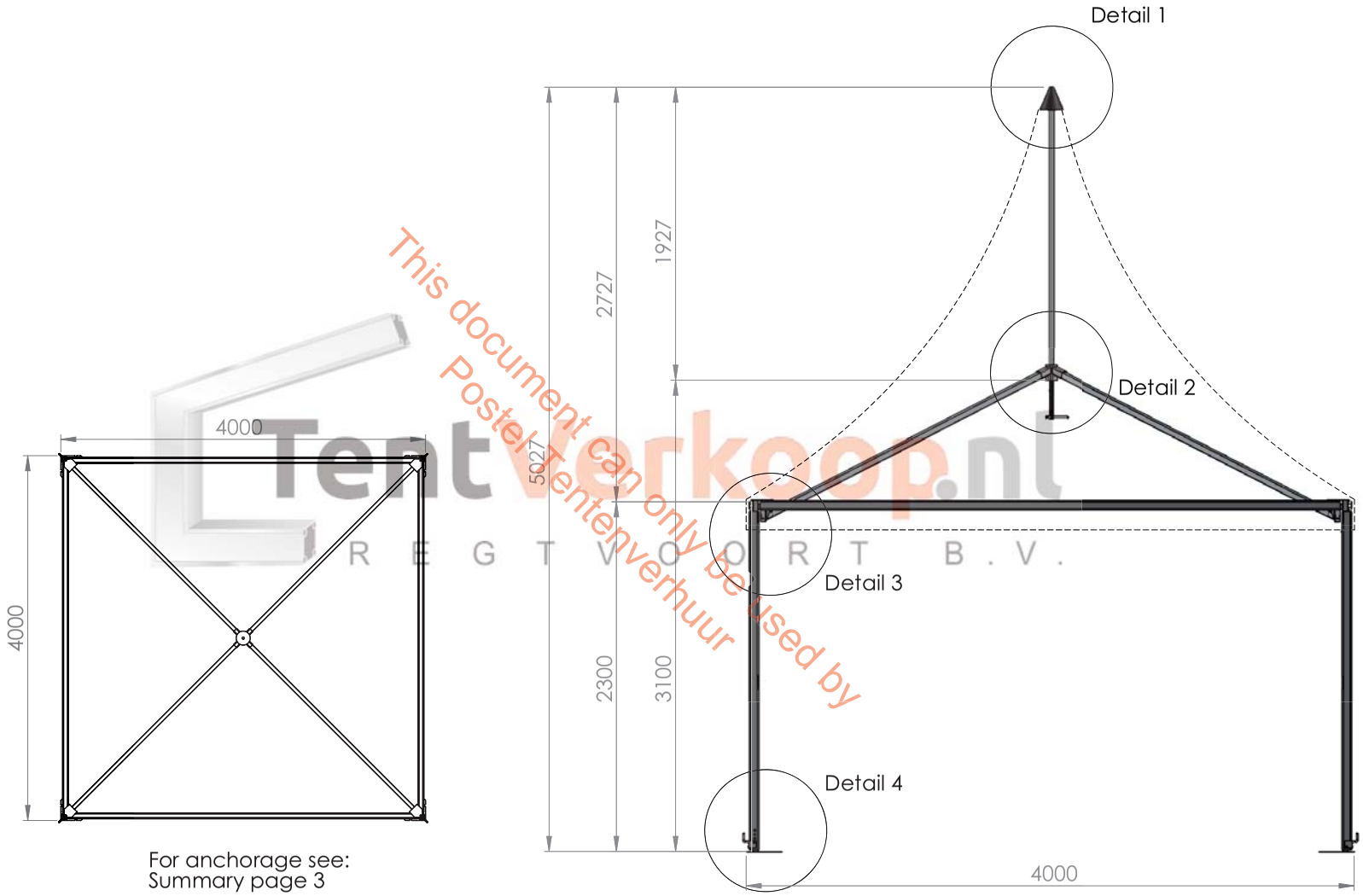
21-5-2016

TITLE: Pagoda Event Serie 64 5m x 5m

DWG NO. Assembly

A3

MP SCALE:1:1



For anchorage see:
Summary page 3

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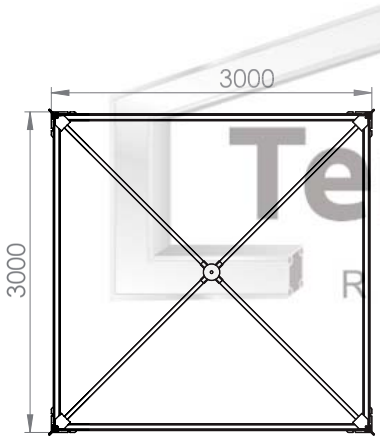
TITLE: Pagoda Event Serie 64 4m x 4m

