Membrane Roof Covering Parts of C.U. Sports Center Swimming Pool

Master - Thesis

A Thesis submitted in partial fulfillment
of the requirements for the degree of

Master Membrane Structures

submitted to

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Faculty of Architecture
Facility Management and Geo Information

by

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Statement

I hereby declare that the work presented in this Master Thesis, entitled: "*Membrane Roof Covering Parts of Chulalongkorn University (C.U.) Sports Center Swimming Pool*" is entirely my own and that I did not use any sources or auxiliary means other than those referenced.

Bangkok, Thailand. 11 September 2011

CONTENT

1. PROJECT INTRODUCTION

Figure 1.1 Map of Thailand

Background

Chulalongkorn University, Thailand's first institution of higher learning, located in Thailand's capital city Bangkok, was officially came into being in March, 1917 by King Vajiravudh, Rama VI. The university is named after his father King Chulalongkorn, Rama V. At first, the university was under the supervision of University Affairs Department, Ministry of Education. Phraya Anukijwithoon was the first principal.

When it was first found, the university had only 380 students taking classes in four faculties. After the decades had passed, Chulalongkorn University was continuing developed, it extends over 456 acres on land granted by the royal family and composed of 41 faculties, departments, colleges, and research offices. The student body consists of nearly 21,000 undergraduate students, 9,740 master degree students, and 1,737 doctorial students (2009). Furthermore, Chulalongkorn university was ranked 138th in the World University Ratings by Times Higher Education.

To meet the needs of the university community, faculty, personnel, and students, the university has built a number of facilities and established various services such as healthcare, transportation, book center, and sport center.

Figure 1.2 Chulalongkorn University

Figure 1.3 Swimming pool in Sport Center

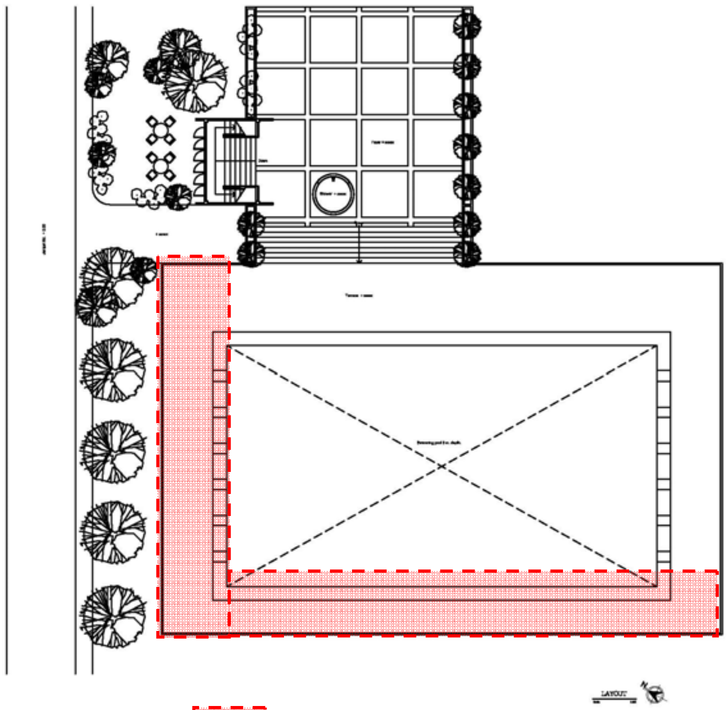
Figure 1.4 Arial view of the swimming pool

Site and Existing Conditions

Chulalongkorn University Sports Center is a part of Chulalongkorn university and its campus program offerings. The center and its subsidiary facilities include the following: outdoor stadium, 2 indoor stadiums, tennis courts, football field, 2 swimming pools, fitness room, golf putting practice, beach volleyball court, sports complex, and outdoor fitness area.

This project is a part of “Sports Center Refurbishment Project” which was held on November 2010. The aim of this project is to design a new roof cover for the outdoor swimming pool deck in order to increase their functionality and to extend their use for other activities.

Figure 1.5 Map of Chulalongkorn University



Area needed to be covered

Figure 1.6 Layout of the swimming pool

Figure 1.7
Existing condition of the swimming pool
(on North wing)

Figure 1.8
Existing condition of the swimming pool
(on West wing)

The area needs to be covered is the deck in the north and west side of swimming pool. Both of them are confined by chain link steel fences which have a height of 2.00 m. The design must provide the membrane roof cover the those both sides of swimming pool deck (area approx. 150 sq.m.) without any intermediate columns. The constraint that the designer faced was selecting the materials and method of construction to suit the university's budget and could be done in short time.

Design Proposal

The conceptual design based on the concept of simplicity and functionality. Three main architectural elements: fabric membrane, cable, and steel frame were compromised with the structural system, making it a more interesting and lightweight structure.

With very long and narrow L-shape area to design, the roof, 21.5 m. by 4 m. in the north and 30 m. by 3.8 m. in the west, is comprised of 14 steel rigid frames which connected together by steel beams. Each frame has a cantilevering end, which has a length of around 4 meters. Fabric membranes were spanned over these steel structures and tensioned after assembly.

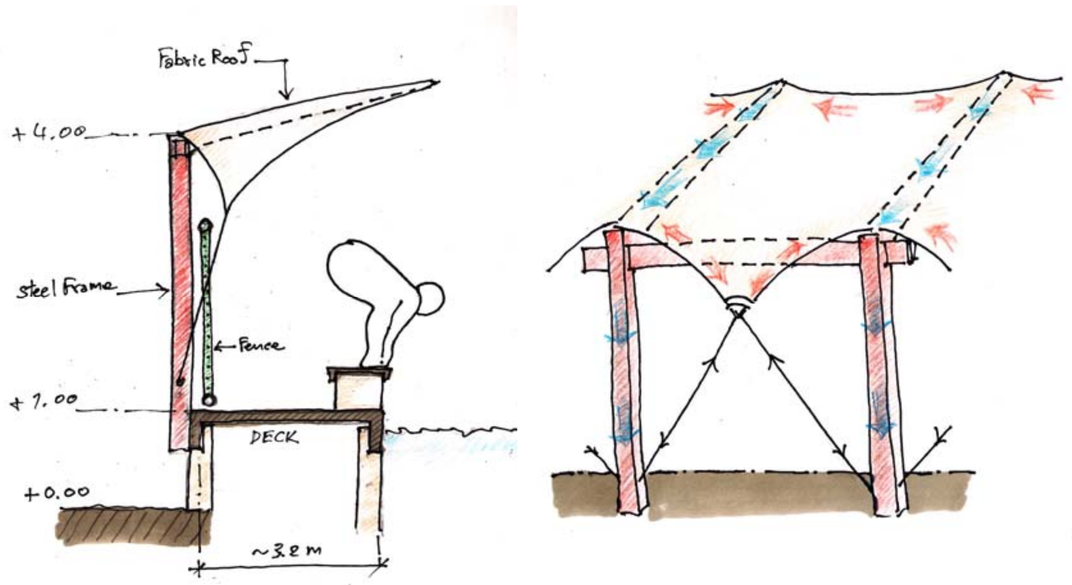


Figure 1.9 Sketches of Design Concept

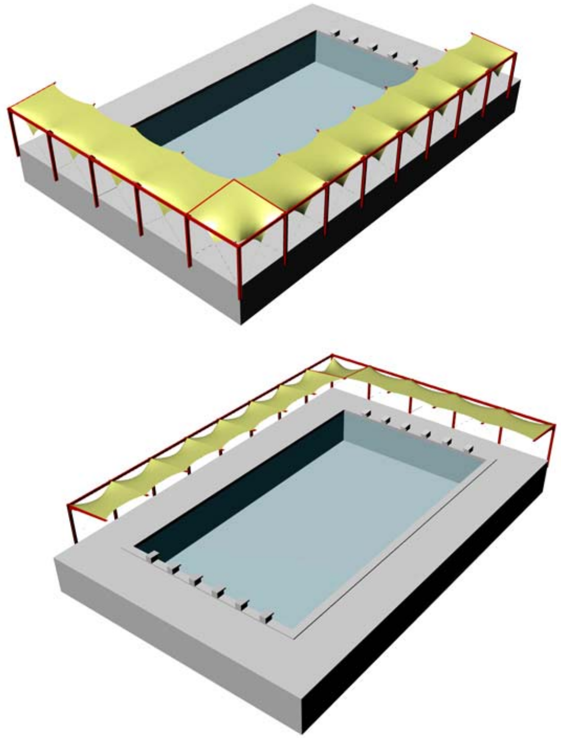


Figure 1.10 3D Model Design

2. STRUCTURAL DESIGN

Form finding

The "form finding" is the starting point in the design process to find a shape of the tension membrane which approximates the state of equilibrium.

This process consisted of experimental work on small-scale computational model which was analysed by Forten 4000. The computational model represent a set of numerical and graphical data describing structure's shape, stresses, and deformations under various load conditions.

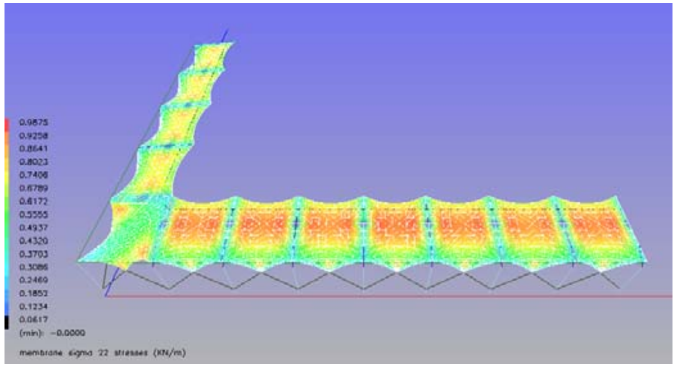


Figure 2.1
Computational Model analysed by Forten 4000

Structural Concept

The structural performance of this project based on the design concept, Simplicity and Functionality. The roof construction consists of a series of the steel load-bearing structure – rigid frame columns, which are arranged parallel running to the length of the pool (Figure 1.10). Each frame has cantilevering end with a span of 4 m. and its base is fixed to the swimming pool deck.

The roof consists of a single layer of PVC-coated polyester membrane. This translucent fabrics covering are stretched over the primary structure. In the north and west wing, the membrane were tensioned to the edges and fixed by the stainless-steel clamping strips to the steel sections whereas in the middle of membrane in each module was tied down to the column by Λ-shaped cables as a low point which provides double curvature and drainage. These cables fix the end points to the adjacent columns (figure 2.2). The steel columns were fixed at their bases in order to stabilize the overall structure. The loads from membrane are transmitted to the steel structures and from there to the ground. Codes, Loads, and structure analysis will be provided in the next section.

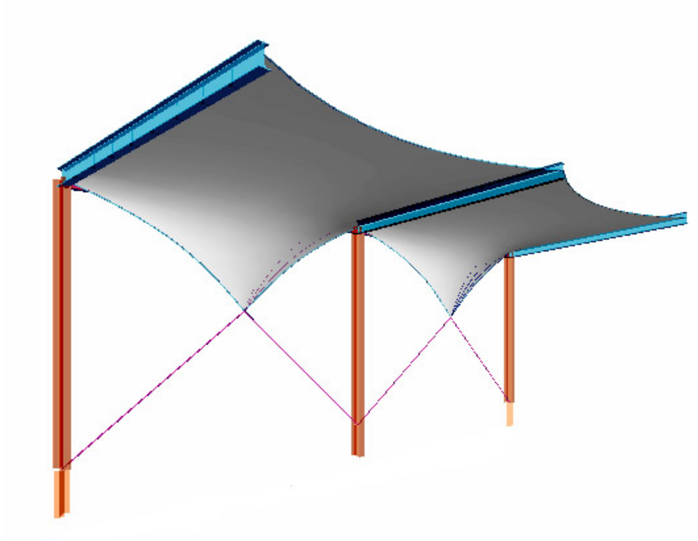


Figure 2.2
Structural Concept in an individual module

Load Conditions

The codes and recommendation used for analysis in this project are mentioned as following:

Actions: EIT Standard 1018-46 (2003), Engineering Institute of Thailand
DPT Standard 1311-50, Department of Public Works and Town & Country Planning

Steel works: AISC, American Institute of Steel Construction
ASCE 7-05, Minimum Design Loads for Buildings and other Structures

Fabric works: European Design Guide for Tensile Surface Structures, Tensinet
Tensile Surface Structures: A Practical Guide to Cable and Membrane Construction

1. Dead Load

Dead loads include the weight of all material used in construction. These loads can be estimated by the quantity of each material and then multiplying it with unit weight. The self weight of material used in this project are listed in table 2.1

Table 2.1 Unit Weight of Materials

Material	Unit Weight
Steel	78.5 $kN \cdot m^{-3}$
PCV Type I *	0.008 $kN \cdot m^{-2}$

** See Appendix IV*

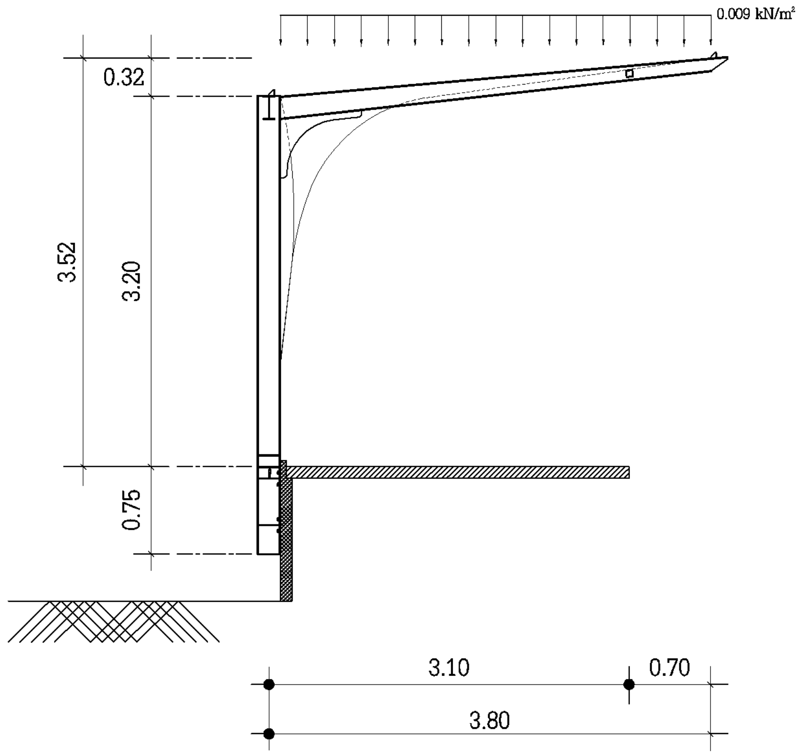


Figure 2.3
Self weight act on structure

The level of prestress in membrane depends on the type of fabric, and external loading. The assume value for the prestress in the fabric is recommended by European Design Guide for Tensile Structure, which indicate that, for PVC coated polyester membrane structure, the prestress should not be less than 1.3 % nor greater than 6 % of the average tensile strip capacity of the material in warp and weft direction.

According to Technical characteristic of membrane (see Appendix III), for PVC type I, Precontraint 702, the approximate value prestress are given as:

V_0, min = 0.65 kN·m^{-1}

V_0, max = 3.00 kN·m^{-1}

2. Live Load

Live loads are movable loads produced in a structure by workers or mobile equipments. Actual values of live loads are difficult to predict. In this case, according to General Building Codes of Thailand*, the minimum design live load should be provided is 30 kg·m^{-2}

** Minimum Design Loads for Building and other Structures, ANSI/ASCE 7-95, American Society of Civil Engineers. (See Appendix I)*

Figure 2.4
Live load occurs on structure

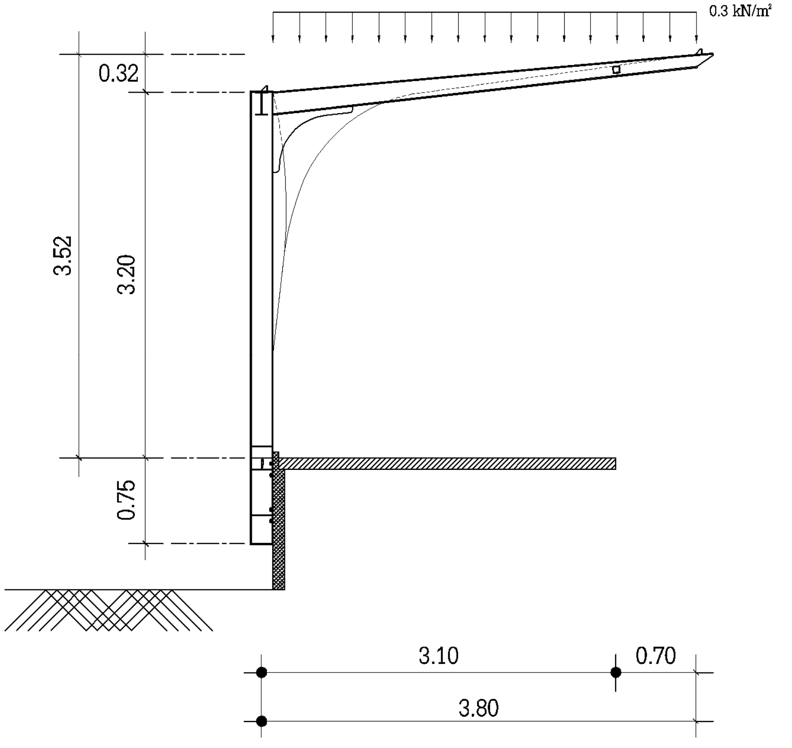


Figure 2.5
Live load act on structure

3. *Wind Load*

Similar to other membrane architecture, although it is located in the Bangkok, where has less impact from wind condition than other regions, the wind loading is still an important design loadcase, especially the lift force, and need to be taken into account.

Wind load acts on the structure, especially in the form of uplift, can be determined according to DPT Standard 1311-50 and EIT Standard 1018-46 Codes of Thailand.

There are three different approaches for determining wind load act on structure (see appendix II). Since the height of structure in this project is not greater than 80 m. Therefore, the procedure used for determining wind load is “Simple procedure”, based on the DPT Standard 1311-50.

The specified external pressure on surface can be expressed as:

$$P = (I_w)(q)(Ce)(Cg)(Cp)$$

where P = The specified external pressure or a suction directed away from the surface ($kg \cdot m^{-2}$)

I_w = Importance factor for wind load, as shown in Table 1

q = The reference velocity pressure ($kg \cdot m^{-2}$)

Ce = The exposure factor

Cg = The gust effect factor

Cp = The external pressure coefficient

3.1 Important Factor (I_w)

According to the occupancy used (see appendix II) of the project, the structure can be categorized as normal building, ULS. Hence, I_w = 1.0 is used. (Table 2.2)

Table 2.2 Importance Factor

Importance Category	Importance Factor I_w	
	Ultimate limit states	Serviceability limit states
Low	0.8	0.75
Normal	1	0.75
High	1.15	0.75
Post-diaster	1.15	0.75

Source: Virote Boonyapinyo, 2010.

3.2 Reference Velocity Pressure (q)

The reference wind velocity is determined from reference wind speed, $\overline{V}$ by the following equation:

$$q = \frac{1}{2}\left(\frac{\rho}{g}\right)\overline{V}^2$$

where q = Reference wind velocity pressure ($kg \cdot m^{-2}$)

ρ = Air density (1.25 $kg \cdot m^{-3}$)

g = Acceleration due to gravity (9.81 $m \cdot s^{-2}$)

$\overline{V}$ = Design wind speed ($m \cdot s^{-2}$)

(see detail in Appendix II)

The project is located in Bangkok which located in zone I, Central region.

Hence, V_{50} = 25 and T_F = 1.0 are used.

$$\text{Therefore,} \quad q = \frac{1}{2}\left(\frac{1.25}{9.81}\right)(25)^2$$

$$= 39.82 \text{ kg}\cdot\text{m}^{-2}$$

3.3 Exposure Factor (Ce)

The exposure factor (Ce) used in Simple procedure are given in Table 2.3

Table 2.3 Exposure Factors (Ce)

Height (m)	Exposure Factor
0 – 6	0.90
6 – 10	1.00
10 – 20	1.15
20 – 30	1.25
30 – 40	1.32
40 - 60	1.43
60 - 80	1.52
80 - 100	1.58
100 - 120	1.64

Source: Virote Boonyapinyo, 2010.

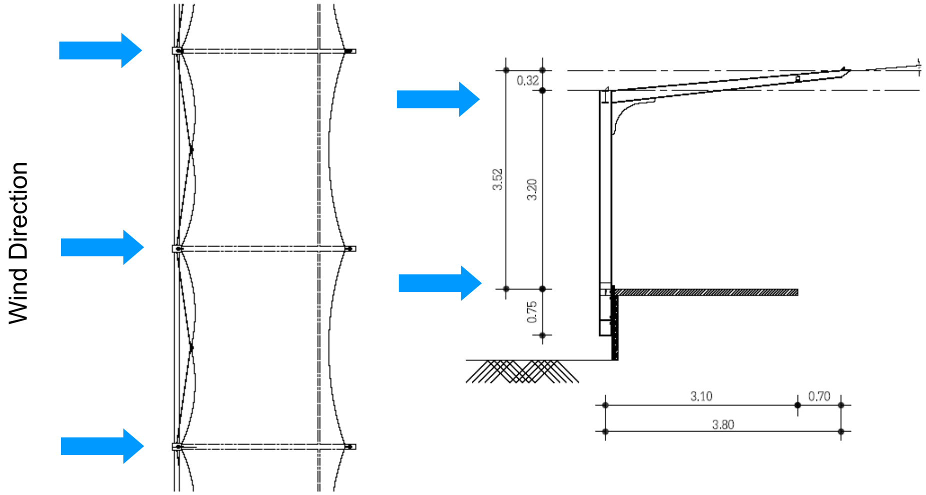
Since the maximum height of the structure is 4.50 m. Therefore, the exposure factor selected from the table 2.3 is 0.9.

3.4 Gust Effect Factor (Cg)

The gust effect factor (Cg) is defined as the ratio of the maximum effect of the loading to the mean effect of the loading. In this case, the gust effect factor used for simple procedure is 2.0 (for the building as a whole and main structural members; see appendix II).

3.5 Pressure Coefficient (Cp)

According to the roof geometry, the angle of roof which incline to the horizontal plane is approximately 5 degrees and the roof mean height –to- the roof cantilever is equal to 1.0. as shown in figure 2.6. Therefore, the pressure coefficient value can be taken from the table 2.4



(a) (b)

Figure 2.6
Wind direction against to the structure
(a) Plan (b) Elevation

Table 2.4 Exposure Factors for windward roof, $\theta < 10°$

Roof Pressure Coefficients, Cp					
Wind Direction	**h/L**	**Horizontal distance from windward edge**	**Cp**		
Normal to Ridge for θ< 10° and Parallel to ridge for all θ	≤ 0.5	0 to h/2	-0.9	* Value is provided for interpolation purposes.	
		h/2 to h	-0.9	**Value can be reduced linearly with area over which it is applicable as follows:	
		h to 2h	-0.5		
		> 2h	-0.3		
	≥ 1.0	0 to h/2	-1.3**	**Area (sq ft)**	**Reduction Factor**
				≤ 100 (9.29 sq m)	1.0
		> h/2	-0.7	200 (23.23 sq m)	0.9
				≥ 1000 (92.9 sq m)	0.8

From the table 2.4, the pressure coefficient values suit for the roof are 1.3 and 0.7 (suction) which act on the structure by the distance of 1.7 m and 2.25 m. respectively (Figure 2.7).

From $P = (I_w)(q)(Ce)(Cg)(Cp)$

$$P_{(Cp = -1.3)} = (1)(39.82)(0.9)(2)(-1.3) = -93.17 \ \text{kg}\cdot\text{m}^{-2}$$

$$P_{(Cp = -07)} = (1)(39.82)(0.9)(2)(-0.7) = -50.17 \ \text{kg}\cdot\text{m}^{-2}$$

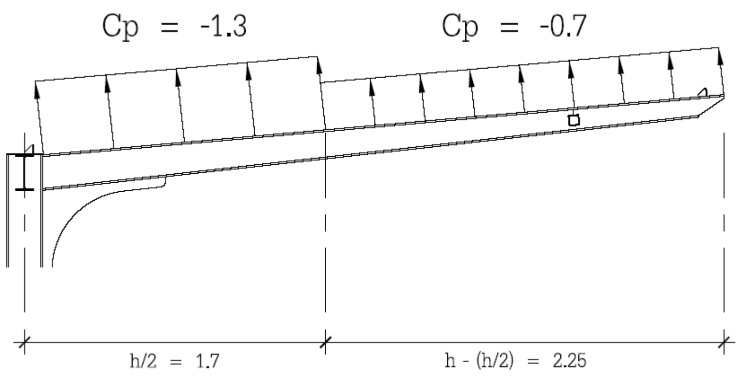


Figure 2.7 Wind suction on the roof

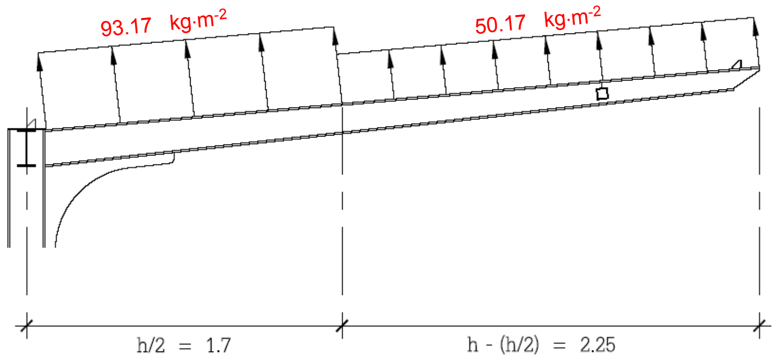


Figure 2.8 Wind suction on the roof

According to the site orientation. Two sides of rectangular shape are enclosed by the surround buildings but the others face to the open spaces, Thus the wind directions which need to take into account remain in 2 sides as shown in the picture:

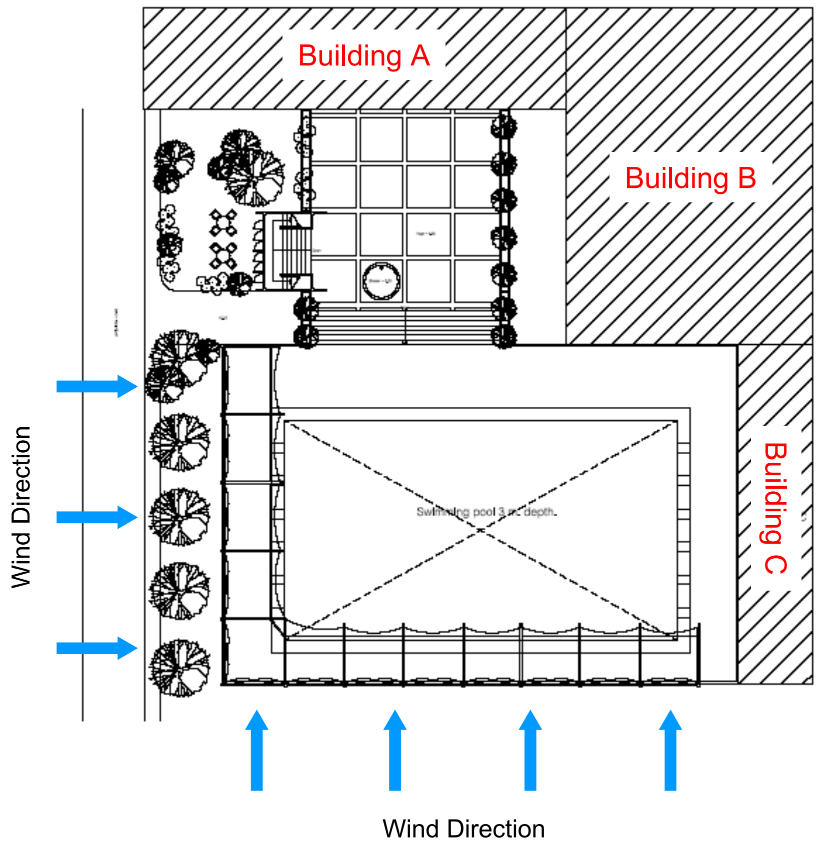


Figure 2.9 Building orientation and Wind direction

Load Combination

To carry out the structural design, it is necessary to quantify the effects of the loads which will be exerted on each element of the structure. The design loads to be considered in this project are as follows:

1) Prestress (V_0)
2) Dead load (DL)
3) Live load (LL)
4) Wind load (WL)

In realistic situation, these load types may act on a structure. Fortunately, Thailand is located in a tropical region. Thus, the calculation of snow accumulation is not required, only wind conditions on structure must take into account. Therefore, according to DIN EN 1990 the load factors and load cases could be managed as in table 2.5

Table 2.5 Load combination and load cases

SLS		ULS	
SLS-01	$1.0DL + 1.0V_0$	ULS-01	$1.35DL + 1.35V_0$
SLS-02	$1.0DL + 1.0V_0 + 1.0LL$	ULS-02	$1.35DL + 1.35V_0 + 1.50LL$
SLS-03	$1.0DL + 1.0V_0 + 1.0WL$	ULS-03	$1.35DL + 1.35V_0 + 1.50WL$
SLS-04	$1.0DL + 1.0V_0 + 1.0LL + 1.0WL$	ULS-04	$1.35DL + 1.35V_0 + 1.35LL + 1.35WL$

Source: Dr.-Ing. Karsten Moritz, Dr.-Ing. Lars Schiemann, 2010.

Load Assumption

Load assumption for each condition can be summarized as in table 2.6

Table 2.6 Load combination and load cases

Condition	Load	
Prestress (V_0)	1.04 – 4.80	$kN{\cdot}m^{-1}$
Dead load (DL)	0.009	$kN{\cdot}m^{-2}$
Live load (LL)	30	$kg{\cdot}m^{-2}$
Wind load (WL)	$P_{(Cp\,-1.3)}$ = 93.17	$kg{\cdot}m^{-2}$
	$P_{(Cp\,-0.7)}$ = 50.17	$kg{\cdot}m^{-2}$

Covered area = 145.52 m^2

Membrane area = 167.86 m^2

Material

For the selection of the materials, different criterions were taken into account:

- The operation of the pool deck must be disturbed as little as possible by maintenance and cleaning works.
- The durability of the material under high wind loads or rain and must be able to bear foot traffic which could occur by workers.
- The fire prevention authorities required a non-combustible material.
- The material must not to increase overall cost greater than the budget.

Due to the above the above specifications, a PVC-coated Polyester fabric was selected.

1. *Steel Structure*

Steel section were composed as rigid frames used in this project as a primary structure which are mainly subjected to compressive force as well as bending moment and the torsion forces. (figure 2.10)

The performance of steel works was analyzed according to the AISC, American Institute of Steel Construction and ASTM A36 Code.

2. *Cable*

Cables used as tension structure in this project are mentioned by AISI 304, and can be classified in three sizes, dia. 8 mm., 7 mm., and 6 mm. with breaking load of 86 kN, 35 kN, and 28 kN respectively. All of them are 1 × 19 spiral strand cable used as boundary cable and tie down cable.

The force analysis in each cable was studied by the computational model (Forten 4000) with various load cases and will be discussed later on.

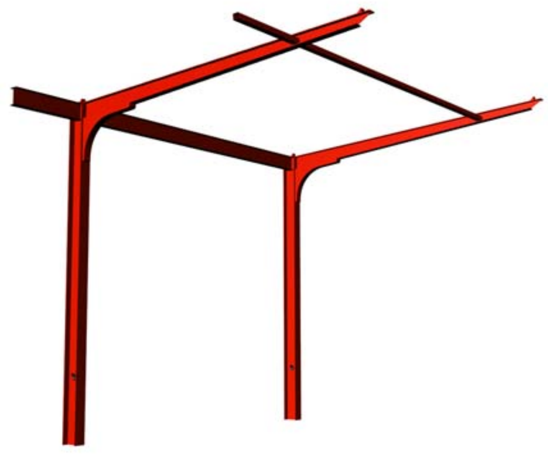


Figure 2.10 Rigid frame as a primary structure

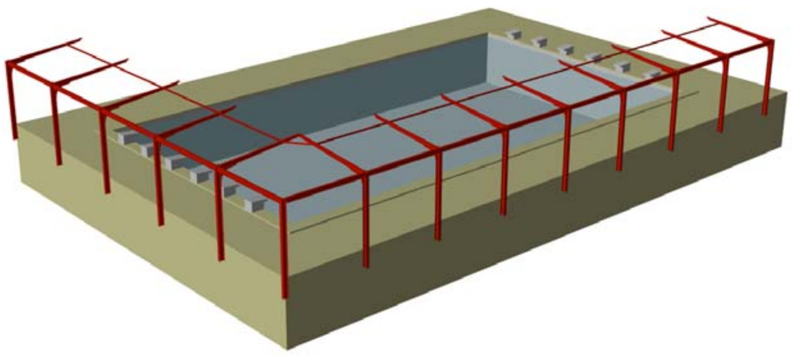


Figure 2.11 Series of Rigid frames as fixed to the site

Figure 2.12 Steel cable with Thread terminal

Figure 2.13 PVC coated polyester membrane

3. Membrane

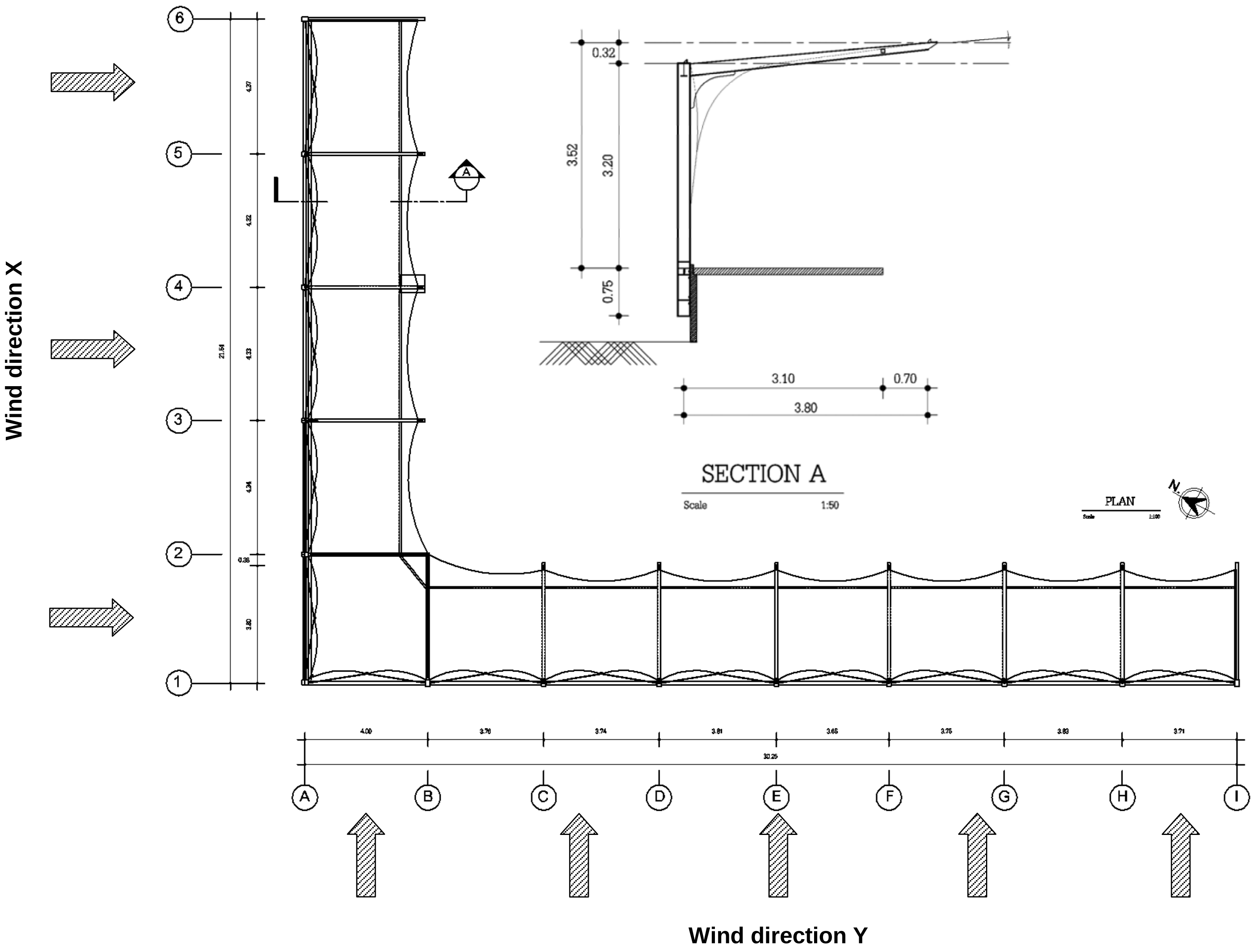
According to the membrane stress analysis (see further in p.67), the fabric material which has been selected for this project is PVC coated polyester because it has a good tensile strength and elasticity. Furthermore, it is relatively inexpensive and has a flexibility and ease of handling that suitable for erection. The basic properties of PVC coated polyester fabric are presented in table 2.7.

Table 2.7 Basic properties of PVC coated polyester fabric.

Coating	PVC
Expected lifetime	8 – 10 years
Ageing	Average
Self-cleaning	Average
Transparency	Good
Fire-retardant	Good (B1 – DIN 4102)
Foldable	Very good

Werner Sobek e.a.: Von der Faser zum Gewebe. (1993).

3. EVALUATION OF STATIC ANALYSIS


Wind direction X
6
5
4
3
2
1
A
0.32
3.52
3.20
0.75
3.10
0.70
3.80
SECTION A
Scale
1:50
PLAN
N
A
B
C
D
E
F
G
H
I
Wind direction Y

To satisfy the Serviceability limit state criteria, a structure must remain functional for its intended use subjected to routine loading. A structure is deemed to satisfy the serviceability limit state when the constituent elements do not deflect by more than certain limit as mentioned in the building codes.

At the SLS it shall be verified that:

$$E_d \leq C_d$$

where E_d is the design value of the effects of actions specified in the serviceability criterion, determined on the basis of the relevant combination.

C_d is the limiting design value of the relevant serviceability criterion.

For serviceability limit state, the partial factor (γ) should be taken as 1.0

Load cases and factor for serviceability limit state

SLS	
SLS-01	$1.0DL + 1.0V_0$
SLS-02	$1.0DL + 1.0V_0 + 1.0LL$
SLS-03	$1.0DL + 1.0V_0 + 1.0WL$
SLS-04	$1.0DL + 1.0V_0 + 1.0LL + 1.0WL$

A) Membrane Stress (S11)

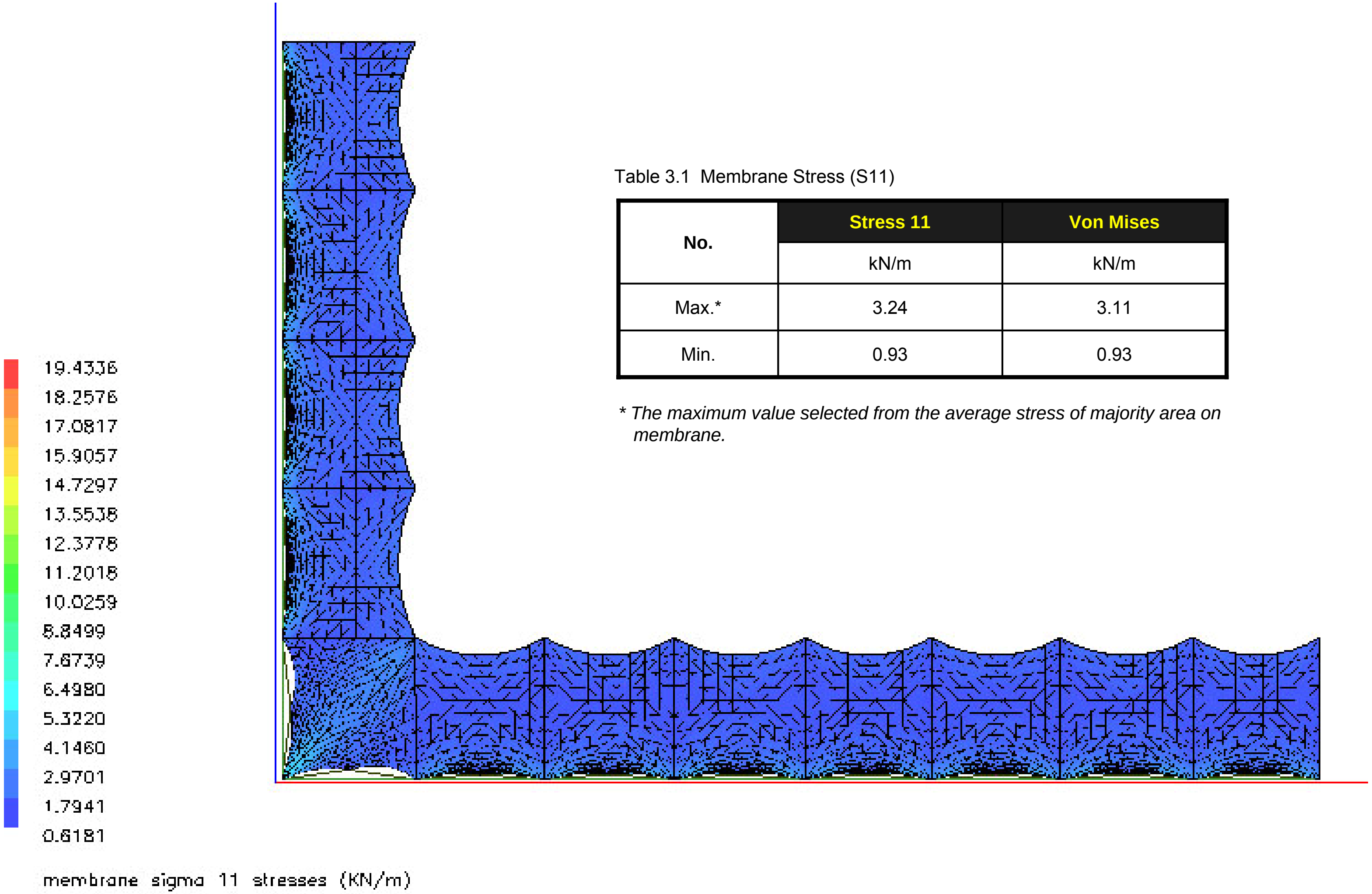


Table 3.1 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	3.24	3.11
Min.	0.93	0.93

** The maximum value selected from the average stress of majority area on membrane.*

Figure 3.1 LC0: Membrane Stress 11

B) Membrane Stress (S22)

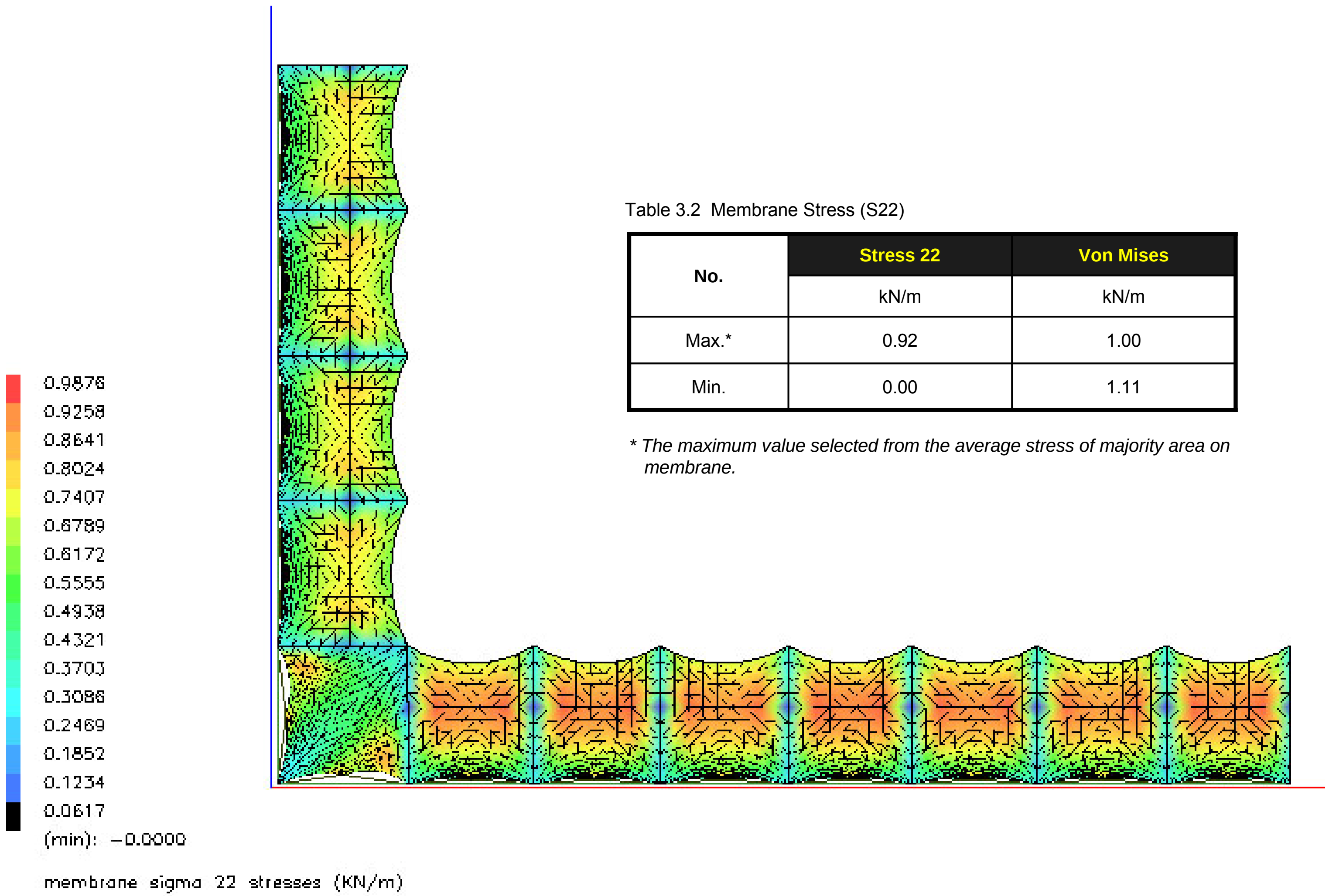


Table 3.2 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	0.92	1.00
Min.	0.00	1.11

** The maximum value selected from the average stress of majority area on membrane.*

Figure 3.2 LC0: Membrane Stress 22

C) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	2.07
1	2.10
2	2.12
3	2.14
4	2.10
5	2.12
6	2.07
7	2.09
8	2.11
9	2.14
10	2.09
11	2.12
12	2.09
13	2.13
14	2.60
15	2.17
16	2.67
17	2.24
18	2.27

No.	Axial Force (kN)
19	2.28
20	2.25
21	2.29
22	2.29
23	2.30
24	2.24
25	2.29

D) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	2.14
3	2.53
5	2.11
6	2.16
7	2.55
9	2.13
10	2.15
11	2.54
13	2.13
14	2.16
15	2.54
17	2.13
18	1.92
20	2.30
22	1.95
23	1.91
24	2.29
26	1.94
27	1.94

Code	Axial Force (kN)
28	2.32
30	1.96
31	1.88
32	2.25
34	1.90
35	1.92
36	2.29
38	1.94
39	1.95
40	2.33
42	1.97
43	1.89
44	2.26
46	1.91
47	3.49
48	3.62
49	1.64
50	1.61

A) Membrane Stress (S11)

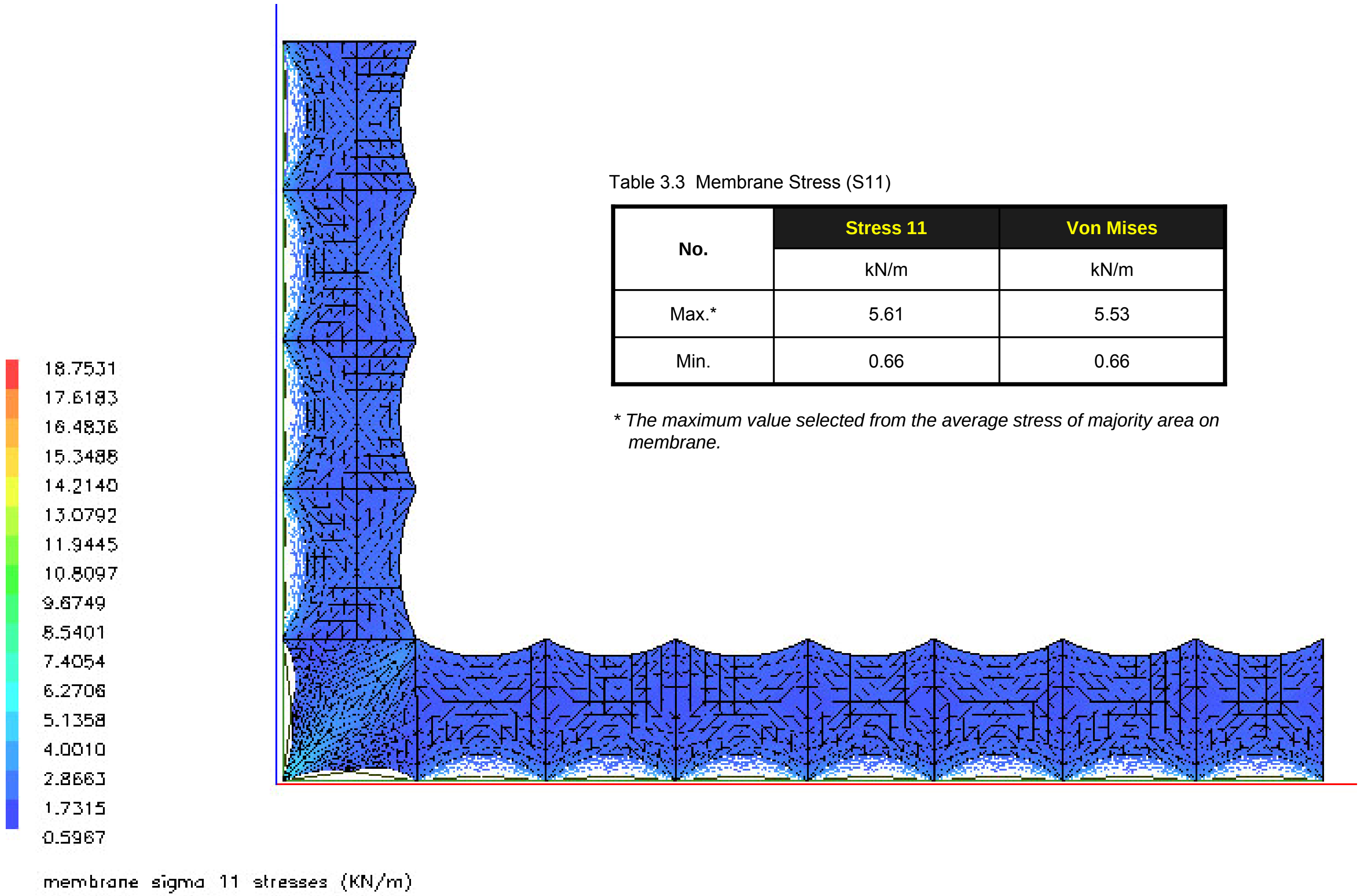


Table 3.3 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	5.61	5.53
Min.	0.66	0.66

** The maximum value selected from the average stress of majority area on membrane.*

B) Membrane Stress (S22)

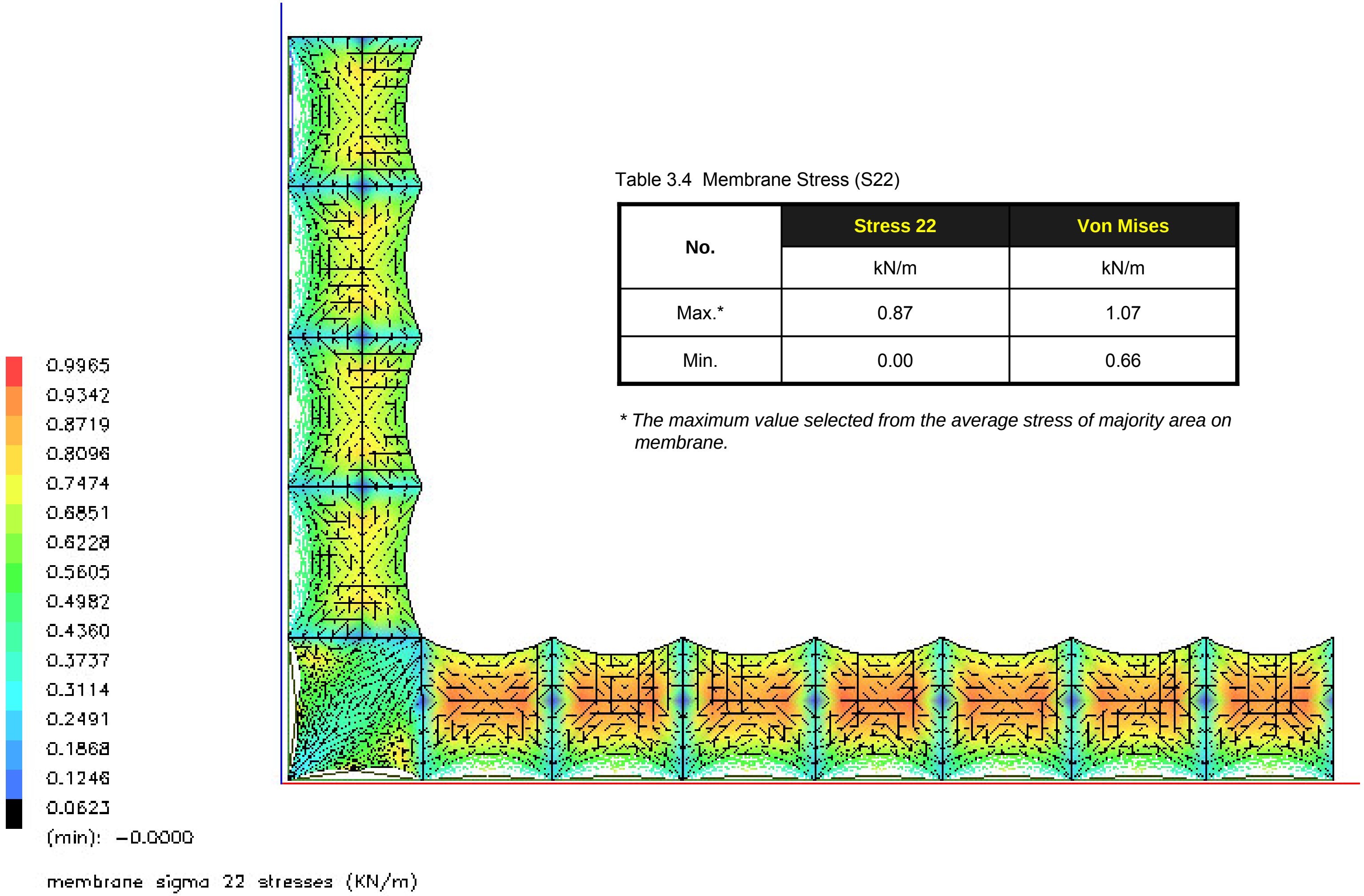


Table 3.4 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	0.87	1.07
Min.	0.00	0.66

** The maximum value selected from the average stress of majority area on membrane.*

C) **Membrane Deformation**

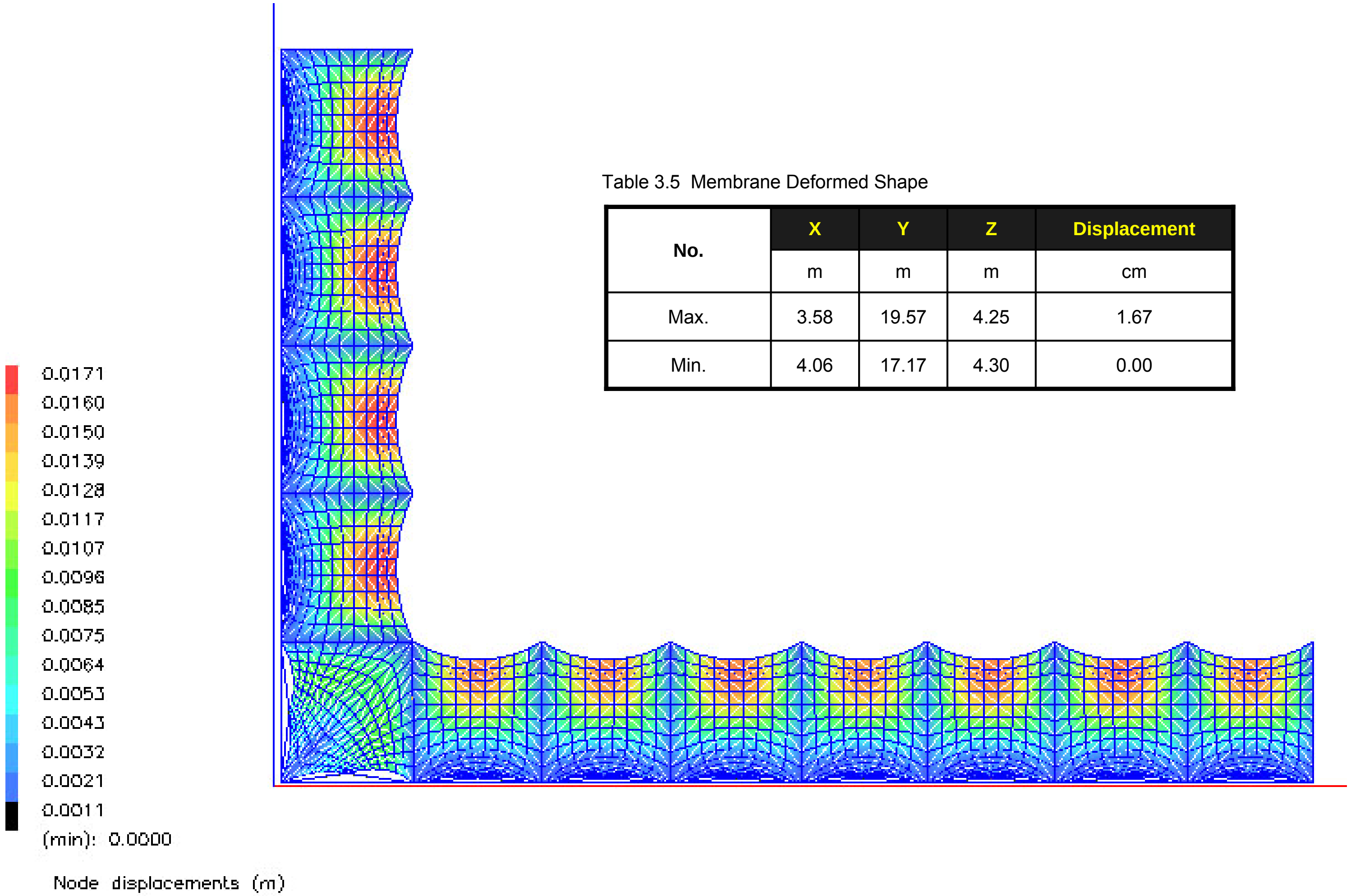


Table 3.5 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	3.58	19.57	4.25	1.67
Min.	4.06	17.17	4.30	0.00