DWG NO. Assembly

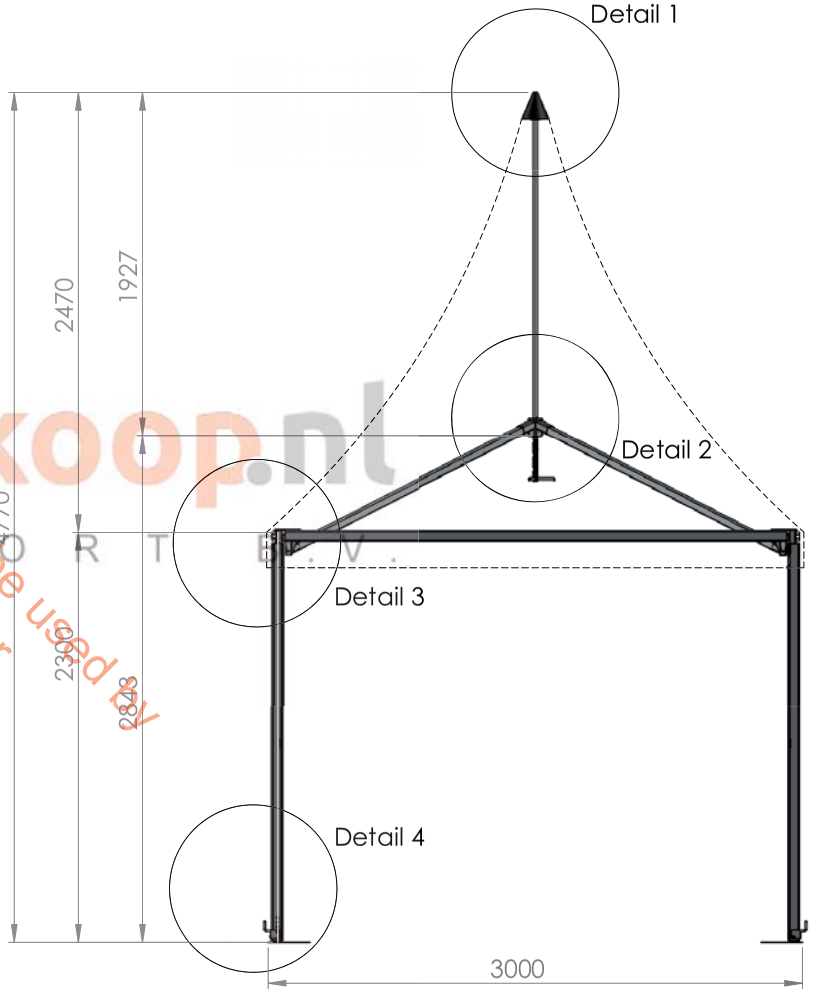
A3

MP

SCALE:1:1



For anchorage see:
Summary page 3



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21-5-2016	TITLE: Pagoda Event Serie 64 3m x 3m		
	DWG NO. Assembly	A3	
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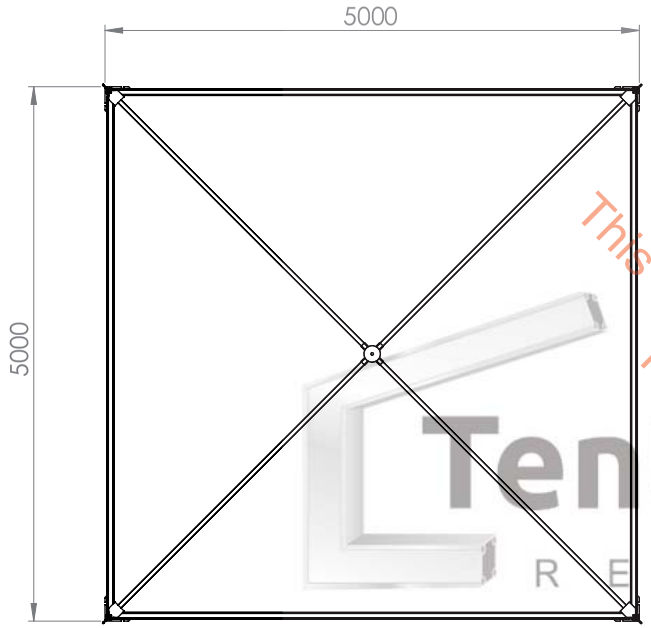