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	1.79
1	1.83
2	1.83
3	1.87
4	1.81
5	1.85
6	1.80
7	1.84
8	1.82
9	1.87
10	1.81
11	1.87
12	1.81
13	1.88
14	2.46
15	1.85
16	2.52
17	1.90
18	1.93

No.	Axial Force (kN)
19	1.97
20	1.91
21	1.99
22	1.95
23	2.00
24	1.91
25	2.00

E) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	1.93
3	2.43
5	1.88
6	1.96
7	2.46
9	1.90
10	1.96
11	2.46
13	1.90
14	1.97
15	2.46
17	1.89
18	1.74
20	2.23
22	1.79
23	1.73
24	2.22
26	1.77
27	1.75

Code	Axial Force (kN)
28	2.25
30	1.79
31	1.70
32	2.18
34	1.74
35	1.73
36	2.22
38	1.76
39	1.75
40	2.26
42	1.79
43	1.70
44	2.18
46	1.73
47	3.40
48	3.51
49	1.38
50	1.35

LC 2 - SLS : 1.0 DL + 1.0 V_0 + 1.0 LL

A) Membrane Stress (S11)

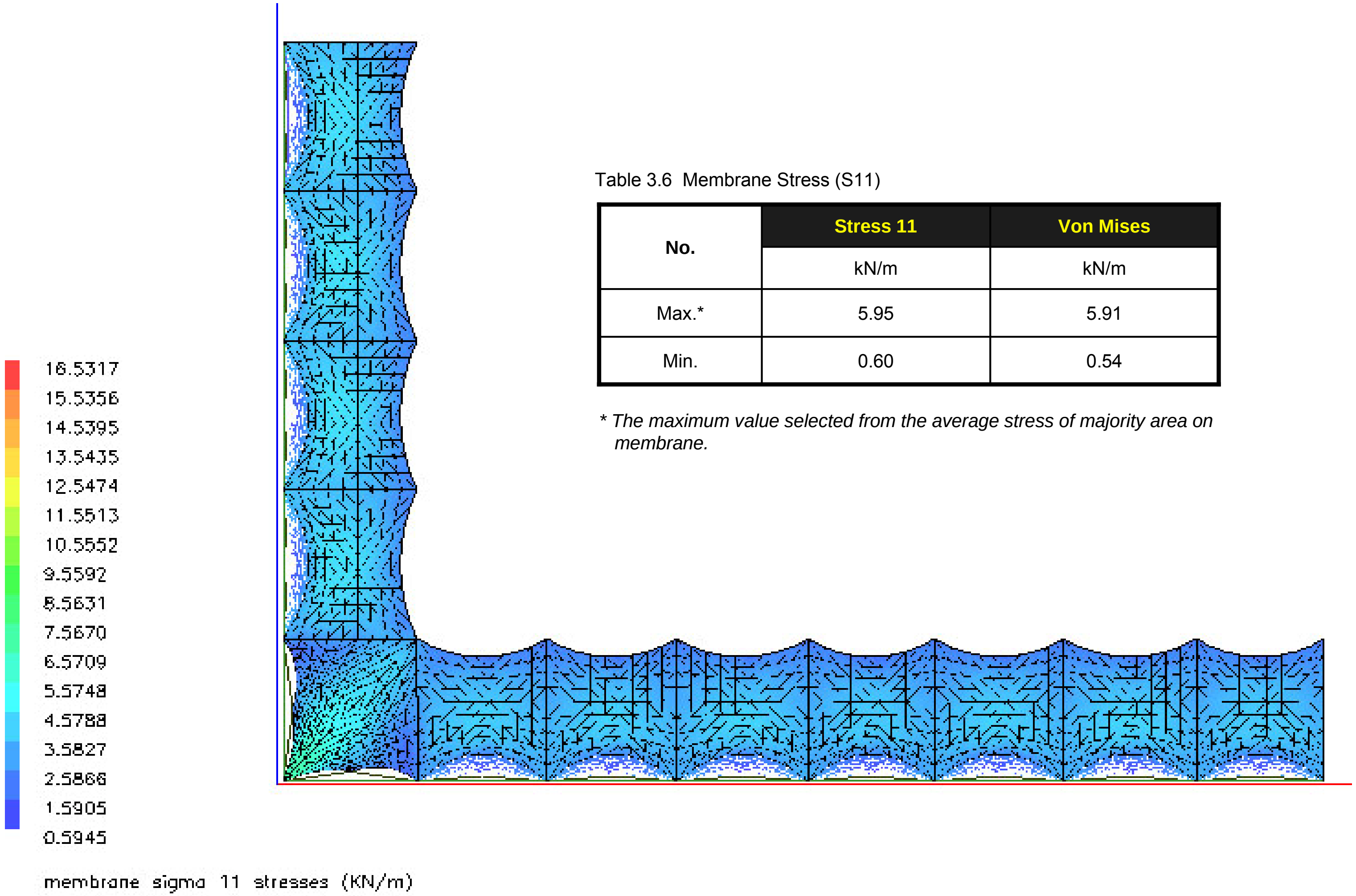


Table 3.6 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	5.95	5.91
Min.	0.60	0.54

** The maximum value selected from the average stress of majority area on membrane.*

B) **Membrane Stress (S22)**

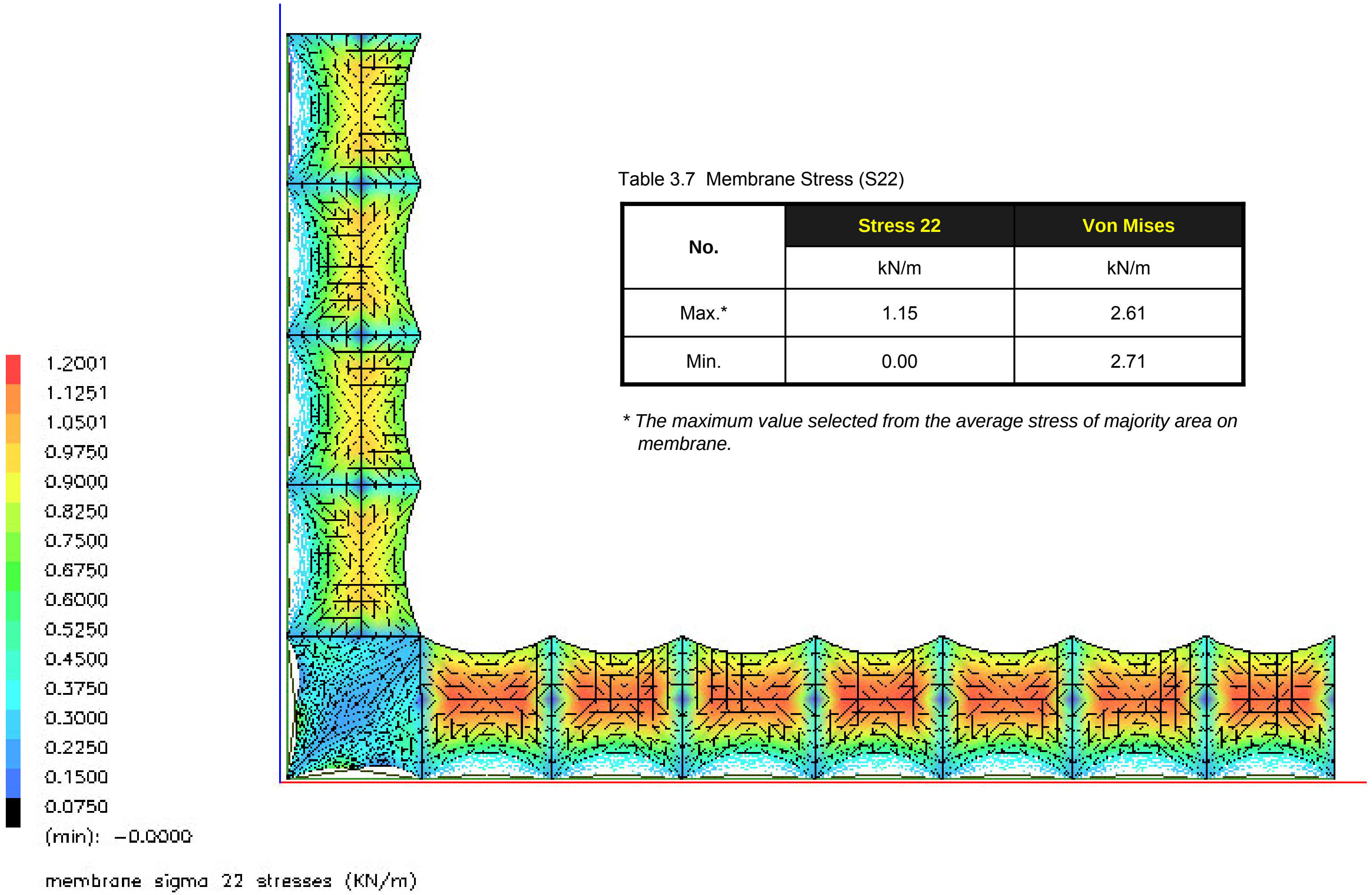


Table 3.7 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	1.15	2.61
Min.	0.00	2.71

** The maximum value selected from the average stress of majority area on membrane.*

C) Membrane Deformation

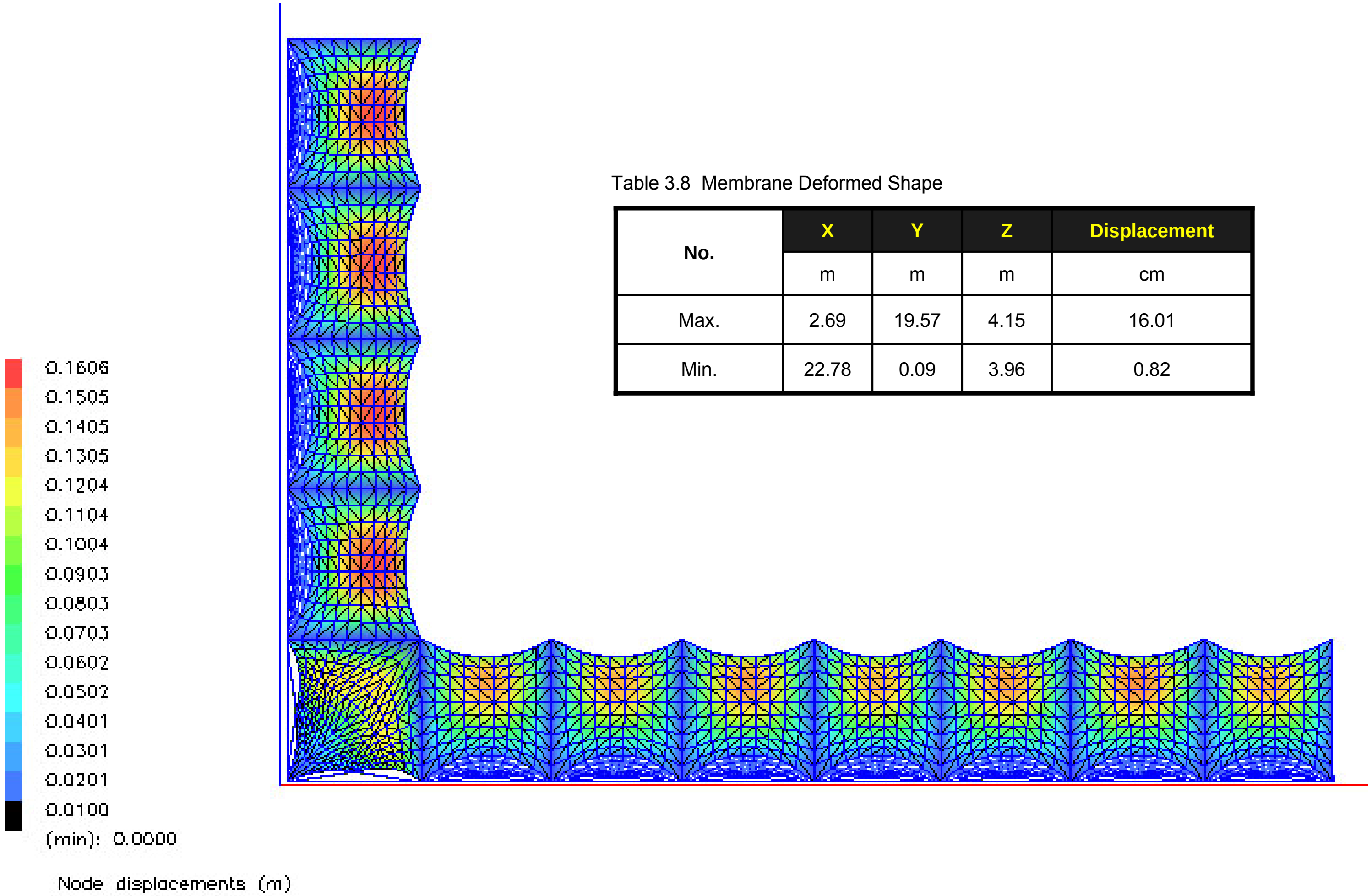


Table 3.8 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	2.69	19.57	4.15	16.01
Min.	22.78	0.09	3.96	0.82

LC 2 - SLS : 1.0 DL + 1.0 V_0 + 1.0 LL

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	1.03
1	1.08
2	1.05
3	1.10
4	1.04
5	1.09
6	1.03
7	1.09
8	1.04
9	1.10
10	1.03
11	1.10
12	1.05
13	1.13
14	4.81
15	1.36
16	4.90
17	1.41
18	1.13

No.	Axial Force (kN)
19	1.20
20	1.11
21	1.21
22	1.13
23	1.21
24	1.11
25	1.22

E) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	1.11
3	3.12
5	1.04
6	1.13
7	3.15
9	1.05
10	1.12
11	3.14
13	1.04
14	1.14
15	3.15
17	1.05
18	0.92
20	2.74
22	0.98
23	0.89
24	2.71
26	0.95
27	0.91

Code	Axial Force (kN)
28	2.77
30	0.96
31	0.88
32	2.64
34	0.93
35	0.90
36	2.73
38	0.94
39	0.92
40	2.80
42	0.96
43	0.89
44	2.67
46	0.93
47	7.86
48	8.09
49	0.40
50	0.39

A) **Membrane Stress (S11)**

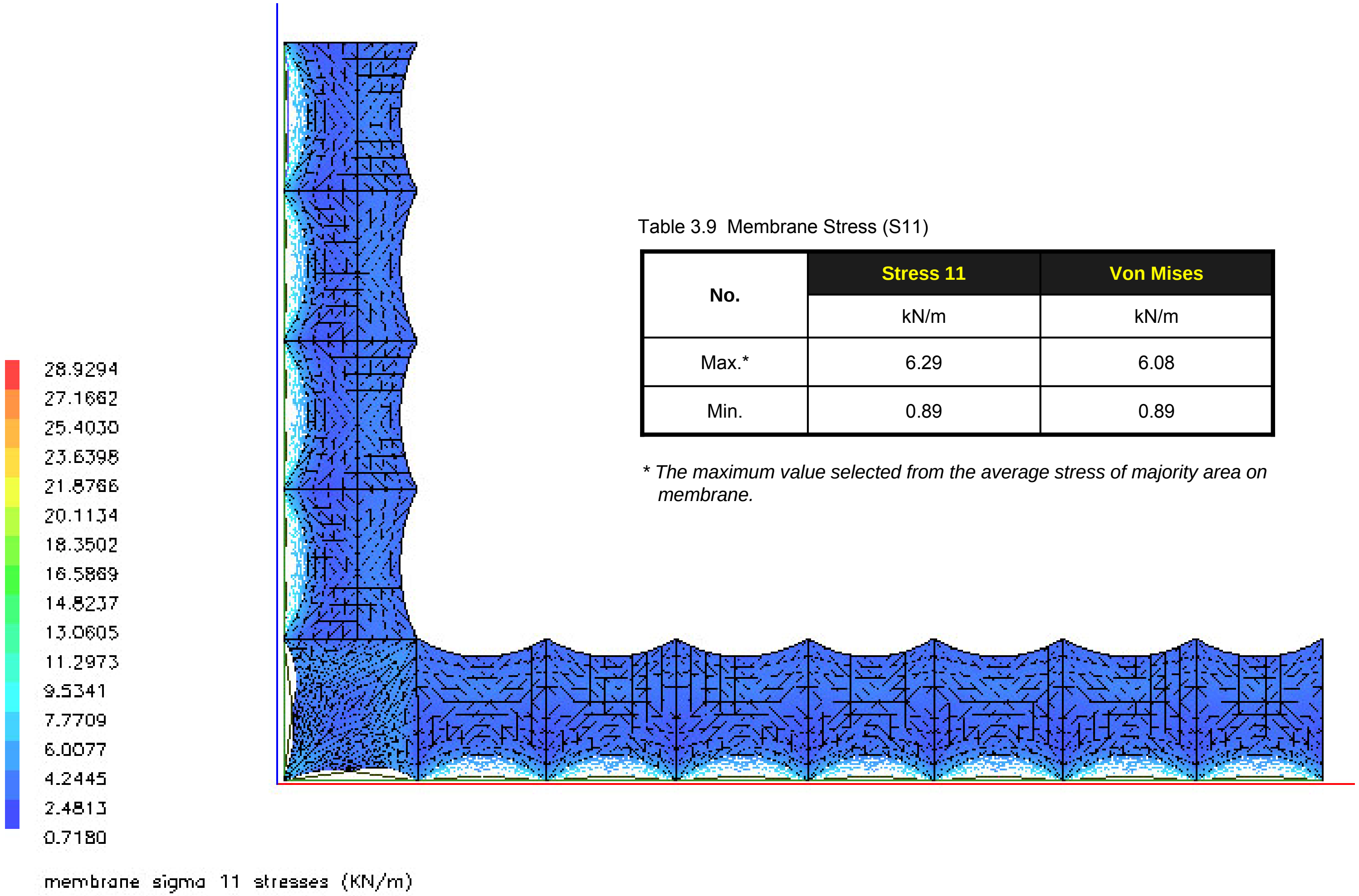


Table 3.9 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	6.29	6.08
Min.	0.89	0.89

** The maximum value selected from the average stress of majority area on membrane.*

B) Membrane Stress (S22)

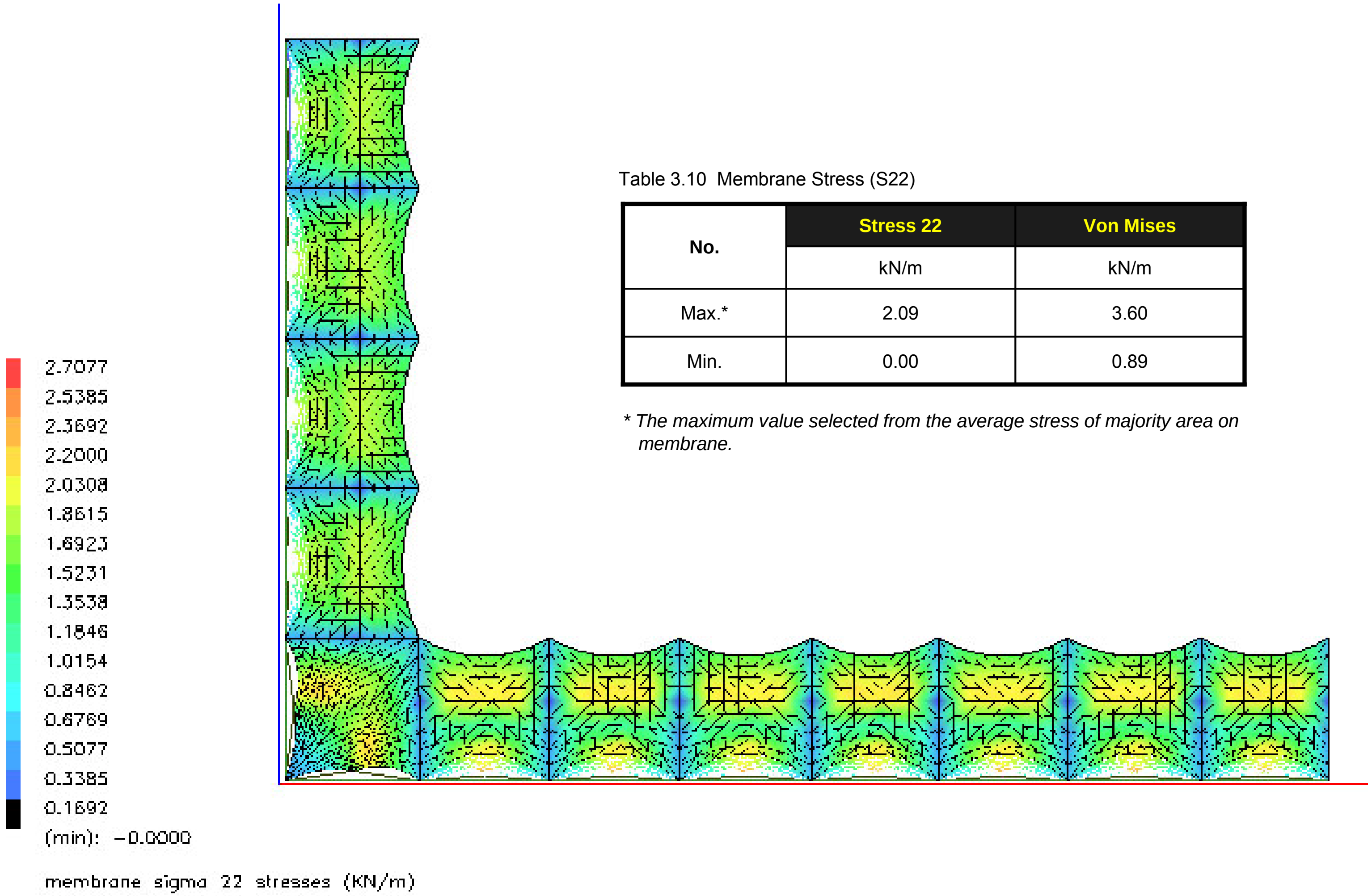


Table 3.10 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	2.09	3.60
Min.	0.00	0.89

** The maximum value selected from the average stress of majority area on membrane.*

C) Membrane Deformation

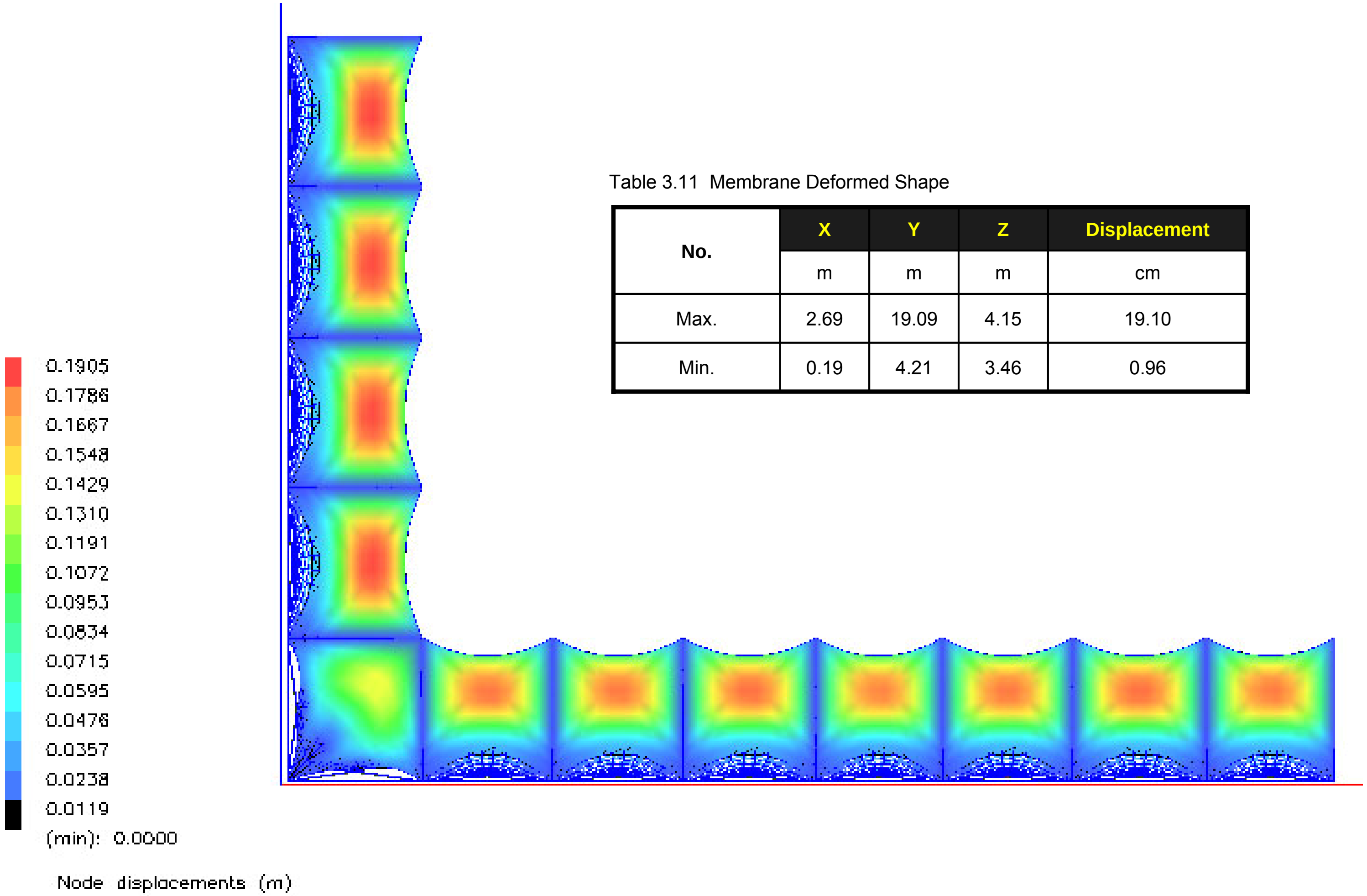


Table 3.11 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	2.69	19.09	4.15	19.10
Min.	0.19	4.21	3.46	0.96

LC 3 - SLS : 1.0 DL + 1.0 V_0 + 1.0 WL

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	5.63
1	5.69
2	5.88
3	5.89
4	5.75
5	5.78
6	5.60
7	5.65
8	5.82
9	5.89
10	5.72
11	5.81
12	5.73
13	5.83
14	4.08
15	7.79
16	4.11
17	8.07
18	6.48

No.	Axial Force (kN)
19	6.46
20	6.46
21	6.49
22	6.56
23	6.52
24	6.42
25	6.51

E) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	6.95
3	6.77
5	6.91
6	7.02
7	6.81
9	6.99
10	7.01
11	6.81
13	7.00
14	7.04
15	6.80
17	6.96
18	6.08
20	5.67
22	6.16
23	6.06
24	5.64
26	6.13
27	6.18

Code	Axial Force (kN)
28	5.78
30	6.24
31	5.90
32	5.43
34	5.93
35	6.09
36	5.64
38	6.11
39	6.24
40	5.81
42	6.25
43	5.95
44	5.53
46	6.00
47	4.37
48	4.45
49	8.32
50	8.06

A) Membrane Stress (S11)

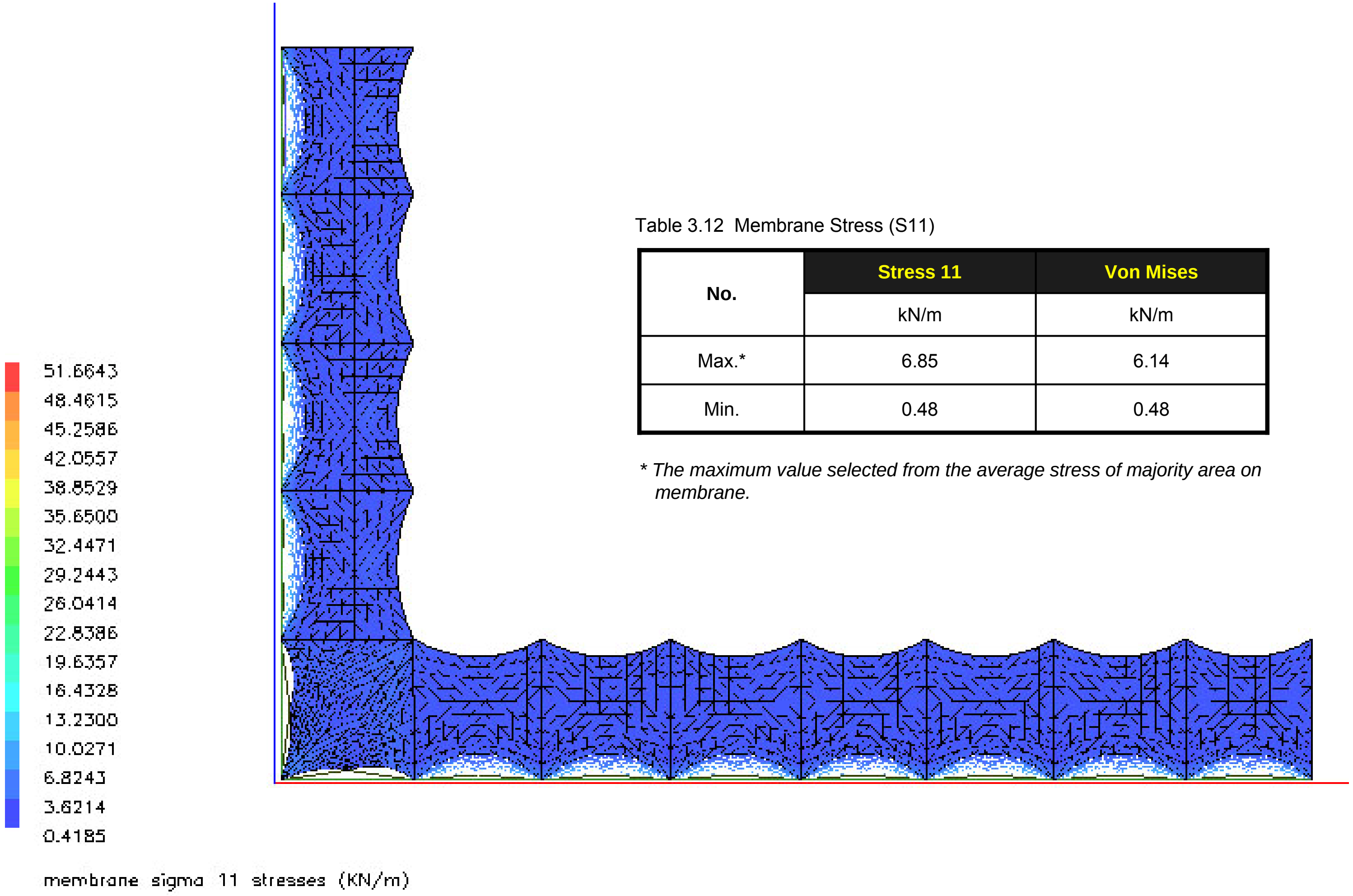


Table 3.12 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	6.85	6.14
Min.	0.48	0.48

** The maximum value selected from the average stress of majority area on membrane.*

B) Membrane Stress (S22)

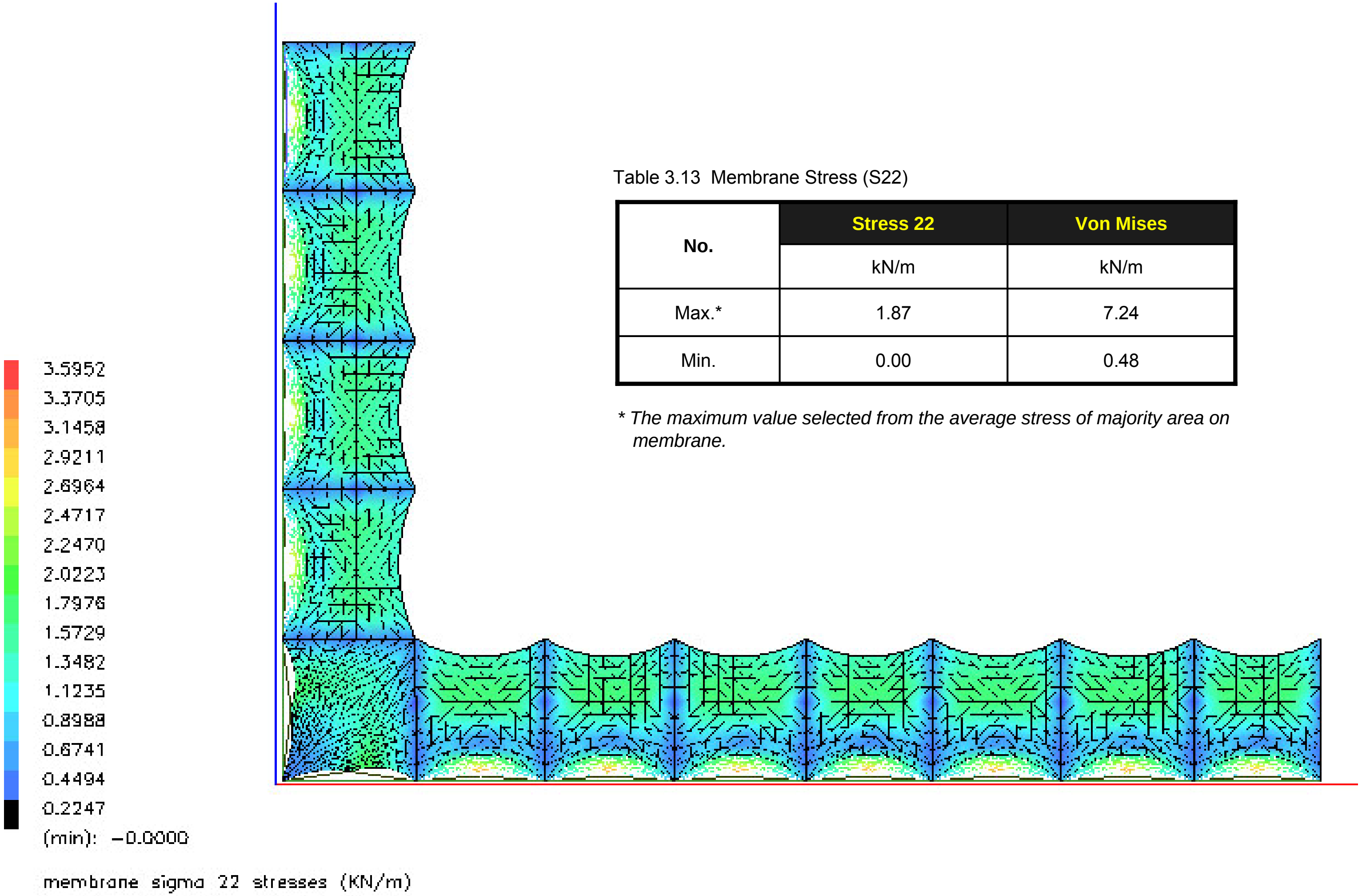


Table 3.13 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	1.87	7.24
Min.	0.00	0.48

** The maximum value selected from the average stress of majority area on membrane.*

C) Membrane Deformation

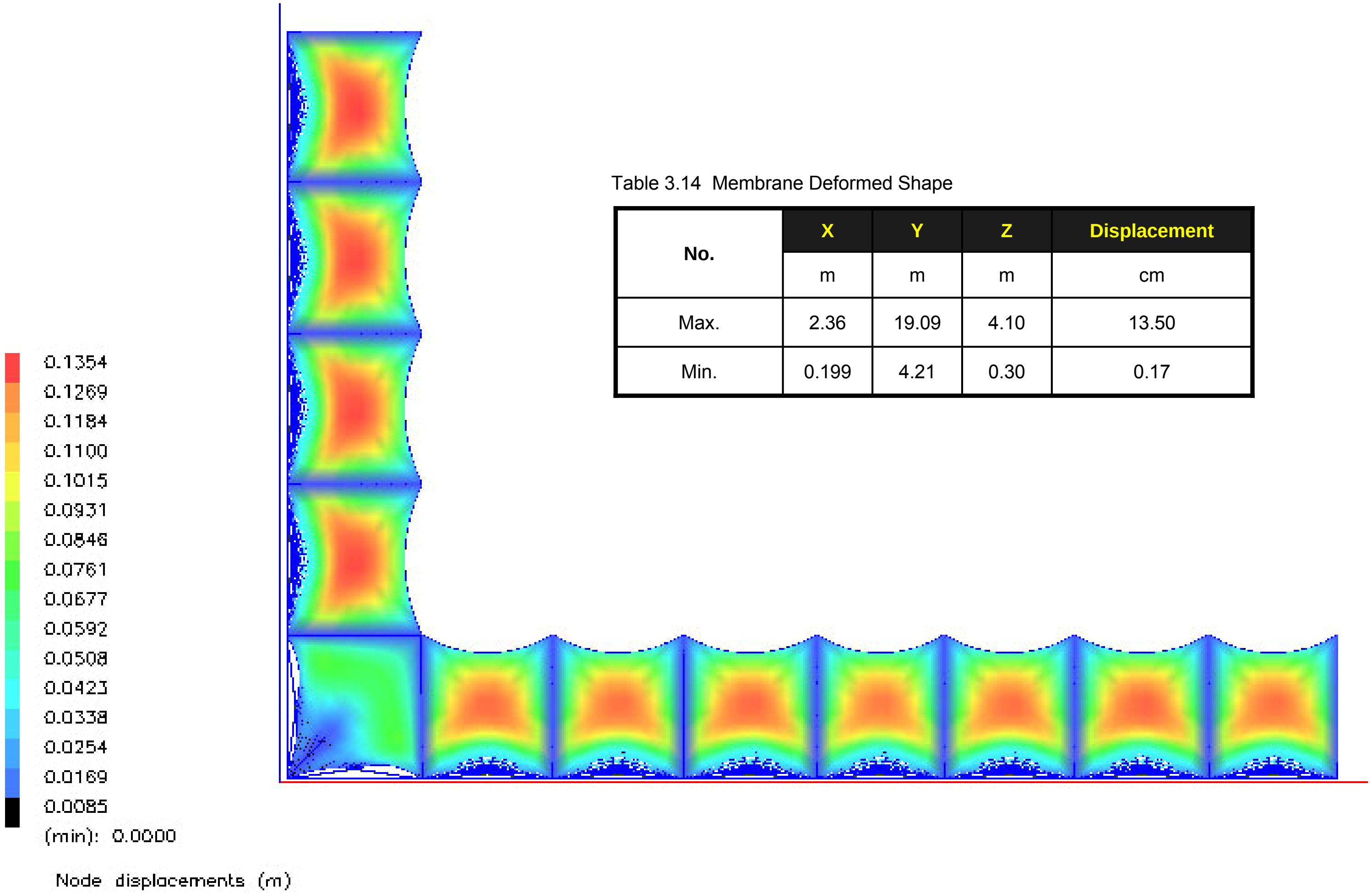


Table 3.14 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	2.36	19.09	4.10	13.50
Min.	0.199	4.21	0.30	0.17

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	8.27
1	8.41
2	8.66
3	8.71
4	8.46
5	8.53
6	8.22
7	8.32
8	8.57
9	8.71
10	8.41
11	8.56
12	8.43
13	8.58
14	4.04
15	6.24
16	4.17
17	6.55
18	9.50

No.	Axial Force (kN)
19	9.54
20	9.48
21	9.60
22	9.62
23	9.61
24	9.43
25	9.61

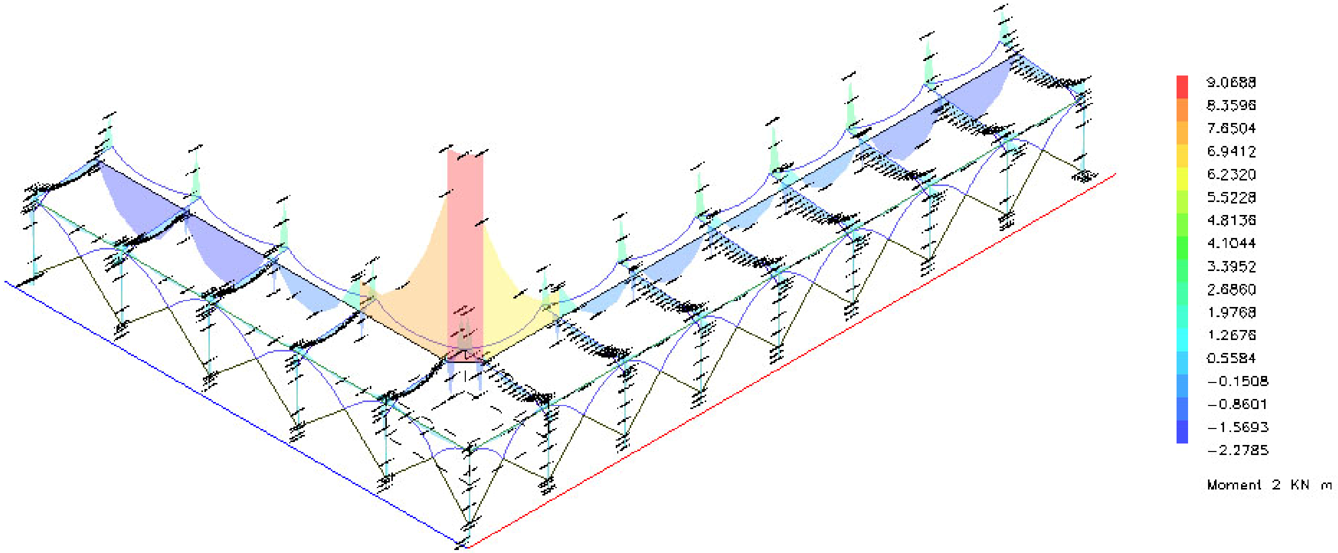
E) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	7.96
3	5.63
5	7.84
6	8.07
7	5.69
9	7.97
10	8.03
11	5.68
13	7.97
14	8.09
15	5.68
17	7.93
18	7.10
20	4.78
22	7.22
23	7.09
24	4.76
26	7.22
27	7.23

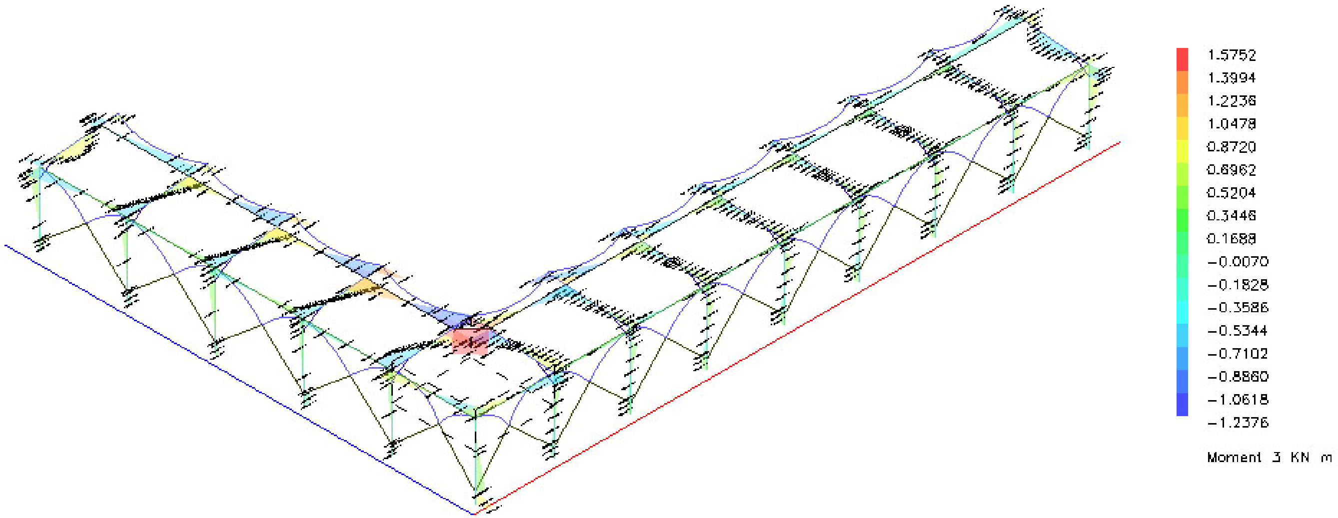
Code	Axial Force (kN)
28	4.89
30	7.34
31	6.92
32	4.58
34	7.00
35	7.14
36	4.77
38	7.19
39	7.31
40	4.92
42	7.35
43	6.95
44	4.66
46	7.07
47	4.09
48	4.27
49	6.15
50	5.86

LC 1 - SLS : 1.0 DL + 1.0 V_0

Moment 2

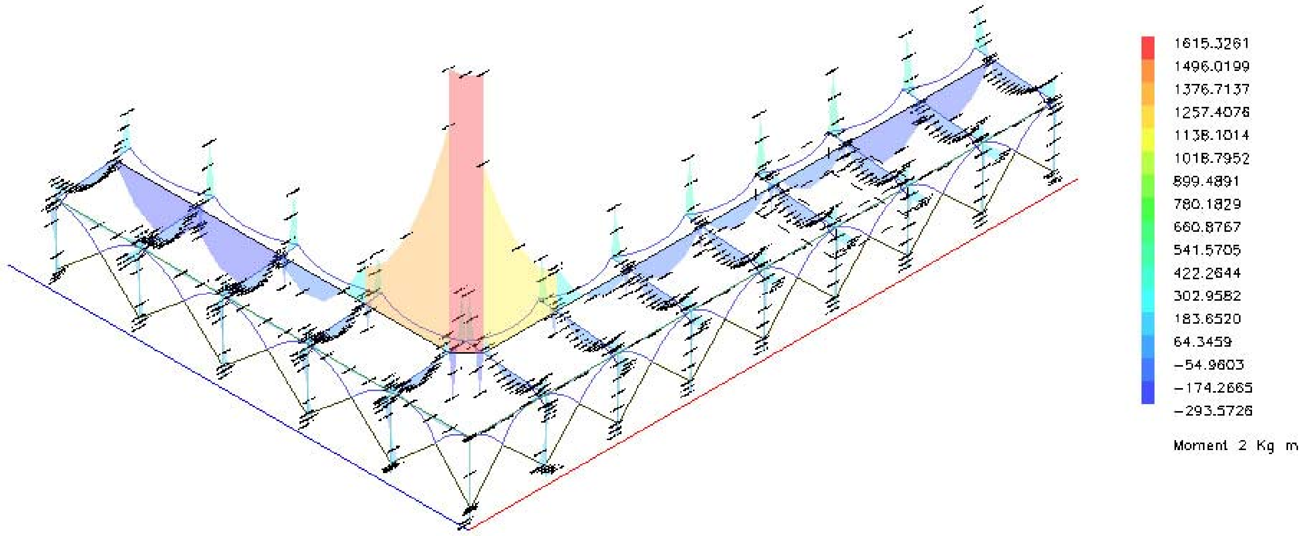


Moment 3

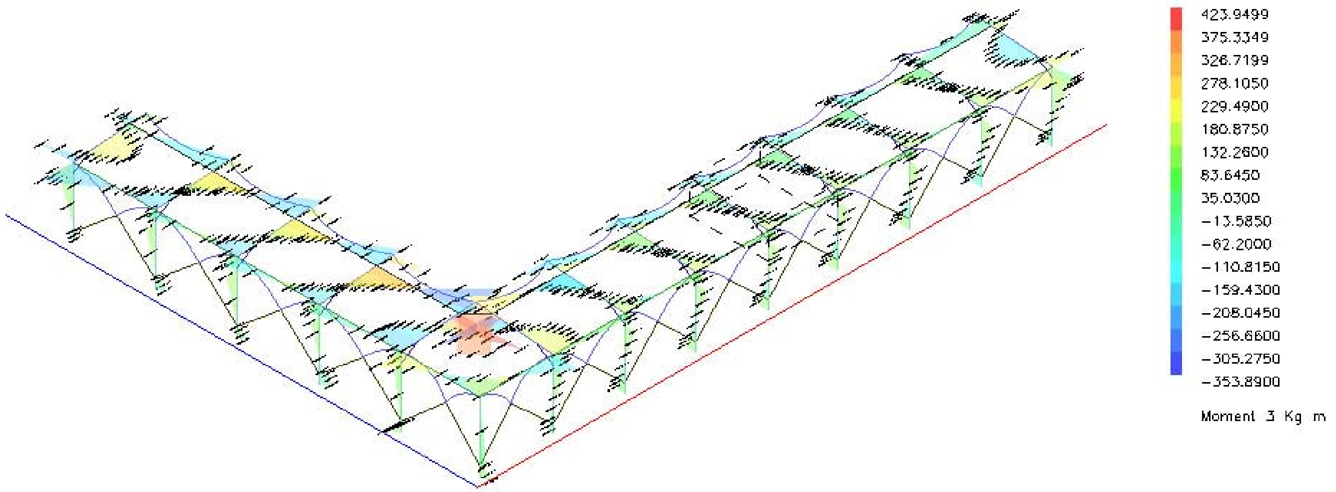


LC 2 - SLS : 1.0 DL + 1.0 V_0 + 1.0 LL

Moment 2

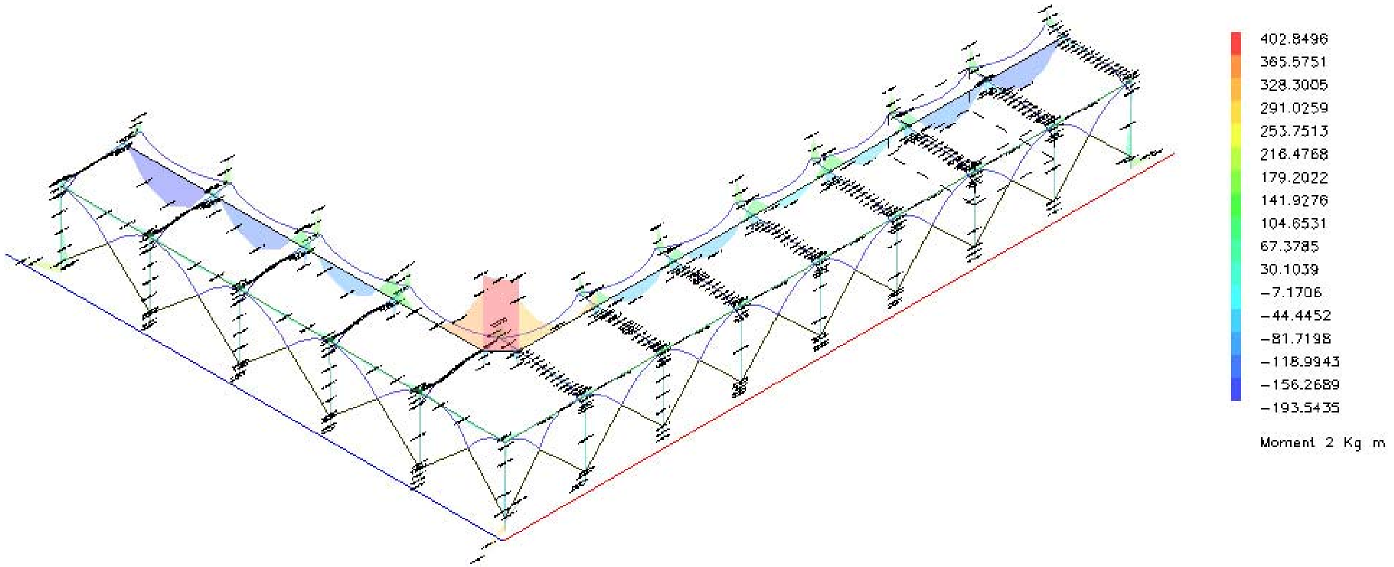


Moment 3

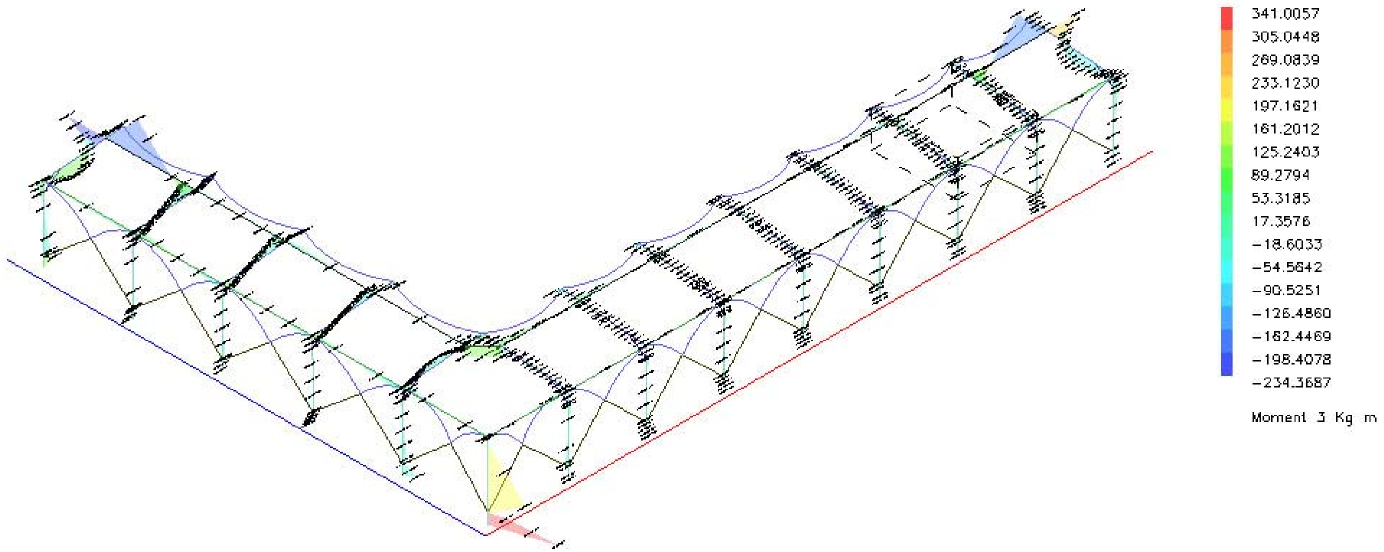


LC 3 - SLS : 1.0 DL + 1.0 V_0 + 1.0 WL

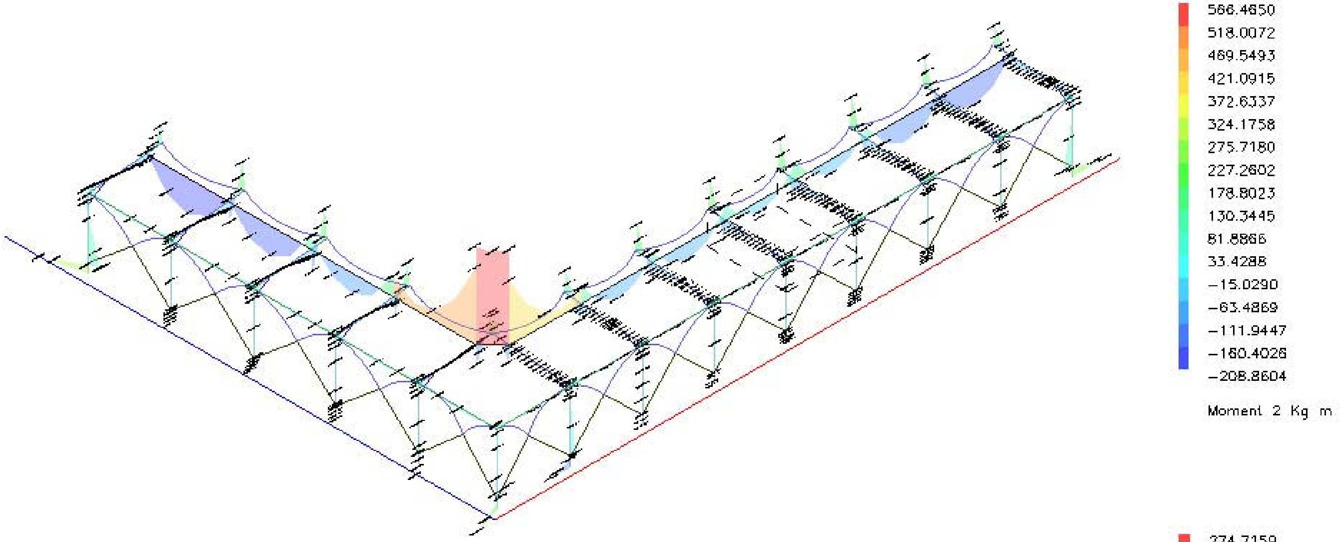
Moment 2



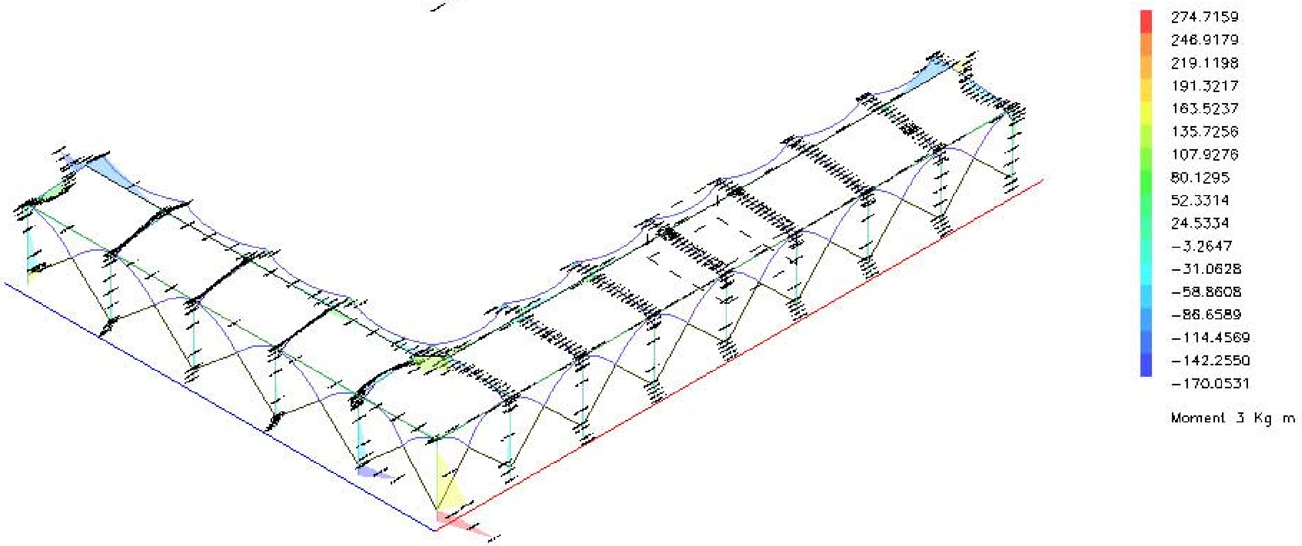
Moment 3



Moment 2



Moment 3



Ultimate Limit State (ULS)

To satisfy the Ultimate limit state, the structure must not collapse when subjected to the peak design load. A structure is deemed to satisfy the ultimate limit state criteria if all factored: bending, shear, and tensile or compressive stresses are below the factored resistance calculated for the member under consideration.

At the ULS it shall be verified that:

$$E_d \leq R_d$$

where E_d is the design value of the effects of actions such as internal force, moment or a vector representing several internal forces or moments.

R_d is the design value of the corresponding resistance.

For ultimate limit state, the partial factor (γ) for actions and combinations of actions are obtained from EN 1990 or CRO-2005

Permanent actions: γ_G = 1.35

Variable actions: γ_Q = 1.50

Load cases and factor for ultimate limit state

ULS	
SLS-01	$1.35DL + 1.35V_0$
SLS-02	$1.35DL + 1.35V_0 + 1.50LL$
SLS-03	$1.35DL + 1.35V_0 + 1.50WL$
SLS-04	$1.35DL + 1.35V_0 + 1.35LL + 1.35WL$

A) Membrane Stress (S11)

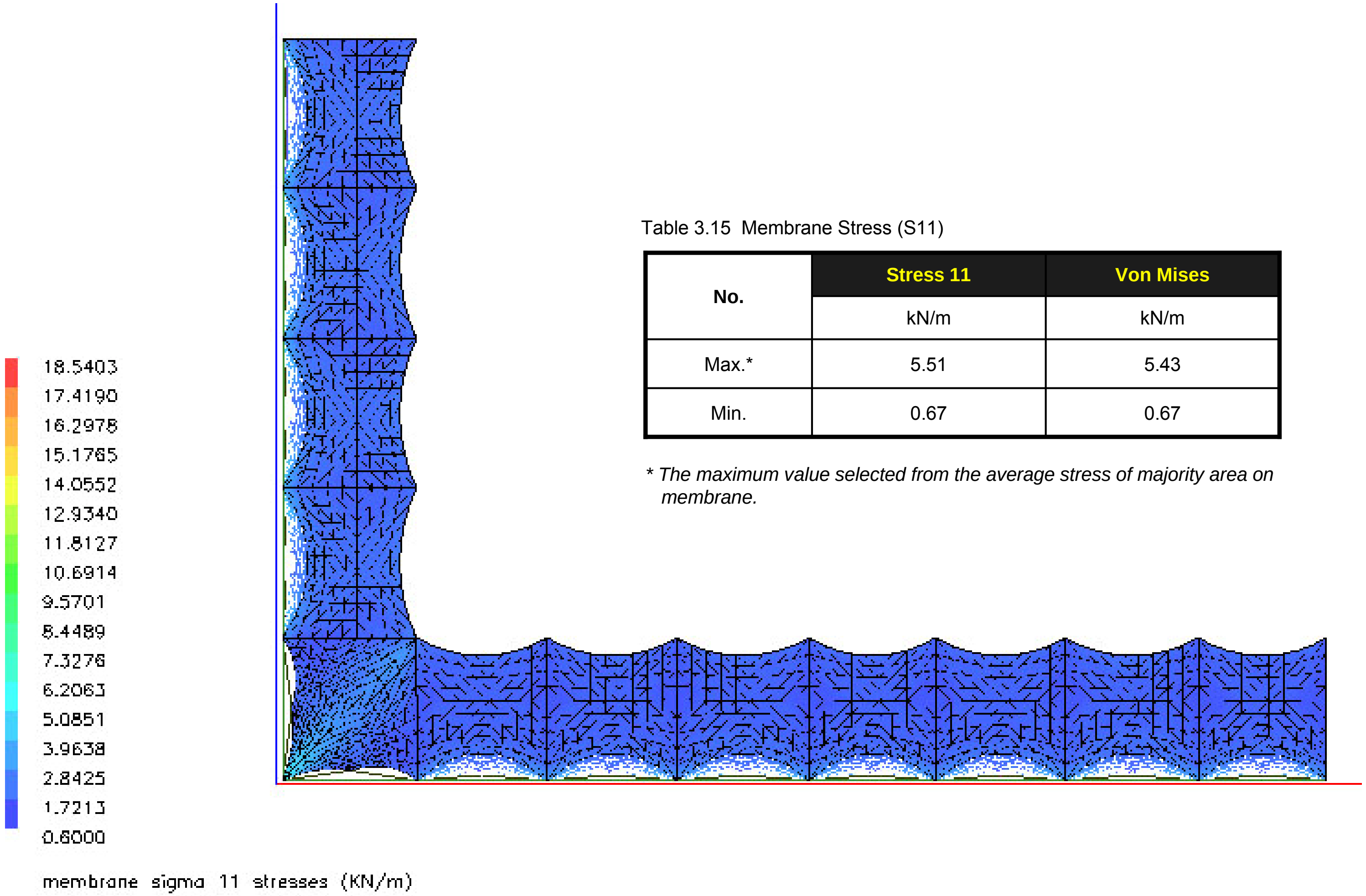


Table 3.15 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	5.51	5.43
Min.	0.67	0.67

** The maximum value selected from the average stress of majority area on membrane.*

B) Membrane Stress (S22)

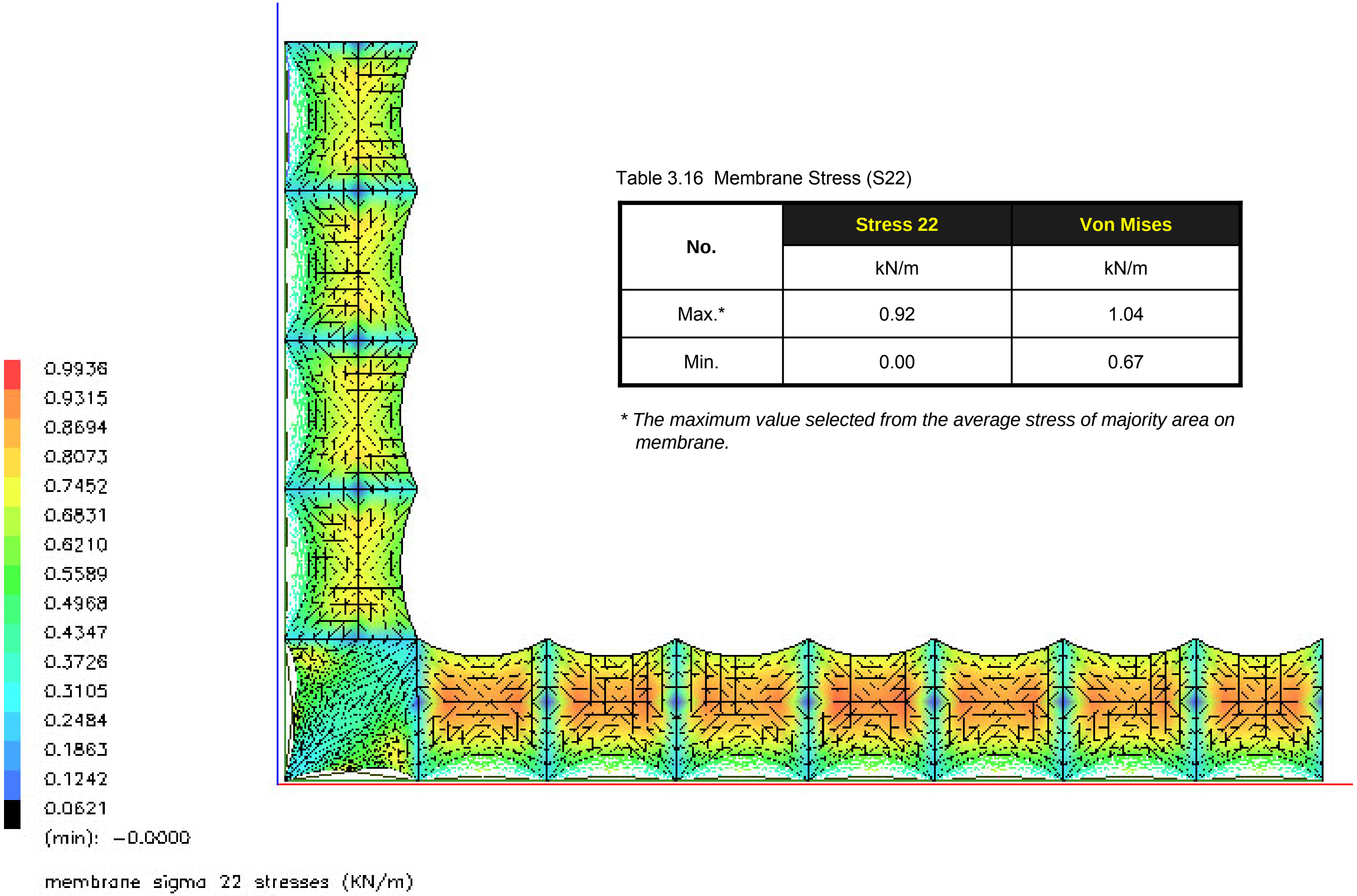


Table 3.16 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	0.92	1.04
Min.	0.00	0.67

** The maximum value selected from the average stress of majority area on membrane.*

C) Membrane Deformation

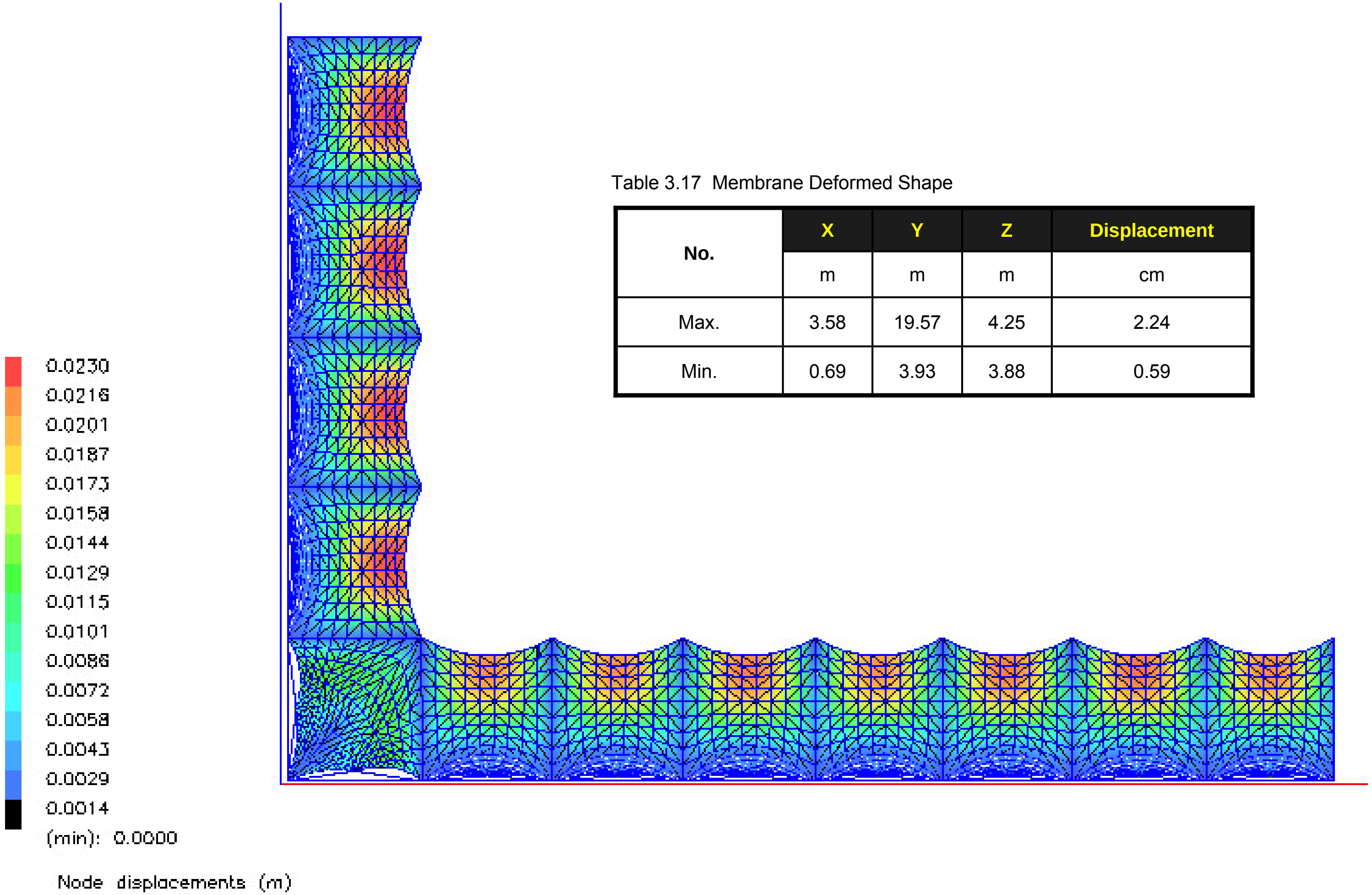


Table 3.17 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	3.58	19.57	4.25	2.24
Min.	0.69	3.93	3.88	0.59

LC 1 - ULS : 1.35 DL + 1.35 V_0

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	1.71
1	1.76
2	1.75
3	1.79
4	1.74
5	1.78
6	1.72
7	1.77
8	1.74
9	1.80
10	1.74
11	1.79
12	1.74
13	1.81
14	2.45
15	1.75
16	2.50
17	1.80
18	1.84

No.	Axial Force (kN)
19	1.89
20	1.82
21	1.90
22	1.86
23	1.91
24	1.82
25	1.91

E) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	1.89
3	2.43
5	1.83
6	1.91
7	2.46
9	1.85
10	1.91
11	2.46
13	1.85
14	1.92
15	2.46
17	1.84
18	1.69
20	2.23
22	1.75
23	1.68
24	2.22
26	1.73
27	1.70

Code	Axial Force (kN)
28	2.25
30	1.74
31	1.66
32	2.18
34	1.69
35	1.68
36	2.22
38	1.72
39	1.71
40	2.25
42	1.74
43	1.65
44	2.18
46	1.69
47	3.44
48	3.55
49	1.30
50	1.27

LC 2 - ULS : 1.35 DL + 1.35 V_0 + 1.50 LL

A) Membrane Stress (S11)

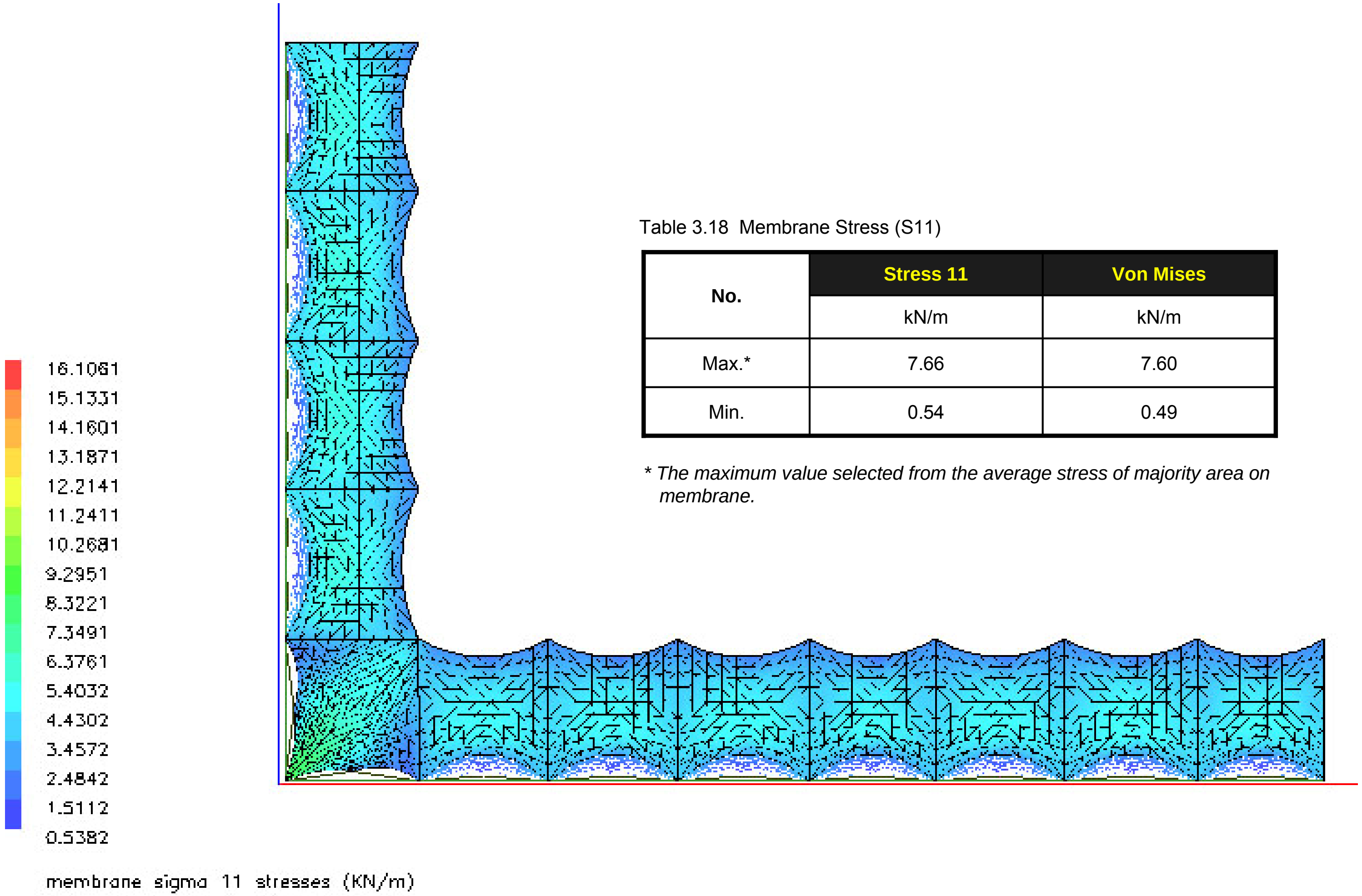


Table 3.18 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	7.66	7.60
Min.	0.54	0.49

** The maximum value selected from the average stress of majority area on membrane.*

B) Membrane Stress (S22)

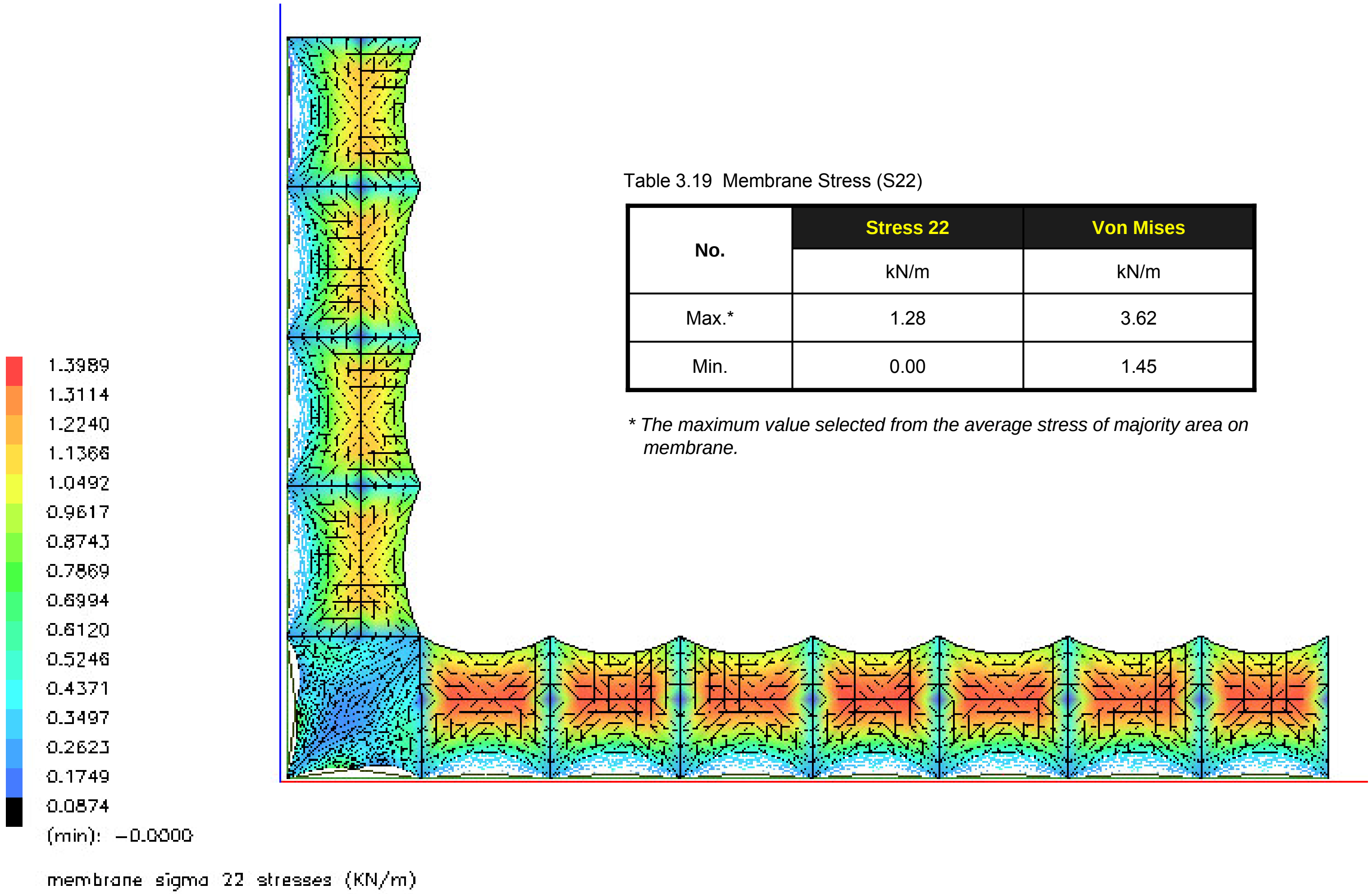


Table 3.19 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	1.28	3.62
Min.	0.00	1.45

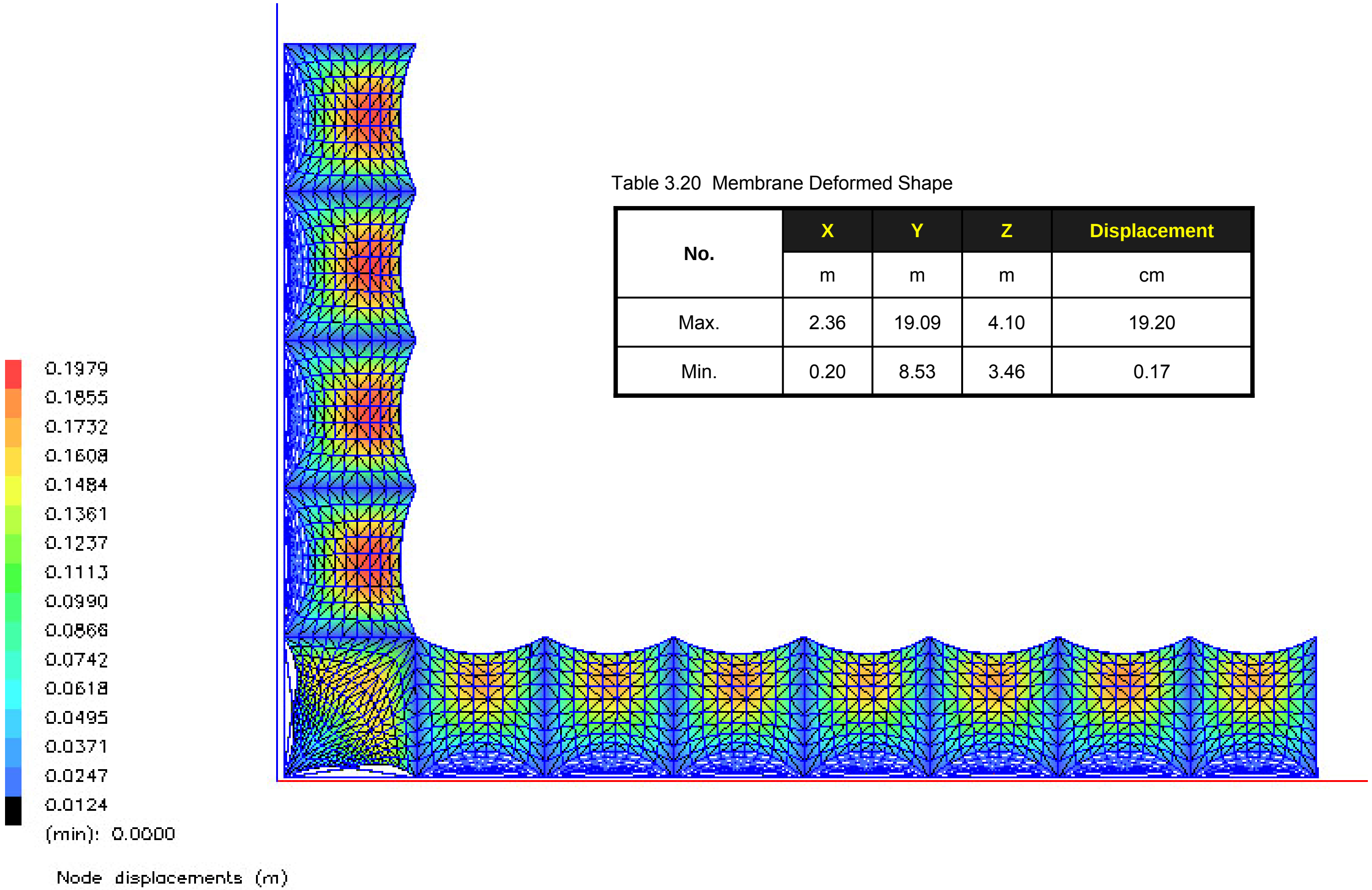
** The maximum value selected from the average stress of majority area on membrane.*

LC 2 - ULS : 1.35 DL + 1.35 V_0 + 1.50 LL

C) Membrane Deformation

Table 3.20 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	2.36	19.09	4.10	19.20
Min.	0.20	8.53	3.46	0.17



LC 2 - ULS : 1.35 DL + 1.35 V_0 + 1.50 LL

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	0.88
1	0.94
2	0.90
3	0.96
4	0.89
5	0.95
6	0.88
7	0.94
8	0.89
9	0.96
10	0.88
11	0.95
12	0.90
13	0.99
14	5.90
15	1.62
16	6.01
17	1.68
18	1.03

No.	Axial Force (kN)
19	1.12
20	1.01
21	1.12
22	1.03
23	1.13
24	1.01
25	1.14

E) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	1.11
3	3.92
5	1.02
6	1.12
7	3.95
9	1.03
10	1.11
11	3.92
13	1.02
14	1.13
15	3.95
17	1.03
18	0.82
20	3.32
22	0.89
23	0.79
24	3.27
26	0.85
27	0.81

Code	Axial Force (kN)
28	3.37
30	0.87
31	0.77
32	3.18
34	0.82
35	0.80
36	3.31
38	0.85
39	0.82
40	3.41
42	0.87
43	0.79
44	3.23
46	0.83
47	10.00
48	10.30
49	0.48
50	0.46

LC 3 - ULS : 1.35 DL + 1.35 V_0 + 1.50 WL

A) Membrane Stress (S11)

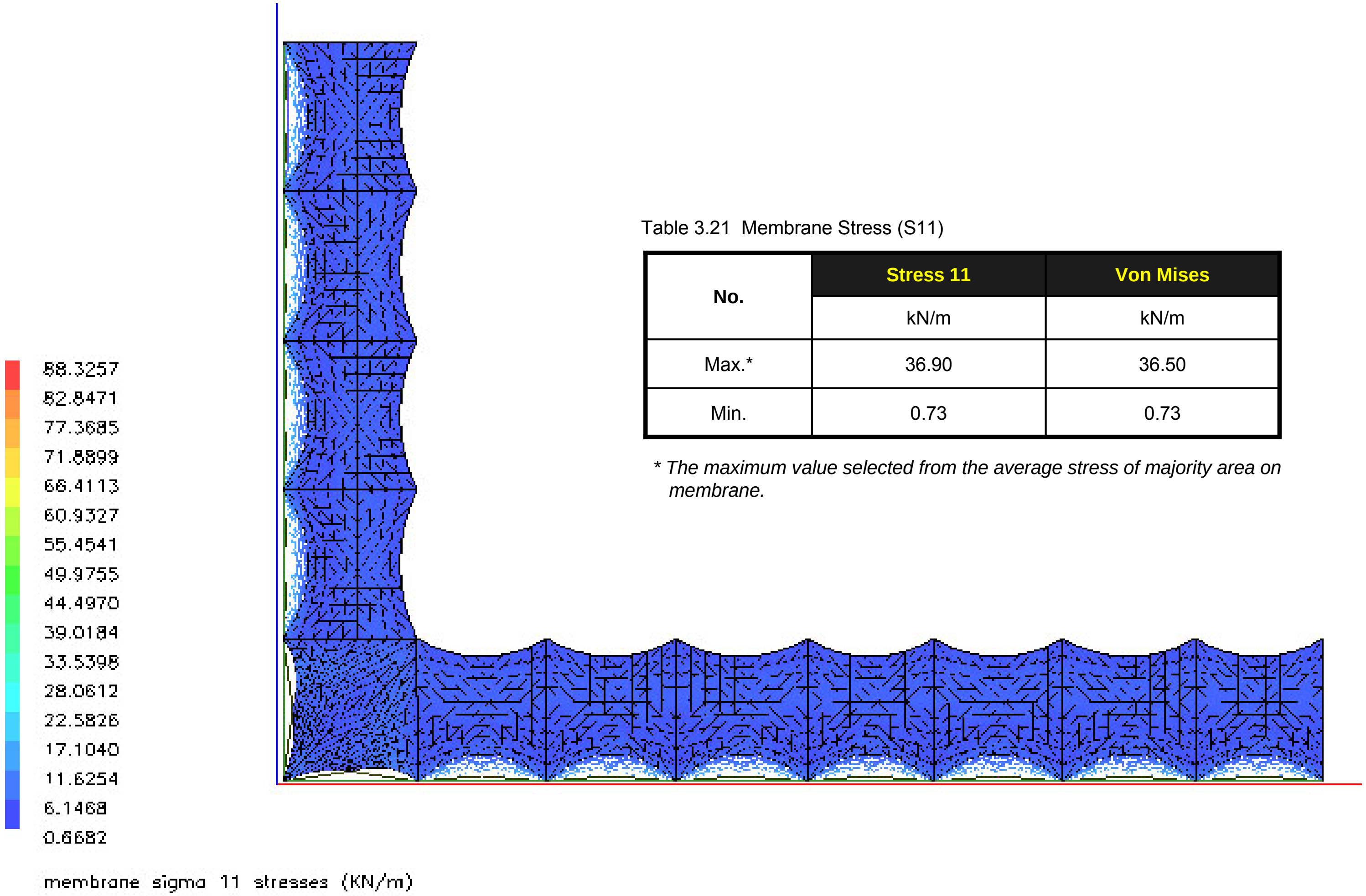


Table 3.21 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	36.90	36.50
Min.	0.73	0.73

** The maximum value selected from the average stress of majority area on membrane.*

B) Membrane Stress (S22)

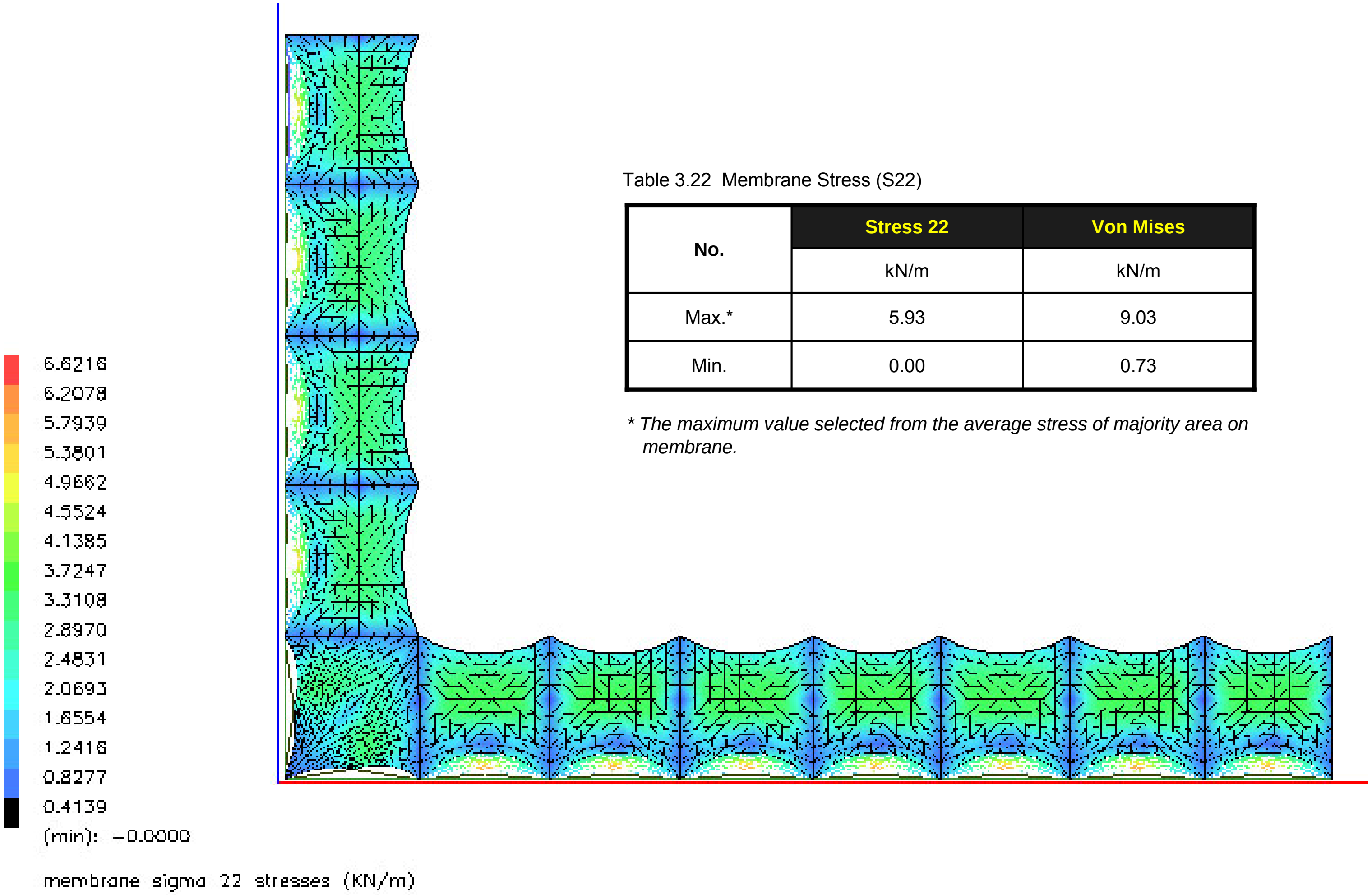


Table 3.22 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	5.93	9.03
Min.	0.00	0.73

** The maximum value selected from the average stress of majority area on membrane.*

C) Membrane Deformation

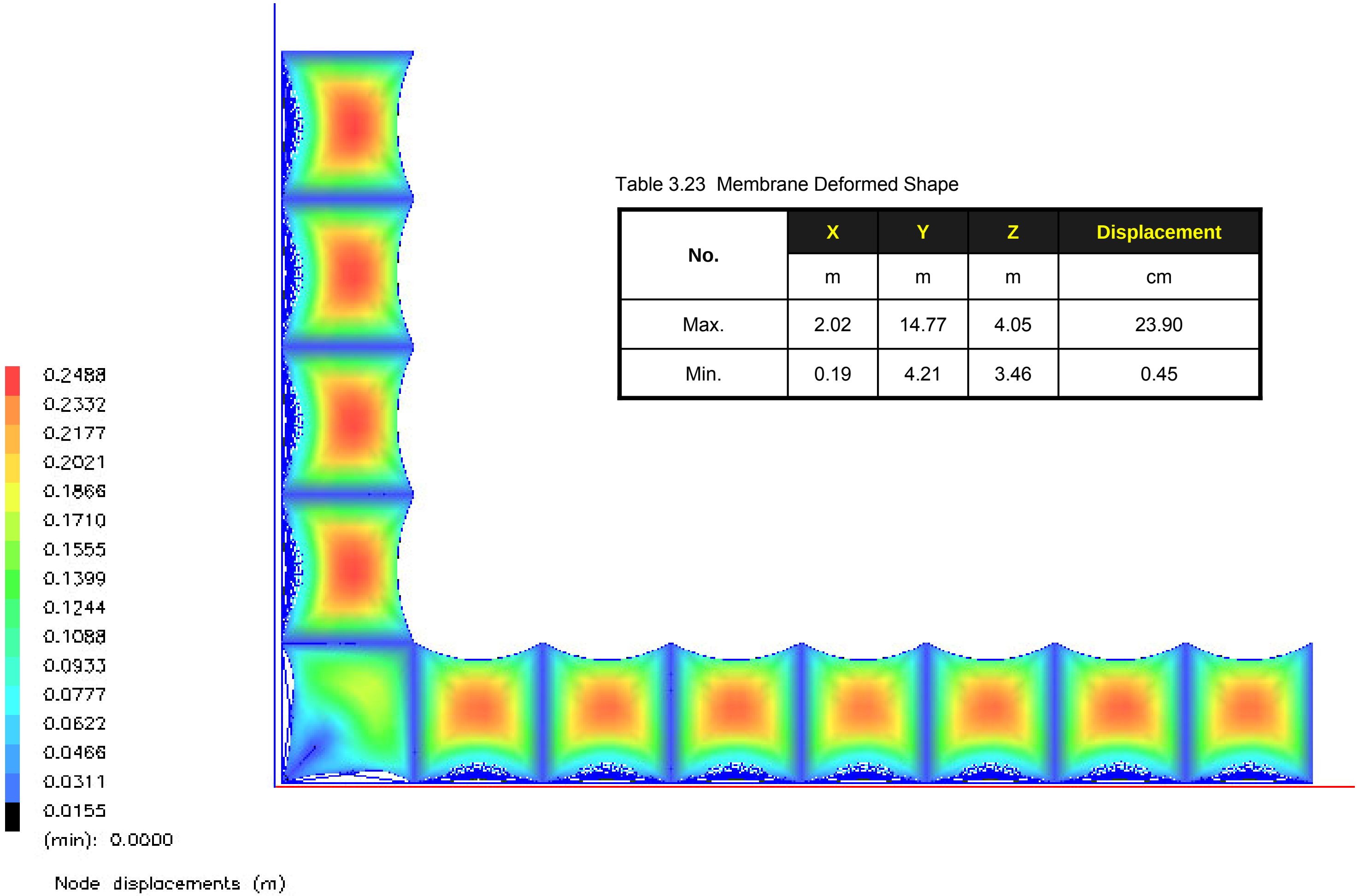


Table 3.23 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	2.02	14.77	4.05	23.90
Min.	0.19	4.21	3.46	0.45

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	14.80
1	14.90
2	15.60
3	15.50
4	15.20
5	15.10
6	14.80
7	14.80
8	15.40
9	15.50
10	15.10
11	15.20
12	15.10
13	15.20
14	6.82
15	13.80
16	6.90
17	14.40
18	17.20

No.	Axial Force (kN)
19	17.00
20	17.30
21	17.10
22	17.50
23	17.10
24	17.20
25	17.10

E) Cable Axial Forces: *Boundary cables*

Code	Axial Force (kN)
1	14.20
3	12.00
5	14.20
6	14.40
7	12.10
9	14.60
10	14.30
11	12.10
13	14.60
14	14.40
15	12.10
17	14.50
18	12.80
20	9.70
22	12.90
23	12.80
24	9.66
26	12.90
27	13.10

Code	Axial Force (kN)
28	9.96
30	13.10
31	12.60
32	9.25
34	12.50
35	12.90
36	9.69
38	12.90
39	13.20
40	10.00
42	13.10
43	12.50
44	9.46
46	12.60
47	5.92
48	5.99
49	14.00
50	13.50

A) Membrane Stress (S11)

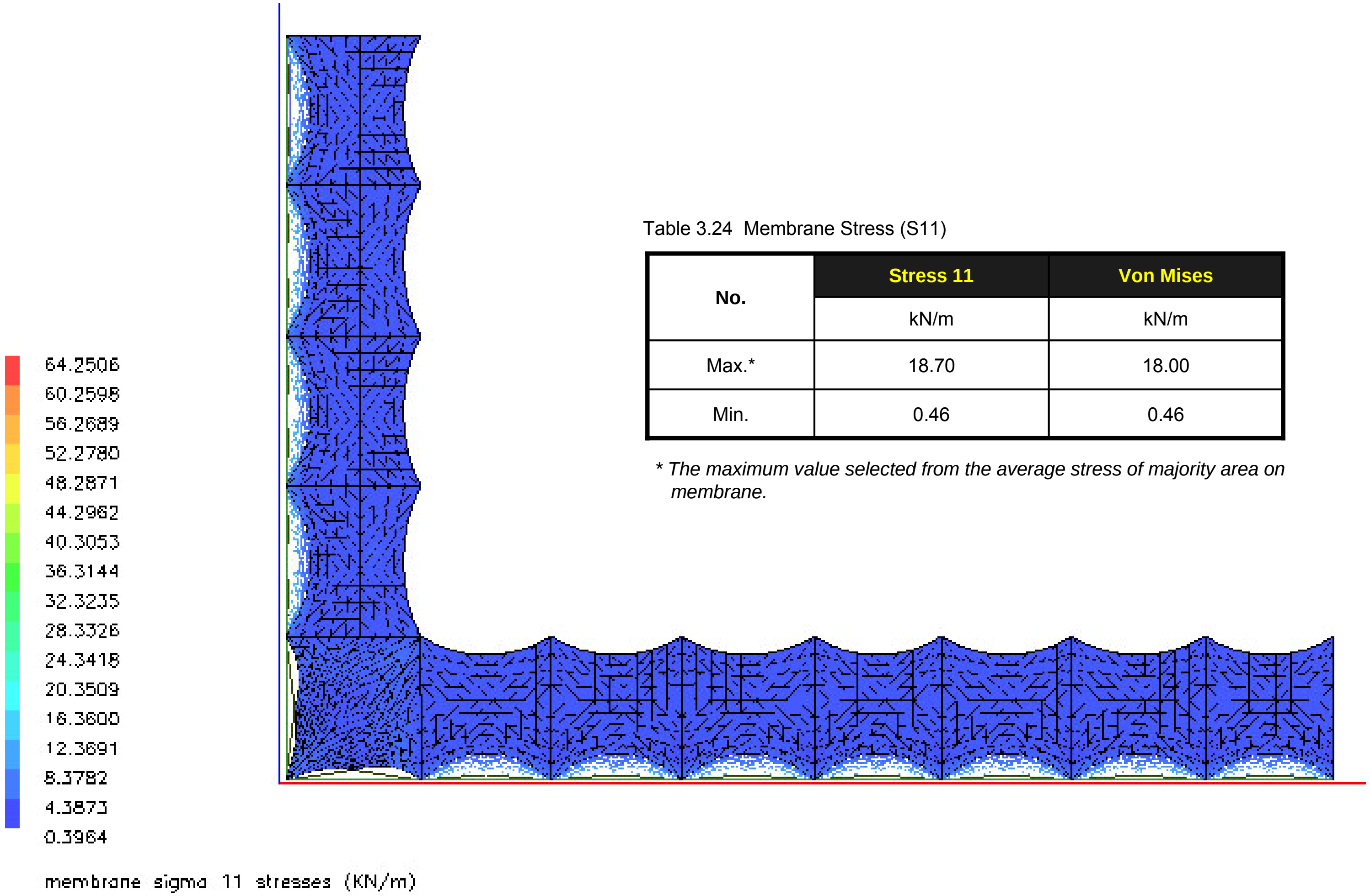


Table 3.24 Membrane Stress (S11)

No.	Stress 11	Von Mises
	kN/m	kN/m
Max.*	18.70	18.00
Min.	0.46	0.46

** The maximum value selected from the average stress of majority area on membrane.*

B) Membrane Stress (S22)

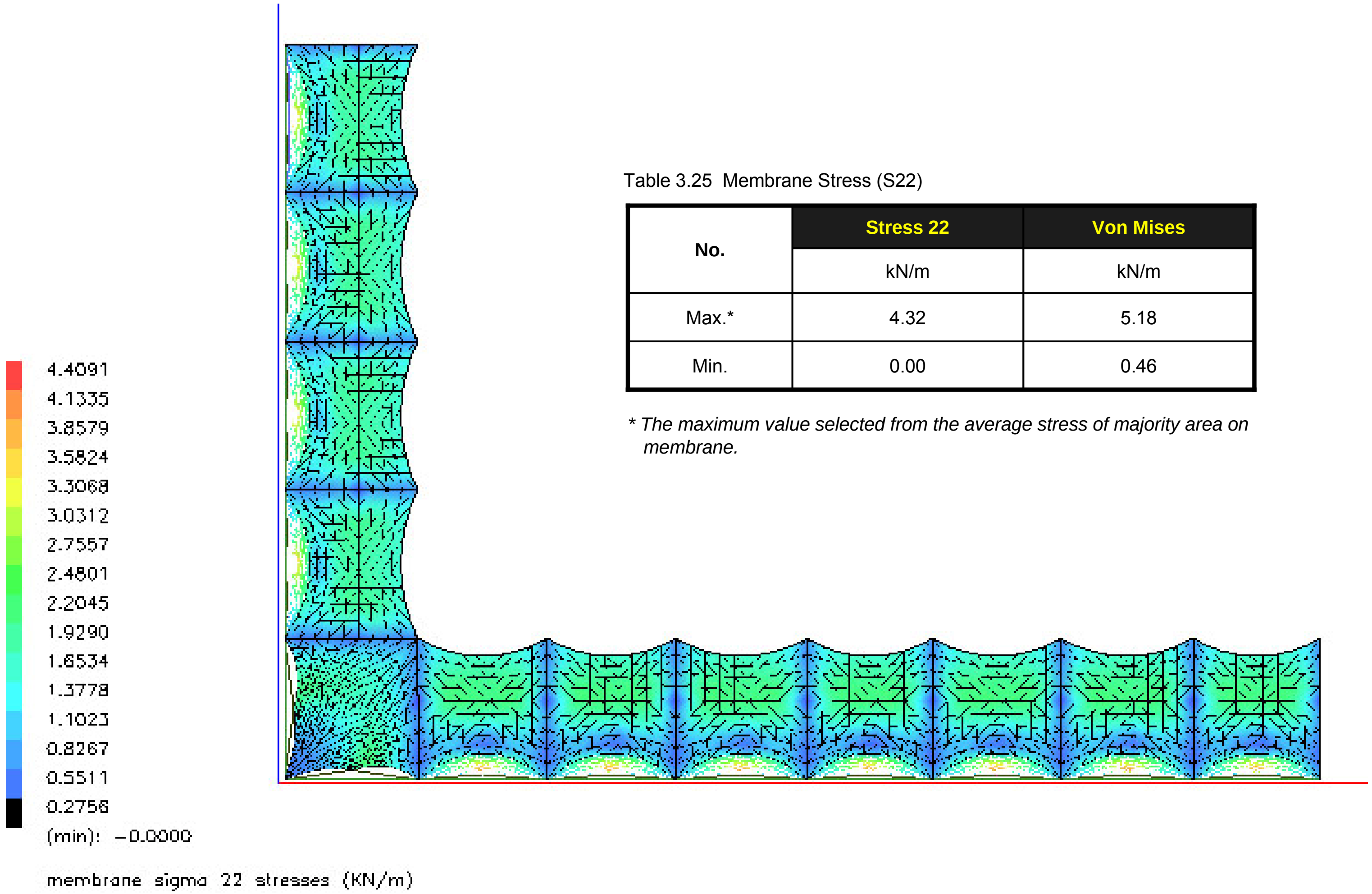


Table 3.25 Membrane Stress (S22)

No.	Stress 22	Von Mises
	kN/m	kN/m
Max.*	4.32	5.18
Min.	0.00	0.46

** The maximum value selected from the average stress of majority area on membrane.*

C) Membrane Deformation

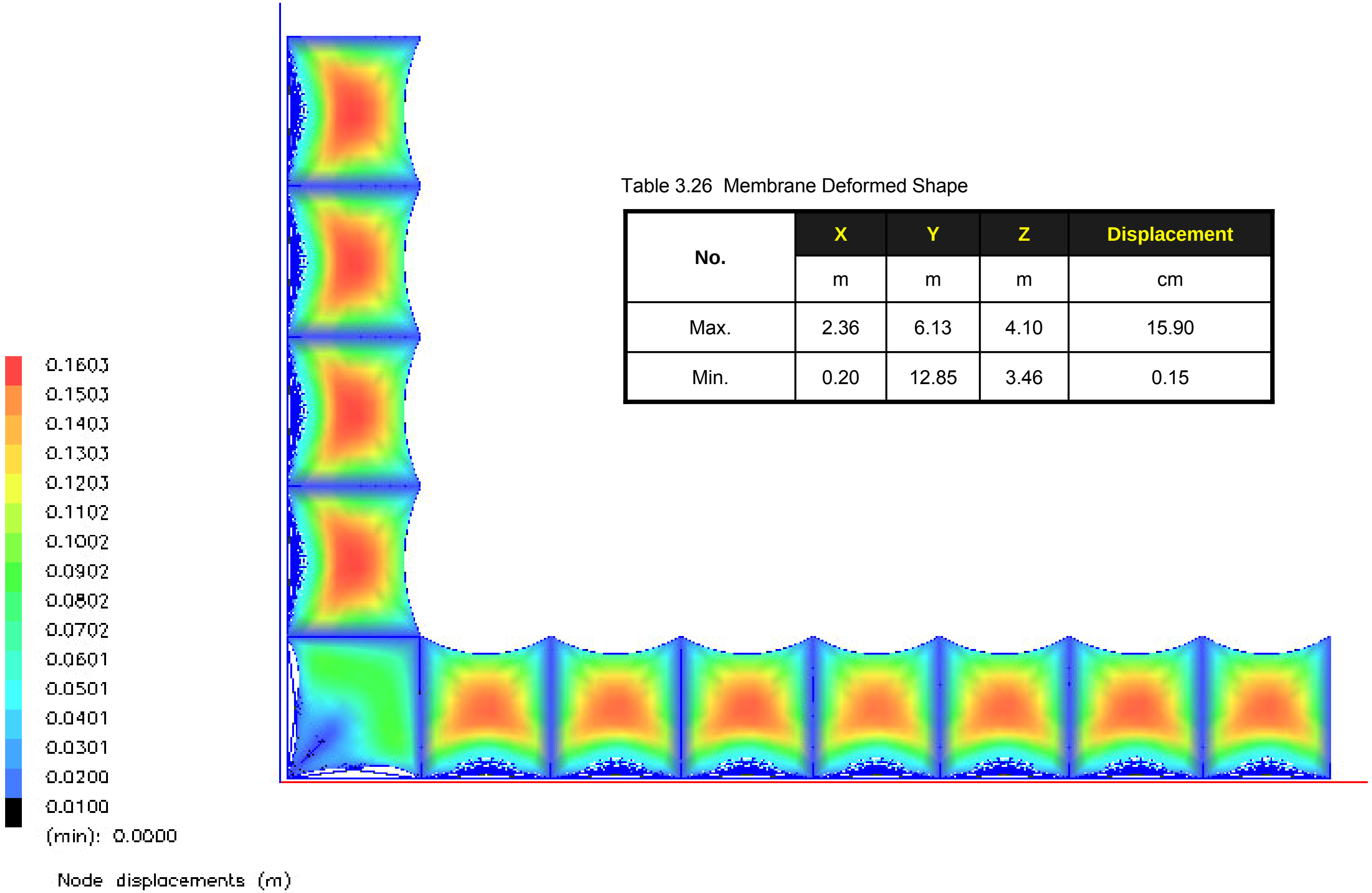


Table 3.26 Membrane Deformed Shape

No.	X	Y	Z	Displacement
	m	m	m	cm
Max.	2.36	6.13	4.10	15.90
Min.	0.20	12.85	3.46	0.15

D) Cable Axial Forces: *Tie down cables*

No.	Axial Force (kN)
0	10.20
1	10.40
2	10.70
3	10.80
4	10.50
5	10.60
6	10.20
7	10.30
8	10.60
9	10.80
10	10.40
11	10.60
12	10.50
13	10.60
14	4.70
15	7.67
16	4.85
17	8.07
18	11.80

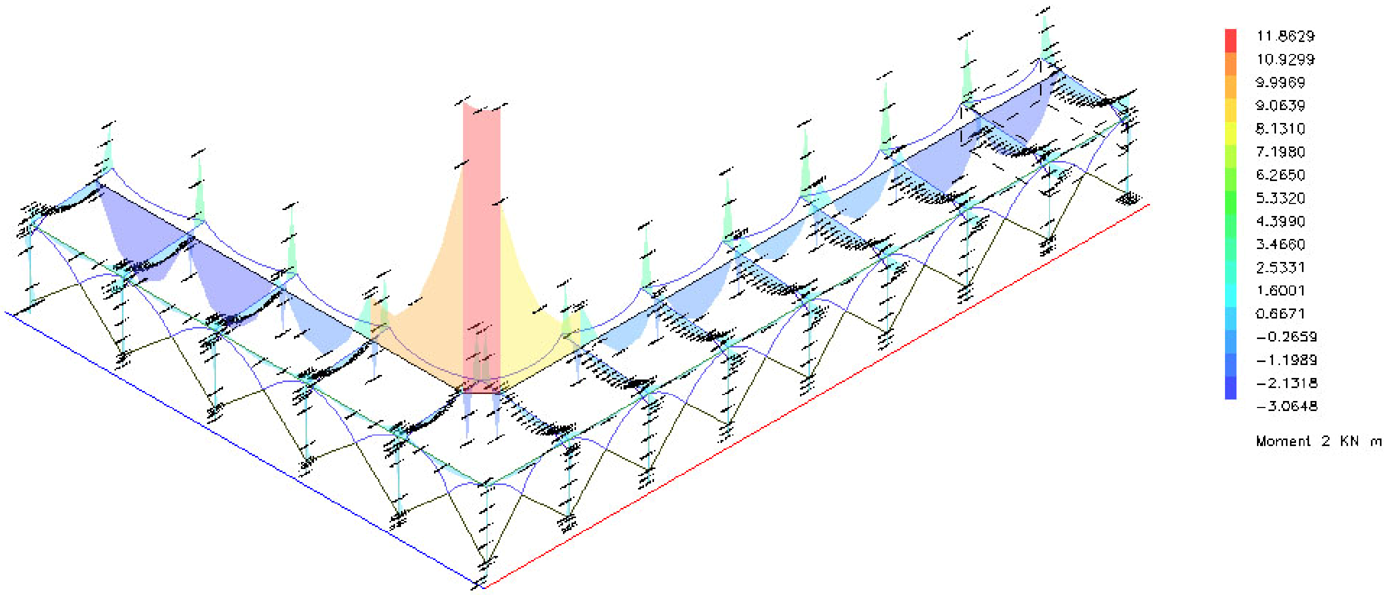
No.	Axial Force (kN)
19	11.80
20	11.80
21	11.90
22	12.00
23	11.90
24	11.70
25	11.90