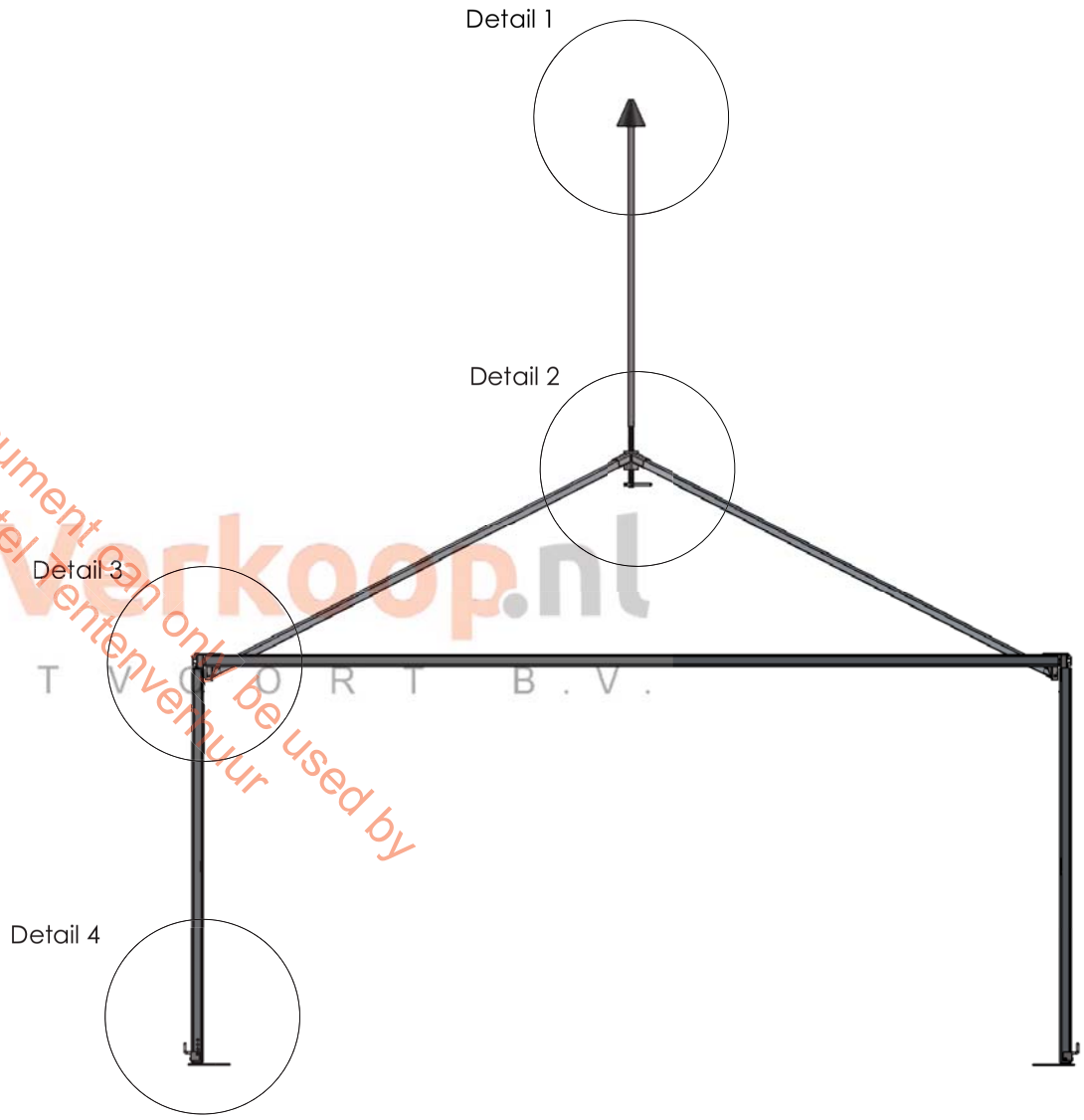

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	TITLE:	Event Serie 64	