E) Cable Axial Forces: *Boundary cables*

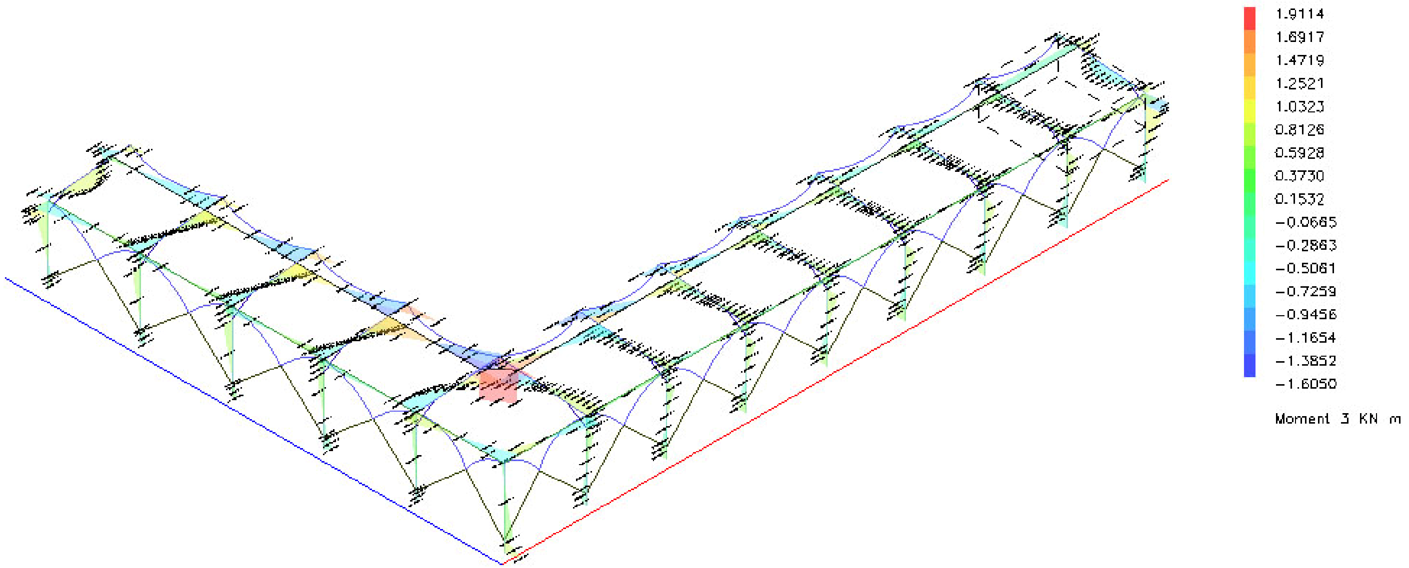
Code	Axial Force (kN)
1	9.60
3	6.73
5	9.48
6	9.74
7	6.80
9	9.66
10	9.70
11	6.78
13	9.66
14	9.76
15	6.79
17	9.60
18	8.61
20	5.69
22	8.74
23	8.60
24	5.66
26	8.75
27	8.77

Code	Axial Force (kN)
28	5.81
30	8.89
31	8.41
32	5.44
34	8.49
35	8.66
36	5.67
38	8.71
39	8.87
40	5.85
42	8.89
43	8.43
44	5.54
46	8.57
47	4.56
48	4.75
49	7.63
50	7.26

Moment 2

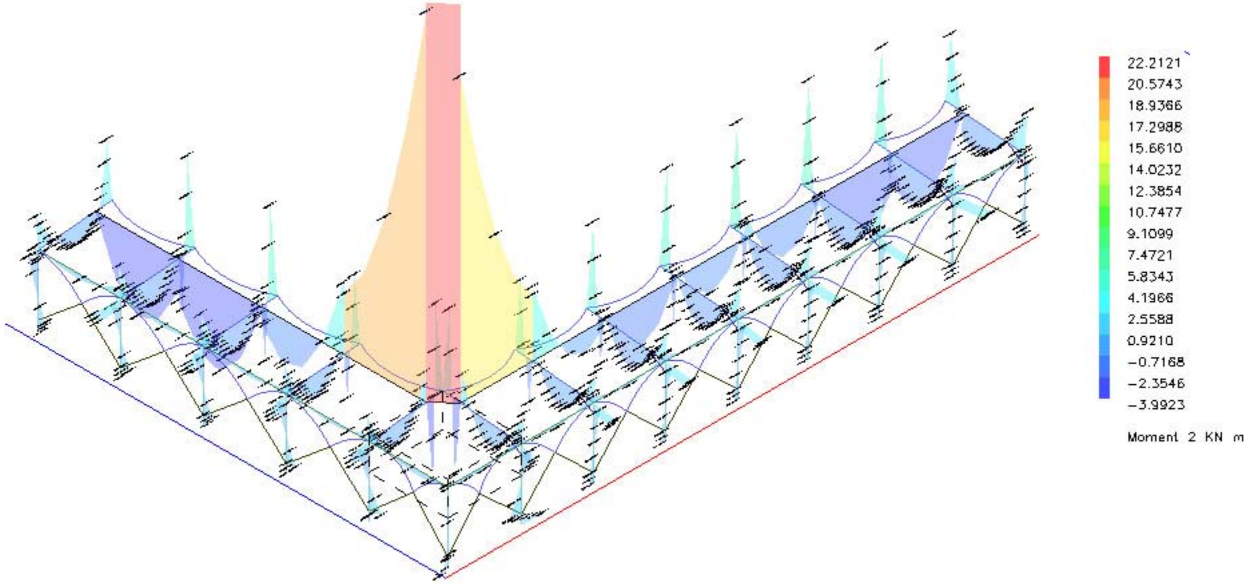


Moment 3

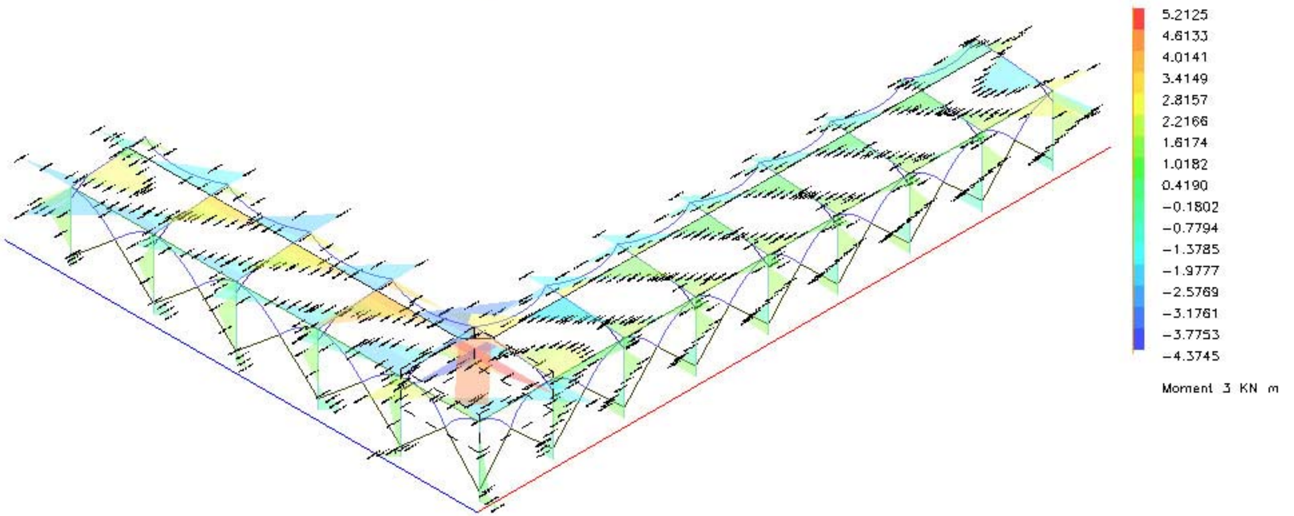


LC 2 - ULS : 1.35 DL + 1.35 V_0 + 1.50 LL

Moment 2

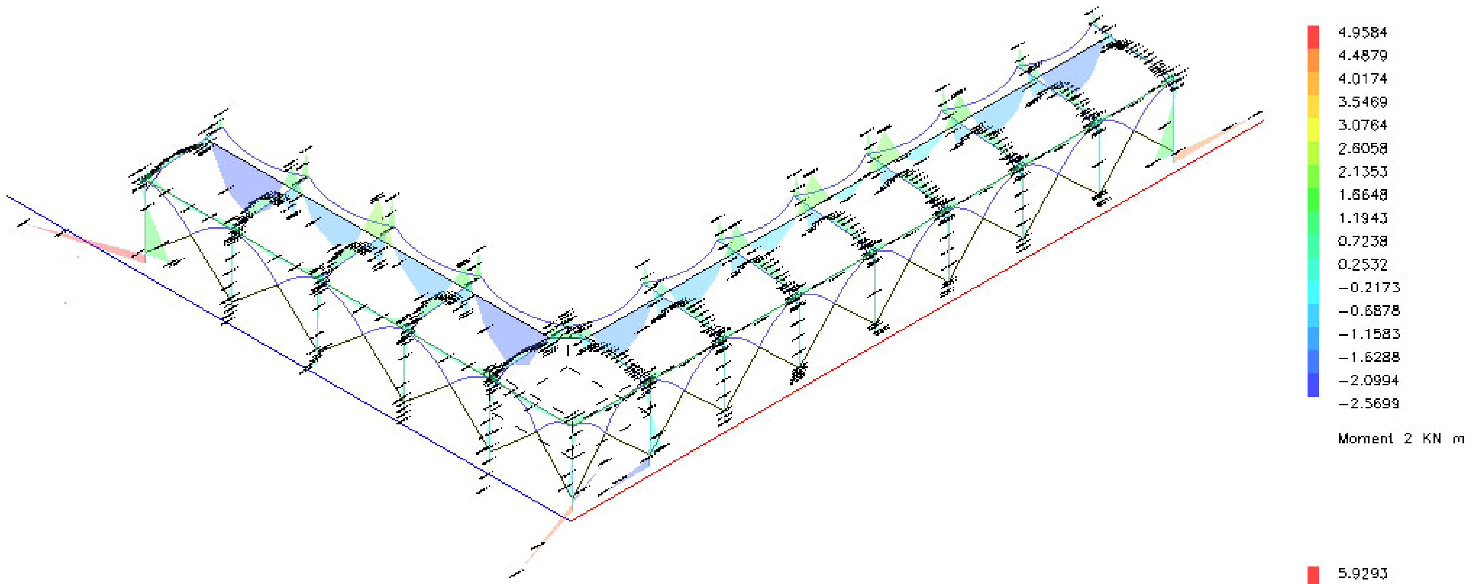


Moment 3

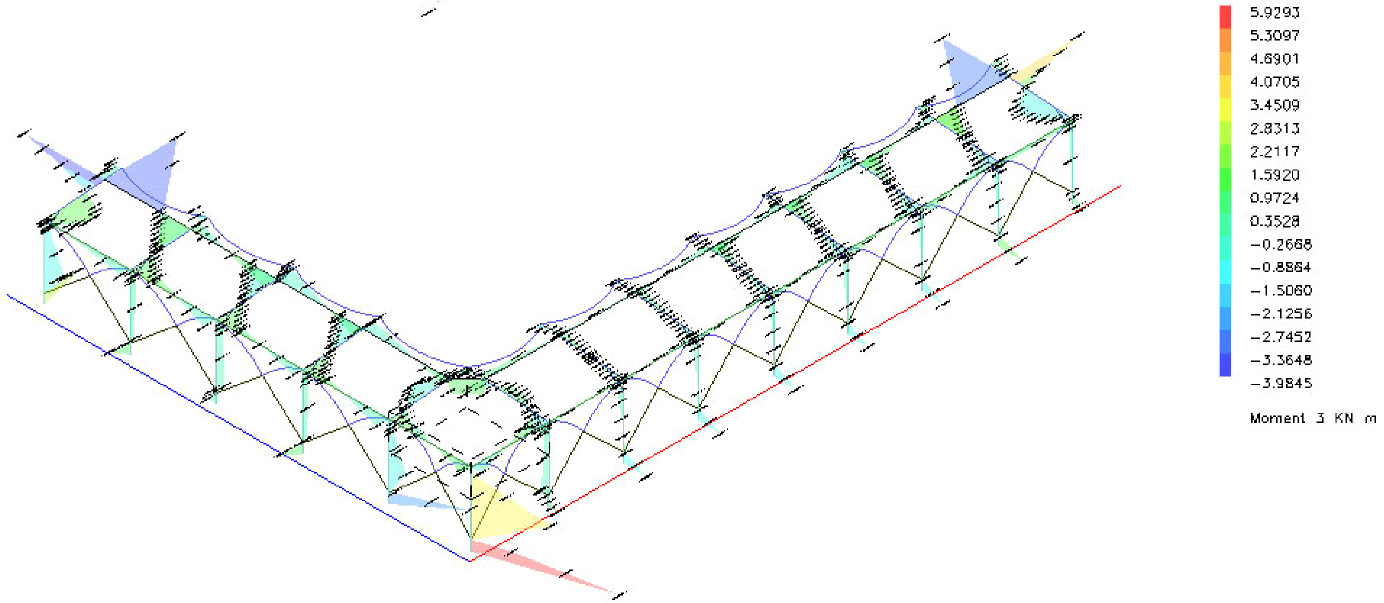


LC 3 - ULS : 1.35 DL + 1.35 V_0 + 1.50 WL

Moment 2

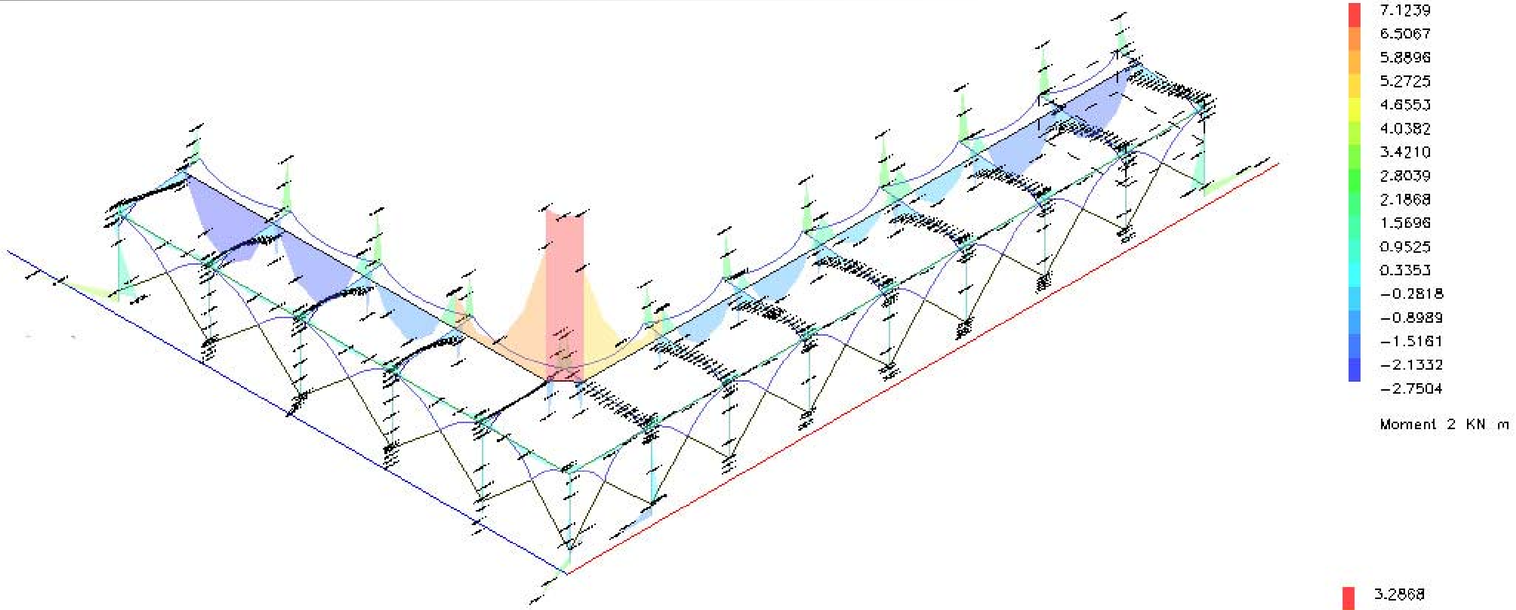


Moment 3



LC 4 - ULS : 1.35 DL + 1.35 V_0 + 1.35 LL + 1.35 WL

Moment 2



Moment 3

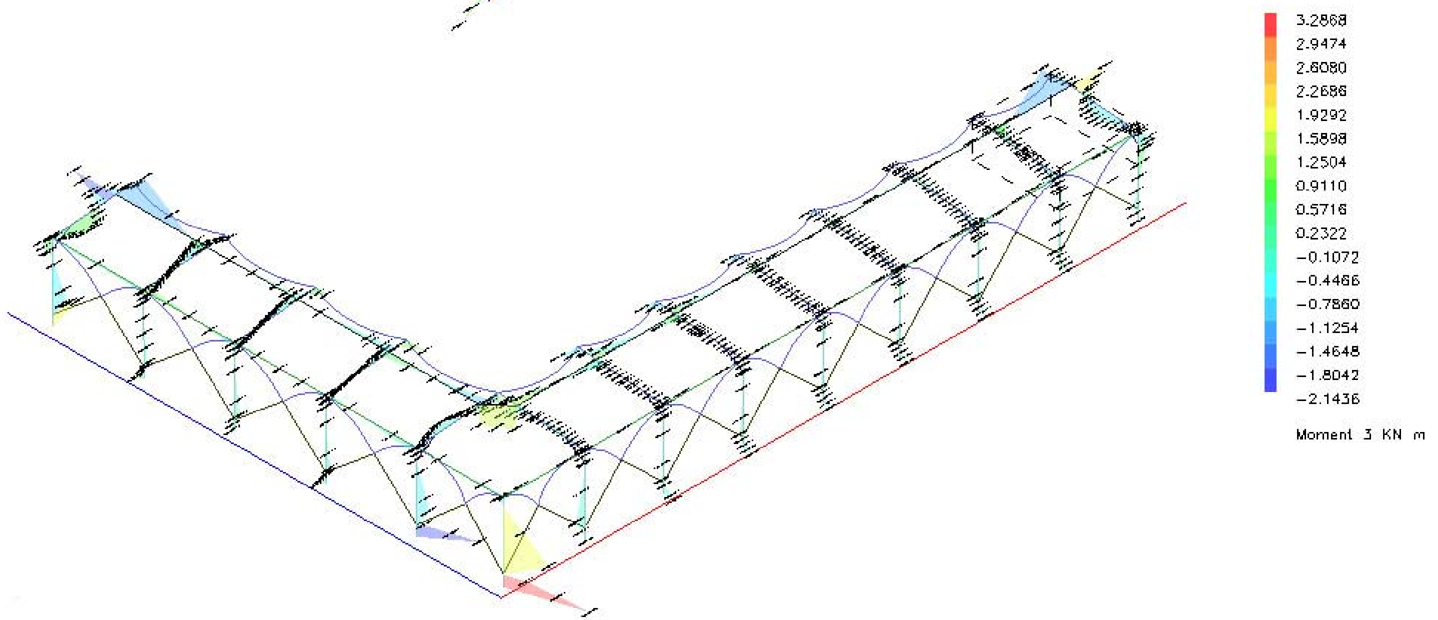


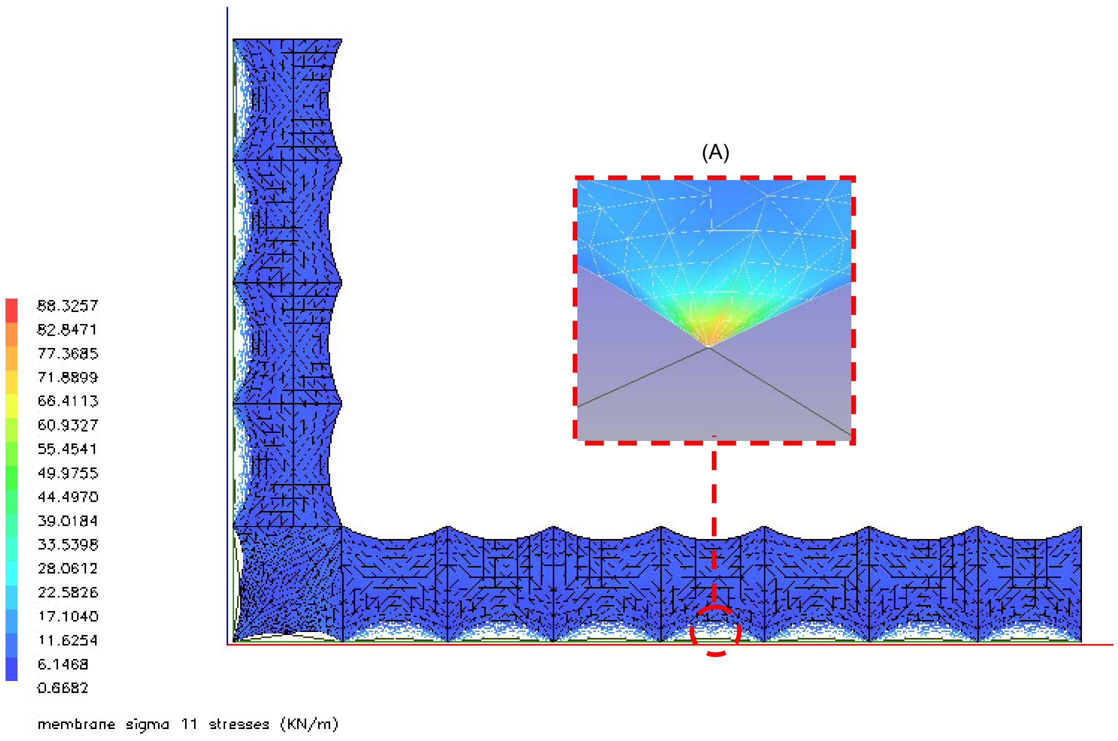
Table 3.27 Membrane Stress and Deformed Shape Summary

LOAD CASE	SLS			ULS		
	S11*	S22*	Node displacement	S11*	S22*	Node displacement
	$kN \cdot m^{-1}$	$kN \cdot m^{-1}$	cm.	$kN \cdot m^{-1}$	$kN \cdot m^{-1}$	cm.
LC 1	5.61	0.87	1.67	5.51	0.92	2.24
LC 2	5.95	1.15	16.01	7.66	1.28	19.20
LC 3	6.29	2.09	19.10	**36.90**	5.93	23.90
LC 4	6.85	1.87	13.50	18.70	4.32	15.90

** The maximum value selected from the average stress of majority area on membrane.*

Table 3.28 Maximum Tension Forces in Cables Summary

LOAD CASE	SLS		ULS	
	Tie Cable	Boundary Cable	Tie Cable	Boundary Cable
	kN	kN	kN	kN
LC 1	2.52	3.51	2.50	3.55
LC 2	4.90	8.09	6.01	10.30
LC 3	8.07	7.04	**17.50**	**14.60**
LC 4	9.62	8.09	12.00	9.76



As can be seen from table 3.27, the maximum stresses (the average stress of majority area), in both warp and weft direction, occur in the ULS Load case 3 which structure were subjected to wind load with the partial factor of 1.50. The maximum stresses shown in table 3.27 are 36.90 kN/m and 5.93 kN/m for warp and weft direction respectively.

According to the Mechanical values of fabric (Appendix IV). Therefore, the PVC-coated polyester fabric type I with breaking tensile strength of 2500/2500 N/5cm was selected to use.

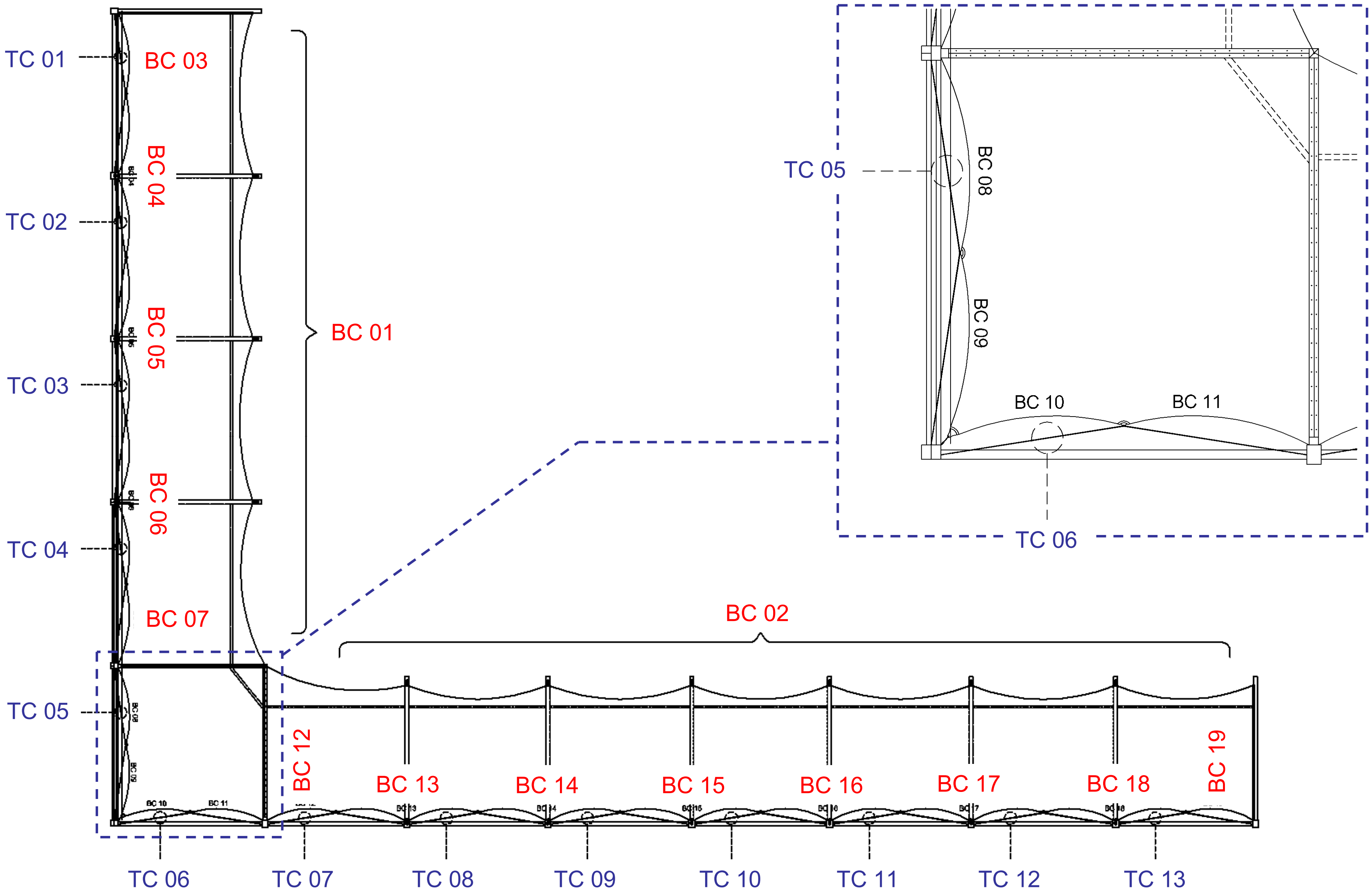
Selected Material

PVC-coated polyester	Type I
Tensile Strength ($Z_{R,k}$) :	2500/2500 N/5cm
Tensile Stiffness (EA) :	0.7/0.4 MN
Shear Stiffness (GA) :	0.05 MN
Tear Resistance :	250/200 N
Elongation at rapture (%) :	15 - 20
Self weight (g) :	0.008 $kN{\cdot}m^{-2}$

Tensile stength (Weft) for PVC type I → 2800 N/5cm = 56 kN/m > 36.90

For the area around the corner of membrane, pulled down by the cables, which has the stress high as 86 kN/m (figure A) will be reinforced by the corner plate and doubling membranes.

Figure 3.1 Boundary cables and Tie cables used in Structure



1. Boundary Cable

Table 3.29 Maximum Tension Forces Boundary Cable (LC3 – ULS)

CODE		Axial Force (kN)	Total Force (kN)
BC 01	3	12.00	48.30
	7	12.10	
	11	12.10	
	15	12.10	
BC 02	20	9.70	67.72
	24	9.66	
	28	9.96	
	32	9.25	
	36	9.69	
	40	10.00	
	44	9.46	
BC 03	1	14.20	14.20
BC 04	5	13.20	27.60
	6	14.40	
BC 05	9	13.60	27.70
	10	14.10	
BC 06	13	13.50	27.80
	14	14.30	

CODE		Axial Force (kN)	Total Force (kN)
BC 07	17	14.50	14.50
BC 08	48	5.99	5.99
BC 09	47	5.92	5.92
BC 10	49	14.10	14.10
BC 11	50	13.50	13.50
BC 12	18	12.80	12.80
BC 13	22	12.90	26.00
	23	13.10	
BC 14	26	12.90	26.00
	27	13.10	
BC 15	30	13.10	25.70
	31	12.60	
BC 16	34	12.50	25.40
	35	12.90	
BC 17	38	12.90	26.10
	39	13.20	
BC 18	42	13.10	25.60
	43	12.50	
BC 19	46	12.60	12.60

Tension force analysis in cables was studied in the numerical models. The boundary cables are classified in to two groups due to the membrane geometry. The first is BC 01 and BC 02 , which links the membrane between cantilever beams, and the another group is BC 03 – BC 19 which links the membrane between columns (Figure 3.1).

The maximum forces in boundary cable occur in Load case 03 (ULS) when wind load was assigned with the partial factor of 1.50. As presented in the table 3.29, the highest value for BC01, BC02 is 67.72 kN and for BC03 – BC19 is 27.80 kN. According to Appendix IV, Typical grade 316 stainless steel – Spiral strand 1 × 19 was selected, and use wire with diameter of 8 mm. and 6 mm. for BC01, BC02 and BC03 – BC19, respectively.

The details and specifications of boundary cable are presented in section 6.

Figure 3.2 Boundary cables and Thread toggle

2. Tie Cable

Table 3.30 Maximum Tension Forces Tie Cables (LC3 – ULS)

No.	Axial Force (kN)	Total Force (kN)
TC 01	14.80	29.70
	14.90	
TC 02	15.60	31.10
	15.50	
TC 03	15.20	30.30
	15.10	
TC 04	14.80	29.60
	14.80	
TC 05	15.40	30.90
	15.50	
TC 06	15.10	30.30
	15.20	
TC 07	15.10	30.30
	15.20	

No.	Axial Force (kN)	Total Force (kN)
TC 08	6.82	20.62
	13.80	
TC 09	6.90	21.30
	14.40	
TC 10	17.20	34.20
	17.00	
TC 11	17.30	34.40
	17.10	
TC 12	17.50	**34.60**
	17.10	
TC 13	17.20	34.30
	17.10	

The maximum force in tie cable also occurs in Load case 03. As can be seen from the table 3.30, TC 12 has the greatest tension force of 34.60 kN. Thus, the stainless steel spiral strand 1 × 19 diameter 7 mm. with breaking load of 35 kN (Appendix IV) was chosen.

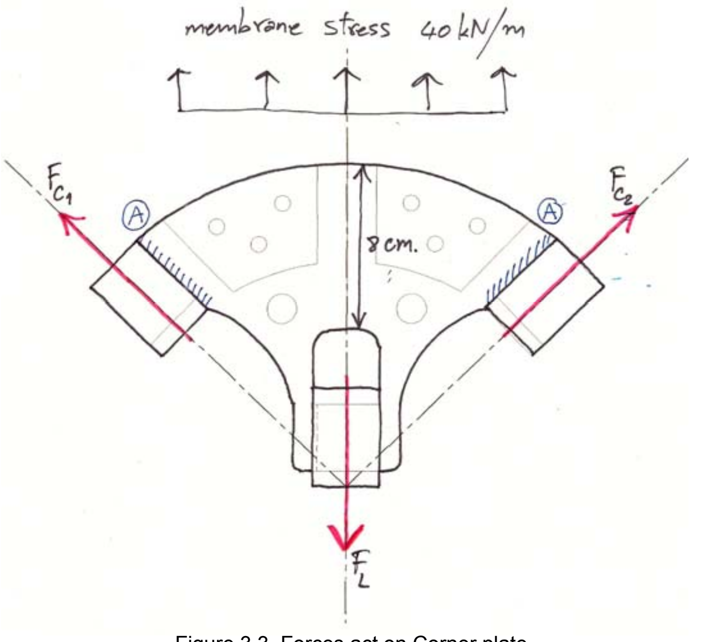


Figure 3.3 Forces act on Corner plate

The forces are not transferred directly into the corner by the fabric, but are passed into to the boundary cables and then transfer those forces to the corner plates.

F_{C1} : Tension force in Boundary cable (Left) = 15 kN
F_{C2} : Tension force in Boundary cable (Right) = 15 kN
F_L : Tension force in Link = 17.5 kN
Fy : Tensile yield strength = 2500 $kg \cdot cm^{-2}$
Ag : Gross section area (cm^2)
Corner plate thickness = 8 mm.
L : Length of barrel pipe = 4.2 cm.
Strength of fillet weld for E70, 6mm. = (0.707)(0.6)(0.3)(4900) = 620 $kg \cdot cm^{-1}$

1. Check tensile strength of plate

Allowable Force (P_A) = 0.6 Fy Ag
= $(0.6)(2500)(8 \times 0.8)$
= 9600 kg = 96 kN

P_A (96 kN) > F_L (17.5 kN) **OK**

2. Determine the weld size for barrel pipe to corner plate (point A)

Shear stress at point A (f_s) = $F_{C2} / \Sigma L$
= $(1500) / (2 \times 4.2)$
= 178.57 $kg \cdot cm^{-1}$

Assume the welds are 6 mm. fillet with E70 electrodes.
Hence, the leg size of weld is:

= (178.57) / (620)
= 0.28 cm ~ 3 mm. (both sides)

4. PATTERNING

The membrane patterning is one of the important procedure in membrane designing. It is allows a three-dimensional shape of surface translate into two-dimensional cutting pattern, in order to enable the manufacture of the membrane. The patterns are made out of strips of fabric of 1.0 – 1.8 m. wide, as shown in the next pages, and keep the cutting out waste as low as possible. After cutting, the strips were assembled by welding and then were transported to the erection site.

Because of flexure and elasticity of material, the membrane has to be compensated (made smaller) so that when it is installed, it can be achieve predefined stress and correct geometry. To determine the compensation values, data from strain test under the applied tension and the reduction of stress over the lifetime were investigated.

According to the Biaxial test of PVC Precontraint 702 reported by Blum Laboraory, the resulting of stress and strain under different load levels were determined as shown in figuer 4.1 and 4.2 repectively. For the compensation, the strain values at the end of the test were adopted.

Ferrari Precontraint 702 – Type I

Warp : 2.0 %

Weft : 1.8 %

Seam welding width* : for PVC 40 – 80 mm. (use 75 mm.)

** Data gained from the Lecture: OM 02 Studio Patterning and Detailing*

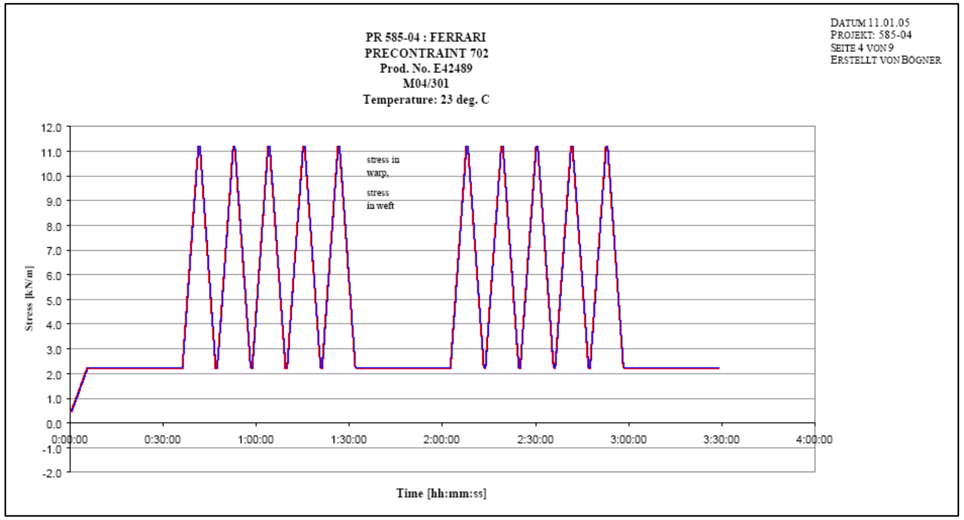


Figure 4.1 Load history with stress measurement

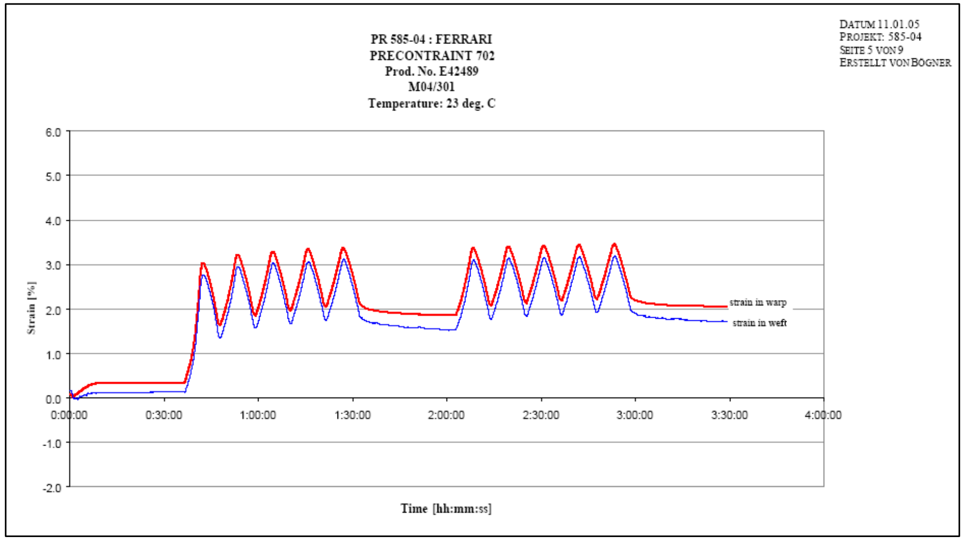


Figure 4.2 Load history with strain measurement

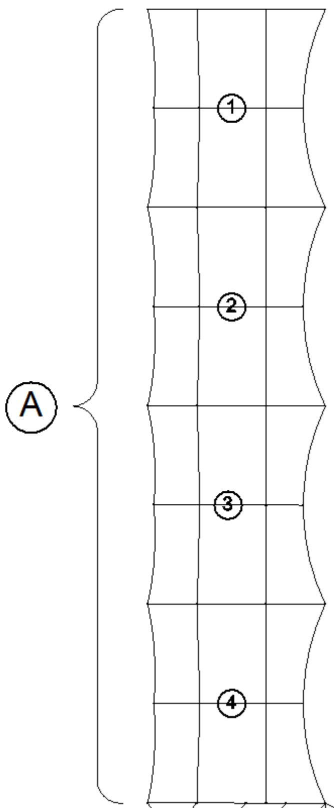
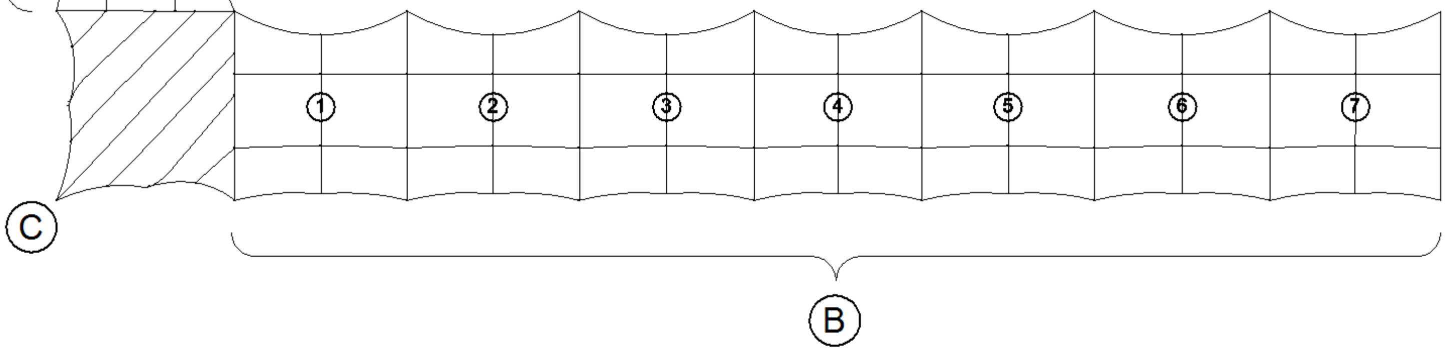


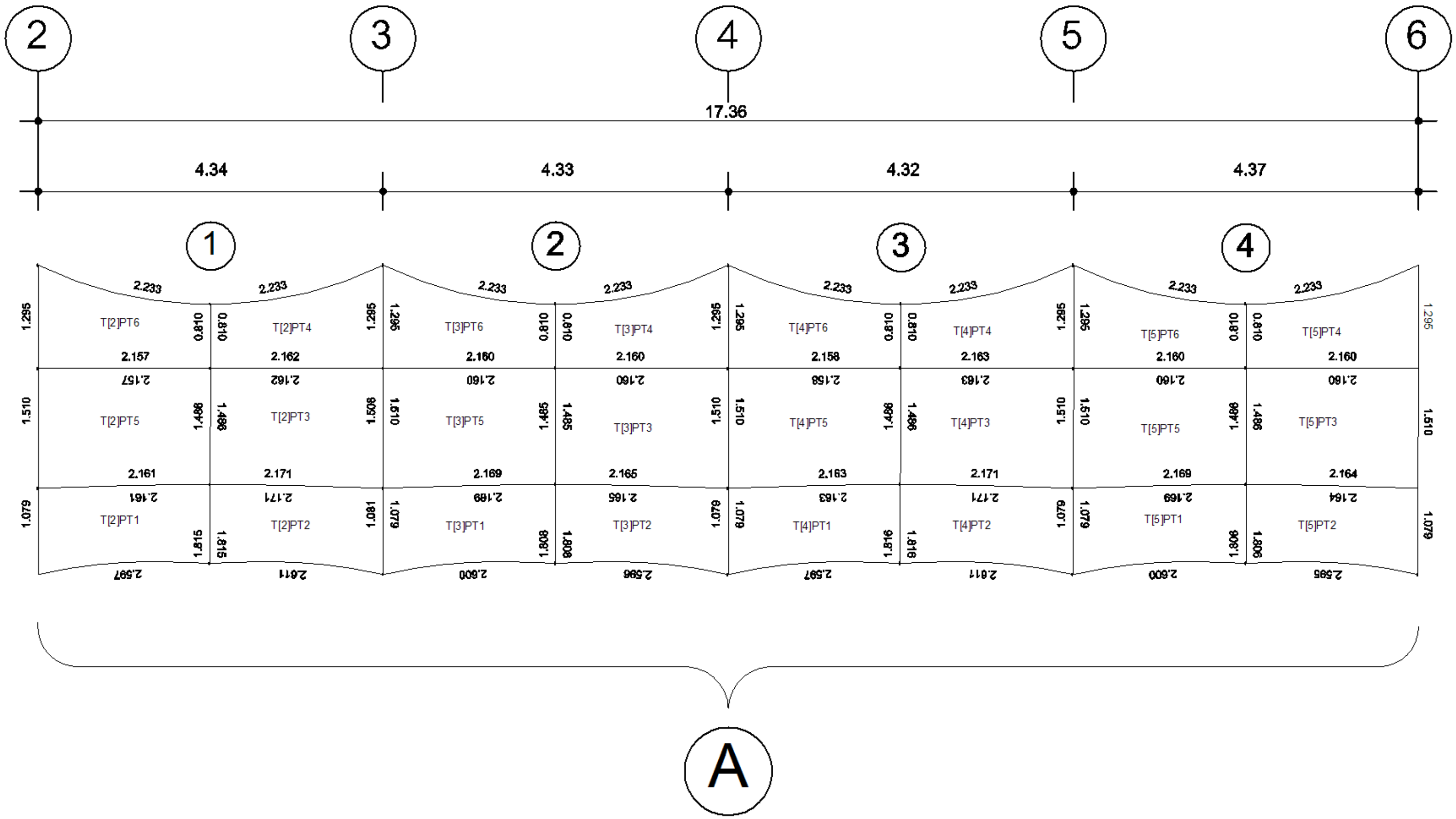
Figure 4.3 Membrane Patterning

Because of the building orientation, membrane roof have to cover all of these structures. Therefore, membrane fabric was divided into 3 parts which cover in the different direction. (as a figure 4.3)

1. Part A (direction y-axis)
2. Part B (direction x-axis)
3. Part C (Central)

These parts of fabric were cut into a two-dimensional pieces by patterning process and will be discussed in the following sections.




2
3
4
5
6
17.36
4.34
4.33
4.32
4.37
1
2
3
4
T[2]PT6
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T[2]PT5
T[2]PT3
T[2]PT1
T[2]PT2
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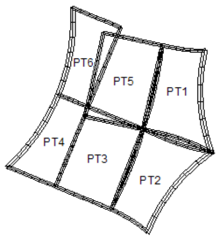
T[5]PT1
T[5]PT2
A

A - 1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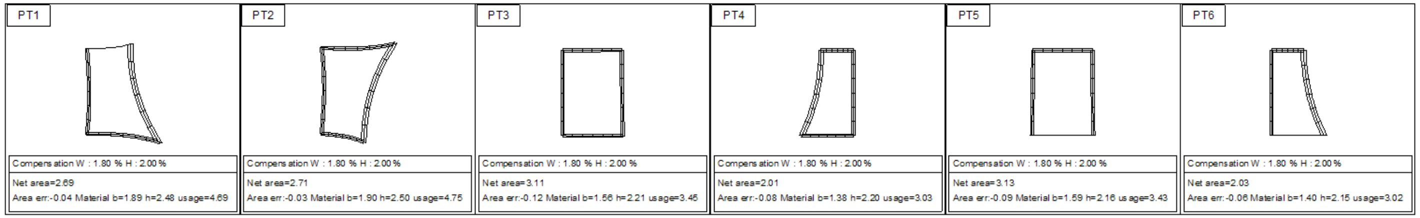
PT1
PT4
PT3
PT2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PT2
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Net area=2.71
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PT3
Compensation W : 1.80 % H : 2.00 %
Net area=3.11
Area err:-0.12 Material b=1.56 h=2.21 usage=3.45
PT4
Compensation W : 1.80 % H : 2.00 %
Net area=2.01
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PT5
Compensation W : 1.80 % H : 2.00 %
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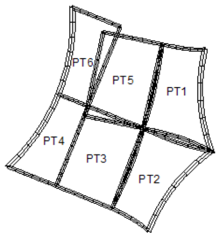
A - 2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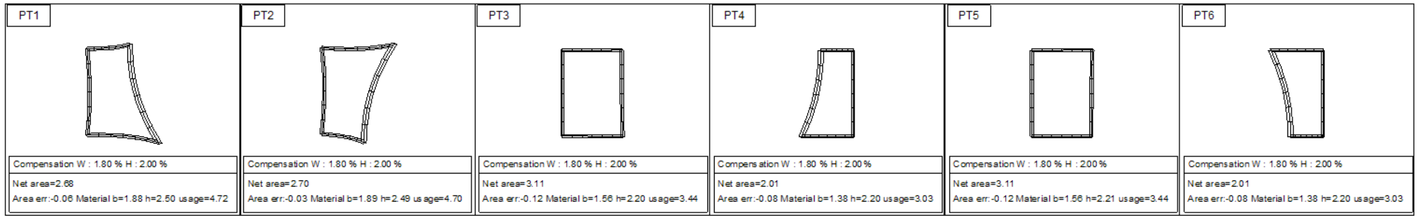
PT1
PT4
PT3
PT2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Net area=2.70
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PT3
Compensation W : 1.80 % H : 2.00 %
Net area=3.11
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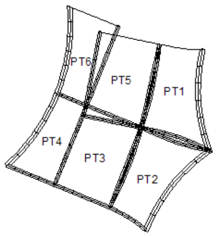
PT4
Compensation W : 1.80 % H : 2.00 %
Net area=2.01
Area err:-0.08 Material b=1.38 h=2.20 usage=3.03
PT5
Compensation W : 1.80 % H : 2.00 %
Net area=3.11
Area err:-0.12 Material b=1.56 h=2.21 usage=3.44
PT6
Compensation W : 1.80 % H : 2.00 %
Net area=2.01
Area err:-0.08 Material b=1.38 h=2.20 usage=3.03

A - 3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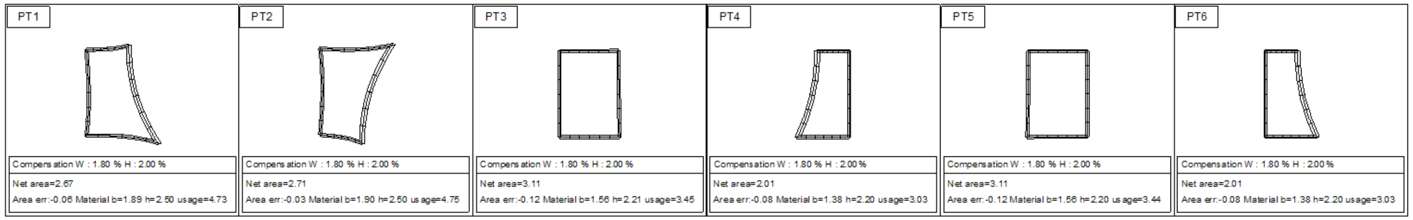
PT5
PT1
PT4
PT3
PT2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Net area=2.71
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PT3
Compensation W : 1.80 % H : 2.00 %
Net area=3.11
Area err:-0.12 Material b=1.56 h=2.21 usage=3.45
PT4
Compensation W : 1.80 % H : 2.00 %
Net area=2.01
Area err:-0.08 Material b=1.38 h=2.20 usage=3.03
PT5
Compensation W : 1.80 % H : 2.00 %
Net area=3.11
Area err:-0.12 Material b=1.56 h=2.20 usage=3.44
PT6
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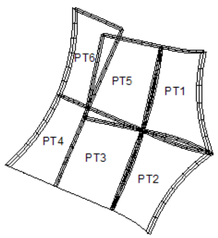
Net area=2.01
Area err:-0.08 Material b=1.38 h=2.20 usage=3.03

A - 4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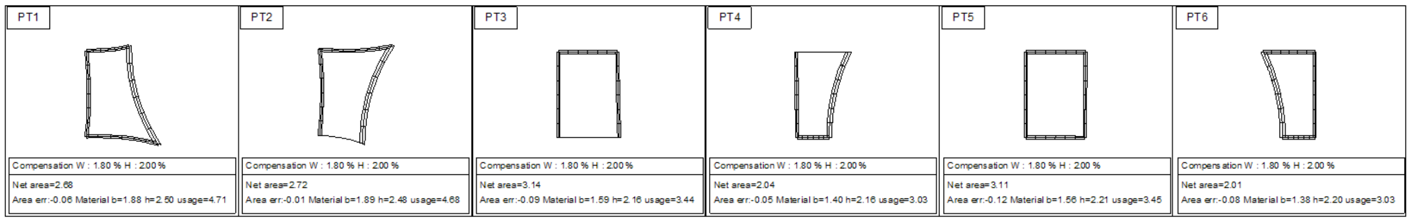
PT5
PT1
PT4
PT3
PT2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Net area=2.68
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PT2
Compensation W : 1.80 % H : 2.00 %
Net area=2.72
Area err:-0.01 Material b=1.89 h=2.48 usage=4.68
PT3
Compensation W : 1.80 % H : 2.00 %
Net area=3.14
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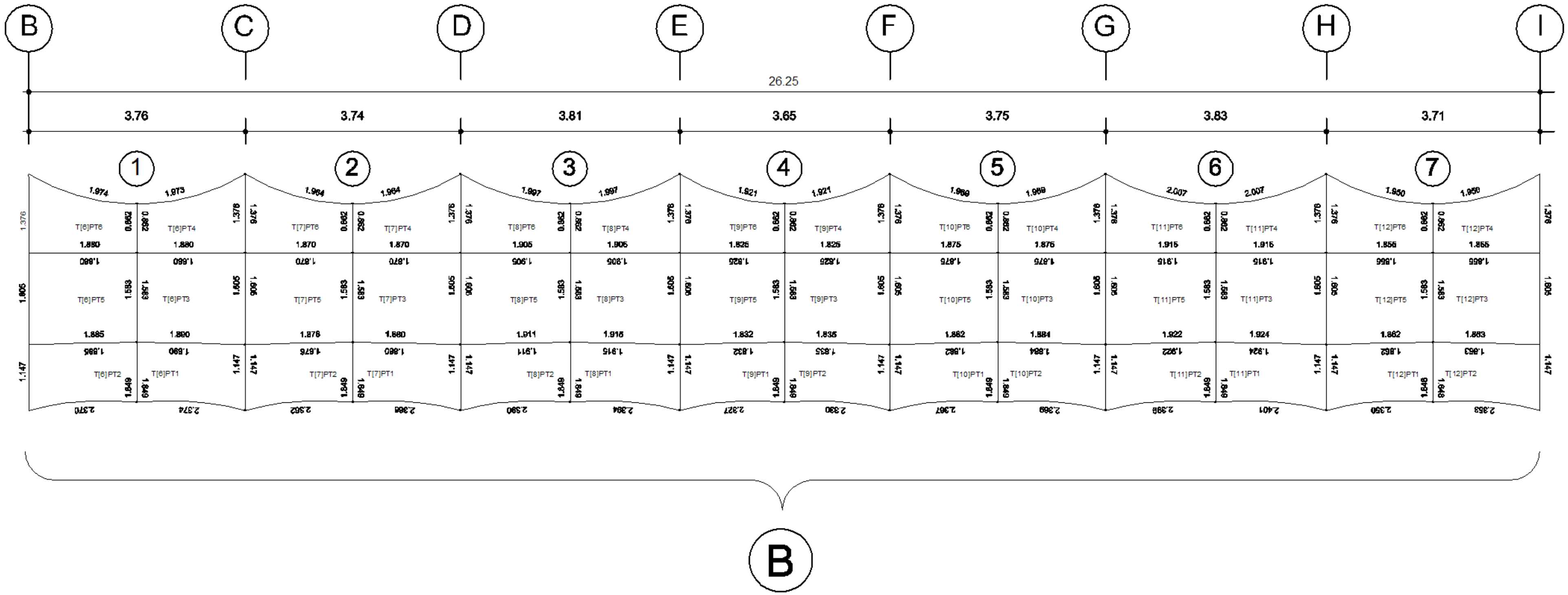
PT4
Compensation W : 1.80 % H : 2.00 %
Net area=2.04
Area err:-0.05 Material b=1.40 h=2.16 usage=3.03
PT5
Compensation W : 1.80 % H : 2.00 %
Net area=3.11
Area err:-0.12 Material b=1.56 h=2.21 usage=3.45
PT6
Compensation W : 1.80 % H : 2.00 %
Net area=2.01
Area err:-0.08 Material b=1.38 h=2.20 usage=3.03


B
C
D
E
F
G
H
I
26.25
3.76
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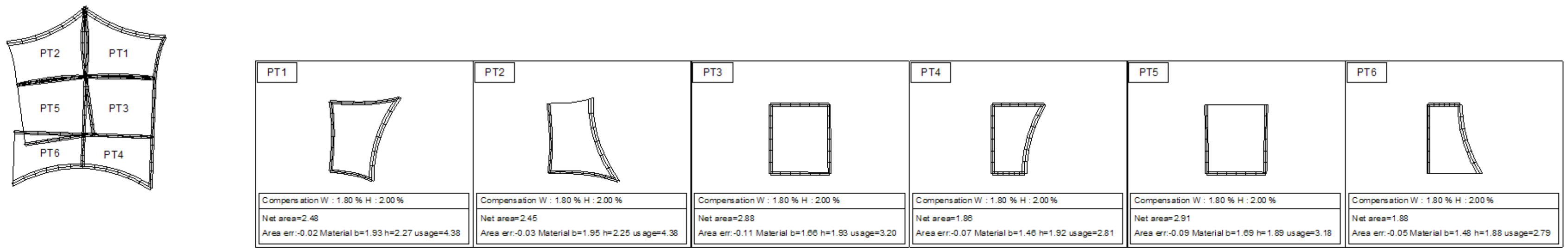
1
2
3
4
5
6
7
B