3-5-2016	DWG NO.	Assembly	A3
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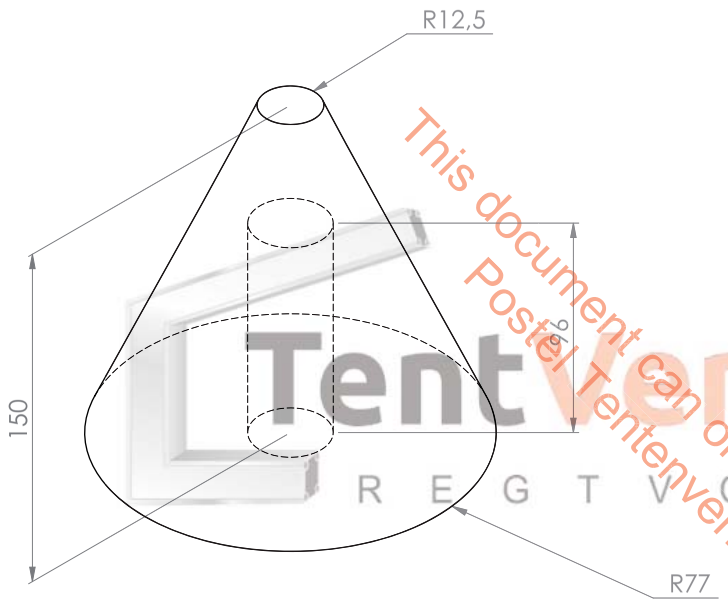