B - 1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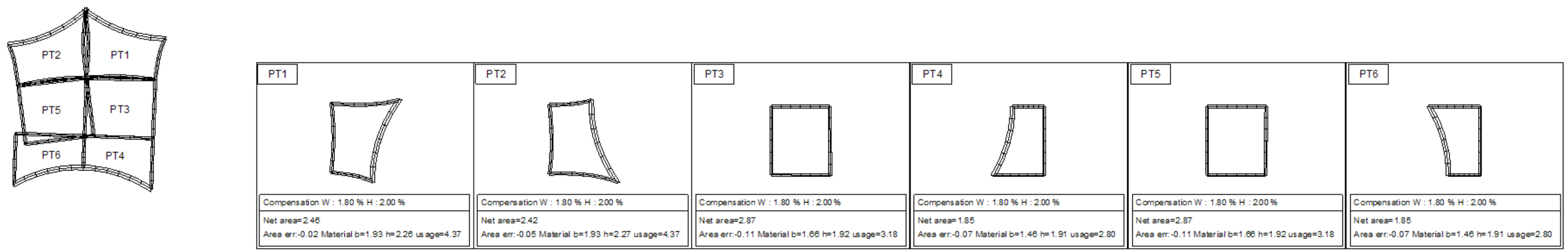
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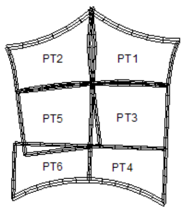
B - 3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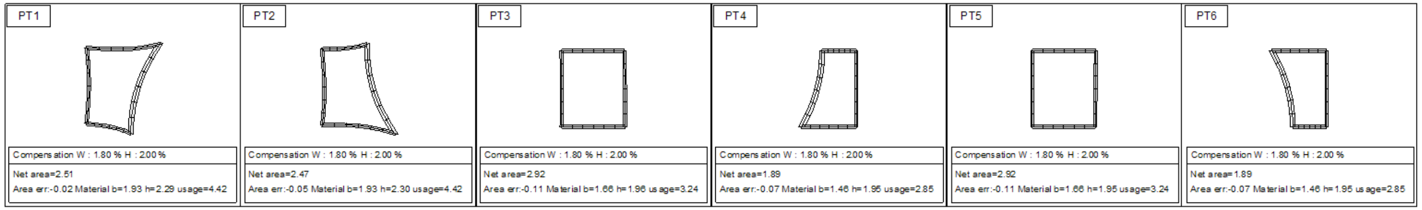
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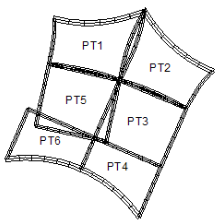
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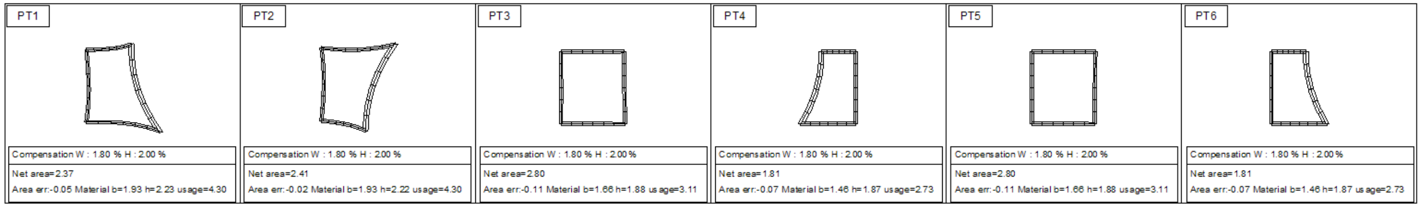
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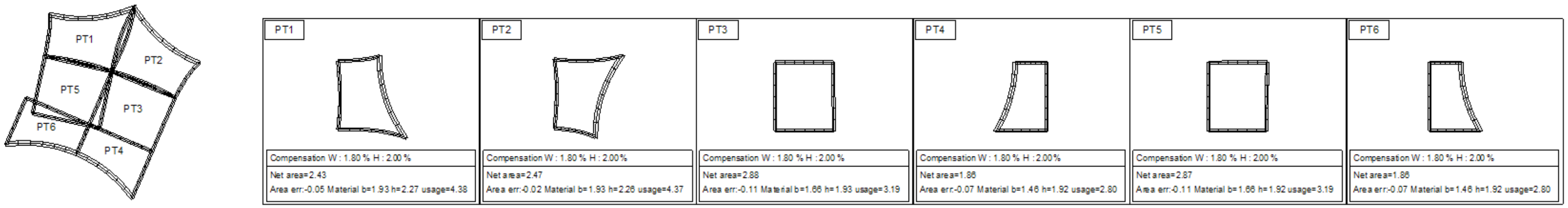
B - 5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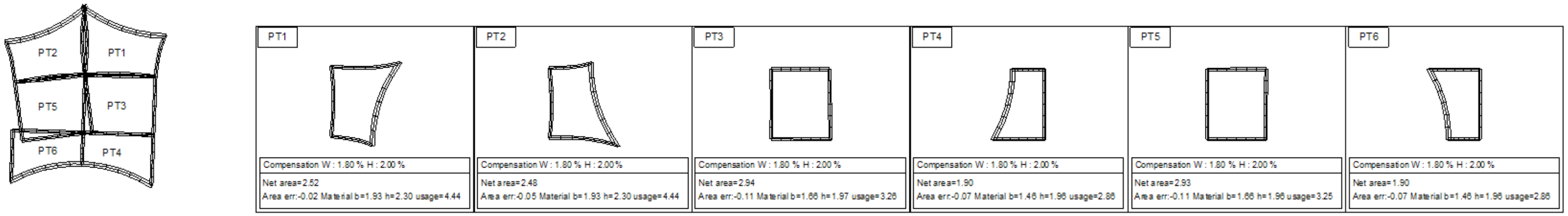
B - 6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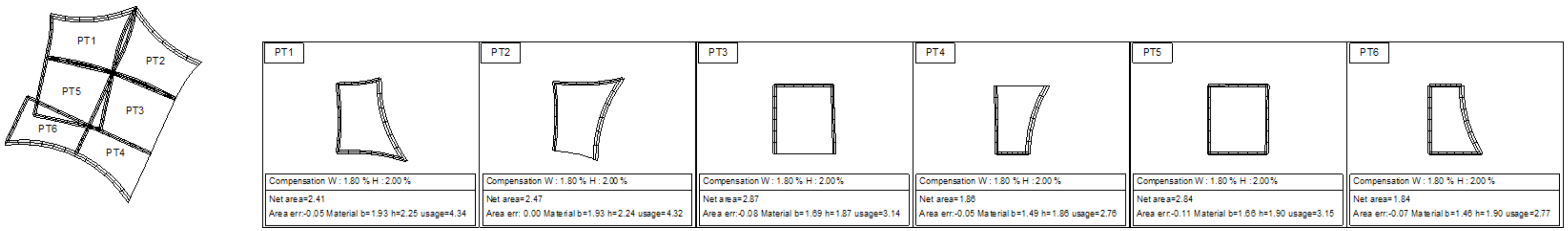
B - 7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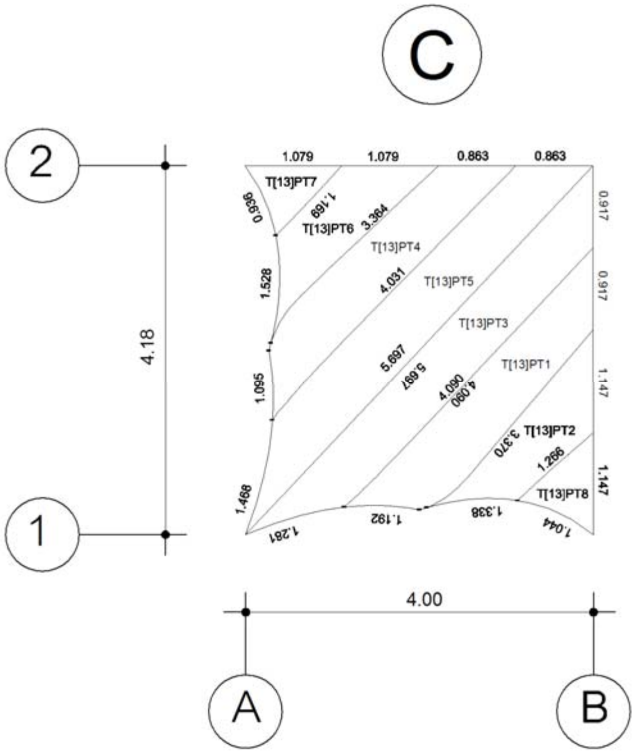
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0.863
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T[13]PT1
T[13]PT2
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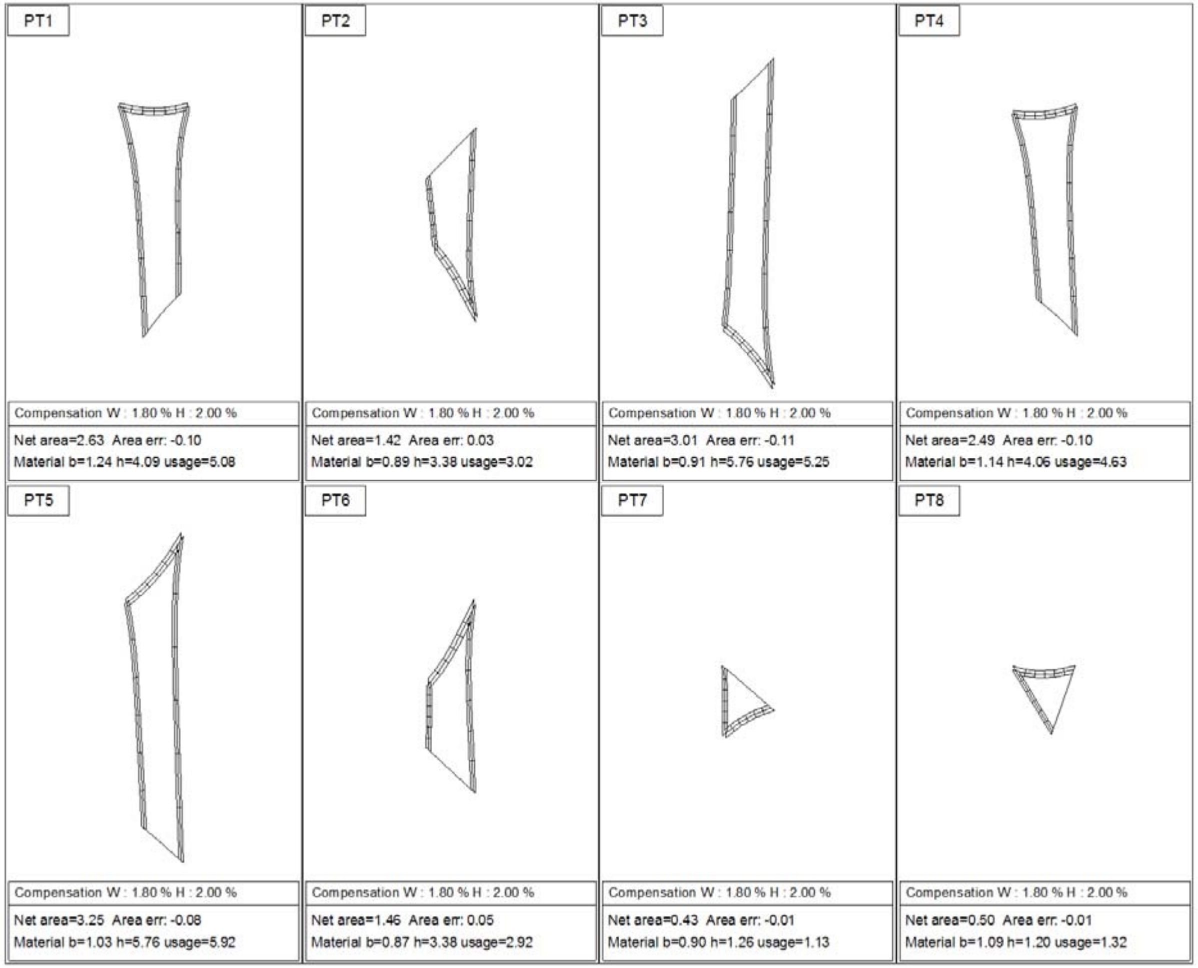
4.00
A
B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Compensation W : 1.80 % H : 2.00 %
Net area=3.25 Area err: -0.08
Material b=1.03 h=5.76 usage=5.92
PT6
Compensation W : 1.80 % H : 2.00 %
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Material b=0.87 h=3.38 usage=2.92
PT7
Compensation W : 1.80 % H : 2.00 %
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Material b=0.90 h=1.26 usage=1.13
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Compensation W : 1.80 % H : 2.00 %
Net area=0.50 Area err: -0.01
Material b=1.09 h=1.20 usage=1.32

EDGE CONNECTIONS

There are 2 different edges and welded seam which need to be considered as the following:

(A), (B) Flexible edge: for boundary cable ∅ 6mm. and ∅ 8 mm.

(C) Membrane seam : Overlapping welded

(D), (E) Clamping plate edge: which membrane edge are fixed to the primary structure.

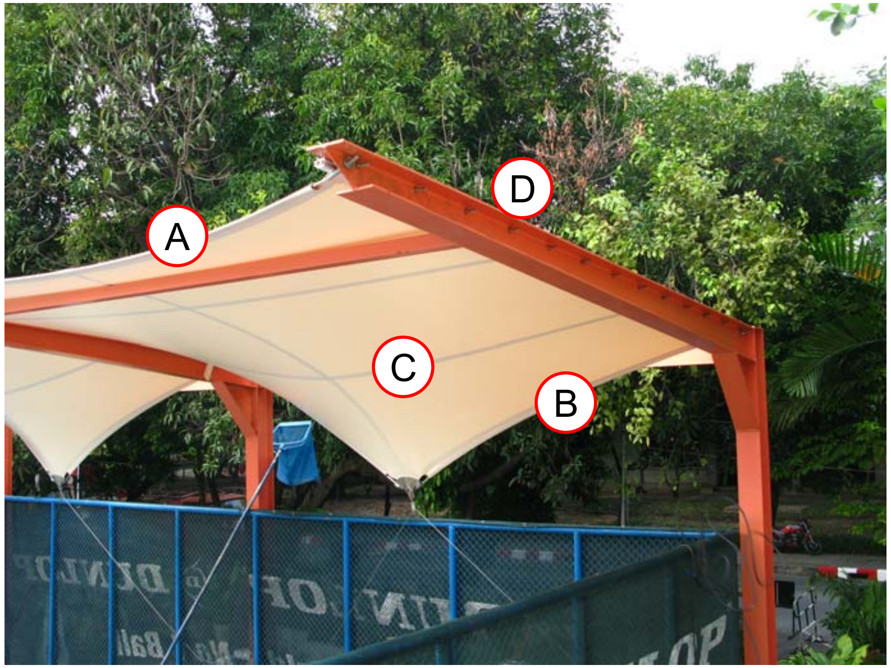
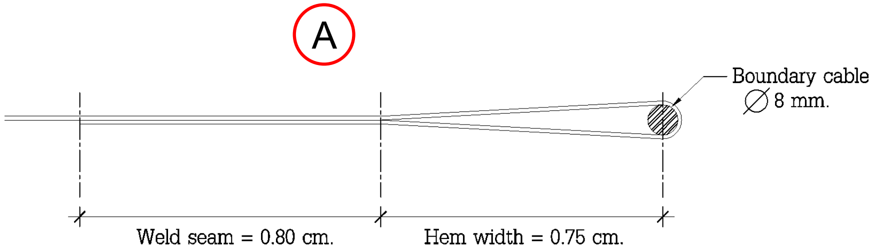


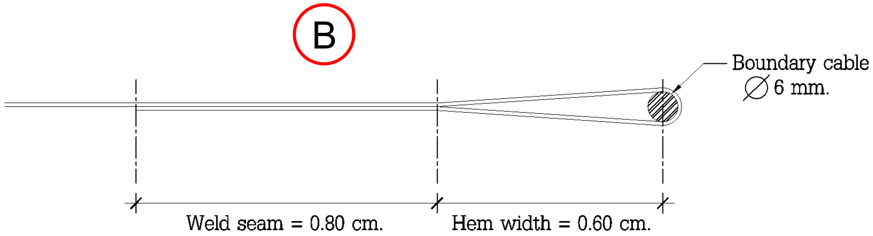
Figure 4.4 Membrane Edge Detailing

A – B. Flexible edge: for boundary cable

The flexible edge used in this project is the cable edge, where the boundary cable runs in the pocket edge of the membrane and collects the forces from the fabric and then leads them to the primary structure. There is a recommendation* that the limitation of the splay angle in the pocket should not be over than 15° in order to avoid the weld seam peeling off.

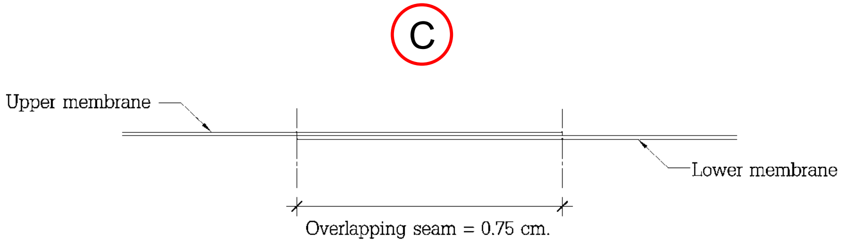
** Michael Seidel, Tensile Surface Structures, pp.76*





C. Welded seams

Membrane strips were joined by welding. Welded seams are made by overlapping of the edge membranes and then weld them together. In this case, the seam width is about 75 millimeter.



D. Clamping Plate Edge I

At the edge (Figure 4.5), it is provided as a fixed edge anchor of the membrane to the primary structure. The fabric has a keder rail at the end and is clamped by the aluminium profile bar which is connected to the steel structure by bolts. (The drawing and detailing are shown in section 6.)

Figure 4.5 Clamping Plate Edge (I)

E. Clamping Plate Edge II

This type of edge was used at the central-part membrane (Part C), in order to stiff membrane edge. The fabric strip to be connected has a keder and was pressed to the primary structure by aluminium flat bars which were fixed along their length by bolts. (The drawing and detailing are also shown in section 6.)

Figure 4.6 Clamping Plate Edge (II)

5. COST ESTIMATION & ERECTION PROCESS

1. Material Specification

The materials used in this project are presented in the table 5.1.

Table 5.1 Material Specification

Material	Description
Fabric	Ferrari Precontraint 702, PVC type I
Cable	1 × 19 strand, Stainless Steel 304, ∅ 6 – 8 mm.
Tendon	Stainless Steel 304, ∅ 6 – 8 mm.
Corner plate	Stainless Steel 304
Gasket	Neoprene
Nut & Bolt	Stainless Steel AISI 316

2. Scope of Works

The following items are included for price estimation.

A. Design and calculating of membrane and support structure.

B. Manufacturing and supplying for the following items:

1) Membrane fabric
2) Cable (Stainless steel 304)
3) Tendon (Stainless steel, 304)
4) Corner plate (Stainless steel) and aluminium clamping
5) Gasket (Neoprene)
6) Nuts & Bolts

The following items are excluded from price estimation.

A. Steel structure and civil works.*

B. Water supply and electricity at the site work.

C. Cranes and lifting devices.

D. VAT 7%

E. Installation work.

(* The reaction force report are provided for client or engineer if they require).

3. Schedule

Because the pool was in operation during the entire erection phase, thus the schedule timeline of erection is very tight and precise. The total erection days used are approximate 65 days as shown in the table 5.2.

4. Cost Estimation

The estimated price for this project is approximate 20,000 EU or 118.34 EU/m^2 (only the include items were take into account as described before). The cost estimation is presented in particularly in the table 5.3.

Table 5.2 Erection timeline

	Activity	Duration (days)
1	**Preliminary work**	
	Sign order confirmation	2
	Preliminary design	5
	Submit to client for approval I	2
2	**Design process**	
	Formfinding	3
	Membrane Analysis	5
	Structural Analysis	5
	Submit to client for approval II	2
3	**Detail design**	
	Detail & Connection design	6
	Drawing: Plan / Section / Layout	6
	Steel shop drawing	6
4	**Fabrication**	
	Steel structure fabrication	7
	Membrane & Accessory fabrication	7
5	**Installation**	
	Steel structure installation	5
	Fabric installation	3
	Site clean-up	1
	TOTAL	65

NOVEMBER																																		
Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
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DECEMBER																												JANUARY						
Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7

= Vacation days (New year 2011)

Total project's covered area : 169 sq.m.

Total membrane area : 185 sq.m.

Rate exchange 1 Euro (EU) = 42.47 Baht Thai (BHT)

Table 5.3 Cost Estimation

Item	Specification	Quantity	Unit	Unit Cost		Total Cost		Total	
				Material	Labor	Material	Labor	Baht	Euro
1	**Design & Engineering**	169.00	m^2	-	1,000.00	-	169,000.00	169,000.00	3,979.28
2	**Fabric**								
	Ferrari Precontraint 702, 1.80 width.	185.00	m^2	1,200.00	600.00	222,000.00	111,000.00	333,000.00	7,840.83
3	**Accessory**								
	3.1 Corner plate	14	pcs	7,500.00	1,000.00	105,000.00	14,000.00	119,000.00	2,801.98
	3.2 Aluminium flat bar	16	m	250.00	-	4,000.00	-	4,000.00	94.18
	3.3 Aluminium clamping	2	pcs	1,500.00	-	3,000.00	-	3,000.00	70.64
	3.4 Tie-down cable, Stainless steel 304, ∅ 7 mm.	70.00	m	250.00	-	17,500.00	-	17,500.00	412.06
	3.5 Boundary cable, Stainless steel 304, ∅ 6 mm.	65.00	m	200.00	-	13,000.00	-	13,000.00	306.10
	3.6 Boundary cable, Stainless steel 304, ∅ 8 mm.	46.00	m	300.00	-	13,800.00	-	13,800.00	324.94
4	**Cable fittings**								
	4.1 Thread Terminal, Stainless steel 304, ∅ 6 mm.	26	pcs	150.00	500.00	3,900.00	13,000.00	16,900.00	397.93
	4.2 Thread Terminal, Stainless steel 304, ∅ 8 mm.	2	pcs	280.00	500.00	560.00	1,000.00	1,560.00	36.73
	4.3 Thread Toggle, Stainless steel M12	31	pcs	350.00	500.00	10,850.00	15,500.00	26,350.00	620.44
	4.4 Rigging screw fork terminal, ∅ 6 mm.	8	pcs	1,500.00	500.00	12,000.00	4,000.00	16,000.00	376.74
	4.5 Rigging screw toggle terminal, ∅ 7 mm.	26	pcs	2,200.00	500.00	57,200.00	13,000.00	70,200.00	1,652.93
	4.6 Rigging screw toggle terminal, ∅ 8 mm.	2	pcs	2,500.00	500.00	5,000.00	1,000.00	6,000.00	141.28
5	**Nuts, Bolts, Neoprene, etc.**	2	set	10,000.00	-	20,000.00	-	20,000.00	470.92
	TOTAL PRICE							**829,310.00**	**19,526.96**

A. Steel structure installation

(A) (B)

Figure 5.1 (A)-(B)
The steel structure was erected to its position as primary structure.

B. Installation of central membrane (Part C)

The erection of the central membrane was the first carried out after the completion of primary structure. Membrane was folded out and brought up to its position (figure 5.2).

Figure 5.2

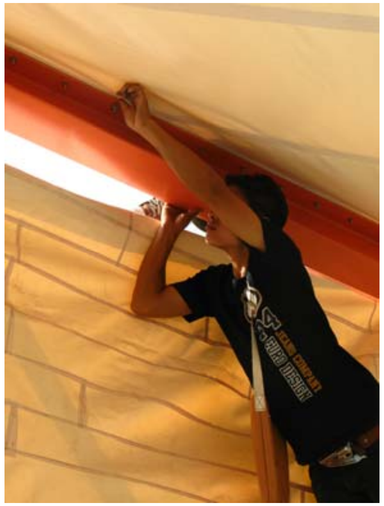
(A)

(B)

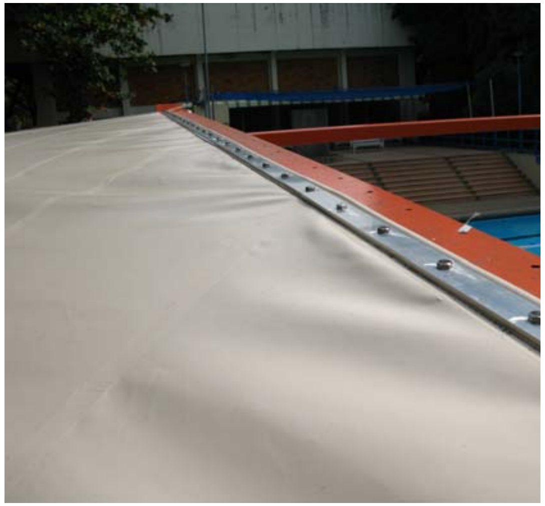
Figure 5.3 (A)-(B)

In order to avoid damage to the fabric, the strips of neoprene were inserted underneath (between the membrane and the beam) and upper (between membrane and aluminium bar) before fixing edge.

(A)



(B)



(C)

Figure 5.4

(A) Installation of aluminium flat bar as a clamping plate edge.

(B) A worker fixed the membrane edge to the supported beam by bolts.

(C) Clamping plate edge after finished.

(A)

(B)

(C)

Figure 5.5

(A) Membrane was temporary stabilized by tie to the column.

(B) Workers fixed the corner area with corner plate and connected it to the column as a high point.

(C) Corner detail after completely finished.

(A)

(B)

Figure 5.6

(A) Corner plate was installed to the membrane.

(B) 7 mm. Tie cable was threaded through a toggle and both of its end were tied down and connected to the bases of columns.

(A) (B)

Figure 5.7

(A) Tensioning the cable by Ratchet lever hoist.

(B) Central membrane after tensioning.

C. Installation of wings membrane (Part A and B)

Sheets of plastic were laid out on the steel beams before put the fabric on, which prevent the membrane from damage during the erecting operation (figure 5.8). These sheets will be removed when the erection is accomplished.

Figure 5.8

(A) (B)

Figure 5.9

(A) Membrane fabric was folded out and prepared for erecting.

(B) After the fabric has been unfolded, then it was lifted up to its position, and then was expanded to cover the intended area.

(A) (B) (C)

Figure 5.10

(A) Aluminium clamping profile and membrane edge were assembled together before connecting to the beam

(B) – (C) After lifting the clamping profile to the intended position, then it was connected to the beam by bolting along the length while the boundary cable was also introduced through the pocket.

(A) (B)

Figure 5.11

(A) Another edge of membrane is reached to the beam and joined as a stiff edge.

(B) The boundary cable was connected to the column by holding of the thread toggle.

(A) (B) (C)

Figure 5.12

(A) The corner plate was assembled and temporary stabilized by pulling rope.

(B) A worker assemble the tie-down cable to the corner plate.

(C) Tie-down cable is connected at the column and tensioned by lever hoist.

(A) (B)

Figure 5.13

(A) To apply force to the membrane, the boundary cable was also tensioned by lever hoist.

(B) A worker was disappearing the wrinkles on the membrane surface.

(A) (B)

Figure 5.14

The same procedure of erecting was repeated for the remain part of the roof.

Membrane roof after finishing

(A) On the north wing

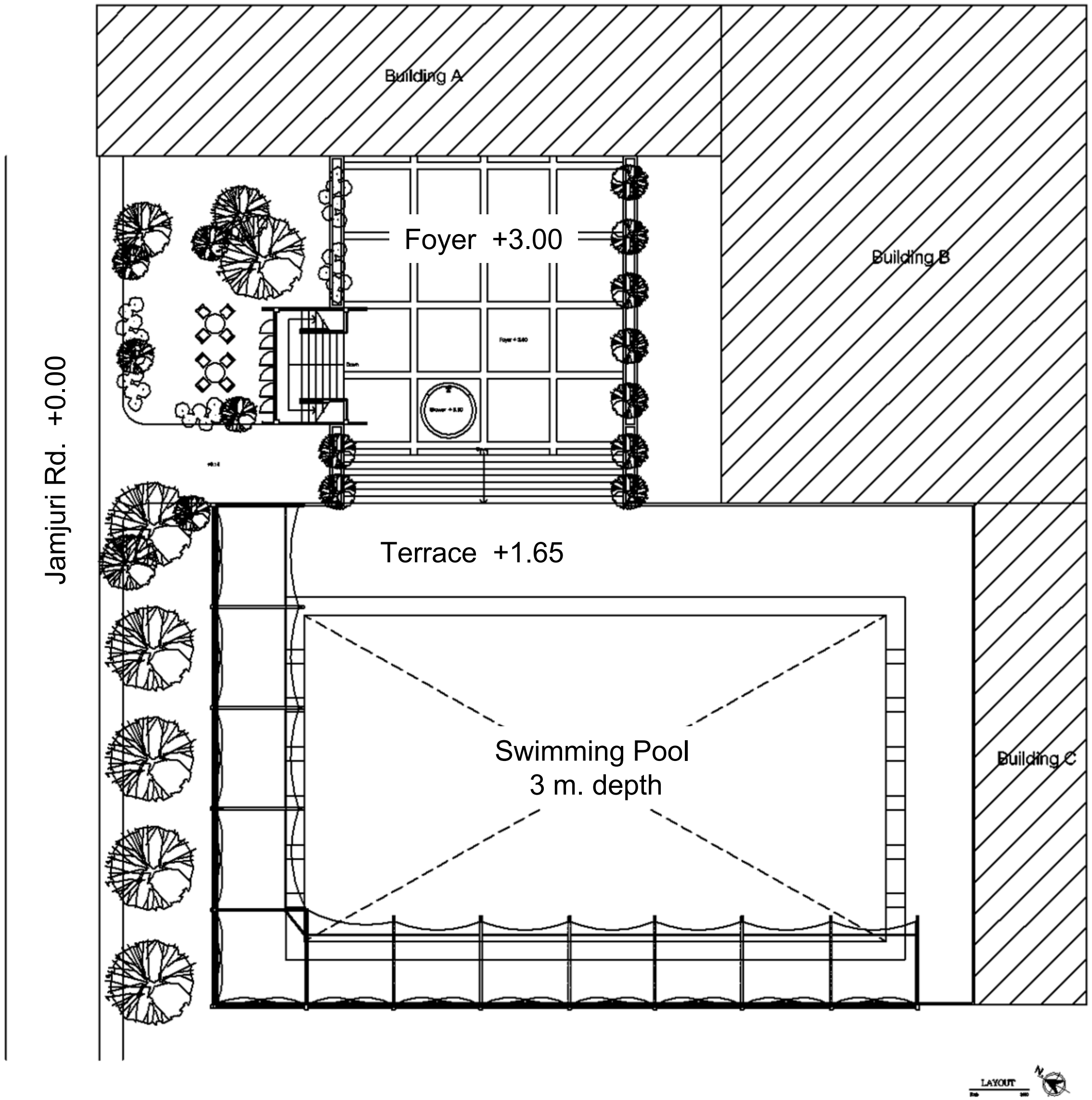
(B) On the west wing


DUNLOP




6. DRAWINGS & DETAILING

LAY OUT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Building B
Building C
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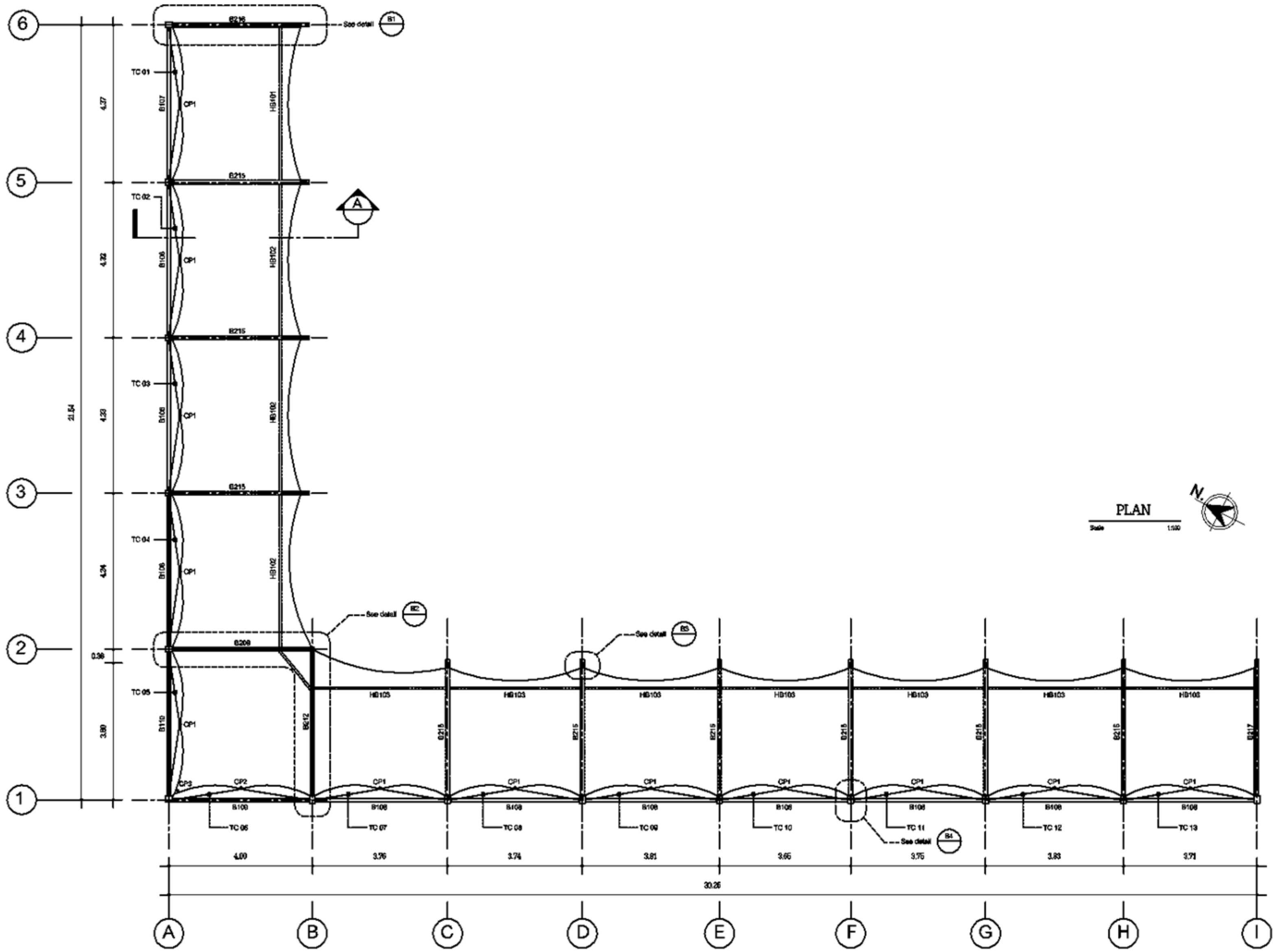
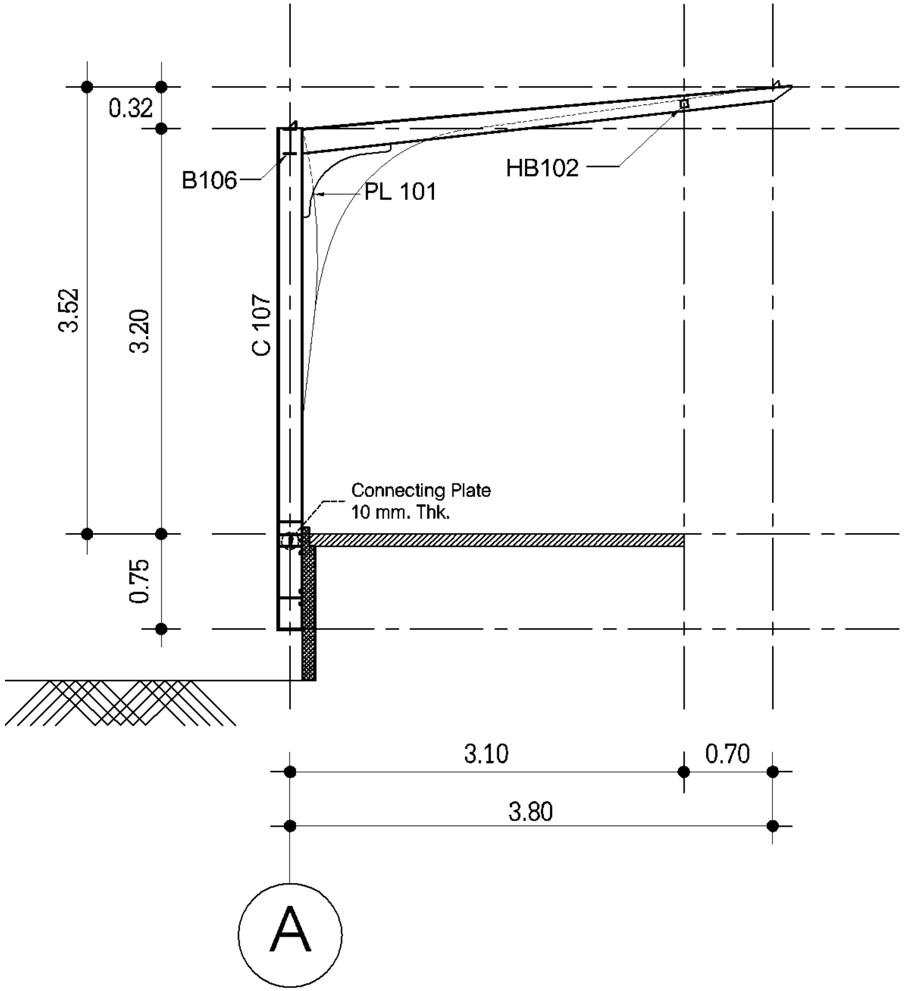
Terrace +1.65
Swimming Pool
3 m. depth
Jamjuri Rd. +0.00

PLAN

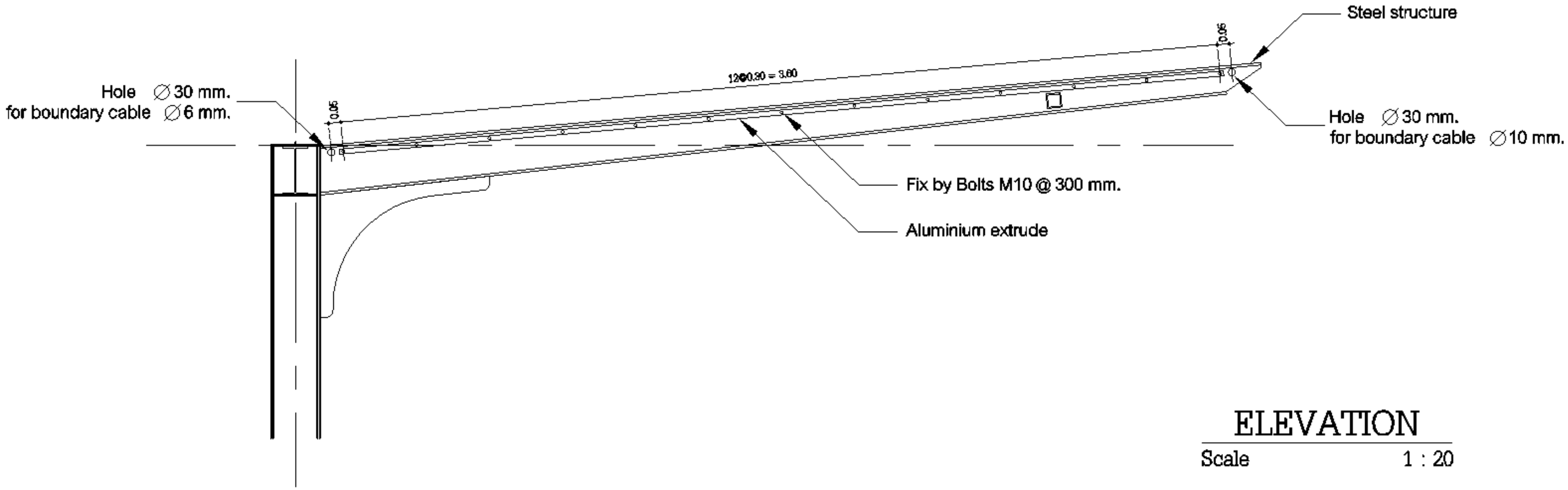




SECTION A

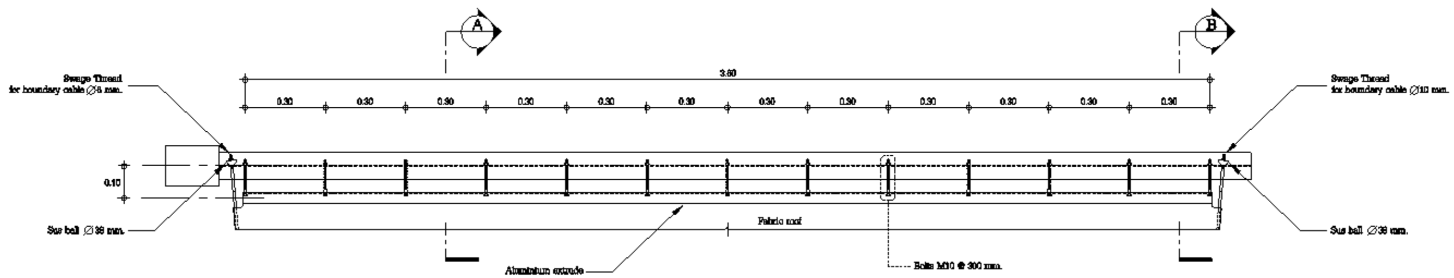
Scale 1:50

Detail B1



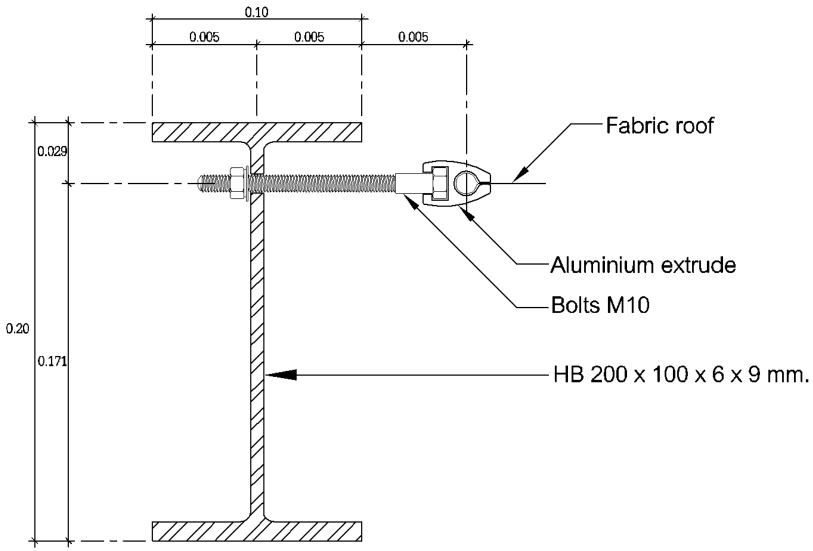
ELEVATION

Scale 1 : 20

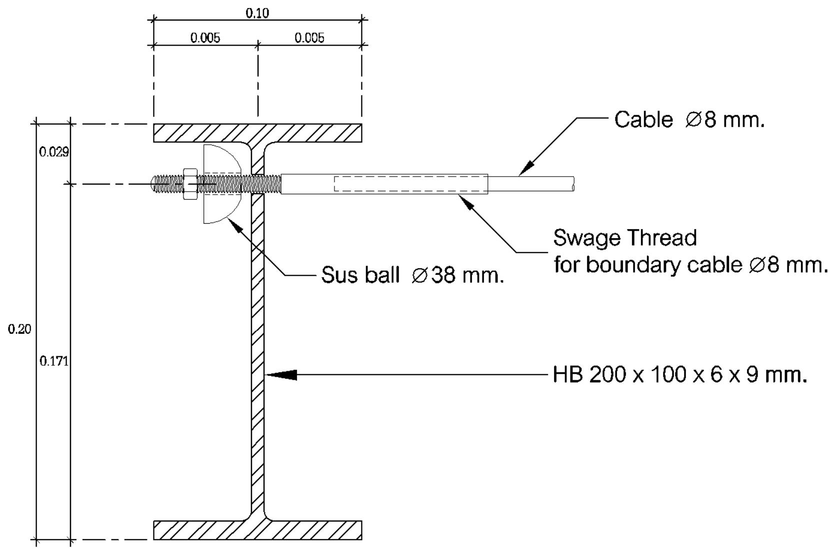


PLAN

Scale 1 : 20

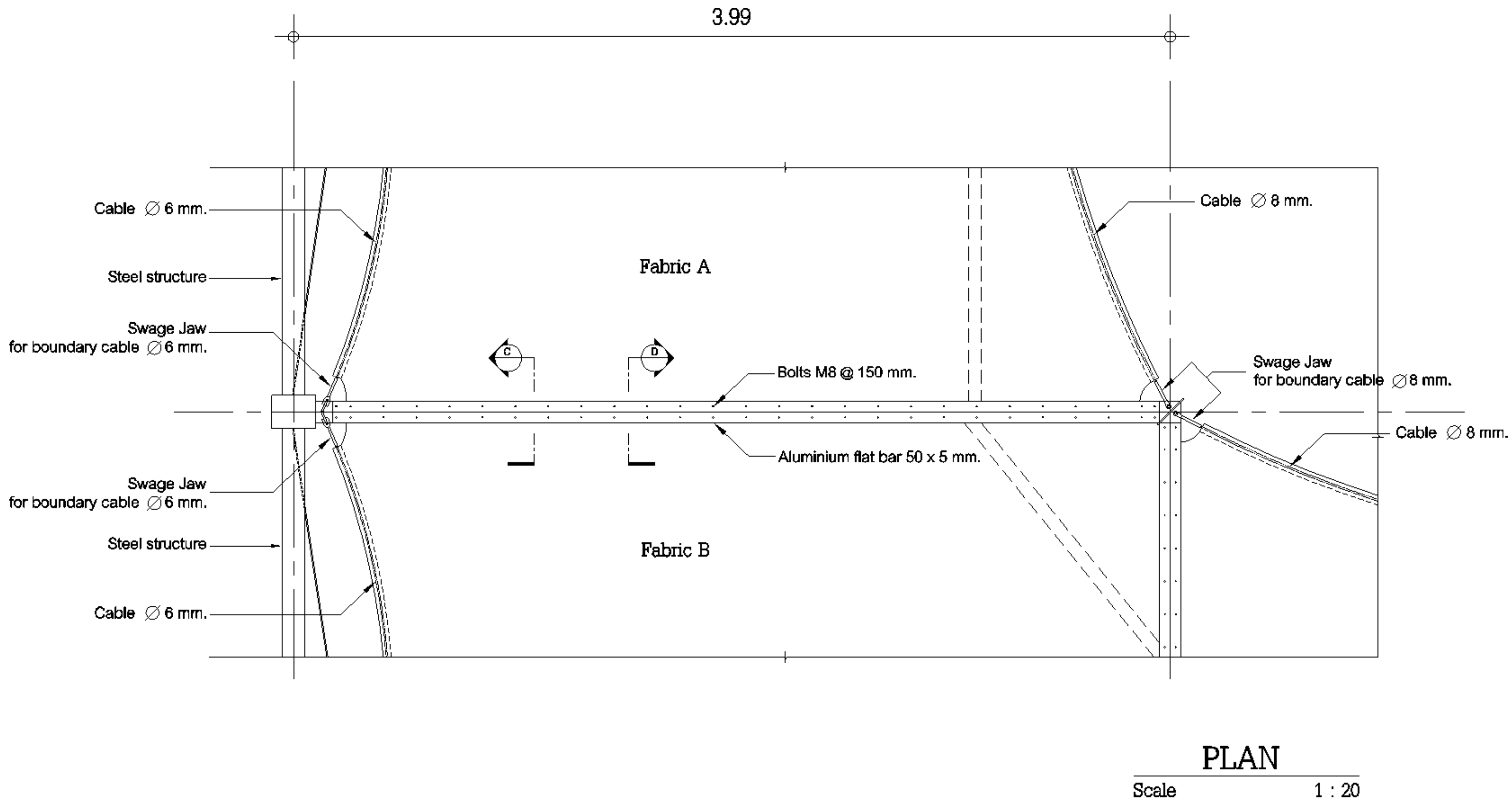


Section A-A
Scale 1 : 2.5

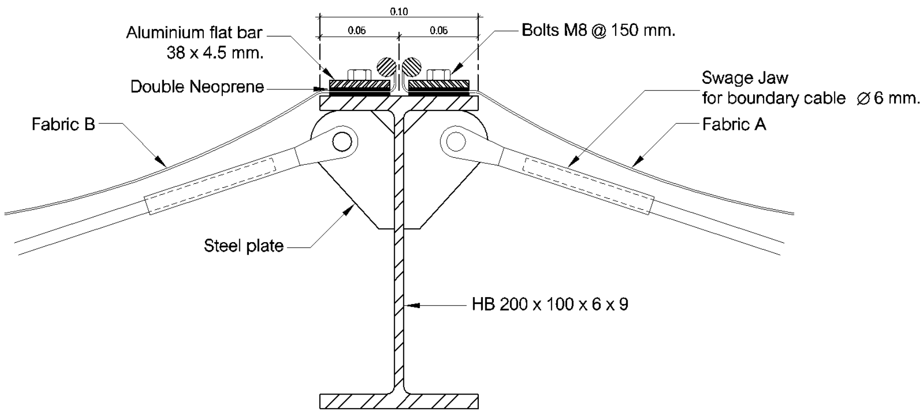


Section B-B
Scale 1 : 2.5

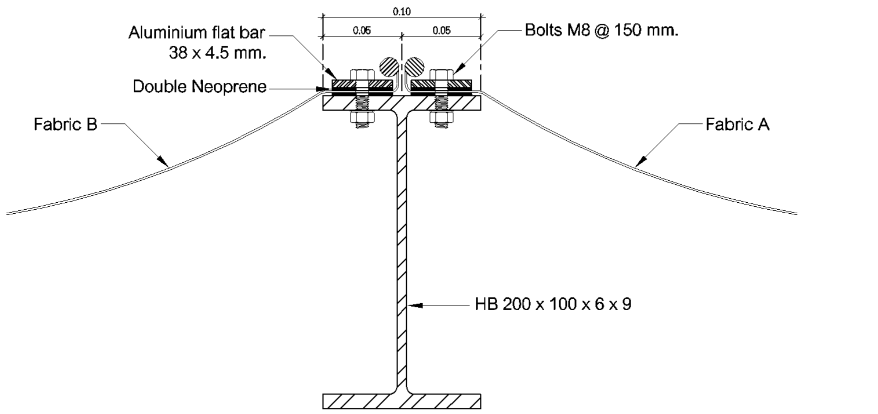
Detail B2


3.99
Cable ∅ 6 mm.
Steel structure
Swage Jaw
for boundary cable ∅ 6 mm.
Swage Jaw
for boundary cable ∅ 6 mm.
Steel structure
Cable ∅ 6 mm.
Fabric A
Fabric B
C
D
Bolts M8 @ 150 mm.
Aluminium flat bar 50 x 5 mm.
Cable ∅ 8 mm.
Swage Jaw
for boundary cable ∅ 8 mm.
Cable ∅ 8 mm.
PLAN
Scale 1 : 20

Detail B2

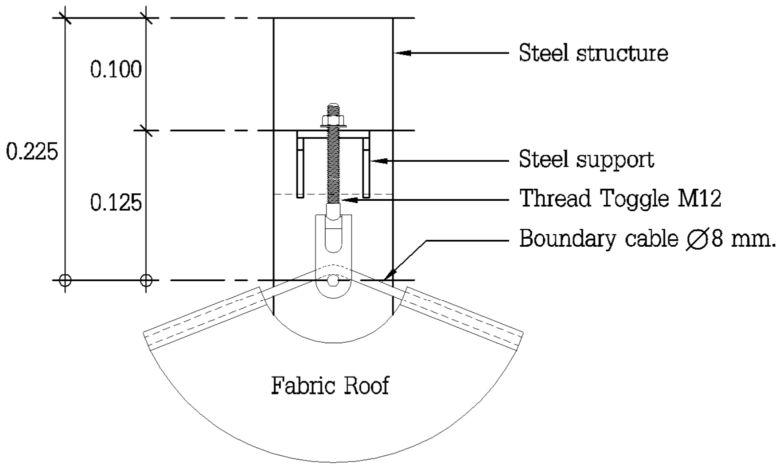


Section C-C
Scale 1 : 2.5



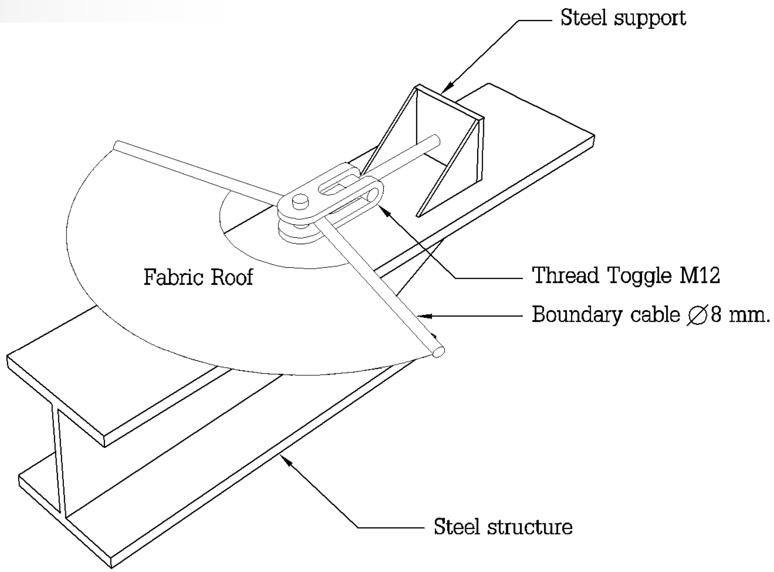
Section D-D
Scale 1 : 2.5

Detail B3



TOP VIEW

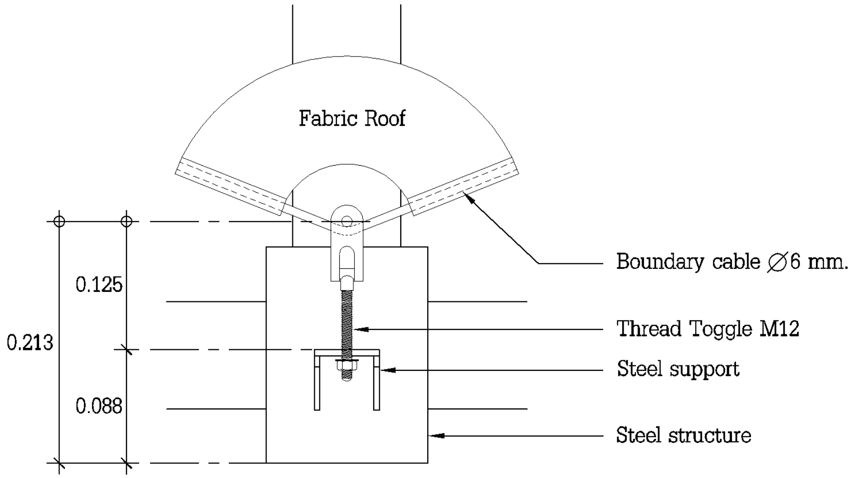
Scale 1 : 5



PERSPECTIVE VIEW

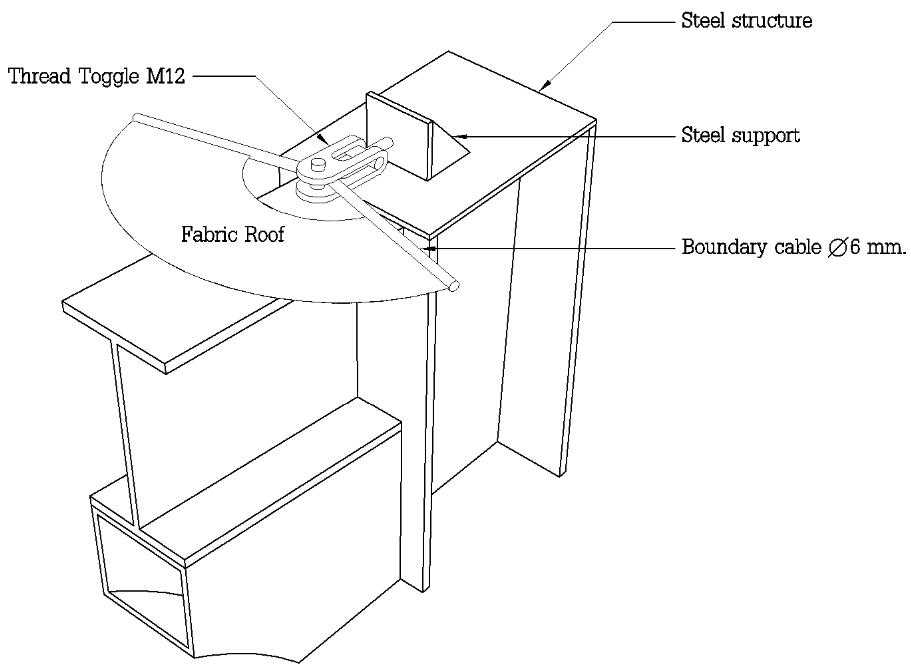
Scale 1 : 5

Detail B4



TOP VIEW

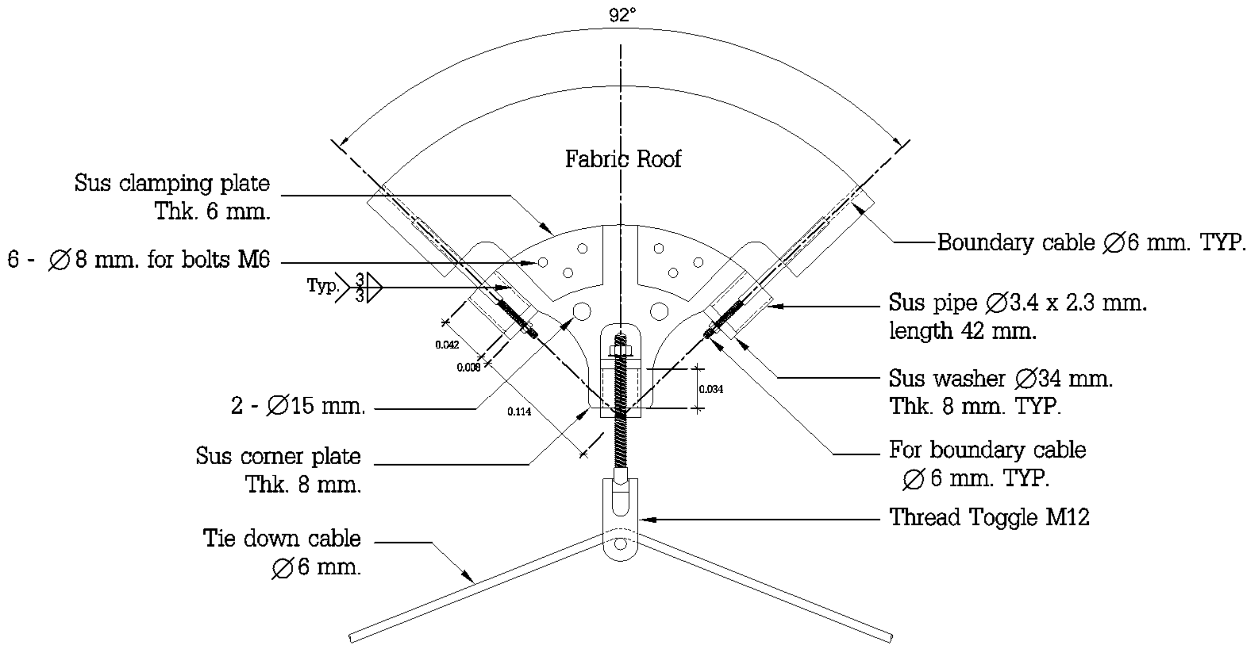
Scale 1 : 5



PERSPECTIVE VIEW

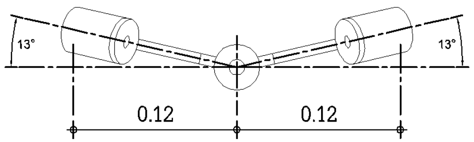
Scale 1 : 5

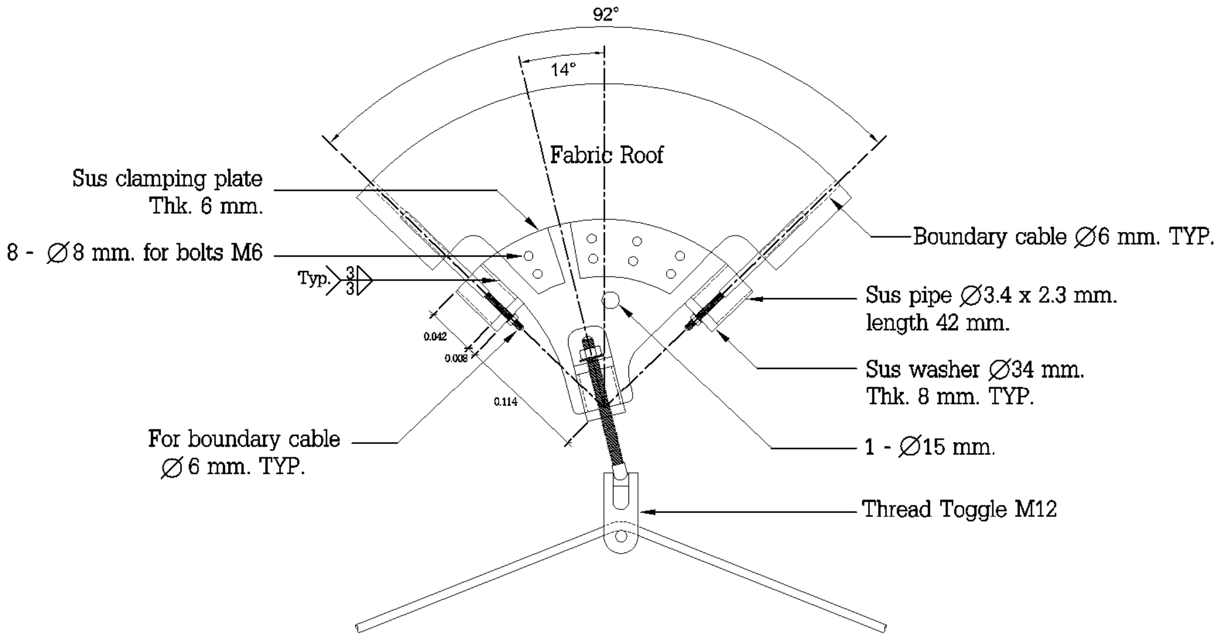
Corner Plate (CP1)