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3-5-2016	TITLE: Peak ES64		
	DWG NO. Detail 1	A3	
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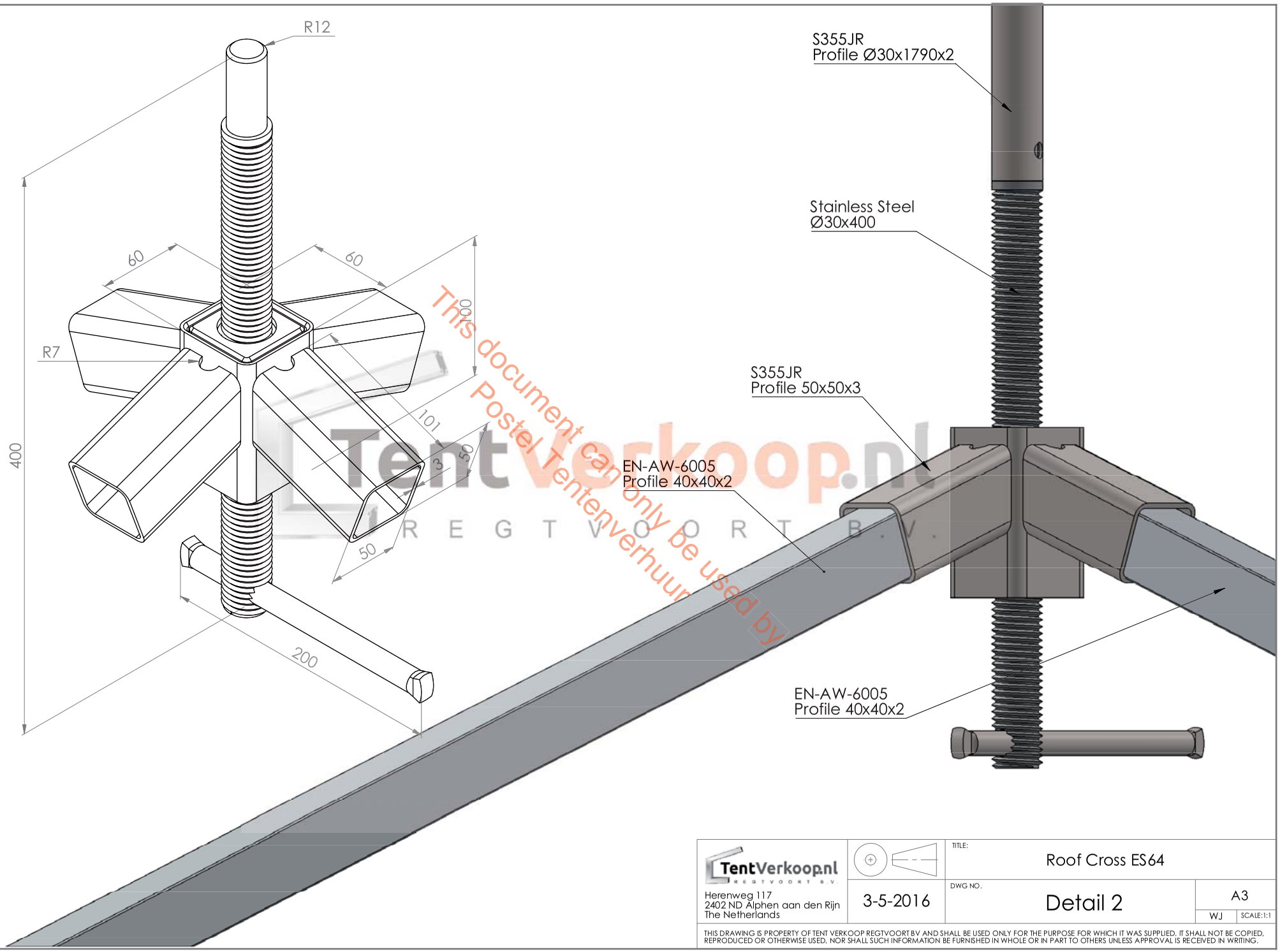