Corner Plate (CP1)

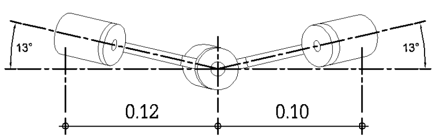
Scale 1 : 5



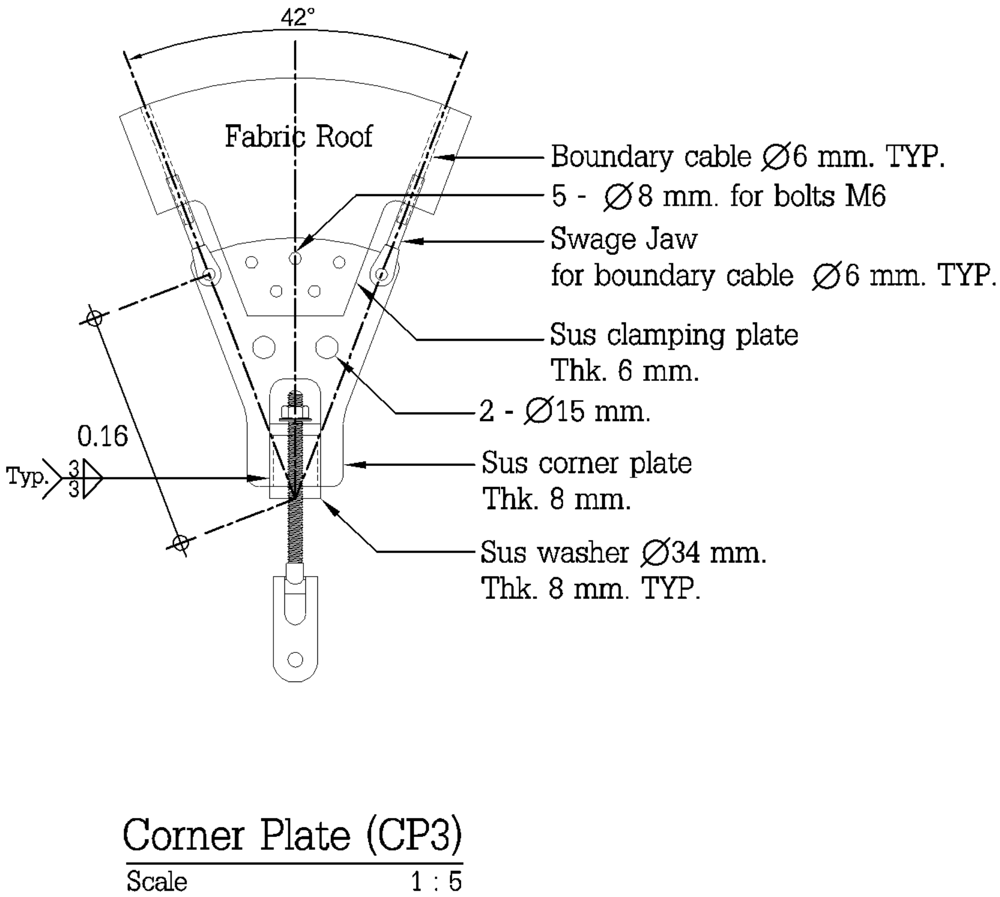


Corner Plate (CP2)

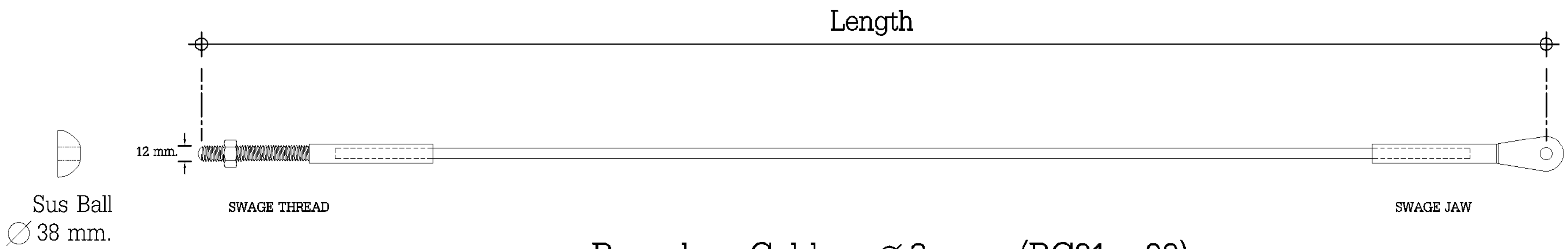
Scale 1 : 5



Corner Plate (CP3)



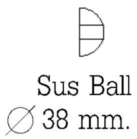
1. *Boundary Cable ∅8 mm.*

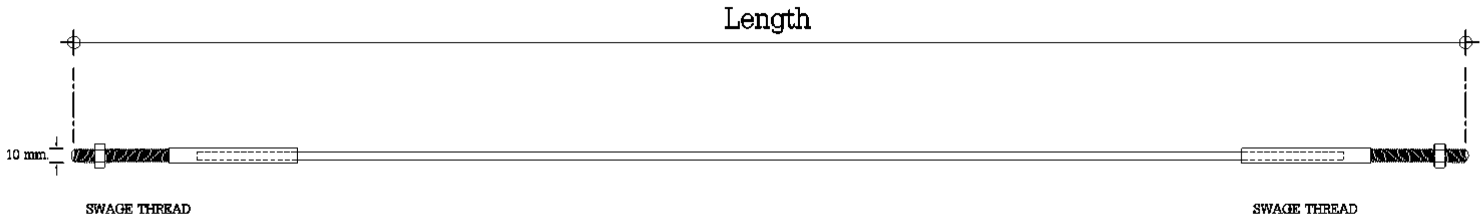


Boundary Cable ∅8 mm. (BC01 - 02)
Scale 1 : 5

Item	Description			
	Cable 8 mm.	Swage-Thread	Swage-Jaw	Sus Ball
	Length (m.)	Pcs.	Pcs.	Pcs.
BC01	17.887	1	1	1
BC02	26.311	1	1	1
Total	44.198	2	2	2

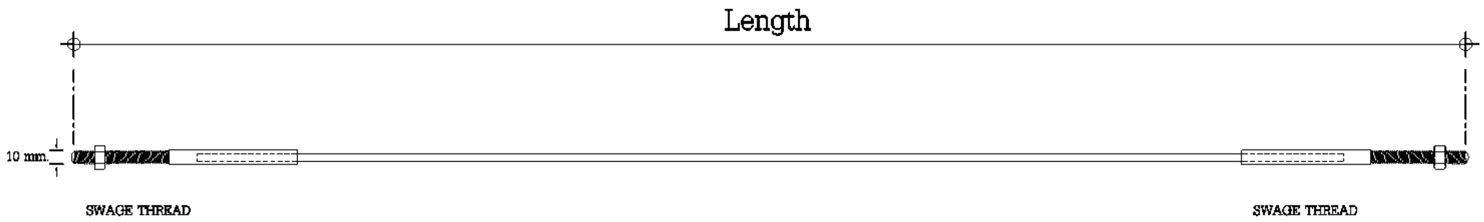
2. *Boundary Cable ∅6 mm.*





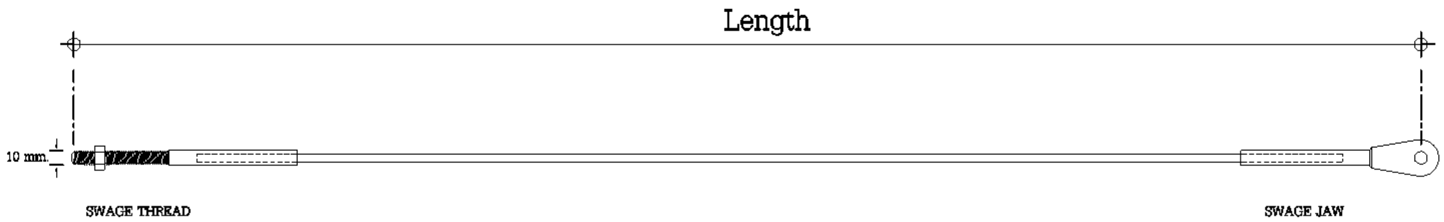
Boundary Cable ∅6 mm. (BC03 , 19)

Scale 1 : 5



Boundary Cable ∅6 mm. (BC04 - 06 , BC13 - 18)

Scale 1 : 5



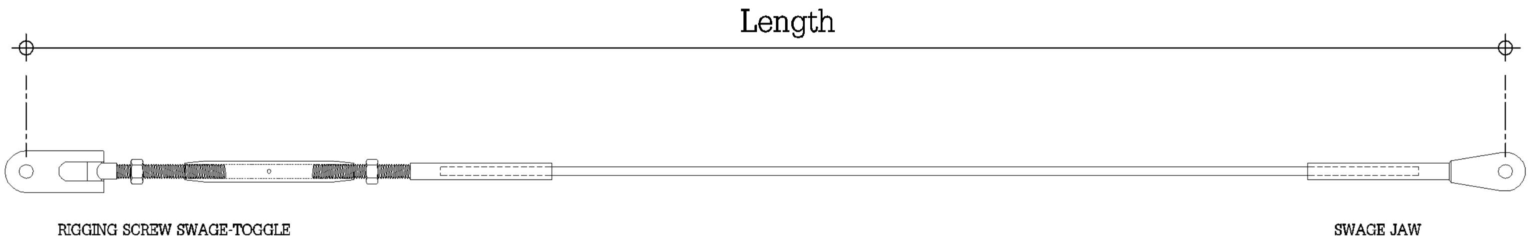
Boundary Cable ∅6 mm. (BC07 - 12)

Scale 1 : 5

Fitting Details

Item	Description			
	Cable 6 mm.	Swage-Thread	Swage-Jaw	Sus Ball
	Length (m.)	Pcs.	Pcs.	Pcs.
BC03	2.550	2	-	1
BC04	5.100	2	-	-
BC05	5.100	2	-	-
BC06	5.100	2	-	-
BC07	2.550	1	1	-
BC08	2.450	1	1	-
BC09	2.350	1	1	-
BC10	2.250	1	1	-
BC11	2.350	1	1	-
BC12	2.250	1	1	-
BC13	4.500	2	-	-
BC14	4.500	2	-	-
BC15	4.500	2	-	-
BC16	4.500	2	-	-
BC17	4.500	2	-	-
BC18	4.500	2	-	-
BC19	2.200	2	-	1
Total	61.250	28	6	2

3. *Tie Down Cable ∅7 mm.*

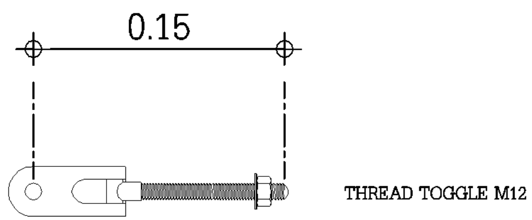


Tie Down Cable ∅7 mm. (TC01 - 13)
Scale 1 : 5

Item	Description		
	Cable 7 mm.	Rigging Screw Swage-Toggle	Swage-Jaw
	Length (m.)	Pcs.	Pcs.
TC01	6.000	1	1
TC02	6.000	1	1
TC03	6.000	1	1
TC04	6.000	1	1
TC05	5.705	1	1
TC06	5.575	1	1
TC07	5.525	1	1
TC08	5.525	1	1
TC09	5.525	1	1

Item	Description		
	Cable 7 mm.	Rigging Screw Swage-Toggle	Swage-Jaw
	Length (m.)	Pcs.	Pcs.
TC10	5.525	1	1
TC11	5.525	1	1
TC12	5.525	1	1
TC13	5.525	1	1
Total	73.955	13	13

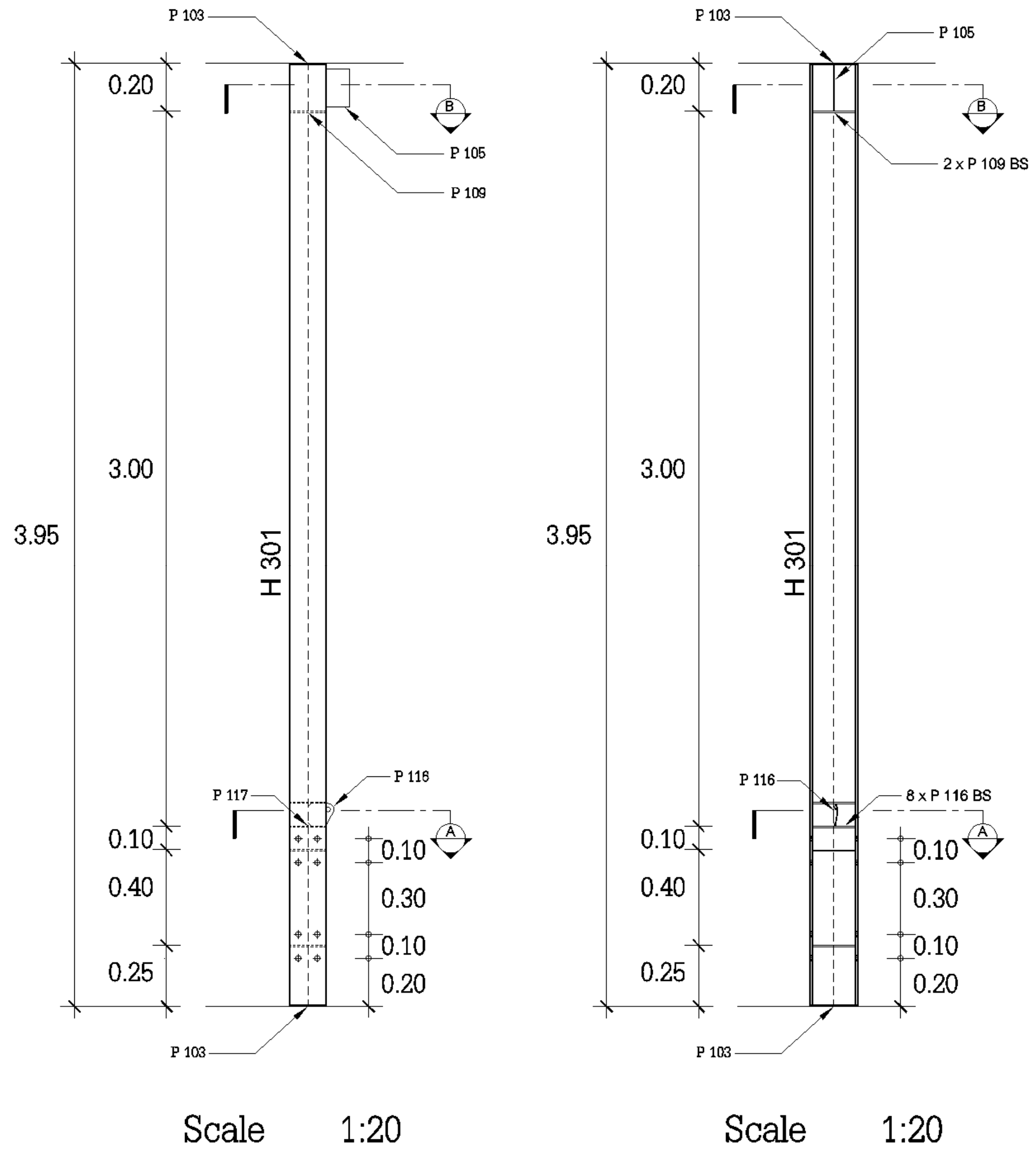
4. Thread Toggle

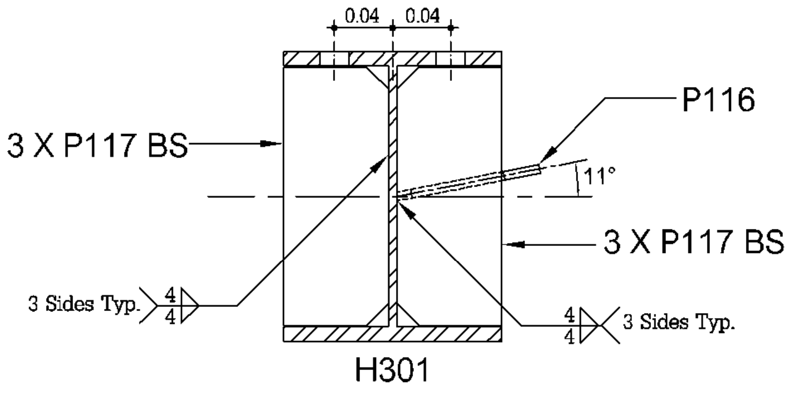


Link Corner
Scale 1 : 5

Description					
Thread-Toggle	Aluminum Extrude	Flat Bar 34 x 2.3 mm.	Nut & Bolts M8 x 35	Stud Bolts M10 x 100	Nut & Bolts M6 x 35
M12 (Pcs.)	m.	m.	Pcs.	Pcs.	Pcs.
32	7.60	18.00	110	24	85

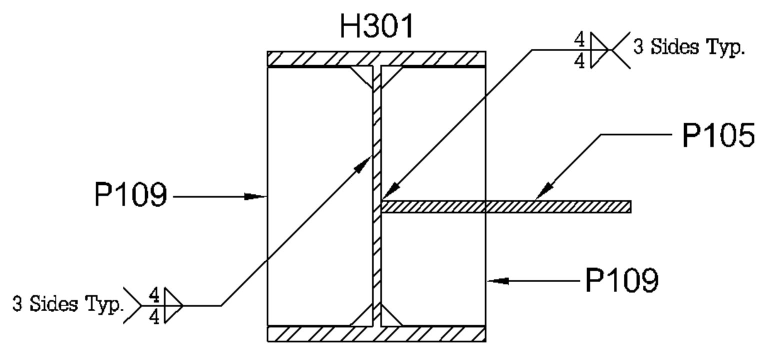
1. No Column required as drawn marked C101





SECTION A

Scale 1:5

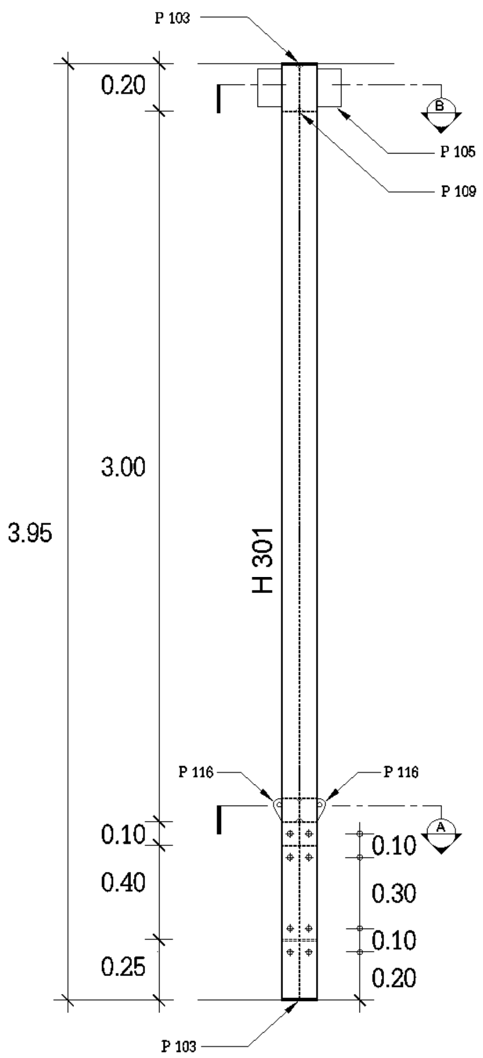


SECTION B

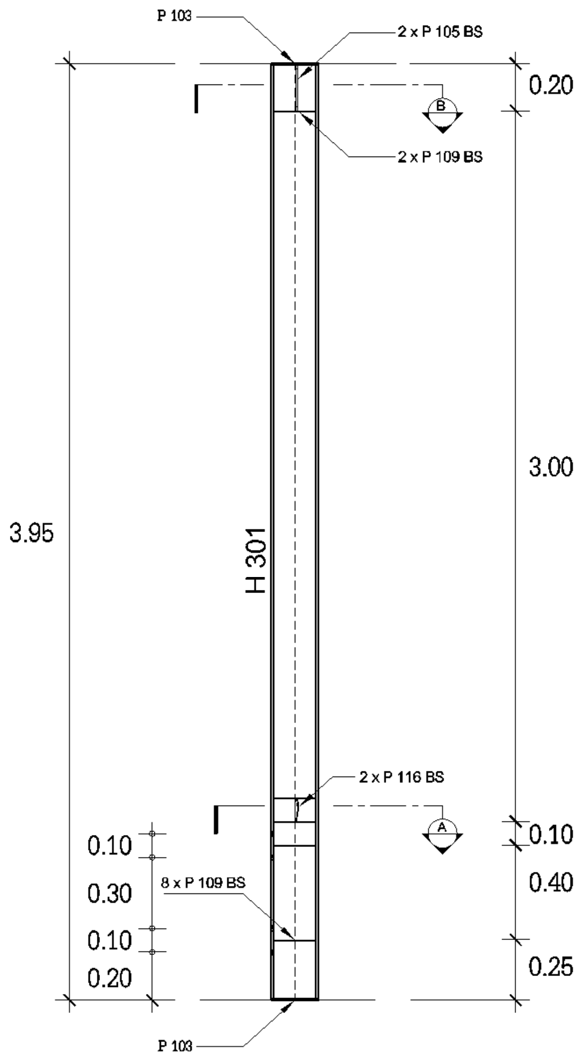
Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			C101		1 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
H301	H-194 × 150 × 6 × 9	A36	1	3944	3.7	120.8
P105	PLT8 × 172	A36	1	188	0.1	1.8
P103	PLT6 × 150	A36	2	194	0.1	1.4
P109	PL6 × 72	A36	2	172	0.0	0.6
P117	PLT5 × 70	A36	8	176	0.0	0.5
P116	PLT6 × 95	43A	2	100	0.0	0.4
Total					**4.2**	**130.7**

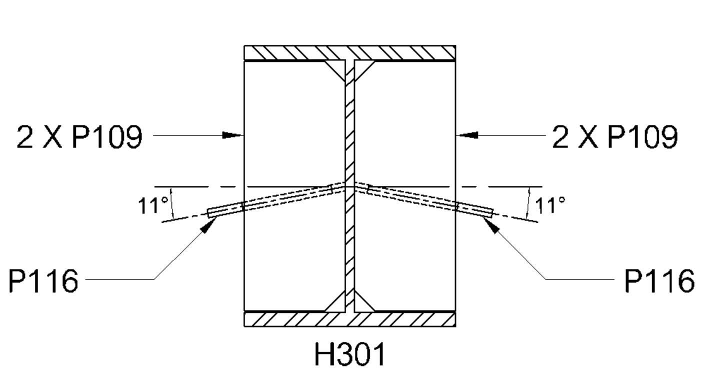
1. No Column required as drawn marked C102



Scale 1:20

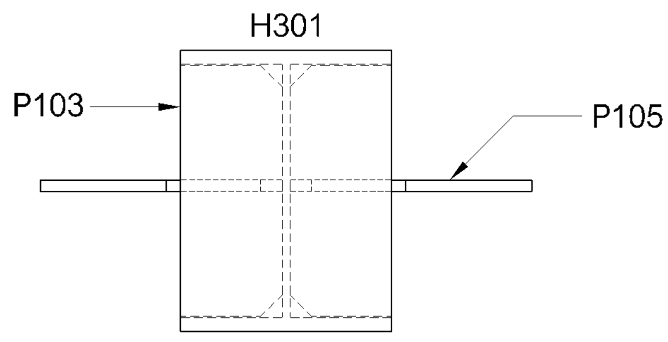


Scale 1:20



SECTION A

Scale 1:5

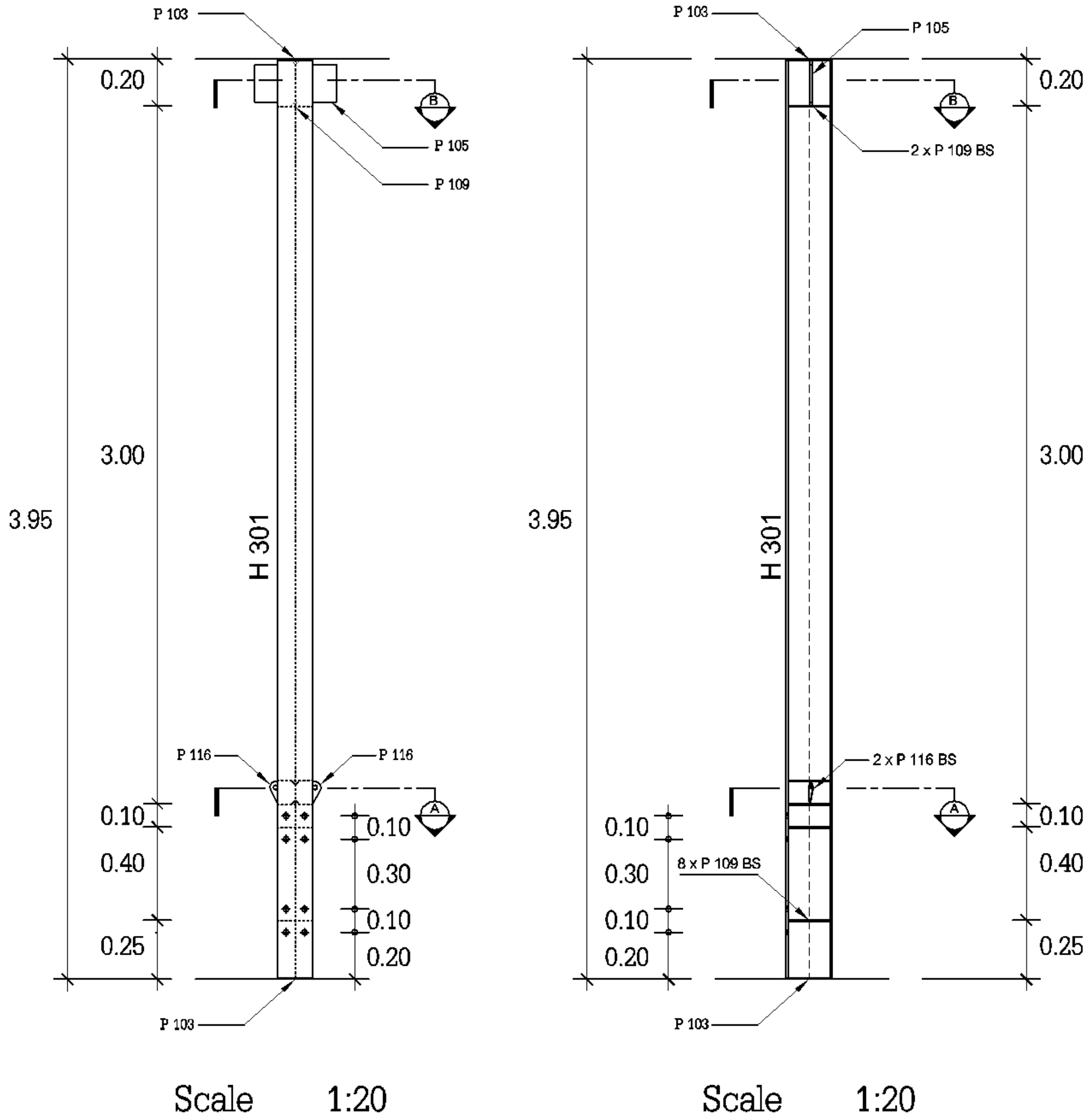


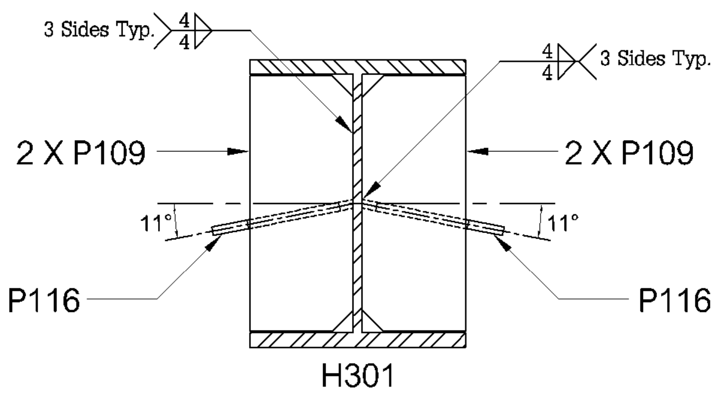
SECTION B

Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			C102		1 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
H301	H-194 × 150 × 6 × 9	A36	1	3944	3.7	120.8
P105	PLT8 × 172	A36	2	188	0.1	1.8
P103	PLT6 × 150	A36	2	194	0.1	1.4
P109	PL6 × 72	A36	10	172	0.0	0.6
P117	PLT6 × 95	43A	2	100	0.0	0.4
Total					**4.3**	**133.6**

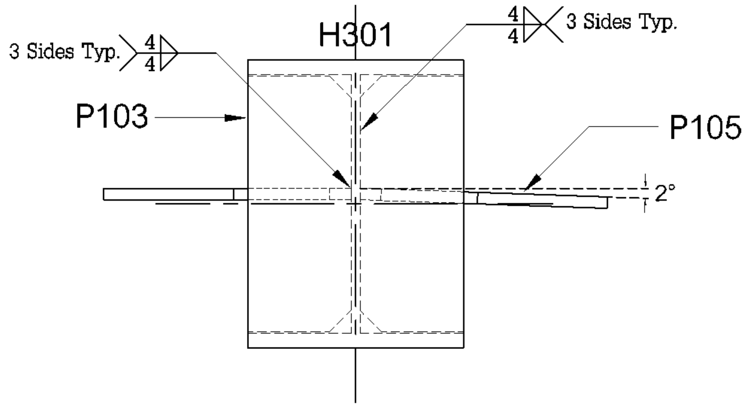
1. No Column required as drawn marked C104





SECTION A

Scale 1:5

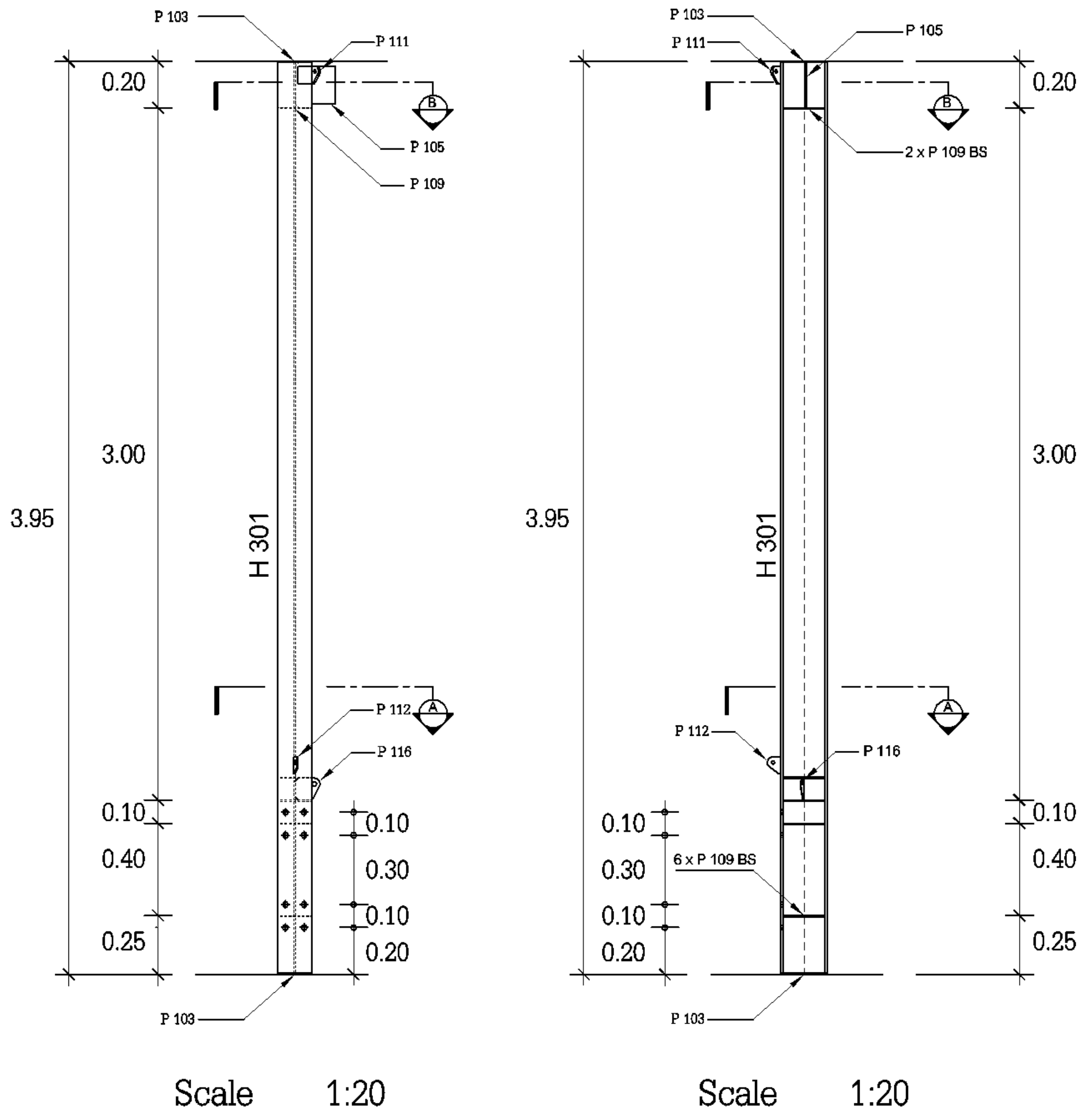


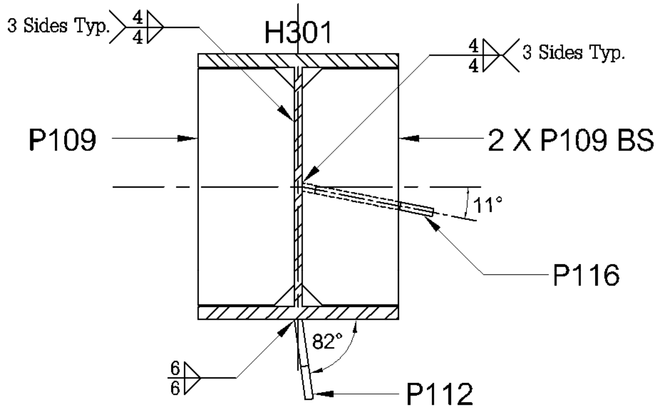
SECTION B

Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			C104		1 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
H301	H-194 × 150 × 6 × 9	A36	1	3944	3.7	120.8
P105	PLT8 × 172	A36	2	188	0.1	1.8
P103	PLT6 × 150	A36	2	194	0.1	1.4
P109	PL6 × 72	A36	10	172	0.0	0.6
P117	PLT6 × 95	43A	2	100	0.0	0.4
Total					**4.3**	**133.6**

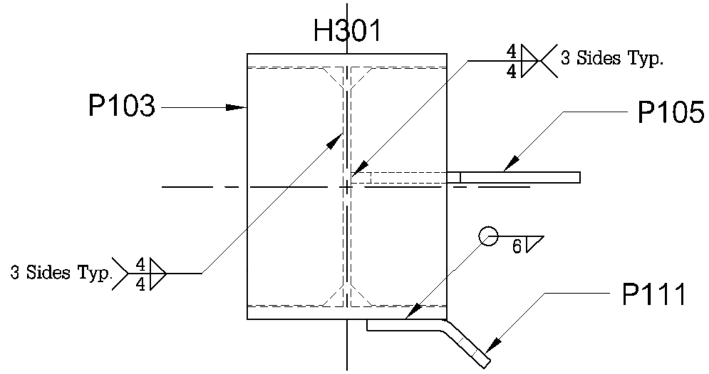
1. No Column required as drawn marked C106





SECTION A

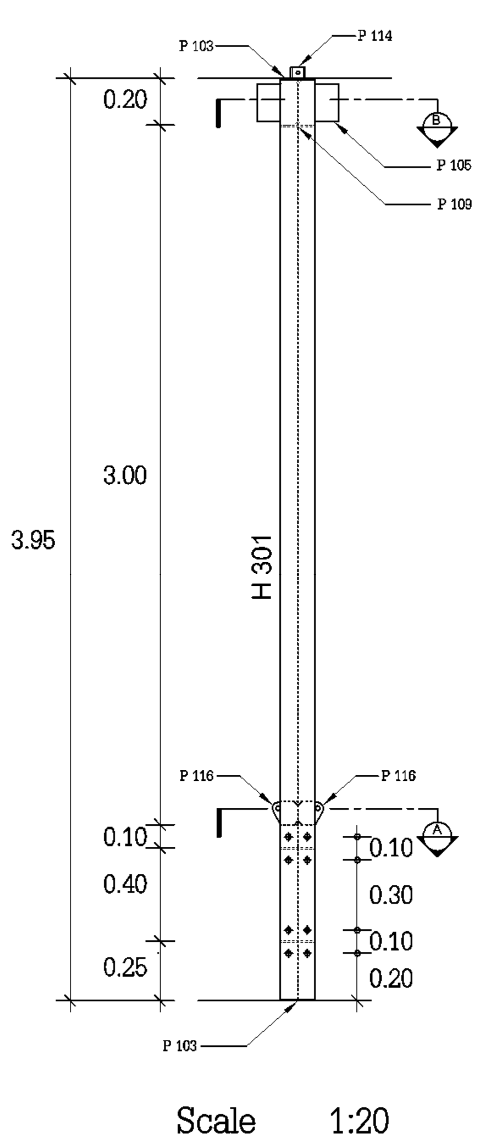
Scale 1:5

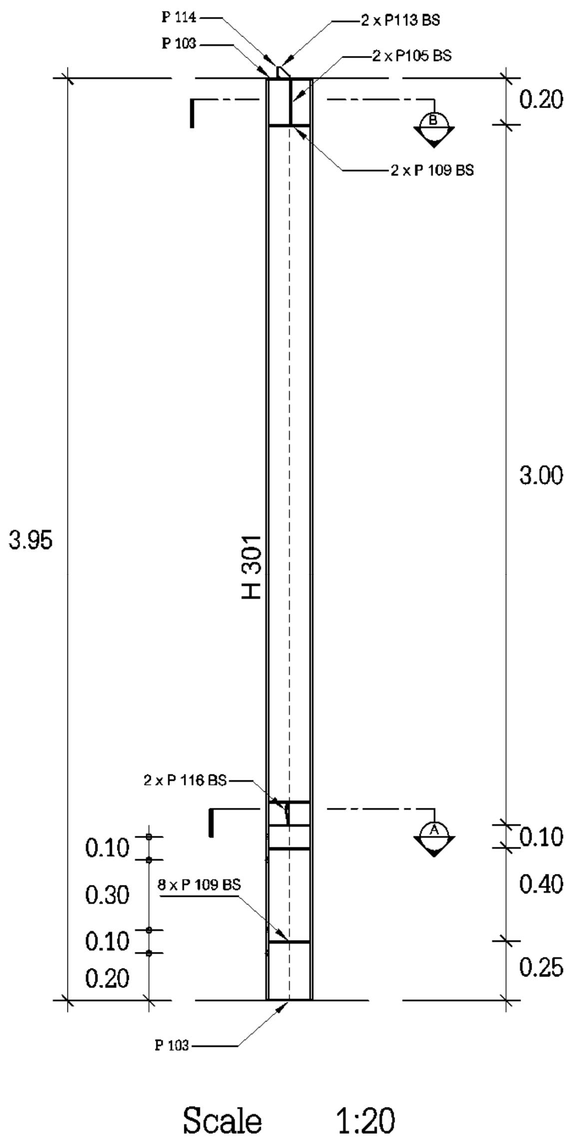


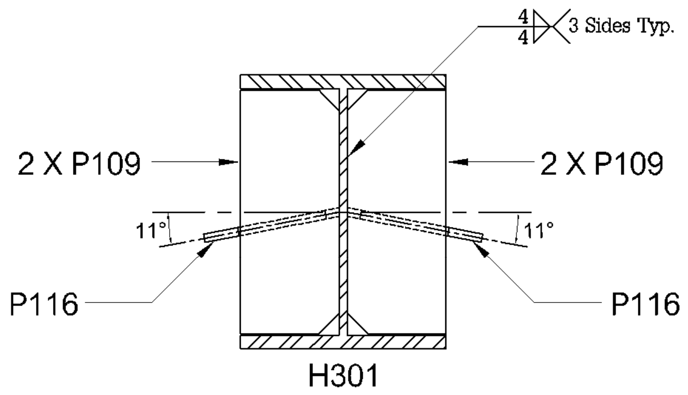
SECTION B

Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			C106		1 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
H301	H-194 × 150 × 6 × 9	A36	1	3944	3.7	120.8
P105	PLT8 × 172	A36	1	188	0.1	1.8
P103	PLT6 × 150	A36	2	194	0.1	1.4
P109	PL6 × 72	A36	9	172	0.0	0.6
P111	Plate8 × 75	A36	1	95	0.0	0.4
P116	PLT6 × 95	43A	1	100	0.0	0.4
P112	PLT6 × 59.9	A36	1	75	0.0	0.2
Total					**4.2**	**131.4**

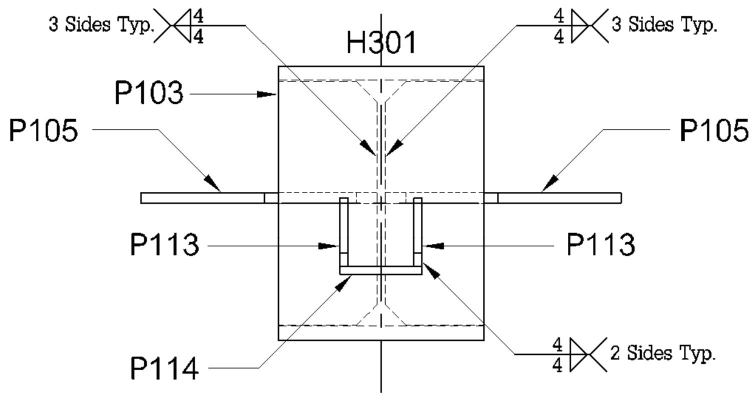

P 103
P 114
0.20
P 105
P 109
3.00
3.95
H 301
P 116
P 116
0.10
0.40
0.25
0.10
0.30
0.10
0.20
P 103
Scale 1:20


P 114
P 103
2 x P113 BS
2 x P105 BS
0.20
2 x P 109 BS
3.00
3.95
H 301
2 x P 116 BS
0.10
0.30
8 x P 109 BS
0.10
0.20
0.10
0.40
0.25
P 103
Scale 1:20



SECTION A

Scale 1:5

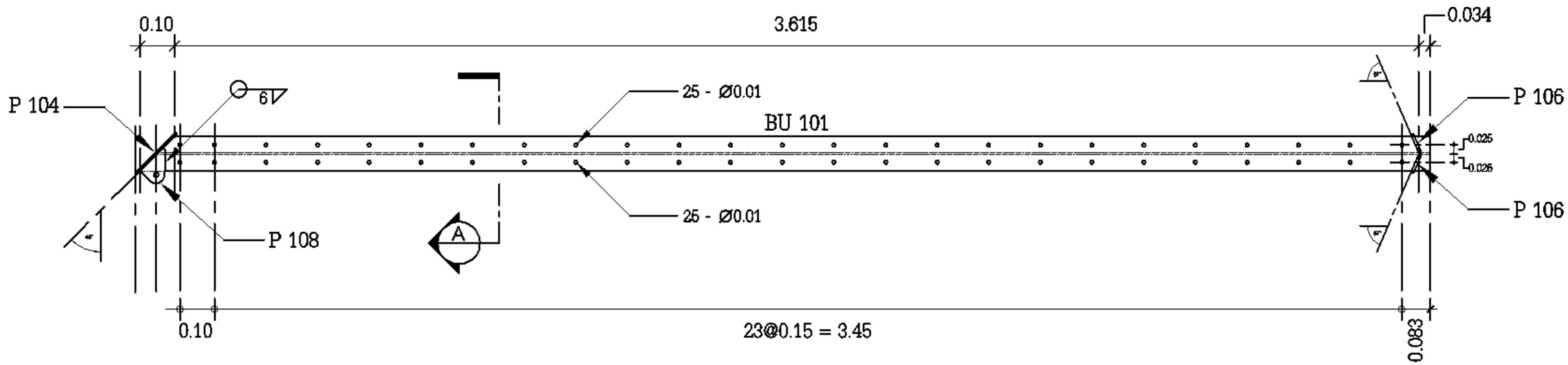


SECTION B

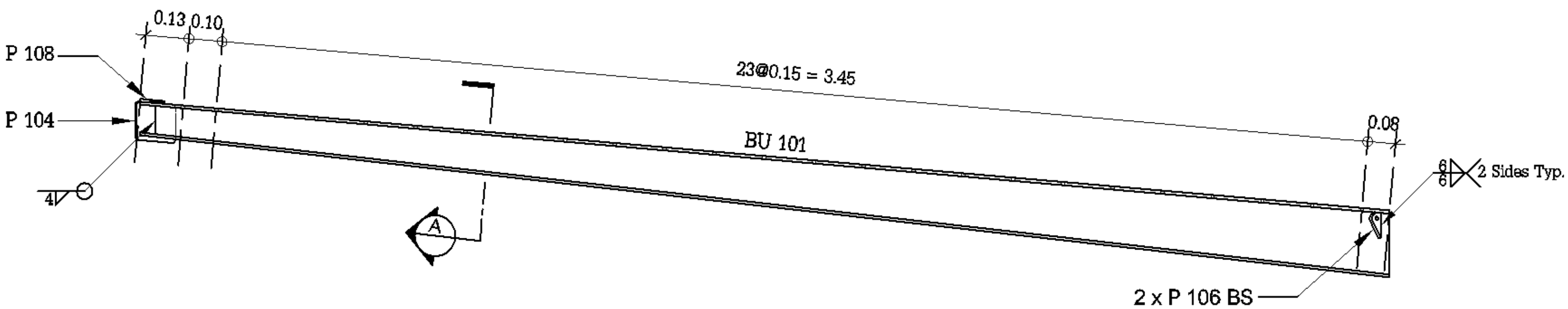
Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			C107		10 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
H301	H-194 × 150 × 6 × 9	A36	1	3944	3.7	120.8
P105	PLT8 × 172	A36	2	188	0.1	1.8
P103	PLT6 × 150	A36	2	194	0.1	1.4
P109	PL6 × 72	A36	10	172	0.0	0.6
P116	PLT6 × 95	43A	2	100	0.0	0.4
P113	PLT5 × 50	A36	2	50	0.0	0.1
P114	PL6 × 50	A36	1	60	0.0	0.1
Total					**4.3**	**133.9**

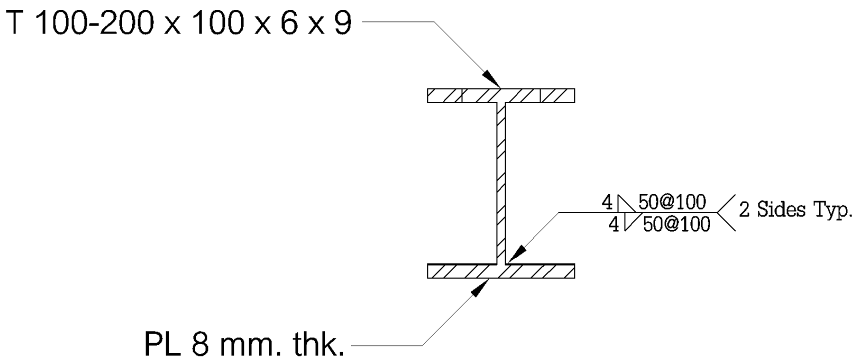
1. No Beam required as drawn marked B209



Scale 1:15



Scale 1:15

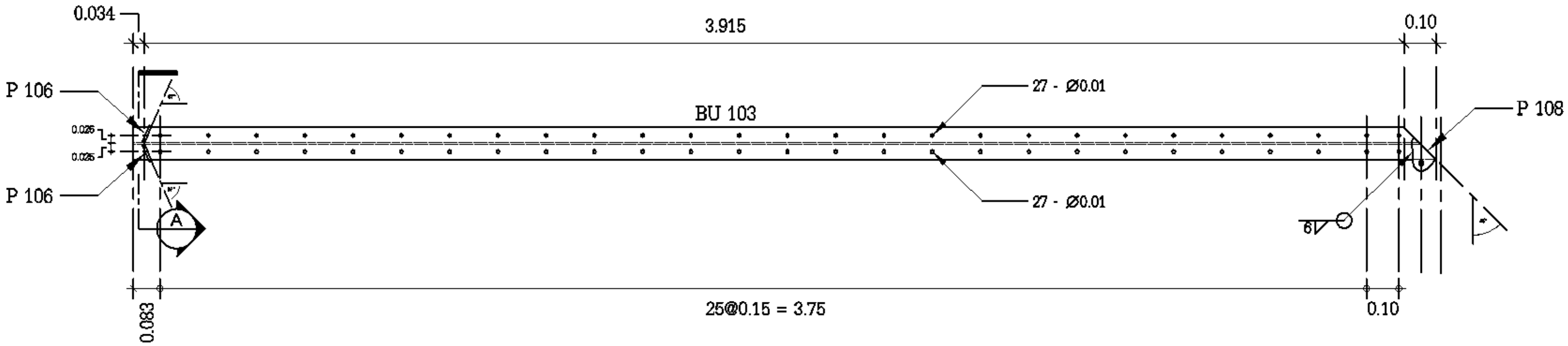


SECTION A

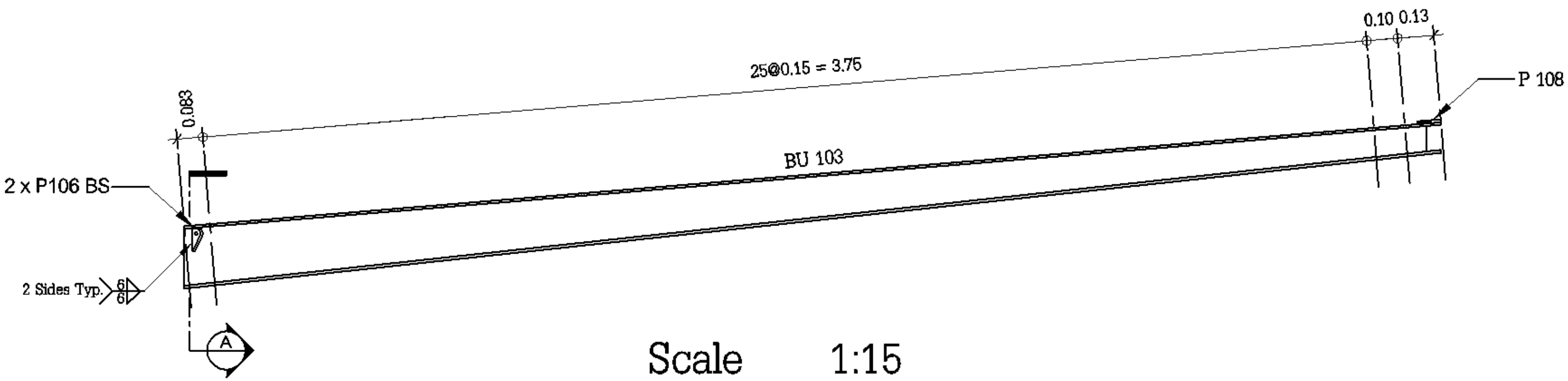
Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			B209		1 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
BU101	PHI 100-200-6-9	A36	1	3781	2.6	75.7
P104	PLT6 × 116	A36	1	178	0.0	0.9
P108	PLT8 × 72.1	A36	1	96	0.0	0.3
P106	PLT8 × 52.8	A36	2	75	0.0	0.2
Total					**2.6**	**77.3**

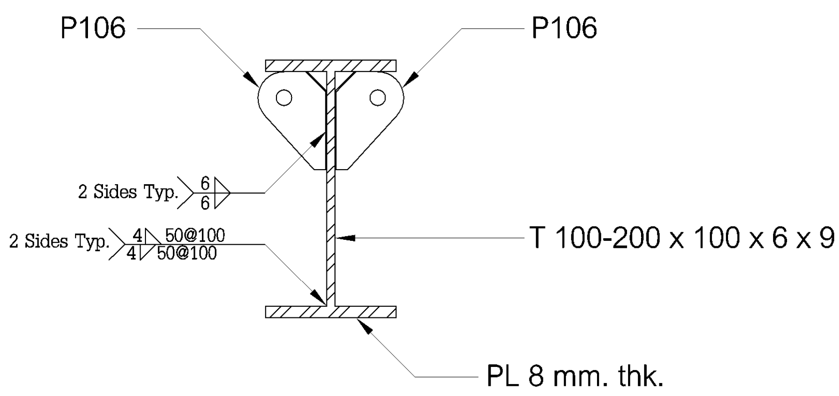
1. No Beam required as drawn marked B212