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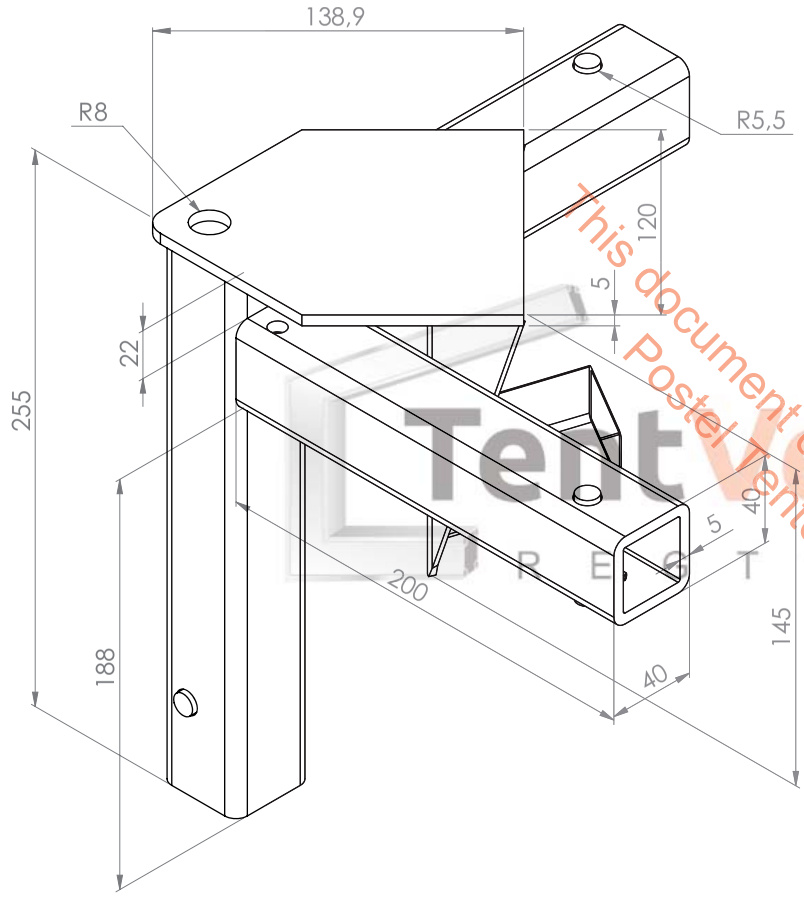
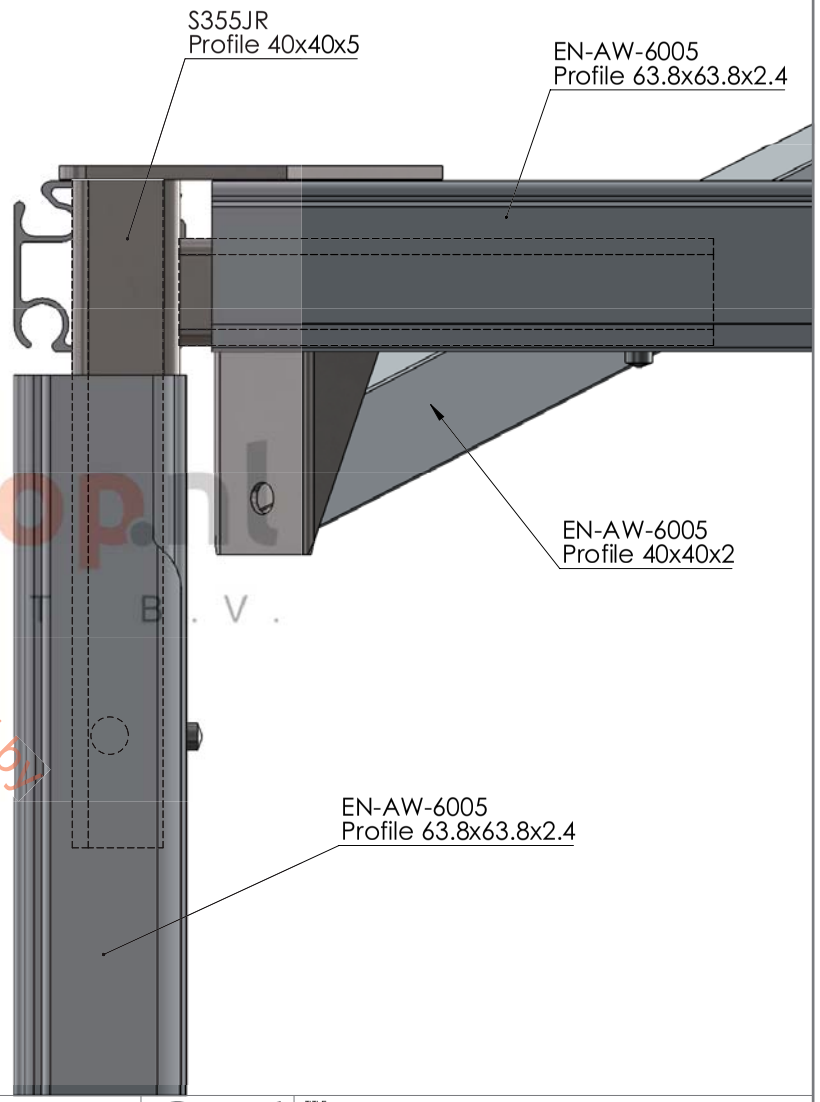
TITLE: Roof Cross ES64

DWG NO. Detail 2

A3

WJ | SCALE:1:1





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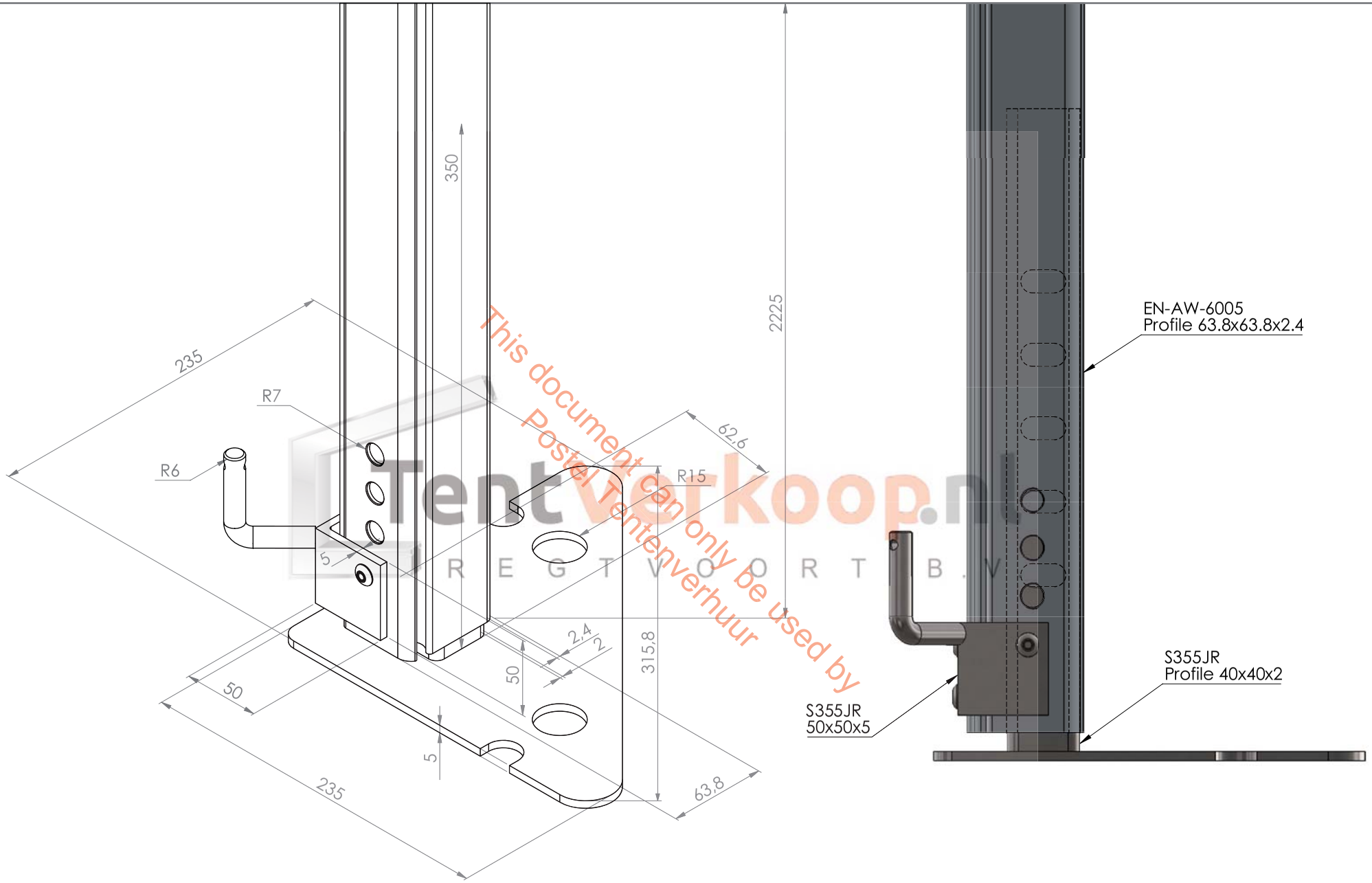
TITLE: Corner ES64

DWG NO. Detail 3

A3

WJ | SCALE:1:1



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3-5-2016	TITLE: Foot ES64		
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