Scale 1:15



Scale 1:15

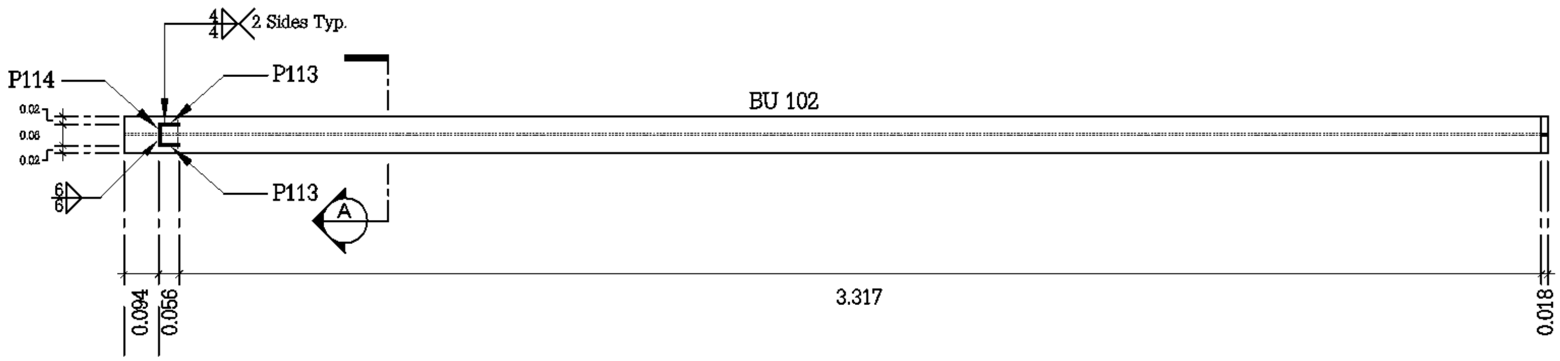


SECTION A

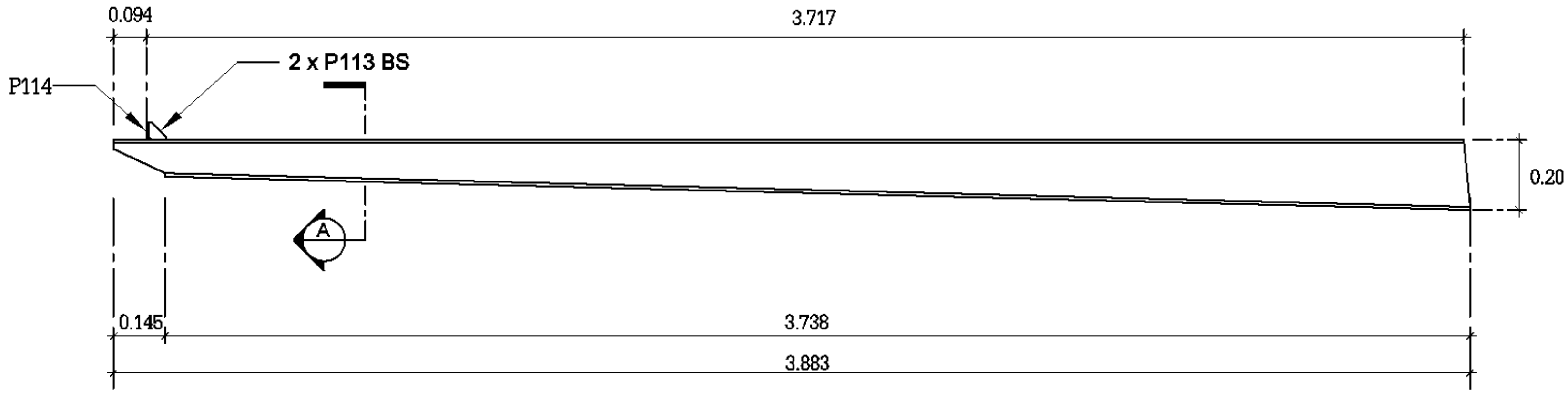
Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			B212		1 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
BU103	PHI 100-200-6-9	A36	1	4078	2.8	81.8
P108	PLT8 × 72.1	A36	1	96	0.0	0.3
P106	PLT8 × 52.8	A36	2	75	0.0	0.2
Total					**2.8**	**82.4**

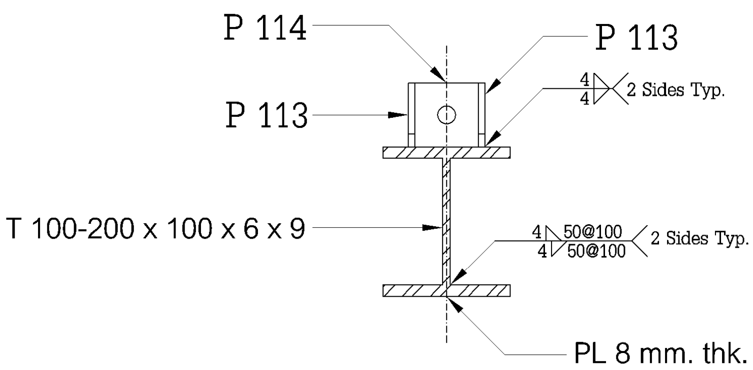
9. No Beam required as drawn marked B215



Scale 1:10



Scale 1:10

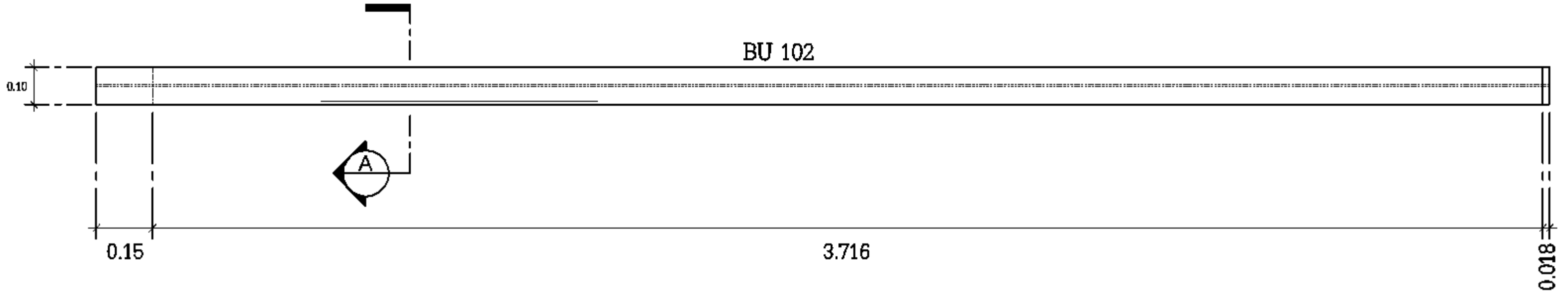


SECTION A

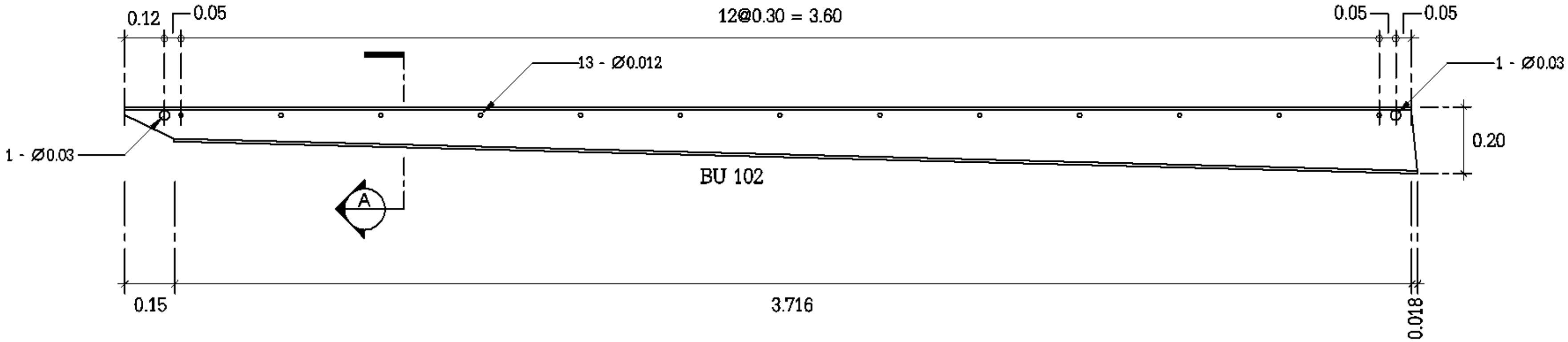
Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			B215		9 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
BU102	PHI 100-200-6-9	A36	1	3884	2.6	77.6
P113	PLT5 × 50	A36	2	50	0.0	0.1
P114	PLT6 × 50	A36	1	60	0.0	0.1
Total					**2.6**	**77.9**

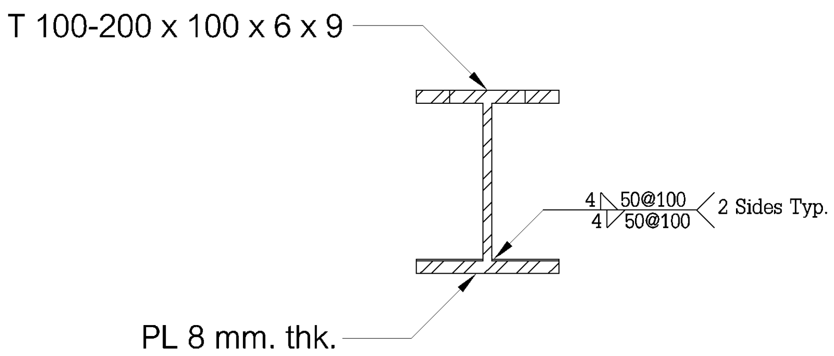
2. No Beam required as drawn marked B216



Scale 1:15



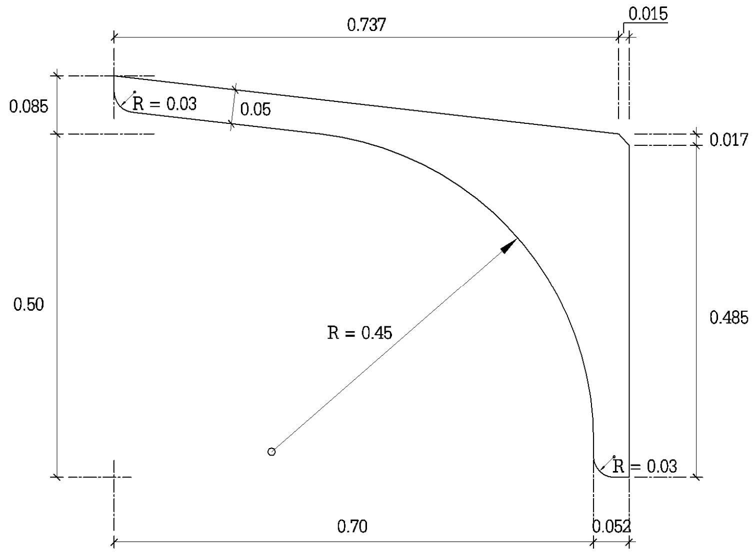
Scale 1:15



SECTION A

Scale 1:5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			B216		2 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
BU102	PHI 100-200-6-9	A36	1	3884	2.6	77.6
Total					**2.6**	**77.6**



Scale 1 : 5

General Notes:		All holes are	22.0	mm Unless Noted		
		All welds are	6.5	mm F.W Unless Noted		
Material List for Assembly MK'D			PL101		13 No. Required	
Mark	Profile	Material	No.	Length	Area	Weight
PL101	PLT6 × 585.5	A36	1	752	0.2	4.4
Total					**0.2**	**4.4**

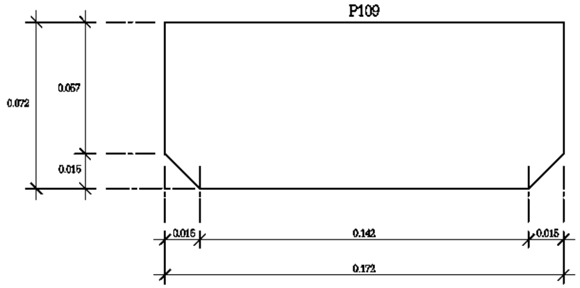


Plate Detail : P109

Thk. = 6.0 mm. Scale 1 : 2.5

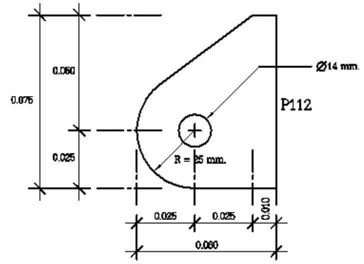


Plate Detail : P112

Thk. = 6.0 mm. Scale 1 : 2.0

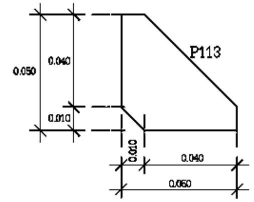
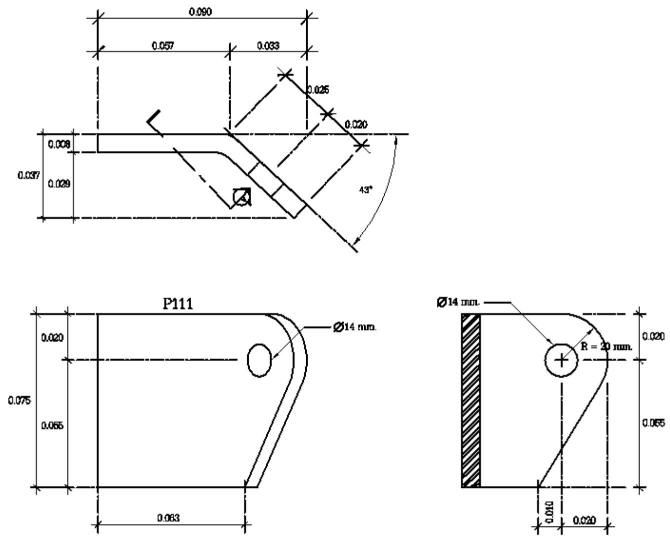


Plate Detail : P113

Thk. = 5.0 mm. Scale 1 : 1.0



Section A-A
Scale 1 : 2.0

Plate Detail : P111

Thk. = 8.0 mm. Scale 1 : 2.0

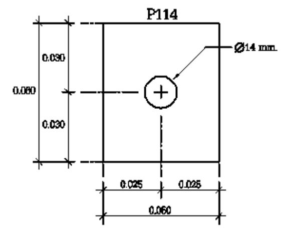


Plate Detail : P114

Thk. = 6.0 mm. Scale 1 : 1.0

Plate Detail

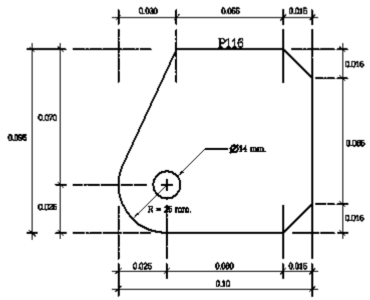


Plate Detail : P116
Thk. = 6.0 mm. Scale 1 : 2.5

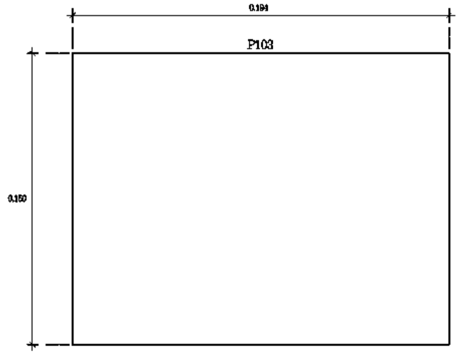


Plate Detail : P103
Thk. = 6.0 mm. Scale 1 : 2.5

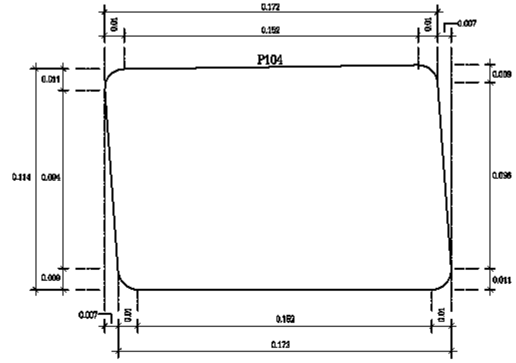


Plate Detail : P104
Thk. = 6.0 mm. Scale 1 : 2.5

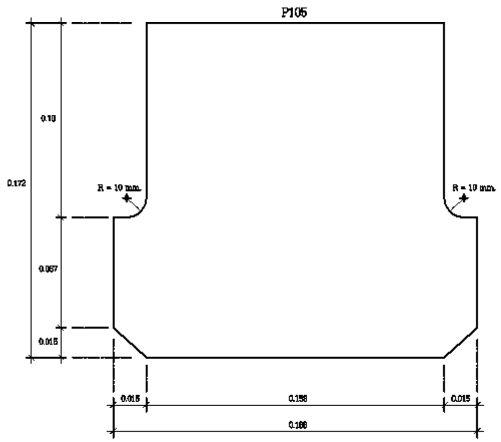


Plate Detail : P105
Thk. = 8.0 mm. Scale 1 : 2.5

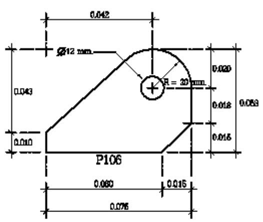


Plate Detail : P106
Thk. = 8.0 mm. Scale 1 : 1.5

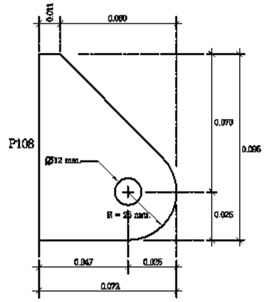


Plate Detail : P108
Thk. = 8.0 mm. Scale 1 : 2

7. APPENDIXES

Minimum Design Live Load in Thailand

Table 1. Minimum Live Load for Building Design

Categories	Live load ($kg \cdot m^{-2}$)
1. Roof	30
2. Overhang / Concrete Roof	100
3. Residential Flat / Kindergarten / Toilet	150
4. Dormitory / Hotel / Hospital	200
5. Office Building / Bank	250
6. Shop-house (Commercial) / University / School / College / Hall, Stairway of Condominium and Hotel	300
7. Supermarket / Shopping mall / Auditorium / Restaurant / Library / Theatre / garage or parking space	400
8. Cargo / Gymnasium / Museum / Stadium / Factory	500

Wind loading Code for Building Design in Thailand

There are three different procedures for determining wind loads on building as follows:

1. *Simple procedure*

This procedure is appropriate for use with the majority of wind loading applications, including the structure and cladding of low and medium rise building and the cladding design of high rise building. This procedure suit for the building which its height should not greater than 80 m. nor more than 4 times of the their minimum effective width (h < 80 m. or h < 4w).

2. *Detailed procedure*

This procedure is appropriate for building whose height is greater than 4 times of their minimum effective width or greater than 80 m (h > 80 m. or h > 4w) and other buildings whose light weight, low frequency and low damping properties make them susceptible to vibration.

3. *Wind tunnel test procedure*

This procedure is appropriate when more exact definition of dynamic response is needed and for determining exterior pressure coefficients for cladding design on buildings whose geometry deviates markedly from more common shapes for which information is already available.

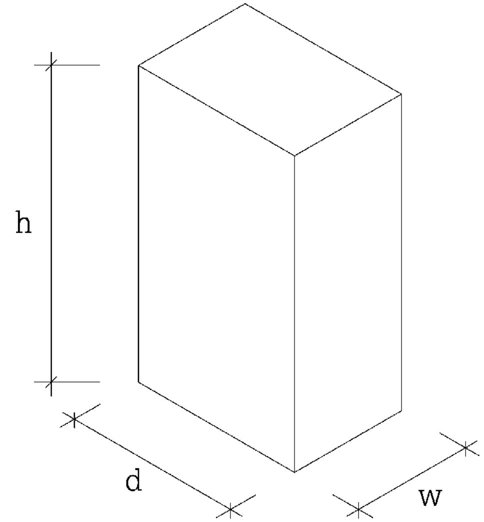


Figure 1. Model of Building

At present, the wind loading standard for building design in Thailand follows the DPT standard 1311-50 which is revised and published by Department of Public Works and Town & Country Planning. The reference wind speed is based on the study of the wind climate in Thailand.

Specified Wind Loading

The specified external pressure or suction due to wind on surface of a building can be determined from:

$$p = (I_w)(q)(Ce)(Cg)(Cp) \quad (1)$$

where

p = The specified external pressure or a suction directed away from the surface ($kg \cdot m^{-2}$)

I_w = Importance factor for wind load, as shown in Table 1

q = The reference velocity pressure ($kg \cdot m^{-2}$)

Ce = The exposure factor

Cg = The gust effect factor

Cp = The external pressure coefficient

Table 1. Importance Factor

Importance Category	Importance Factor I_w	
	Ultimate limit states	Serviceability limit states
Low	0.8	0.75
Normal	1	0.75
High	1.15	0.75
Post-diaster	1.15	0.75

Occupancy use

Low (Category I) : Building representing low hazard to human life in the case of failure, such as agricultural and minor storage facilities.

Normal (Category II) : All buildings other than those listed in Categories I, III and IV.

High (Category III) : Buildings representing a substantial hazard to human life in the case of failure, such as: those where more than 300 people congregate in one area; schools and day-care facilities with capacity greater than 250; colleges with capacity greater than 500; hospitals without emergency treatment or surgery facilities but with patient capacity greater than 50; jails, power stations and utilities not essential in an emergency; and buildings containing toxic and explosive materials.

Post-diaster (Category IV) : Essential facilities, including hospitals, fire and police stations, national defense facilities and shelters, communication centers, power stations, and utilities required in an emergency.

Reference Velocity Pressure

The reference wind velocity can be determined from the following equation:

$$q = \frac{1}{2}\left(\frac{\rho}{g}\right)\overline{V}^2 \qquad (2)$$

Where q = Reference wind velocity pressure (kg·m^{-2})

ρ = Air density (1.25 kg·m^{-3})

g = Acceleration due to gravity (9.81 m·s^{-2})

$\overline{V}$ = Design wind speed (m·s^{-2})

$\overline{V} = V_{50}$ for serviceability limit state

$\overline{V} = T_F \cdot V_{50}$ for ultimate (strength) limit state

V_{50} = Reference wind speed that is based on one-hour average wind speed at 10 m. in open terrain in 50-years return period. V_{50} and Typhoon Factor (T_F) are shown in Table 2. and Figure 2.

Table 2. Reference Wind Speed and Typhoon Factor

Zone	Area	V_{50}	T_F
1	Central region	25	1.0
2	Lower part of Northern region and East west border region	27	1.0
3	Upper part of Northern region	29	1.0
4A	East coast of Southern peninsula	25	1.2
4B	Petchaburi and West coast of Southern peninsula	25	1.08

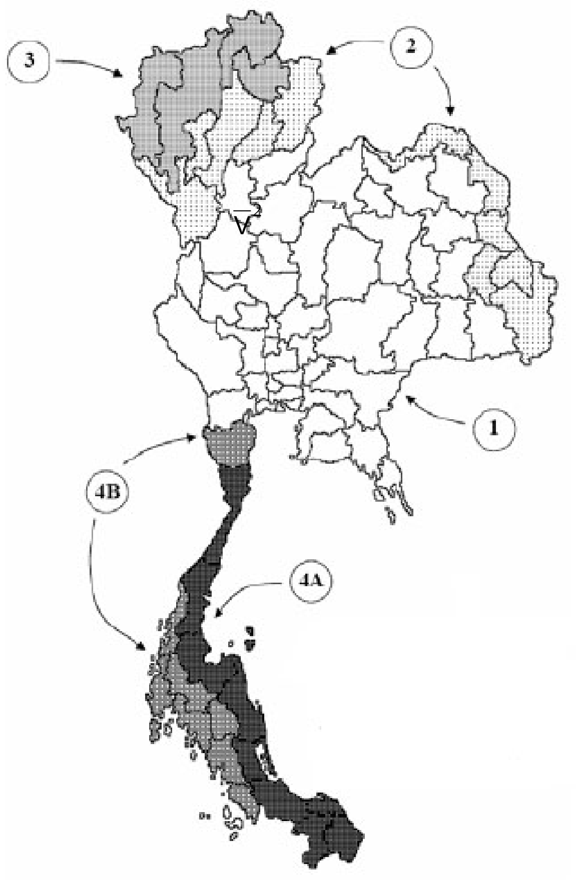


Figure 2. Reference Wind speed zone for Thailand

Exposure Factor

The exposure factor (Ce) reflects changes in wind speed and height, and also the effects of variations in the surrounding terrain and topography.

Simple Procedure

The exposure factor can be determined from equation 3 or in Table 3.

$$Ce = \left(\frac{Z}{10}\right)^{0.2}, \quad Ce \geq 0.9 \qquad (3)$$

where Z is the reference height above ground (m).

Detailed Procedure

The exposure factor is based on the mean wind speed profile, which varies considerable depending on the general roughness of the terrain over which the wind has been blowing before it reaches the building. To determine the exposure factor, three categories have been established as follows:

Table 3. Exposure Factors (Ce)

Height (m)	Exposure Factor
0 – 6	0.90
6 – 10	1.00
10 – 20	1.15
20 – 30	1.25
30 – 40	1.32
40 - 60	1.43
60 - 80	1.52
80 - 100	1.58
100 - 120	1.64

Exposure A: (Open or standard exposure) open level terrain with only scattered buildings, trees or obstructions, open water or shorelines thereof.

$$Ce = \left(\frac{Z}{10}\right)^{0.28}, \quad Ce \geq 1.0 \qquad (4)$$

Exposure B: Suburban and urban areas, wooded terrain or centers of large towns.

$$Ce = 0.5\left(\frac{Z}{10}\right)^{0.5}, \quad Ce \geq 0.5 \qquad (5)$$

Exposure C: Centers of large cities with heavy concentrations of tall buildings. At least 50% of the buildings should exceed 4 storeys.

$$Ce = 0.4\left(\frac{Z}{10}\right)^{0.72}, \quad Ce \geq 0.4 \qquad (6)$$

where Z is the reference height above ground (m).

Gust Effect Factor

The gust effect factor (Cg) is the ratio of the maximum effect of the loading to the mean effect of the loading.

Simple Procedure

The gust effect factor is one of the following values:

a) 1.0 or 2.0 for internal pressures as appropriate[1].
b) 2.0 for the building as a whole and main structural members.
c) 2.5 for small elements including cladding.

Detailed Procedure

The gust effect factor can be expressed as:

$$Cg = 1 + g_p \left(\frac{\sigma}{\mu} \right) \tag{7}$$

where Cg = Gust Effect Factor

g_p = A statistical peak factor for the loading effect obtained from figure in the code.

μ = The mean loading effect.

σ = The “root-mean square” loading effect.

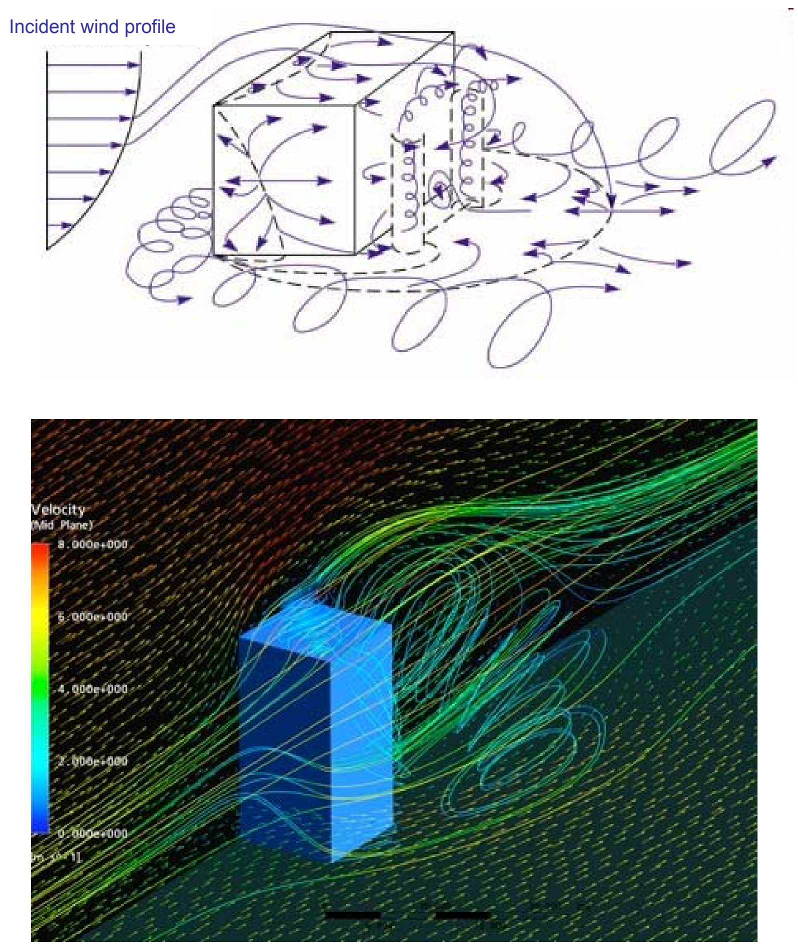


Figure 3. Wind flow around the building

Source: http://www.cleanfieldenergy.com/how_VAWTs_work.php

[1] Engineering Institute of Thailand (2003), E.I.T. Standard 1018-46, Wind Loading Code for Building Design.

Pressure Coefficients

Pressure coefficients are the non-dimensional ratios of wind-induced pressures on a building to the dynamic pressure of the wind speed at the reference height. Pressures on the surfaces of structures vary considerably with the shape, wind direction and profile of the wind velocity.

The values of Cp for windward and leeward roof are given in the following Table:

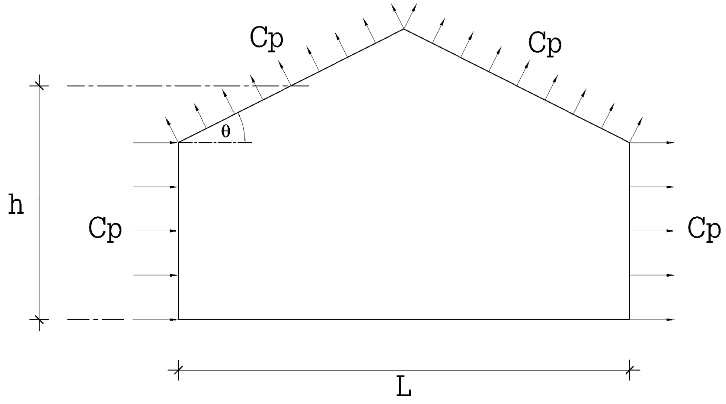


Figure 4. Cp for External Pressure of building

Table 4. Windward and Leeward Roof Pressure Coefficients, Cp, θ > 10°

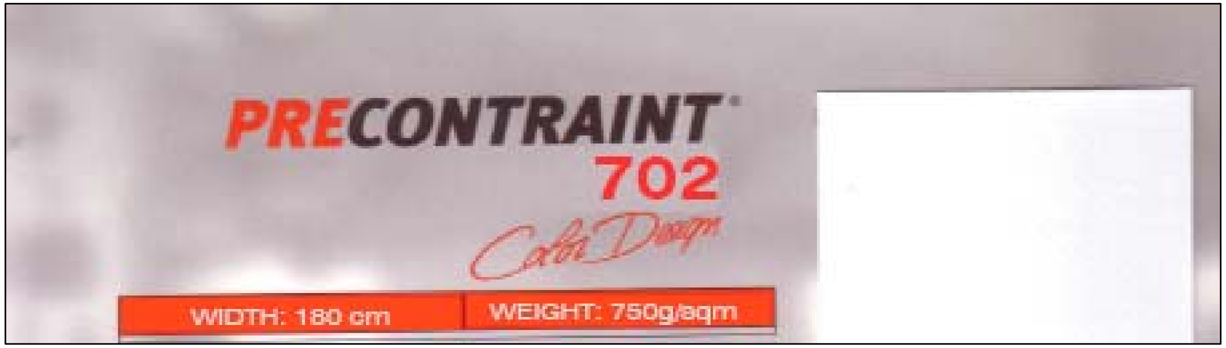
Roof Pressure Coefficients, Cp												
Wind Direction	**Windward**								**Leeward**			
	Angle, θ (degrees)								**Angle, θ (degrees)**			
	h/L	**10**	**15**	**20**	**25**	**30**	**35**	**45**	**≥ 60**	**10**	**15**	**≥ 20**
Normal to Ridge for θ ≥ 10°	≤ 0.25	-0.7	-0.5 0.0*	-0.3 0.2	-0.2 0.3	-0.2 0.3	0.0* 0.4	0.4	0.01 θ	-0.3	-0.5	-0.6
	0.5	-0.9	-0.7	-0.4 0.0*	-0.3 0.2	-0.2 0.2	-0.2 0.3	0.0* 0.4	0.01 θ	-0.5	-0.5	-0.6
	≥ 1.0	-1.3**	-1.0	-0.7	-0.5 0.0*	-0.3 0.2	-0.2 0.2	0.0* 0.3	0.01 θ	-0.7	-0.6	-0.6

Table 4.(Continue) Windward and Leeward Roof Pressure Coefficients, Cp, θ < 10°

<table>
<tr><th colspan="6">Roof Pressure Coefficients, Cp</th></tr>
<tr><th>Wind Direction</th><th>h/L</th><th>Horizontal distance from windward edge</th><th>Cp</th><th colspan="2" rowspan="5">* Value is provided for interpolation purposes.
**Value can be reduced linearly with area over which it is applicable as follows:</th></tr>
<tr><td rowspan="8">Normal to Ridge for θ< 10° and Parallel to ridge for all θ</td><td rowspan="4">≤ 0.5</td><td>0 to h/2</td><td>-0.9</td></tr>
<tr><td>h/2 to h</td><td>-0.9</td></tr>
<tr><td>h to 2h</td><td>-0.5</td></tr>
<tr><td>> 2h</td><td>-0.3</td></tr>
<tr><td rowspan="4">≥ 1.0</td><td rowspan="2">0 to h/2</td><td rowspan="2">-1.3**</td><th>Area (sq ft)</th><th>Reduction Factor</th></tr>
<tr><td>≤ 100 (9.29 sq m)</td><td>1.0</td></tr>
<tr><td rowspan="2">> h/2</td><td rowspan="2">-0.7</td><td>200 (23.23 sq m)</td><td>0.9</td></tr>
<tr><td>≥ 1000 (92.9 sq m)</td><td>0.8</td></tr>
</table>

APPENDIX III

Mechanical Values of Membrane



Yarn	1100 dtex PES HT	
Weight	750 g/sqm	EN ISO 2286-2
Width	180 cm	
Tensile Strength (warp/weft)	250/250 da N/5 cm	EN ISO 1421
Tear Strength (warp/weft)	25/20 daN	DIN 53.363
Adhesion	9/9 da N/5 cm	EN ISO 2411
Finish	Varnish both sides	
Flame Retardancy	**M2**/NFP 92-507 • **Test 1**/NFPA 701 • CSFM T19 • UBC 31-1 • ASTM E 84-03 • **B1**/DIN 4102-1 • BS 7837 • **Group 1**/AS/NZS 3837 • **1530.3**/AS/NZS • SP Method 2205 • **Classe 2**/UNI 9177 • LP7 • **M2**/UNE 23.727 • **VKF 5.3**/SN 198898	
Handling Temperature Range	-30°C/+70°C	
Quality Management System	ISO 9001	
Environment Management System	ISO 14001	

Wire Breaking Load Ratings & Comparison Table

TYPICAL GRADE 316 STAINLESS STEEL WIRE ROPE BREAKING LOADS

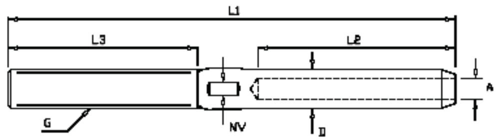
										
WIRE DIAMETER		1 x19			7 x 19			7 x 7		
mm	in.	kN	kg	lb	kN	kg	lb	kN	kg	lb
1.2 mm	3/64 in.	1.08	110	243	0.81	83	183	0.85	87	192
1.5 mm	1/16 in.	1.76	180	397	1.23	126	278	2.01	205	452
2.0 mm	5/64 in.	3.14	320	705	2.26	275	606	2.37	242	534
-	3/32 in.	4.74	484	1065	4.08	417	917	3.25	332	730
2.5 mm	-	4.90	500	1102	3.82	428	944	3.71	378	833
3.0 mm	1/8 in.	7.06	720	1587	6.00	612	1349	5.34	544	1200
4.0 mm	5/32 in.	12.60	1285	2833	8.89	907	2000	9.40	959	2115
-	3/16 in.	18.90	1930	4255	12.60	1280	2822	14.10	1437	3168
5.0 mm	-	19.60	2000	4410	13.90	1418	3127	14.80	1509	3327
5.6 mm	7/32 in.	24.20	2470	5445	17.20	1750	3858	18.10	1850	4080
6.0 mm	-	28.00	2876	6340	20.00	2040	4498	21.40	2181	4810
-	1/4 in.	34.00	3440	7584	22.00	2280	5027	25.90	2642	5825
7.0 mm	9/32 in.	35.00	3549	7807	36.00	2785	6127	29.10	2966	6526
8.0 mm	5/16 in.	86.00	8770	19335	68.00	6950	15322	76.70	7820	17240
12.0 mm	-	102.00	10401	22930	80.00	98163	17958	85.40	8700	19180
-	1/2 in.	119.00	12101	26678	90.00	9150	20172	107.00	10900	24030
14.0 mm	9/16 in.	139.00	14174	31248	109.00	11122	24624	117.00	11930	26300
16.0 mm	5/8 in.	182.00	18559	40916	133.00	14387	31723	-	-	-
19.0 mm	3/4 in.	212.00	21618	47660	191.00	19500	44730	-	-	-
22.0 mm	7/8 in.	285.00	29062	64071	-	-	-	-	-	-
26.0 mm	1 in.	398.00	40585	89475	-	-	-	-	-	-

THREAD TERMINALS

*Stainless Steel – **AISI 316***

NO. RIGHT	NO. LEFT	G	WIRE	L1	L2	L3	D	A	NV	B.L. KG.	KG/100	PACK
900204	-	M4	2	79	32	34	5,50	2,2	4,0	500	1,2	BULK
900205	910205	M5	2	87	32	42	5,50	2,2	4,5	800	1,4	BULK
902505	912505	M5	2,5	87	32	42	5,50	2,8	4,5	800	1,5	BULK
900306	910306	M6	3	100	38	48	6,35	3,5	5,0	1250	2,0	BULK
900406	910406	M6	4	110	45	48	7,50	4,4	6,0	1250	2,4	BULK
900408	910408	M8	4	117	45	57	7,50	4,4	6,0	2350	3,0	BULK
900508	910508	M8	5	123	51	57	9,00	5,3	7,0	2350	4,0	BULK
900510	910510	M10	5	130	51	63	9,00	5,3	7,0	3500	4,5	BULK
900610	910610	M10	6	145	64	63	12,58	6,5	11,0	3500	8,4	BULK
900612	910612	M12	6	162	64	80	12,58	6,5	11,0	5100	11,0	BULK
900712	910712	M12	7	170	70	80	14,20	7,5	12,0	5100	13,3	BULK
900714	910714	M14	7	180	70	89	14,20	7,5	12,0	5900	16,0	BULK
900812	910812	M12	8	185	83	80	16,00	8,4	14,0	5100	19,2	BULK
900814	910814	M14	8	194	83	89	16,00	8,4	14,0	5900	20,0	BULK
900816	910816	M16	8	203	83	100	16,00	8,4	14,0	8000	23,0	BULK
901016	911016	M16	10	210	89	100	17,80	10,5	15,0	8000	35,0	BULK
901020	911020	M20	10	230	89	120	17,80	10,5	15,0	13000	35,0	BULK
901220	911220	M20	12	249	105	120	20,00	12,5	17,0	13000	45,0	BULK
901220X	911220X	M20	12	265	120	120	21,40	12,5	19,0	13000	50,0	BULK
901422	911422	M22	14	308	140	140	25,00	14,8	22,0	17000	76,8	BULK
901622	911622	M22	16	333	160	140	28,00	17,0	25,0	17000	97,8	BULK
901624	911624	M24	16	363	160	170	28,00	17,0	25,0	23000	111,0	BULK
901927	911927	M27	19	425	200	180	34,50	20,0	30,0	25500	209.0	BULK
902230	912230	M30	22	480	230	200	40,50	23,5	36,0	31000	314,0	BULK
902636	912636	M36	26	550	280	220	46,00	27,5	41,0	43000	470,0	BULK

Note: All breakloads are determined by thread



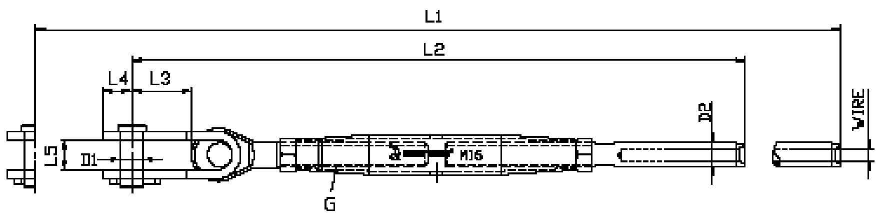
RIGGING SCREWS TOGGLE-TERMINAL

*High Polished Stainless Steel – **AISI 316***

ART. NO.	G	WIRE	L1	L2	L3	L4	L5	D1	D2	B.L. KG.	PACK
320306	M6	3	271	201	16.0	8.0	8.0	6.4	6.4	1250	BULK
320408	M8	4	310	240	20.0	9.0	10.0	8.0	7.5	2350	BULK
320510	M10	5	361	278	24.0	12.0	12.0	9.5	9.0	3500	BULK
320612X	M12	6	448	340	31.0	18.0	18.0	12.7	12.6	5100	BULK
320712X	M12	7	456	348	31.0	18.0	18.0	12.7	14.2	5100	BULK
320812X	M12	8	471	363	31.0	18.0	18.0	12.7	16.0	5100	BULK
320816X	M16	8	566	436	37.0	20.0	20.0	16.0	16.0	8000	BULK
321020X	M20	10	642	488	40.0	25.0	24.0	19.0	17.8	13000	BULK
321220X	M20	12	661	507	40.0	25.0	24.0	19.0	20.0	13000	BULK
321220XX	M20	12	677	523	40.0	25.0	24.0	19.0	21.4	13000	BULK
! 321422X	M22	14	808	627	46.0	30.0	26.0	22.0	25.0	17000	BULK
! 321624X	M24	16	963	730	53.0	37.0	29.0	25.4	28.0	23000	BULK
! 321927X	M27	19	1071	836	60.0	34.0	34.0	28.0	34.5	25500	BULK
! 322230X	M30	22	1193	931	70.0	41.5	40.0	32.0	40.5	31000	BULK
! 322636X	M36	26	1319	1045	80.0	41.0	44.0	36.0	46.0	43000	BULK

Note: All breakloads are determined by Clevis Pin (D1) & thread

! Bodie with bronze inserts



APPENDIX V: *REACTION FORCES IN COLUMNS*

Case 0: LC 0 (Form finding)

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-1.41e+00	9.48e-02	6.23e-02	-1.64e-04	-6.14e-02	1.39e-01
	4608	-1.41e+00	9.48e-02	6.23e-02	-1.64e-04	-3.03e-02	9.19e-02
	4607	-1.41e+00	5.93e-02	9.67e-02	-2.18e-04	-6.69e-02	6.99e-02
	4607	-1.41e+00	5.93e-02	9.67e-02	-2.18e-04	1.90e-01	-8.78e-02
	4615	3.24e-02	-4.32e-01	1.62e+00	-7.26e-05	-2.00e-01	6.11e-02
	4615	3.24e-02	-4.32e-01	1.62e+00	-7.26e-05	6.07e-01	2.77e-01
C02	4610	-2.62e+00	4.27e-02	-5.15e-02	2.48e-06	1.08e-01	8.08e-02
	4610	-2.62e+00	4.27e-02	-5.15e-02	2.48e-06	8.21e-02	5.94e-02
	4609	-2.62e+00	4.17e-02	5.75e-02	-3.74e-05	-7.90e-02	6.35e-02
	4609	-2.62e+00	4.17e-02	5.75e-02	-3.74e-05	7.39e-02	-4.74e-02
	4614	2.33e-01	-1.72e-02	1.78e-01	-1.71e-05	-3.03e-02	-8.24e-02
	4614	2.33e-01	-1.72e-02	1.78e-01	-1.71e-05	5.88e-02	-7.38e-02
C03	4612	-2.67e+00	5.80e-02	-3.36e-02	-3.61e-05	9.25e-02	1.10e-01
	4612	-2.67e+00	5.80e-02	-3.36e-02	-3.61e-05	7.57e-02	8.06e-02
	4611	-2.67e+00	4.06e-02	5.72e-02	-6.82e-05	-7.50e-02	8.13e-02
	4611	-2.67e+00	4.06e-02	5.72e-02	-6.82e-05	7.70e-02	-2.66e-02
	4613	2.29e-01	-4.48e-02	-1.73e-01	-4.74e-05	4.00e-02	7.10e-02
	4613	2.29e-01	-4.48e-02	-1.73e-01	-4.74e-05	-4.65e-02	9.34e-02
C04	4617	-2.64e+00	6.18e-02	-4.77e-02	-4.41e-05	8.93e-02	1.18e-01
	4617	-2.64e+00	6.18e-02	-4.77e-02	-4.41e-05	6.55e-02	8.67e-02
	4616	-2.64e+00	5.61e-02	6.00e-02	-9.03e-05	-8.09e-02	7.25e-02
	4616	-2.64e+00	5.61e-02	6.00e-02	-9.03e-05	7.85e-02	-7.67e-02
	4621	2.13e-01	-3.01e-02	1.81e-01	-3.44e-05	-2.44e-02	-1.07e-01
	4621	2.13e-01	-3.01e-02	1.81e-01	-3.44e-05	6.59e-02	-9.19e-02
C05	4619	-2.42e+00	6.74e-02	-6.40e-02	3.72e-05	1.54e-01	1.24e-01
	4619	-2.42e+00	6.74e-02	-6.40e-02	3.72e-05	1.22e-01	9.03e-02
	4618	-2.42e+00	5.81e-02	7.99e-02	-1.60e-05	-1.08e-01	1.07e-01
	4618	-2.42e+00	5.81e-02	7.99e-02	-1.60e-05	1.05e-01	-4.74e-02
	4620	7.84e-01	-3.64e-01	9.67e-02	1.59e-05	-8.74e-03	-1.15e-01
	4620	7.84e-01	-3.64e-01	9.67e-02	1.59e-05	3.96e-02	6.73e-02
C06	4589	-3.10e+00	1.58e-01	-1.92e-03	5.28e-05	-1.74e-02	4.93e-01
	4589	-3.10e+00	1.58e-01	-1.92e-03	5.28e-05	-2.35e-02	-5.17e-03
	4590	-2.12e-01	1.43e+00	-2.16e+00	-4.77e-04	7.13e-01	1.04e+00
	4590	-2.12e-01	1.43e+00	-2.16e+00	-4.77e-04	-3.70e-01	3.27e-01
C07	4599	-2.44e+00	-9.06e-02	-6.23e-02	1.99e-05	1.50e-01	-1.79e-01
	4599	-2.44e+00	-9.06e-02	-6.23e-02	1.99e-05	1.19e-01	-1.34e-01
	4598	-2.44e+00	-8.94e-02	-6.87e-02	-1.45e-05	9.23e-02	-8.36e-02
	4598	-2.44e+00	-8.94e-02	-6.87e-02	-1.45e-05	-9.04e-02	1.54e-01
	4622	7.77e-01	2.96e-01	-3.49e-01	-8.93e-05	8.67e-02	8.94e-02
	4622	7.77e-01	2.96e-01	-3.49e-01	-8.93e-05	-8.79e-02	-5.87e-02

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C08	4600	-2.66e+00	-4.12e-02	-5.12e-02	8.68e-05	1.11e-01	-8.92e-02
	4600	-2.66e+00	-4.12e-02	-5.12e-02	8.68e-05	8.56e-02	-6.86e-02
	4597	-2.66e+00	-5.72e-02	-3.76e-02	5.74e-05	4.10e-02	-5.96e-02
	4597	-2.66e+00	-5.72e-02	-3.76e-02	5.74e-05	-5.90e-02	9.25e-02
	4623	2.20e-01	1.77e-01	4.49e-02	2.61e-05	3.83e-02	6.14e-02
	4623	2.20e-01	1.77e-01	4.49e-02	2.61e-05	6.08e-02	-2.73e-02
C09	4601	-2.66e+00	-3.13e-02	-5.59e-02	6.52e-05	1.20e-01	-6.90e-02
	4601	-2.66e+00	-3.13e-02	-5.59e-02	6.52e-05	9.25e-02	-5.33e-02
	4596	-2.66e+00	-5.86e-02	-3.20e-02	3.62e-05	3.39e-02	-6.20e-02
	4596	-2.66e+00	-5.86e-02	-3.20e-02	3.62e-05	-5.13e-02	9.37e-02
	4624	2.16e-01	1.77e-01	6.92e-02	1.15e-05	3.05e-02	6.38e-02
	4624	2.16e-01	1.77e-01	6.92e-02	1.15e-05	6.50e-02	-2.47e-02
C10	4602	-2.67e+00	-3.61e-02	-5.44e-02	6.11e-05	1.23e-01	-7.55e-02
	4602	-2.67e+00	-3.61e-02	-5.44e-02	6.11e-05	9.54e-02	-5.74e-02
	4595	-2.67e+00	-5.86e-02	-3.44e-02	4.12e-05	4.00e-02	-5.71e-02
	4595	-2.67e+00	-5.86e-02	-3.44e-02	4.12e-05	-5.13e-02	9.88e-02
	4625	2.11e-01	1.73e-01	-2.56e-02	1.14e-05	3.76e-02	5.87e-02
	4625	2.11e-01	1.73e-01	-2.56e-02	1.14e-05	2.48e-02	-2.78e-02
C11	4603	-2.67e+00	-1.72e-02	-6.10e-02	5.62e-05	1.32e-01	-3.86e-02
	4603	-2.67e+00	-1.72e-02	-6.10e-02	5.62e-05	1.02e-01	-3.00e-02
	4594	-2.67e+00	-6.06e-02	-2.63e-02	2.72e-05	2.78e-02	-6.37e-02
	4594	-2.67e+00	-6.06e-02	-2.63e-02	2.72e-05	-4.21e-02	9.75e-02
	4626	2.08e-01	1.76e-01	6.41e-02	9.69e-06	2.22e-02	6.59e-02
	4626	2.08e-01	1.76e-01	6.41e-02	9.69e-06	5.42e-02	-2.20e-02
C12	4604	-2.68e+00	-1.76e-02	-6.03e-02	5.08e-05	1.32e-01	-3.86e-02
	4604	-2.68e+00	-1.76e-02	-6.03e-02	5.08e-05	1.02e-01	-2.98e-02
	4593	-2.68e+00	-6.08e-02	-2.43e-02	3.02e-05	2.61e-02	-6.25e-02
	4593	-2.68e+00	-6.08e-02	-2.43e-02	3.02e-05	-3.85e-02	9.90e-02
	4627	2.03e-01	1.75e-01	4.95e-02	1.54e-05	1.96e-02	6.49e-02
	4627	2.03e-01	1.75e-01	4.95e-02	1.54e-05	4.43e-02	-2.28e-02
C13	4605	-2.63e+00	-7.94e-03	-6.38e-02	3.65e-05	1.36e-01	-1.45e-02
	4605	-2.63e+00	-7.94e-03	-6.38e-02	3.65e-05	1.04e-01	-1.06e-02
	4592	-2.63e+00	-6.06e-02	-2.78e-02	5.09e-06	3.36e-02	-6.43e-02
	4592	-2.63e+00	-6.06e-02	-2.78e-02	5.09e-06	-4.03e-02	9.68e-02
	4628	2.43e-01	-1.72e-01	2.47e-02	-1.98e-05	-2.40e-02	-6.85e-02
	4628	2.43e-01	-1.72e-01	2.47e-02	-1.98e-05	-1.17e-02	1.73e-02
C14	4606	-1.40e+00	-6.02e-02	6.87e-02	6.93e-05	-6.23e-02	-1.30e-01
	4606	-1.40e+00	-6.02e-02	6.87e-02	6.93e-05	-2.80e-02	-9.98e-02
	4591	-1.40e+00	-5.05e-02	-7.51e-02	1.68e-04	1.58e-01	-3.91e-02
	4591	-1.40e+00	-5.05e-02	-7.51e-02	1.68e-04	-4.15e-02	9.50e-02
	4629	2.83e-02	-7.11e-02	1.42e+00	3.96e-05	-1.58e-01	-3.86e-02
	4629	2.83e-02	-7.11e-02	1.42e+00	3.96e-05	5.51e-01	-2.99e-03

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-2.35e+00	2.66e-01	9.49e-02	-4.88e-06	-1.30e-01	6.29e-01
	4608	-2.37e+00	2.66e-01	9.49e-02	-4.88e-06	-1.18e-01	5.96e-01
	4608	-2.40e+00	2.66e-01	9.49e-02	-4.88e-06	-1.06e-01	5.63e-01
	4608	-2.42e+00	2.66e-01	9.50e-02	-4.88e-06	-9.44e-02	5.30e-01
	4608	-2.45e+00	2.66e-01	9.50e-02	-4.88e-06	-8.25e-02	4.96e-01
	4607	-2.45e+00	2.16e-01	1.83e-01	-2.44e-04	-2.54e-01	4.35e-01
	4607	-2.58e+00	2.16e-01	1.83e-01	-2.44e-04	-1.32e-01	2.91e-01
	4607	-2.72e+00	2.16e-01	1.83e-01	-2.44e-04	-1.07e-02	1.48e-01
	4607	-2.85e+00	2.16e-01	1.83e-01	-2.44e-04	1.11e-01	4.03e-03
	4607	-2.99e+00	2.16e-01	1.83e-01	-2.44e-04	2.33e-01	-1.39e-01
	4615	-1.79e+00	-5.03e-01	1.26e+00	4.78e-05	-2.51e-01	1.04e-01
	4615	-1.81e+00	-5.03e-01	1.26e+00	4.78e-05	-9.34e-02	1.67e-01
	4615	-1.84e+00	-5.03e-01	1.26e+00	4.78e-05	6.39e-02	2.30e-01
	4615	-1.86e+00	-5.03e-01	1.26e+00	4.78e-05	2.21e-01	2.92e-01
	4615	-1.89e+00	-5.03e-01	1.26e+00	4.78e-05	3.78e-01	3.55e-01
C02	4610	-3.99e+00	3.21e-02	-1.75e-01	-2.78e-04	4.75e-01	2.86e-02
	4610	-4.01e+00	3.21e-02	-1.75e-01	-2.78e-04	4.53e-01	2.46e-02
	4610	-4.04e+00	3.21e-02	-1.75e-01	-2.78e-04	4.32e-01	2.06e-02
	4610	-4.06e+00	3.21e-02	-1.75e-01	-2.78e-04	4.10e-01	1.66e-02
	4610	-4.09e+00	3.21e-02	-1.75e-01	-2.78e-04	3.88e-01	1.26e-02
	4609	-4.09e+00	1.67e-01	7.85e-02	-4.29e-06	-1.07e-01	3.73e-01
	4609	-4.22e+00	1.67e-01	7.86e-02	-4.29e-06	-5.47e-02	2.62e-01
	4609	-4.36e+00	1.67e-01	7.87e-02	-4.29e-06	-2.45e-03	1.51e-01
	4609	-4.49e+00	1.67e-01	7.88e-02	-4.29e-06	4.99e-02	3.97e-02
	4609	-4.63e+00	1.67e-01	7.89e-02	-4.29e-06	1.02e-01	-7.14e-02
	4614	-2.22e+00	6.21e-02	4.99e-02	3.32e-05	-4.11e-02	-1.18e-01
	4614	-2.24e+00	6.21e-02	4.99e-02	3.32e-05	-3.49e-02	-1.26e-01
	4614	-2.27e+00	6.21e-02	4.99e-02	3.32e-05	-2.86e-02	-1.33e-01
	4614	-2.29e+00	6.21e-02	4.99e-02	3.32e-05	-2.24e-02	-1.41e-01
	4614	-2.32e+00	6.21e-02	4.99e-02	3.32e-05	-1.61e-02	-1.49e-01
C03	4612	-3.95e+00	1.09e-01	-1.34e-01	-2.14e-04	4.19e-01	2.40e-01
	4612	-3.98e+00	1.09e-01	-1.34e-01	-2.14e-04	4.03e-01	2.26e-01
	4612	-4.00e+00	1.09e-01	-1.34e-01	-2.14e-04	3.86e-01	2.13e-01
	4612	-4.03e+00	1.09e-01	-1.34e-01	-2.14e-04	3.69e-01	1.99e-01
	4612	-4.05e+00	1.09e-01	-1.34e-01	-2.14e-04	3.52e-01	1.85e-01
	4611	-4.05e+00	1.53e-01	9.41e-02	-4.60e-05	-1.38e-01	3.74e-01
	4611	-4.19e+00	1.53e-01	9.43e-02	-4.60e-05	-7.52e-02	2.72e-01
	4611	-4.33e+00	1.53e-01	9.44e-02	-4.60e-05	-1.25e-02	1.71e-01
	4611	-4.46e+00	1.53e-01	9.46e-02	-4.60e-05	5.03e-02	6.95e-02
	4611	-4.60e+00	1.53e-01	9.47e-02	-4.60e-05	1.13e-01	-3.20e-02
	4613	-2.15e+00	-9.52e-02	-3.05e-02	-1.26e-05	4.85e-02	1.07e-01
	4613	-2.17e+00	-9.52e-02	-3.05e-02	-1.26e-05	4.47e-02	1.19e-01
	4613	-2.20e+00	-9.52e-02	-3.05e-02	-1.26e-05	4.09e-02	1.31e-01
	4613	-2.23e+00	-9.52e-02	-3.05e-02	-1.26e-05	3.71e-02	1.43e-01
	4613	-2.25e+00	-9.52e-02	-3.05e-02	-1.26e-05	3.33e-02	1.55e-01
C04	4617	-3.85e+00	1.06e-01	-1.44e-01	-2.20e-04	3.54e-01	2.18e-01
	4617	-3.88e+00	1.06e-01	-1.44e-01	-2.20e-04	3.36e-01	2.05e-01
	4617	-3.90e+00	1.06e-01	-1.44e-01	-2.20e-04	3.18e-01	1.92e-01
	4617	-3.93e+00	1.06e-01	-1.44e-01	-2.20e-04	3.00e-01	1.78e-01
	4617	-3.95e+00	1.06e-01	-1.44e-01	-2.20e-04	2.82e-01	1.65e-01
	4616	-3.95e+00	1.61e-01	9.26e-02	-7.99e-05	-1.30e-01	3.00e-01
	4616	-4.09e+00	1.61e-01	9.28e-02	-7.99e-05	-6.82e-02	1.93e-01
	4616	-4.22e+00	1.61e-01	9.30e-02	-7.99e-05	-6.48e-03	8.55e-02
	4616	-4.36e+00	1.61e-01	9.31e-02	-7.99e-05	5.54e-02	-2.16e-02
	4616	-4.49e+00	1.61e-01	9.33e-02	-7.99e-05	1.17e-01	-1.29e-01
	4621	-2.08e+00	8.61e-02	1.14e-01	4.43e-05	-3.53e-02	-1.71e-01
	4621	-2.10e+00	8.61e-02	1.14e-01	4.43e-05	-2.13e-02	-1.81e-01
	4621	-2.13e+00	8.61e-02	1.14e-01	4.43e-05	-6.85e-03	-1.92e-01
	4621	-2.15e+00	8.61e-02	1.14e-01	4.43e-05	7.38e-03	-2.03e-01
	4621	-2.18e+00	8.61e-02	1.14e-01	4.43e-05	2.16e-02	-2.14e-01
C05	4619	-3.53e+00	9.71e-02	-1.25e-01	-7.67e-05	3.39e-01	1.83e-01
	4619	-3.55e+00	9.71e-02	-1.25e-01	-7.67e-05	3.24e-01	1.71e-01
	4619	-3.58e+00	9.71e-02	-1.25e-01	-7.67e-05	3.08e-01	1.58e-01
	4619	-3.60e+00	9.71e-02	-1.25e-01	-7.67e-05	2.92e-01	1.46e-01
	4619	-3.63e+00	9.71e-02	-1.25e-01	-7.67e-05	2.77e-01	1.34e-01
	4618	-3.63e+00	1.22e-01	1.17e-01	1.41e-05	-1.65e-01	2.60e-01
	4618	-3.76e+00	1.22e-01	1.18e-01	1.41e-05	-8.67e-02	1.79e-01
	4618	-3.90e+00	1.22e-01	1.18e-01	1.41e-05	-8.42e-03	9.77e-02
	4618	-4.03e+00	1.22e-01	1.18e-01	1.41e-05	7.00e-02	1.67e-02
	4618	-4.17e+00	1.22e-01	1.18e-01	1.41e-05	1.49e-01	-6.43e-02
	4620	-1.32e+00	-3.51e-01	-1.40e-02	7.22e-05	-4.69e-03	-1.62e-01
	4620	-1.35e+00	-3.51e-01	-1.40e-02	7.22e-05	-6.44e-03	-1.18e-01
	4620	-1.37e+00	-3.51e-01	-1.40e-02	7.22e-05	-8.20e-03	-7.39e-02
	4620	-1.40e+00	-3.51e-01	-1.40e-02	7.22e-05	-9.95e-03	-3.00e-02
	4620	-1.42e+00	-3.51e-01	-1.40e-02	7.22e-05	-1.17e-02	1.39e-02

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-4.43e+00	1.41e-01	8.62e-02	1.31e-05	-9.52e-02	3.69e-01
	4589	-4.27e+00	1.41e-01	8.64e-02	1.31e-05	-2.71e-02	2.58e-01
	4589	-4.11e+00	1.41e-01	8.67e-02	1.31e-05	4.13e-02	1.47e-01
	4589	-3.95e+00	1.41e-01	8.69e-02	1.31e-05	1.10e-01	3.56e-02
	4589	-3.79e+00	1.41e-01	8.71e-02	1.31e-05	1.79e-01	-7.54e-02
	4590	-2.11e+00	1.11e+00	-1.82e+00	-2.50e-04	5.90e-01	7.59e-01
	4590	-2.09e+00	1.11e+00	-1.82e+00	-2.50e-04	3.62e-01	6.20e-01
	4590	-2.06e+00	1.11e+00	-1.82e+00	-2.50e-04	1.34e-01	4.81e-01
	4590	-2.03e+00	1.11e+00	-1.82e+00	-2.50e-04	-9.42e-02	3.42e-01
	4590	-2.01e+00	1.11e+00	-1.82e+00	-2.50e-04	-3.22e-01	2.03e-01
C07	4599	-3.49e+00	-1.52e-01	-1.57e-01	1.26e-04	3.46e-01	-3.15e-01
	4599	-3.52e+00	-1.52e-01	-1.57e-01	1.26e-04	3.27e-01	-2.96e-01
	4599	-3.55e+00	-1.52e-01	-1.57e-01	1.26e-04	3.07e-01	-2.77e-01
	4599	-3.57e+00	-1.52e-01	-1.57e-01	1.26e-04	2.87e-01	-2.58e-01
	4599	-3.60e+00	-1.52e-01	-1.57e-01	1.26e-04	2.68e-01	-2.39e-01
	4598	-4.14e+00	-1.98e-01	-1.04e-01	-1.91e-05	1.24e-01	-2.01e-01
	4598	-4.00e+00	-1.98e-01	-1.04e-01	-1.91e-05	5.53e-02	-6.92e-02
	4598	-3.87e+00	-1.98e-01	-1.04e-01	-1.91e-05	-1.38e-02	6.24e-02
	4598	-3.73e+00	-1.98e-01	-1.04e-01	-1.91e-05	-8.28e-02	1.94e-01
	4598	-3.60e+00	-1.98e-01	-1.03e-01	-1.91e-05	-1.52e-01	3.26e-01
	4622	-1.25e+00	-1.67e-01	3.69e-01	-2.72e-04	-1.03e-01	-2.12e-01
	4622	-1.27e+00	-1.67e-01	3.69e-01	-2.72e-04	-5.71e-02	-1.92e-01
	4622	-1.30e+00	-1.67e-01	3.69e-01	-2.72e-04	-1.10e-02	-1.71e-01
	4622	-1.33e+00	-1.67e-01	3.69e-01	-2.72e-04	3.50e-02	-1.50e-01
	4622	-1.35e+00	-1.67e-01	3.69e-01	-2.72e-04	8.11e-02	-1.29e-01
C08	4600	-3.79e+00	-6.71e-02	-1.96e-01	3.08e-04	4.14e-01	-1.51e-01
	4600	-3.81e+00	-6.71e-02	-1.96e-01	3.08e-04	3.90e-01	-1.42e-01
	4600	-3.84e+00	-6.71e-02	-1.96e-01	3.08e-04	3.65e-01	-1.34e-01
	4600	-3.86e+00	-6.71e-02	-1.96e-01	3.08e-04	3.41e-01	-1.25e-01
	4600	-3.89e+00	-6.71e-02	-1.96e-01	3.08e-04	3.16e-01	-1.17e-01
	4597	-4.43e+00	-2.05e-01	-5.28e-02	4.59e-05	5.33e-02	-2.19e-01
	4597	-4.29e+00	-2.05e-01	-5.26e-02	4.59e-05	1.83e-02	-8.27e-02
	4597	-4.16e+00	-2.05e-01	-5.25e-02	4.59e-05	-1.66e-02	5.36e-02
	4597	-4.02e+00	-2.05e-01	-5.23e-02	4.59e-05	-5.15e-02	1.90e-01
	4597	-3.89e+00	-2.05e-01	-5.22e-02	4.59e-05	-8.62e-02	3.26e-01
	4623	-1.95e+00	2.61e-03	6.97e-02	-1.05e-04	4.32e-02	2.21e-01
	4623	-1.98e+00	2.61e-03	6.97e-02	-1.05e-04	5.20e-02	2.21e-01
	4623	-2.00e+00	2.61e-03	6.97e-02	-1.05e-04	6.07e-02	2.21e-01
	4623	-2.03e+00	2.61e-03	6.97e-02	-1.05e-04	6.94e-02	2.20e-01
	4623	-2.05e+00	2.61e-03	6.98e-02	-1.05e-04	7.81e-02	2.20e-01
C09	4601	-3.88e+00	-4.77e-02	-2.39e-01	3.16e-04	5.03e-01	-1.09e-01
	4601	-3.90e+00	-4.77e-02	-2.39e-01	3.16e-04	4.74e-01	-1.03e-01
	4601	-3.93e+00	-4.77e-02	-2.39e-01	3.16e-04	4.44e-01	-9.67e-02
	4601	-3.95e+00	-4.77e-02	-2.39e-01	3.16e-04	4.14e-01	-9.08e-02
	4601	-3.98e+00	-4.77e-02	-2.39e-01	3.16e-04	3.84e-01	-8.48e-02
	4596	-4.52e+00	-2.43e-01	-4.84e-02	1.60e-05	4.92e-02	-2.61e-01
	4596	-4.38e+00	-2.43e-01	-4.83e-02	1.60e-05	1.70e-02	-9.94e-02
	4596	-4.25e+00	-2.43e-01	-4.82e-02	1.60e-05	-1.50e-02	6.22e-02
	4596	-4.11e+00	-2.43e-01	-4.80e-02	1.60e-05	-4.70e-02	2.24e-01
	4596	-3.98e+00	-2.43e-01	-4.79e-02	1.60e-05	-7.88e-02	3.85e-01
	4624	-2.05e+00	-3.52e-02	8.22e-02	-1.23e-04	3.44e-02	2.63e-01
	4624	-2.07e+00	-3.52e-02	8.22e-02	-1.23e-04	4.47e-02	2.68e-01
	4624	-2.10e+00	-3.52e-02	8.22e-02	-1.23e-04	5.49e-02	2.72e-01
	4624	-2.13e+00	-3.52e-02	8.22e-02	-1.23e-04	6.52e-02	2.77e-01
	4624	-2.15e+00	-3.52e-02	8.22e-02	-1.23e-04	7.55e-02	2.81e-01
C10	4602	-3.93e+00	-7.08e-02	-2.61e-01	2.91e-04	5.55e-01	-1.59e-01
	4602	-3.95e+00	-7.08e-02	-2.61e-01	2.91e-04	5.22e-01	-1.50e-01
	4602	-3.98e+00	-7.08e-02	-2.61e-01	2.91e-04	4.89e-01	-1.41e-01
	4602	-4.01e+00	-7.08e-02	-2.61e-01	2.91e-04	4.57e-01	-1.32e-01
	4602	-4.03e+00	-7.08e-02	-2.61e-01	2.91e-04	4.24e-01	-1.23e-01
	4595	-4.57e+00	-2.69e-01	-6.09e-02	3.26e-05	6.03e-02	-2.84e-01
	4595	-4.44e+00	-2.69e-01	-6.08e-02	3.26e-05	1.99e-02	-1.06e-01
	4595	-4.30e+00	-2.69e-01	-6.07e-02	3.26e-05	-2.05e-02	7.29e-02
	4595	-4.17e+00	-2.69e-01	-6.05e-02	3.26e-05	-6.08e-02	2.51e-01
	4595	-4.03e+00	-2.69e-01	-6.04e-02	3.26e-05	-1.01e-01	4.30e-01
	4625	-2.10e+00	-6.36e-02	2.00e-02	-1.60e-04	4.75e-02	2.87e-01
	4625	-2.13e+00	-6.36e-02	2.00e-02	-1.60e-04	5.00e-02	2.95e-01
	4625	-2.15e+00	-6.36e-02	2.00e-02	-1.60e-04	5.25e-02	3.02e-01
	4625	-2.18e+00	-6.36e-02	2.00e-02	-1.60e-04	5.50e-02	3.10e-01
	4625	-2.20e+00	-6.36e-02	2.00e-02	-1.60e-04	5.75e-02	3.18e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-3.96e+00	-6.81e-03	-2.84e-01	3.29e-04	6.01e-01	-1.89e-02
	4603	-3.98e+00	-6.81e-03	-2.84e-01	3.29e-04	5.65e-01	-1.80e-02
	4603	-4.01e+00	-6.81e-03	-2.84e-01	3.29e-04	5.30e-01	-1.72e-02
	4603	-4.03e+00	-6.81e-03	-2.84e-01	3.29e-04	4.94e-01	-1.63e-02
	4603	-4.06e+00	-6.81e-03	-2.84e-01	3.29e-04	4.59e-01	-1.55e-02
	4594	-4.60e+00	-2.85e-01	-4.56e-02	1.89e-06	4.90e-02	-3.03e-01
	4594	-4.46e+00	-2.85e-01	-4.55e-02	1.89e-06	1.87e-02	-1.14e-01
	4594	-4.33e+00	-2.85e-01	-4.54e-02	1.89e-06	-1.15e-02	7.52e-02
	4594	-4.19e+00	-2.85e-01	-4.53e-02	1.89e-06	-4.16e-02	2.64e-01
	4594	-4.06e+00	-2.85e-01	-4.52e-02	1.89e-06	-7.17e-02	4.54e-01
	4626	-2.12e+00	-7.60e-02	6.77e-02	-1.15e-04	2.28e-02	3.06e-01
	4626	-2.15e+00	-7.60e-02	6.77e-02	-1.15e-04	3.13e-02	3.16e-01
	4626	-2.17e+00	-7.60e-02	6.77e-02	-1.15e-04	3.98e-02	3.25e-01
	4626	-2.20e+00	-7.60e-02	6.77e-02	-1.15e-04	4.82e-02	3.35e-01
	4626	-2.23e+00	-7.60e-02	6.77e-02	-1.15e-04	5.67e-02	3.44e-01
C12	4604	-4.00e+00	-2.04e-02	-2.92e-01	2.70e-04	6.18e-01	-4.79e-02
	4604	-4.02e+00	-2.04e-02	-2.91e-01	2.70e-04	5.81e-01	-4.53e-02
	4604	-4.05e+00	-2.04e-02	-2.91e-01	2.70e-04	5.45e-01	-4.27e-02
	4604	-4.07e+00	-2.04e-02	-2.91e-01	2.70e-04	5.08e-01	-4.02e-02
	4604	-4.10e+00	-2.04e-02	-2.91e-01	2.70e-04	4.72e-01	-3.76e-02
	4593	-4.64e+00	-2.93e-01	-5.07e-02	1.25e-05	5.31e-02	-3.11e-01
	4593	-4.50e+00	-2.93e-01	-5.06e-02	1.25e-05	1.95e-02	-1.17e-01
	4593	-4.37e+00	-2.93e-01	-5.05e-02	1.25e-05	-1.41e-02	7.77e-02
	4593	-4.23e+00	-2.93e-01	-5.04e-02	1.25e-05	-4.77e-02	2.72e-01
	4593	-4.10e+00	-2.93e-01	-5.03e-02	1.25e-05	-8.12e-02	4.67e-01
	4627	-2.17e+00	-8.52e-02	5.78e-02	-9.23e-05	2.17e-02	3.15e-01
	4627	-2.20e+00	-8.52e-02	5.78e-02	-9.23e-05	2.89e-02	3.26e-01
	4627	-2.22e+00	-8.52e-02	5.79e-02	-9.23e-05	3.61e-02	3.36e-01
	4627	-2.25e+00	-8.52e-02	5.79e-02	-9.23e-05	4.34e-02	3.47e-01
	4627	-2.28e+00	-8.52e-02	5.79e-02	-9.23e-05	5.06e-02	3.58e-01
C13	4605	-3.98e+00	5.03e-02	-2.83e-01	3.43e-04	6.07e-01	1.17e-01
	4605	-4.00e+00	5.03e-02	-2.83e-01	3.43e-04	5.72e-01	1.11e-01
	4605	-4.03e+00	5.03e-02	-2.83e-01	3.43e-04	5.37e-01	1.05e-01
	4605	-4.05e+00	5.03e-02	-2.83e-01	3.43e-04	5.01e-01	9.83e-02
	4605	-4.08e+00	5.03e-02	-2.83e-01	3.43e-04	4.66e-01	9.20e-02
	4592	-4.62e+00	-2.89e-01	-3.83e-02	-2.06e-05	5.36e-02	-2.95e-01
	4592	-4.48e+00	-2.89e-01	-3.82e-02	-2.06e-05	2.81e-02	-1.03e-01
	4592	-4.35e+00	-2.89e-01	-3.81e-02	-2.06e-05	2.75e-03	8.86e-02
	4592	-4.21e+00	-2.89e-01	-3.81e-02	-2.06e-05	-2.26e-02	2.81e-01
	4592	-4.08e+00	-2.89e-01	-3.80e-02	-2.06e-05	-4.78e-02	4.73e-01
	4628	-2.16e+00	8.36e-02	2.93e-02	-1.71e-04	-7.92e-03	-3.00e-01
	4628	-2.19e+00	8.36e-02	2.93e-02	-1.71e-04	-4.26e-03	-3.11e-01
	4628	-2.21e+00	8.36e-02	2.93e-02	-1.71e-04	-5.99e-04	-3.21e-01
	4628	-2.24e+00	8.36e-02	2.93e-02	-1.71e-04	3.06e-03	-3.31e-01
	4628	-2.26e+00	8.36e-02	2.93e-02	-1.71e-04	6.72e-03	-3.42e-01
C14	4606	-2.40e+00	-3.16e-01	8.15e-02	-3.09e-04	-1.03e-01	-7.64e-01
	4606	-2.42e+00	-3.16e-01	8.15e-02	-3.09e-04	-9.30e-02	-7.24e-01
	4606	-2.45e+00	-3.16e-01	8.16e-02	-3.09e-04	-8.28e-02	-6.85e-01
	4606	-2.47e+00	-3.16e-01	8.16e-02	-3.09e-04	-7.26e-02	-6.45e-01
	4606	-2.50e+00	-3.16e-01	8.17e-02	-3.09e-04	-6.24e-02	-6.06e-01
	4591	-3.04e+00	-3.03e-01	-1.21e-01	3.39e-04	1.79e-01	-2.13e-01
	4591	-2.90e+00	-3.03e-01	-1.21e-01	3.39e-04	9.81e-02	-1.21e-02
	4591	-2.77e+00	-3.03e-01	-1.21e-01	3.39e-04	1.76e-02	1.89e-01
	4591	-2.63e+00	-3.03e-01	-1.21e-01	3.39e-04	-6.28e-02	3.91e-01
	4591	-2.50e+00	-3.03e-01	-1.21e-01	3.39e-04	-1.43e-01	5.92e-01
	4629	-1.83e+00	1.95e-01	1.18e+00	-5.26e-04	-1.79e-01	-2.13e-01
	4629	-1.85e+00	1.95e-01	1.18e+00	-5.26e-04	-3.25e-02	-2.37e-01
	4629	-1.88e+00	1.95e-01	1.18e+00	-5.26e-04	1.15e-01	-2.62e-01
	4629	-1.90e+00	1.95e-01	1.18e+00	-5.26e-04	2.62e-01	-2.86e-01
	4629	-1.93e+00	1.95e-01	1.18e+00	-5.26e-04	4.09e-01	-3.10e-01

SLS - LC 2: 1.0DL + 1.0V_0 + 1.0LL

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-2.80e+00	4.24e-01	9.68e-02	-1.46e-04	-9.78e-02	1.16e+00
	4608	-2.83e+00	4.24e-01	9.68e-02	-1.46e-04	-8.57e-02	1.11e+00
	4608	-2.85e+00	4.24e-01	9.69e-02	-1.46e-04	-7.36e-02	1.05e+00
	4608	-2.88e+00	4.24e-01	9.69e-02	-1.46e-04	-6.15e-02	1.00e+00
	4608	-2.90e+00	4.24e-01	9.69e-02	-1.46e-04	-4.93e-02	9.49e-01
	4607	-2.90e+00	3.63e-01	2.40e-01	-5.78e-04	-3.84e-01	8.69e-01
	4607	-3.04e+00	3.63e-01	2.41e-01	-5.78e-04	-2.24e-01	6.28e-01
	4607	-3.17e+00	3.63e-01	2.41e-01	-5.78e-04	-6.40e-02	3.87e-01
	4607	-3.31e+00	3.63e-01	2.41e-01	-5.78e-04	9.60e-02	1.46e-01
	4607	-3.45e+00	3.63e-01	2.41e-01	-5.78e-04	2.56e-01	-9.49e-02
	4615	-2.83e+00	-4.88e-01	4.73e-01	-4.04e-04	-2.67e-01	5.65e-02
	4615	-2.86e+00	-4.88e-01	4.73e-01	-4.04e-04	-2.08e-01	1.18e-01
	4615	-2.89e+00	-4.88e-01	4.73e-01	-4.04e-04	-1.49e-01	1.79e-01
	4615	-2.91e+00	-4.88e-01	4.73e-01	-4.04e-04	-8.97e-02	2.40e-01
	4615	-2.94e+00	-4.88e-01	4.73e-01	-4.04e-04	-3.06e-02	3.01e-01
C02	4610	-4.48e+00	1.27e-01	-3.80e-01	-5.48e-04	1.05e+00	1.57e-01
	4610	-4.50e+00	1.27e-01	-3.80e-01	-5.48e-04	1.01e+00	1.41e-01
	4610	-4.53e+00	1.27e-01	-3.80e-01	-5.48e-04	9.58e-01	1.25e-01
	4610	-4.55e+00	1.27e-01	-3.80e-01	-5.48e-04	9.11e-01	1.09e-01
	4610	-4.58e+00	1.27e-01	-3.80e-01	-5.48e-04	8.63e-01	9.35e-02
	4609	-4.58e+00	3.44e-01	2.21e-01	-4.94e-05	-3.01e-01	8.14e-01
	4609	-4.71e+00	3.44e-01	2.21e-01	-4.94e-05	-1.55e-01	5.86e-01
	4609	-4.85e+00	3.44e-01	2.21e-01	-4.94e-05	-7.60e-03	3.57e-01
	4609	-4.99e+00	3.44e-01	2.21e-01	-4.94e-05	1.39e-01	1.28e-01
	4609	-5.12e+00	3.44e-01	2.21e-01	-4.94e-05	2.87e-01	-1.00e-01
	4614	-3.88e+00	3.04e-01	-1.56e-01	-1.99e-05	-1.91e-02	-3.03e-01
	4614	-3.90e+00	3.04e-01	-1.56e-01	-1.99e-05	-3.86e-02	-3.41e-01
	4614	-3.93e+00	3.04e-01	-1.56e-01	-1.99e-05	-5.81e-02	-3.79e-01
	4614	-3.95e+00	3.04e-01	-1.56e-01	-1.99e-05	-7.76e-02	-4.17e-01
	4614	-3.98e+00	3.04e-01	-1.56e-01	-1.99e-05	-9.71e-02	-4.55e-01
C03	4612	-4.61e+00	2.84e-01	-2.76e-01	-4.72e-04	9.35e-01	6.08e-01
	4612	-4.64e+00	2.84e-01	-2.76e-01	-4.72e-04	9.00e-01	5.72e-01
	4612	-4.66e+00	2.84e-01	-2.76e-01	-4.72e-04	8.66e-01	5.37e-01
	4612	-4.69e+00	2.84e-01	-2.76e-01	-4.72e-04	8.31e-01	5.01e-01
	4612	-4.71e+00	2.84e-01	-2.76e-01	-4.72e-04	7.97e-01	4.66e-01
	4611	-4.71e+00	3.17e-01	2.50e-01	-1.52e-04	-3.57e-01	8.51e-01
	4611	-4.85e+00	3.17e-01	2.50e-01	-1.52e-04	-1.91e-01	6.40e-01
	4611	-4.98e+00	3.17e-01	2.50e-01	-1.52e-04	-2.46e-02	4.29e-01
	4611	-5.12e+00	3.17e-01	2.51e-01	-1.52e-04	1.42e-01	2.19e-01
	4611	-5.25e+00	3.17e-01	2.51e-01	-1.52e-04	3.08e-01	7.70e-03
	4613	-3.82e+00	-2.54e-01	2.37e-01	-1.65e-04	3.84e-02	3.06e-01
	4613	-3.85e+00	-2.54e-01	2.37e-01	-1.65e-04	6.81e-02	3.38e-01
	4613	-3.87e+00	-2.54e-01	2.37e-01	-1.65e-04	9.78e-02	3.70e-01
	4613	-3.90e+00	-2.54e-01	2.37e-01	-1.65e-04	1.27e-01	4.01e-01
	4613	-3.92e+00	-2.54e-01	2.37e-01	-1.65e-04	1.57e-01	4.33e-01
C04	4617	-4.44e+00	2.90e-01	-3.27e-01	-5.05e-04	8.35e-01	5.81e-01
	4617	-4.46e+00	2.90e-01	-3.27e-01	-5.05e-04	7.94e-01	5.44e-01
	4617	-4.49e+00	2.90e-01	-3.27e-01	-5.05e-04	7.53e-01	5.08e-01
	4617	-4.52e+00	2.90e-01	-3.27e-01	-5.05e-04	7.13e-01	4.72e-01
	4617	-4.54e+00	2.90e-01	-3.27e-01	-5.05e-04	6.72e-01	4.36e-01
	4616	-4.54e+00	3.66e-01	2.54e-01	-2.31e-04	-3.51e-01	7.20e-01
	4616	-4.68e+00	3.66e-01	2.54e-01	-2.31e-04	-1.82e-01	4.76e-01
	4616	-4.81e+00	3.66e-01	2.54e-01	-2.31e-04	-1.35e-02	2.33e-01
	4616	-4.95e+00	3.66e-01	2.55e-01	-2.31e-04	1.56e-01	-1.06e-02
	4616	-5.08e+00	3.66e-01	2.55e-01	-2.31e-04	3.25e-01	-2.54e-01
	4621	-3.67e+00	3.97e-01	-1.09e-02	-5.64e-06	-1.47e-02	-4.12e-01
	4621	-3.69e+00	3.97e-01	-1.09e-02	-5.64e-06	-1.61e-02	-4.62e-01
	4621	-3.72e+00	3.97e-01	-1.09e-02	-5.64e-06	-1.74e-02	-5.11e-01
	4621	-3.74e+00	3.97e-01	-1.09e-02	-5.64e-06	-1.88e-02	-5.61e-01
	4621	-3.77e+00	3.97e-01	-1.09e-02	-5.64e-06	-2.02e-02	-6.11e-01
C05	4619	-3.97e+00	2.77e-01	-2.19e-01	-1.43e-04	7.93e-01	4.75e-01
	4619	-4.00e+00	2.77e-01	-2.19e-01	-1.43e-04	7.66e-01	4.40e-01
	4619	-4.02e+00	2.77e-01	-2.19e-01	-1.43e-04	7.38e-01	4.05e-01
	4619	-4.05e+00	2.77e-01	-2.19e-01	-1.43e-04	7.11e-01	3.71e-01
	4619	-4.08e+00	2.77e-01	-2.19e-01	-1.43e-04	6.84e-01	3.36e-01
	4618	-4.07e+00	1.95e-01	3.08e-01	7.50e-05	-4.12e-01	6.41e-01
	4618	-4.21e+00	1.95e-01	3.08e-01	7.50e-05	-2.07e-01	5.11e-01
	4618	-4.35e+00	1.95e-01	3.09e-01	7.50e-05	-1.89e-03	3.82e-01
	4618	-4.48e+00	1.95e-01	3.09e-01	7.50e-05	2.03e-01	2.52e-01
	4618	-4.62e+00	1.95e-01	3.09e-01	7.50e-05	4.09e-01	1.23e-01
	4620	-7.27e-01	-2.19e+00	-1.30e+00	-2.03e-04	2.65e-01	-3.34e-01
	4620	-7.52e-01	-2.19e+00	-1.30e+00	-2.03e-04	1.03e-01	-6.01e-02
	4620	-7.78e-01	-2.19e+00	-1.30e+00	-2.03e-04	-5.86e-02	2.14e-01
	4620	-8.03e-01	-2.19e+00	-1.30e+00	-2.03e-04	-2.21e-01	4.88e-01
	4620	-8.29e-01	-2.19e+00	-1.30e+00	-2.03e-04	-3.83e-01	7.62e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-8.16e+00	1.08e-01	8.49e-03	8.67e-06	4.54e-02	3.13e-01
	4589	-8.00e+00	1.08e-01	8.72e-03	8.67e-06	5.22e-02	2.27e-01
	4589	-7.84e+00	1.08e-01	8.96e-03	8.67e-06	5.92e-02	1.42e-01
	4589	-7.68e+00	1.08e-01	9.19e-03	8.67e-06	6.64e-02	5.62e-02
	4589	-7.52e+00	1.08e-01	9.43e-03	8.67e-06	7.37e-02	-2.94e-02
	4590	-6.49e+00	8.64e-01	-1.40e+00	-5.57e-04	5.19e-01	6.91e-01
	4590	-6.46e+00	8.64e-01	-1.40e+00	-5.57e-04	3.44e-01	5.83e-01
	4590	-6.44e+00	8.64e-01	-1.40e+00	-5.57e-04	1.69e-01	4.75e-01
	4590	-6.41e+00	8.64e-01	-1.40e+00	-5.57e-04	-6.59e-03	3.67e-01
	4590	-6.39e+00	8.64e-01	-1.40e+00	-5.57e-04	-1.82e-01	2.59e-01
C07	4599	-3.92e+00	-4.18e-01	-3.07e-01	2.35e-04	7.89e-01	-8.05e-01
	4599	-3.95e+00	-4.18e-01	-3.07e-01	2.35e-04	7.51e-01	-7.53e-01
	4599	-3.97e+00	-4.18e-01	-3.07e-01	2.35e-04	7.12e-01	-7.01e-01
	4599	-4.00e+00	-4.18e-01	-3.07e-01	2.35e-04	6.74e-01	-6.49e-01
	4599	-4.02e+00	-4.18e-01	-3.07e-01	2.35e-04	6.36e-01	-5.96e-01
	4598	-4.56e+00	-4.19e-01	-3.16e-01	-9.60e-05	4.51e-01	-3.33e-01
	4598	-4.43e+00	-4.19e-01	-3.16e-01	-9.60e-05	2.42e-01	-5.45e-02
	4598	-4.29e+00	-4.19e-01	-3.16e-01	-9.60e-05	3.18e-02	2.24e-01
	4598	-4.16e+00	-4.19e-01	-3.15e-01	-9.60e-05	-1.78e-01	5.02e-01
	4598	-4.02e+00	-4.19e-01	-3.15e-01	-9.60e-05	-3.87e-01	7.81e-01
	4622	-6.29e-01	-1.49e-01	2.46e+00	-5.14e-04	-4.15e-01	-3.77e-01
	4622	-6.55e-01	-1.49e-01	2.46e+00	-5.14e-04	-1.08e-01	-3.59e-01
	4622	-6.80e-01	-1.49e-01	2.46e+00	-5.14e-04	1.99e-01	-3.40e-01
	4622	-7.05e-01	-1.49e-01	2.46e+00	-5.14e-04	5.06e-01	-3.22e-01
	4622	-7.31e-01	-1.49e-01	2.46e+00	-5.14e-04	8.13e-01	-3.03e-01
C08	4600	-4.26e+00	-1.78e-01	-4.52e-01	7.20e-04	9.63e-01	-3.87e-01
	4600	-4.28e+00	-1.78e-01	-4.52e-01	7.20e-04	9.06e-01	-3.65e-01
	4600	-4.31e+00	-1.78e-01	-4.52e-01	7.20e-04	8.50e-01	-3.42e-01
	4600	-4.33e+00	-1.78e-01	-4.52e-01	7.20e-04	7.93e-01	-3.20e-01
	4600	-4.36e+00	-1.78e-01	-4.52e-01	7.20e-04	7.37e-01	-2.98e-01
	4597	-4.90e+00	-4.71e-01	-1.39e-01	1.32e-04	1.42e-01	-4.90e-01
	4597	-4.76e+00	-4.71e-01	-1.39e-01	1.32e-04	5.00e-02	-1.77e-01
	4597	-4.63e+00	-4.71e-01	-1.39e-01	1.32e-04	-4.21e-02	1.36e-01
	4597	-4.49e+00	-4.71e-01	-1.38e-01	1.32e-04	-1.34e-01	4.49e-01
	4597	-4.36e+00	-4.71e-01	-1.38e-01	1.32e-04	-2.26e-01	7.62e-01
	4623	-3.47e+00	-3.56e-01	1.44e-01	-2.05e-04	1.20e-01	4.96e-01
	4623	-3.50e+00	-3.56e-01	1.44e-01	-2.05e-04	1.38e-01	5.41e-01
	4623	-3.52e+00	-3.56e-01	1.44e-01	-2.05e-04	1.56e-01	5.85e-01
	4623	-3.55e+00	-3.56e-01	1.44e-01	-2.05e-04	1.74e-01	6.29e-01
	4623	-3.57e+00	-3.56e-01	1.44e-01	-2.05e-04	1.92e-01	6.74e-01
C09	4601	-4.39e+00	-1.31e-01	-5.26e-01	6.98e-04	1.12e+00	-2.83e-01
	4601	-4.42e+00	-1.31e-01	-5.26e-01	6.98e-04	1.05e+00	-2.66e-01
	4601	-4.44e+00	-1.31e-01	-5.26e-01	6.98e-04	9.86e-01	-2.50e-01
	4601	-4.47e+00	-1.31e-01	-5.26e-01	6.98e-04	9.20e-01	-2.34e-01
	4601	-4.49e+00	-1.31e-01	-5.26e-01	6.98e-04	8.54e-01	-2.17e-01
	4596	-5.03e+00	-5.32e-01	-1.27e-01	5.97e-05	1.34e-01	-5.56e-01
	4596	-4.90e+00	-5.32e-01	-1.27e-01	5.97e-05	4.91e-02	-2.03e-01
	4596	-4.76e+00	-5.32e-01	-1.27e-01	5.97e-05	-3.54e-02	1.51e-01
	4596	-4.63e+00	-5.32e-01	-1.27e-01	5.97e-05	-1.20e-01	5.04e-01
	4596	-4.49e+00	-5.32e-01	-1.27e-01	5.97e-05	-2.04e-01	8.58e-01
	4624	-3.62e+00	-4.17e-01	1.47e-01	-2.36e-04	1.02e-01	5.63e-01
	4624	-3.65e+00	-4.17e-01	1.47e-01	-2.36e-04	1.20e-01	6.15e-01
	4624	-3.67e+00	-4.17e-01	1.47e-01	-2.36e-04	1.39e-01	6.67e-01
	4624	-3.70e+00	-4.17e-01	1.47e-01	-2.36e-04	1.57e-01	7.19e-01
	4624	-3.72e+00	-4.17e-01	1.47e-01	-2.36e-04	1.76e-01	7.71e-01
C10	4602	-4.48e+00	-1.67e-01	-5.60e-01	6.41e-04	1.20e+00	-3.67e-01
	4602	-4.50e+00	-1.67e-01	-5.60e-01	6.41e-04	1.13e+00	-3.46e-01
	4602	-4.53e+00	-1.67e-01	-5.60e-01	6.41e-04	1.06e+00	-3.25e-01
	4602	-4.55e+00	-1.67e-01	-5.60e-01	6.41e-04	9.87e-01	-3.05e-01
	4602	-4.58e+00	-1.67e-01	-5.60e-01	6.41e-04	9.17e-01	-2.84e-01
	4595	-5.12e+00	-5.72e-01	-1.42e-01	9.99e-05	1.42e-01	-5.90e-01
	4595	-4.98e+00	-5.72e-01	-1.42e-01	9.99e-05	4.73e-02	-2.09e-01
	4595	-4.85e+00	-5.72e-01	-1.42e-01	9.99e-05	-4.70e-02	1.71e-01
	4595	-4.71e+00	-5.72e-01	-1.42e-01	9.99e-05	-1.41e-01	5.51e-01
	4595	-4.58e+00	-5.72e-01	-1.41e-01	9.99e-05	-2.35e-01	9.31e-01
	4625	-3.70e+00	-4.57e-01	1.23e-01	-3.00e-04	1.15e-01	5.95e-01
	4625	-3.73e+00	-4.57e-01	1.23e-01	-3.00e-04	1.30e-01	6.52e-01
	4625	-3.75e+00	-4.57e-01	1.23e-01	-3.00e-04	1.46e-01	7.10e-01
	4625	-3.78e+00	-4.57e-01	1.23e-01	-3.00e-04	1.61e-01	7.67e-01
	4625	-3.80e+00	-4.57e-01	1.23e-01	-3.00e-04	1.77e-01	8.24e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-4.52e+00	-4.51e-02	-5.99e-01	6.88e-04	1.28e+00	-9.40e-02
	4603	-4.54e+00	-4.51e-02	-5.99e-01	6.88e-04	1.20e+00	-8.84e-02
	4603	-4.57e+00	-4.51e-02	-5.99e-01	6.88e-04	1.13e+00	-8.27e-02
	4603	-4.59e+00	-4.51e-02	-5.99e-01	6.88e-04	1.05e+00	-7.71e-02
	4603	-4.62e+00	-4.51e-02	-5.99e-01	6.88e-04	9.79e-01	-7.14e-02
	4594	-5.16e+00	-5.93e-01	-1.23e-01	3.78e-05	1.35e-01	-6.14e-01
	4594	-5.02e+00	-5.93e-01	-1.23e-01	3.78e-05	5.32e-02	-2.20e-01
	4594	-4.89e+00	-5.93e-01	-1.23e-01	3.78e-05	-2.83e-02	1.75e-01
	4594	-4.75e+00	-5.93e-01	-1.22e-01	3.78e-05	-1.10e-01	5.69e-01
	4594	-4.62e+00	-5.93e-01	-1.22e-01	3.78e-05	-1.91e-01	9.63e-01
	4626	-3.74e+00	-4.78e-01	1.17e-01	-1.98e-04	8.17e-02	6.23e-01
	4626	-3.76e+00	-4.78e-01	1.17e-01	-1.98e-04	9.63e-02	6.83e-01
	4626	-3.79e+00	-4.78e-01	1.17e-01	-1.98e-04	1.11e-01	7.43e-01
	4626	-3.81e+00	-4.78e-01	1.18e-01	-1.98e-04	1.26e-01	8.03e-01
	4626	-3.84e+00	-4.78e-01	1.18e-01	-1.98e-04	1.40e-01	8.62e-01
C12	4604	-4.61e+00	-7.22e-02	-6.13e-01	5.71e-04	1.31e+00	-1.53e-01
	4604	-4.64e+00	-7.22e-02	-6.13e-01	5.71e-04	1.24e+00	-1.44e-01
	4604	-4.66e+00	-7.22e-02	-6.13e-01	5.71e-04	1.16e+00	-1.35e-01
	4604	-4.69e+00	-7.22e-02	-6.13e-01	5.71e-04	1.08e+00	-1.26e-01
	4604	-4.71e+00	-7.22e-02	-6.13e-01	5.71e-04	1.01e+00	-1.17e-01
	4593	-5.25e+00	-6.09e-01	-1.32e-01	6.61e-05	1.42e-01	-6.27e-01
	4593	-5.12e+00	-6.09e-01	-1.32e-01	6.61e-05	5.42e-02	-2.22e-01
	4593	-4.98e+00	-6.09e-01	-1.32e-01	6.61e-05	-3.37e-02	1.82e-01
	4593	-4.85e+00	-6.09e-01	-1.32e-01	6.61e-05	-1.22e-01	5.87e-01
	4593	-4.71e+00	-6.09e-01	-1.32e-01	6.61e-05	-2.09e-01	9.91e-01
	4627	-3.84e+00	-4.96e-01	1.11e-01	-1.44e-04	7.87e-02	6.38e-01
	4627	-3.87e+00	-4.96e-01	1.11e-01	-1.44e-04	9.25e-02	7.00e-01
	4627	-3.89e+00	-4.96e-01	1.11e-01	-1.44e-04	1.06e-01	7.62e-01
	4627	-3.92e+00	-4.96e-01	1.11e-01	-1.44e-04	1.20e-01	8.24e-01
	4627	-3.94e+00	-4.96e-01	1.11e-01	-1.44e-04	1.34e-01	8.86e-01
C13	4605	-4.55e+00	7.99e-02	-6.06e-01	7.13e-04	1.30e+00	1.97e-01
	4605	-4.58e+00	7.99e-02	-6.06e-01	7.13e-04	1.22e+00	1.87e-01
	4605	-4.61e+00	7.99e-02	-6.06e-01	7.13e-04	1.15e+00	1.77e-01
	4605	-4.63e+00	7.99e-02	-6.06e-01	7.13e-04	1.07e+00	1.67e-01
	4605	-4.66e+00	7.99e-02	-6.06e-01	7.13e-04	9.98e-01	1.57e-01
	4592	-5.20e+00	-6.07e-01	-1.05e-01	-1.55e-05	1.37e-01	-6.13e-01
	4592	-5.06e+00	-6.07e-01	-1.05e-01	-1.55e-05	6.74e-02	-2.10e-01
	4592	-4.93e+00	-6.07e-01	-1.04e-01	-1.55e-05	-2.04e-03	1.94e-01
	4592	-4.79e+00	-6.07e-01	-1.04e-01	-1.55e-05	-7.14e-02	5.97e-01
	4592	-4.66e+00	-6.07e-01	-1.04e-01	-1.55e-05	-1.41e-01	1.00e+00
	4628	-3.79e+00	4.96e-01	-1.99e-02	-3.28e-04	-4.19e-02	-6.27e-01
	4628	-3.81e+00	4.96e-01	-1.99e-02	-3.28e-04	-4.44e-02	-6.89e-01
	4628	-3.84e+00	4.96e-01	-1.99e-02	-3.28e-04	-4.69e-02	-7.51e-01
	4628	-3.86e+00	4.96e-01	-1.99e-02	-3.28e-04	-4.94e-02	-8.13e-01
	4628	-3.89e+00	4.96e-01	-1.99e-02	-3.28e-04	-5.19e-02	-8.75e-01
C14	4606	-2.93e+00	-5.79e-01	6.96e-02	-4.35e-04	-8.66e-02	-1.42e+00
	4606	-2.96e+00	-5.79e-01	6.97e-02	-4.35e-04	-7.79e-02	-1.35e+00
	4606	-2.98e+00	-5.79e-01	6.97e-02	-4.35e-04	-6.92e-02	-1.27e+00
	4606	-3.01e+00	-5.79e-01	6.98e-02	-4.35e-04	-6.05e-02	-1.20e+00
	4606	-3.03e+00	-5.79e-01	6.98e-02	-4.35e-04	-5.17e-02	-1.13e+00
	4591	-3.57e+00	-5.65e-01	-1.44e-01	7.74e-04	1.80e-01	-3.92e-01
	4591	-3.44e+00	-5.65e-01	-1.44e-01	7.74e-04	8.43e-02	-1.61e-02
	4591	-3.30e+00	-5.65e-01	-1.44e-01	7.74e-04	-1.14e-02	3.60e-01
	4591	-3.17e+00	-5.65e-01	-1.44e-01	7.74e-04	-1.07e-01	7.35e-01
	4591	-3.03e+00	-5.65e-01	-1.44e-01	7.74e-04	-2.03e-01	1.11e+00
	4629	-2.89e+00	5.04e-01	6.08e-01	-8.15e-04	-1.82e-01	-3.91e-01
	4629	-2.91e+00	5.04e-01	6.08e-01	-8.15e-04	-1.06e-01	-4.54e-01
	4629	-2.94e+00	5.04e-01	6.08e-01	-8.15e-04	-2.96e-02	-5.17e-01
	4629	-2.96e+00	5.04e-01	6.08e-01	-8.15e-04	4.65e-02	-5.80e-01
	4629	-2.99e+00	5.04e-01	6.09e-01	-8.15e-04	1.23e-01	-6.43e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-5.26e+00	3.99e-01	2.51e-01	-1.83e-04	-3.11e-01	1.58e-01
	4608	-5.28e+00	3.99e-01	2.52e-01	-1.83e-04	-2.80e-01	1.08e-01
	4608	-5.31e+00	3.99e-01	2.52e-01	-1.83e-04	-2.48e-01	5.86e-02
	4608	-5.33e+00	3.99e-01	2.52e-01	-1.83e-04	-2.17e-01	8.69e-03
	4608	-5.36e+00	3.99e-01	2.52e-01	-1.83e-04	-1.85e-01	-4.12e-02
	4607	-5.36e+00	2.86e-01	3.76e-01	-2.25e-04	-1.59e-01	-1.04e-01
	4607	-5.50e+00	2.86e-01	3.76e-01	-2.25e-04	9.11e-02	-2.94e-01
	4607	-5.63e+00	2.86e-01	3.76e-01	-2.25e-04	3.41e-01	-4.84e-01
	4607	-5.77e+00	2.86e-01	3.76e-01	-2.25e-04	5.91e-01	-6.74e-01
	4607	-5.90e+00	2.86e-01	3.76e-01	-2.25e-04	8.41e-01	-8.64e-01
	4615	2.30e+00	-2.25e+00	9.43e+00	1.74e-03	-9.58e-01	7.32e-01
	4615	2.27e+00	-2.25e+00	9.43e+00	1.74e-03	2.21e-01	1.01e+00
	4615	2.25e+00	-2.25e+00	9.43e+00	1.74e-03	1.40e+00	1.29e+00
	4615	2.22e+00	-2.25e+00	9.43e+00	1.74e-03	2.58e+00	1.57e+00
	4615	2.20e+00	-2.25e+00	9.43e+00	1.74e-03	3.76e+00	1.86e+00
C02	4610	-1.00e+01	-1.19e-01	5.64e-03	8.95e-05	-1.65e-01	-1.53e-01
	4610	-1.01e+01	-1.19e-01	5.68e-03	8.95e-05	-1.64e-01	-1.38e-01
	4610	-1.01e+01	-1.19e-01	5.71e-03	8.95e-05	-1.64e-01	-1.23e-01
	4610	-1.01e+01	-1.19e-01	5.75e-03	8.95e-05	-1.63e-01	-1.08e-01
	4610	-1.01e+01	-1.19e-01	5.79e-03	8.95e-05	-1.62e-01	-9.36e-02
	4609	-1.01e+01	3.76e-02	-1.05e-01	1.26e-04	1.30e-01	-1.34e-01
	4609	-1.03e+01	3.76e-02	-1.05e-01	1.26e-04	6.08e-02	-1.59e-01
	4609	-1.04e+01	3.76e-02	-1.04e-01	1.26e-04	-8.63e-03	-1.84e-01
	4609	-1.05e+01	3.76e-02	-1.04e-01	1.26e-04	-7.80e-02	-2.09e-01
	4609	-1.07e+01	3.76e-02	-1.04e-01	1.26e-04	-1.47e-01	-2.34e-01
	4614	5.53e+00	-9.74e-01	1.11e+00	3.27e-04	-2.65e-01	7.86e-02
	4614	5.51e+00	-9.74e-01	1.11e+00	3.27e-04	-1.26e-01	2.00e-01
	4614	5.48e+00	-9.74e-01	1.11e+00	3.27e-04	1.26e-02	3.22e-01
	4614	5.46e+00	-9.74e-01	1.11e+00	3.27e-04	1.52e-01	4.44e-01
	4614	5.43e+00	-9.74e-01	1.11e+00	3.27e-04	2.91e-01	5.66e-01
C03	4612	-7.97e+00	-1.46e-02	-9.54e-02	-1.06e-04	1.70e-01	-8.67e-03
	4612	-8.00e+00	-1.46e-02	-9.53e-02	-1.06e-04	1.58e-01	-6.85e-03
	4612	-8.02e+00	-1.46e-02	-9.53e-02	-1.06e-04	1.46e-01	-5.02e-03
	4612	-8.05e+00	-1.46e-02	-9.53e-02	-1.06e-04	1.34e-01	-3.19e-03
	4612	-8.07e+00	-1.46e-02	-9.52e-02	-1.06e-04	1.22e-01	-1.36e-03
	4611	-8.07e+00	1.04e-01	-1.91e-02	3.74e-05	1.73e-02	1.21e-01
	4611	-8.21e+00	1.04e-01	-1.90e-02	3.74e-05	4.66e-03	5.20e-02
	4611	-8.34e+00	1.04e-01	-1.88e-02	3.74e-05	-7.91e-03	-1.69e-02
	4611	-8.48e+00	1.04e-01	-1.87e-02	3.74e-05	-2.04e-02	-8.58e-02
	4611	-8.62e+00	1.04e-01	-1.85e-02	3.74e-05	-3.27e-02	-1.55e-01
	4613	-4.06e-01	1.04e-01	-5.87e-01	2.07e-04	1.48e-01	-5.55e-02
	4613	-4.32e-01	1.04e-01	-5.87e-01	2.07e-04	7.47e-02	-6.04e-02
	4613	-4.57e-01	1.04e-01	-5.87e-01	2.07e-04	1.24e-03	-8.14e-02
	4613	-4.82e-01	1.04e-01	-5.87e-01	2.07e-04	-7.22e-02	-9.44e-02
	4613	-5.08e-01	1.04e-01	-5.87e-01	2.07e-04	-1.46e-01	-1.07e-01
C04	4617	-7.91e+00	-1.71e-02	-7.34e-02	-1.07e-04	1.31e-01	-1.30e-02
	4617	-7.93e+00	-1.71e-02	-7.34e-02	-1.07e-04	1.22e-01	-1.09e-02
	4617	-7.96e+00	-1.71e-02	-7.33e-02	-1.07e-04	1.13e-01	-8.75e-03
	4617	-7.98e+00	-1.71e-02	-7.33e-02	-1.07e-04	1.04e-01	-6.61e-03
	4617	-8.01e+00	-1.71e-02	-7.33e-02	-1.07e-04	9.47e-02	-4.48e-03
	4616	-8.01e+00	8.26e-02	-1.68e-02	2.31e-05	1.59e-02	9.35e-02
	4616	-8.14e+00	8.26e-02	-1.66e-02	2.31e-05	4.79e-03	3.86e-02
	4616	-8.28e+00	8.26e-02	-1.64e-02	2.31e-05	-6.18e-03	-1.63e-02
	4616	-8.42e+00	8.26e-02	-1.62e-02	2.31e-05	-1.70e-02	-7.12e-02
	4616	-8.55e+00	8.26e-02	-1.61e-02	2.31e-05	-2.78e-02	-1.26e-01
	4621	-4.38e-01	-3.80e-01	4.69e-01	1.75e-04	-1.18e-01	-5.17e-02
	4621	-4.63e-01	-3.80e-01	4.69e-01	1.75e-04	-5.98e-02	-4.10e-03
	4621	-4.88e-01	-3.80e-01	4.69e-01	1.75e-04	-1.22e-03	4.35e-02
	4621	-5.14e-01	-3.80e-01	4.69e-01	1.75e-04	5.74e-02	9.10e-02
	4621	-5.39e-01	-3.80e-01	4.69e-01	1.75e-04	1.16e-01	1.39e-01
C05	4619	-8.20e+00	-4.59e-02	-1.67e-01	-2.07e-04	2.14e-01	-3.34e-02
	4619	-8.23e+00	-4.59e-02	-1.67e-01	-2.07e-04	1.94e-01	-2.77e-02
	4619	-8.25e+00	-4.59e-02	-1.67e-01	-2.07e-04	1.73e-01	-2.20e-02
	4619	-8.28e+00	-4.59e-02	-1.67e-01	-2.07e-04	1.52e-01	-1.62e-02
	4619	-8.30e+00	-4.59e-02	-1.67e-01	-2.07e-04	1.31e-01	-1.05e-02
	4618	-8.30e+00	1.91e-01	-1.13e-02	3.09e-05	-4.54e-03	1.31e-01
	4618	-8.44e+00	1.91e-01	-1.11e-02	3.09e-05	-1.20e-02	4.22e-03
	4618	-8.57e+00	1.91e-01	-1.09e-02	3.09e-05	-1.93e-02	-1.23e-01
	4618	-8.71e+00	1.91e-01	-1.07e-02	3.09e-05	-2.65e-02	-2.50e-01
	4618	-8.84e+00	1.91e-01	-1.05e-02	3.09e-05	-3.35e-02	-3.77e-01
	4620	-2.11e+00	1.11e+00	1.58e+00	5.91e-04	-3.62e-01	-1.08e-01
	4620	-2.14e+00	1.11e+00	1.58e+00	5.91e-04	-1.64e-01	-2.47e-01
	4620	-2.16e+00	1.11e+00	1.58e+00	5.91e-04	3.34e-02	-3.86e-01
	4620	-2.19e+00	1.11e+00	1.58e+00	5.91e-04	2.31e-01	-5.24e-01
	4620	-2.22e+00	1.11e+00	1.58e+00	5.91e-04	4.29e-01	-6.63e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-5.31e+00	5.77e-01	2.34e-01	1.87e-04	-4.23e-01	1.67e+00
	4589	-5.15e+00	5.77e-01	2.35e-01	1.87e-04	-2.38e-01	1.21e+00
	4589	-4.99e+00	5.77e-01	2.35e-01	1.87e-04	-5.29e-02	7.56e-01
	4589	-4.83e+00	5.77e-01	2.35e-01	1.87e-04	1.33e-01	3.01e-01
	4589	-4.67e+00	5.77e-01	2.35e-01	1.87e-04	3.18e-01	-1.55e-01
	4590	4.97e+00	4.85e+00	-7.83e+00	-1.02e-03	2.46e+00	3.34e+00
	4590	5.00e+00	4.85e+00	-7.83e+00	-1.02e-03	1.48e+00	2.74e+00
	4590	5.02e+00	4.85e+00	-7.83e+00	-1.02e-03	5.04e-01	2.13e+00
	4590	5.05e+00	4.85e+00	-7.83e+00	-1.02e-03	-4.74e-01	1.53e+00
	4590	5.08e+00	4.85e+00	-7.83e+00	-1.02e-03	-1.45e+00	9.21e-01
C07	4599	-7.99e+00	-3.30e-04	-1.47e-01	1.63e-04	2.26e-01	-5.16e-02
	4599	-8.02e+00	-3.30e-04	-1.47e-01	1.63e-04	2.08e-01	-5.16e-02
	4599	-8.04e+00	-3.30e-04	-1.47e-01	1.63e-04	1.90e-01	-5.15e-02
	4599	-8.07e+00	-3.30e-04	-1.47e-01	1.63e-04	1.71e-01	-5.15e-02
	4599	-8.09e+00	-3.30e-04	-1.47e-01	1.63e-04	1.53e-01	-5.14e-02
	4598	-8.63e+00	-1.50e-01	3.35e-02	8.54e-06	-9.51e-02	-2.38e-01
	4598	-8.50e+00	-1.50e-01	3.37e-02	8.54e-06	-7.28e-02	-1.38e-01
	4598	-8.36e+00	-1.50e-01	3.38e-02	8.54e-06	-5.03e-02	-3.83e-02
	4598	-8.23e+00	-1.50e-01	3.40e-02	8.54e-06	-2.78e-02	6.14e-02
	4598	-8.09e+00	-1.50e-01	3.42e-02	8.54e-06	-5.11e-03	1.61e-01
	4622	-1.97e+00	-6.59e-01	-1.18e+00	-2.92e-04	1.19e-01	-2.27e-01
	4622	-1.99e+00	-6.59e-01	-1.18e+00	-2.92e-04	-2.86e-02	-1.44e-01
	4622	-2.02e+00	-6.59e-01	-1.18e+00	-2.92e-04	-1.76e-01	-6.20e-02
	4622	-2.04e+00	-6.59e-01	-1.18e+00	-2.92e-04	-3.24e-01	2.05e-02
	4622	-2.07e+00	-6.59e-01	-1.18e+00	-2.92e-04	-4.71e-01	1.03e-01
C08	4600	-7.62e+00	-4.67e-03	-6.95e-02	9.82e-05	1.37e-01	-2.43e-02
	4600	-7.65e+00	-4.67e-03	-6.95e-02	9.82e-05	1.28e-01	-2.37e-02
	4600	-7.67e+00	-4.67e-03	-6.95e-02	9.82e-05	1.19e-01	-2.31e-02
	4600	-7.70e+00	-4.67e-03	-6.94e-02	9.82e-05	1.11e-01	-2.25e-02
	4600	-7.72e+00	-4.67e-03	-6.94e-02	9.82e-05	1.02e-01	-2.19e-02
	4597	-8.27e+00	-7.65e-02	-6.83e-03	5.07e-07	5.28e-03	-9.98e-02
	4597	-8.13e+00	-7.65e-02	-6.68e-03	5.07e-07	7.86e-04	-4.89e-02
	4597	-7.99e+00	-7.65e-02	-6.52e-03	5.07e-07	-3.60e-03	1.94e-03
	4597	-7.86e+00	-7.65e-02	-6.37e-03	5.07e-07	-7.88e-03	5.28e-02
	4597	-7.72e+00	-7.65e-02	-6.21e-03	5.07e-07	-1.21e-02	1.04e-01
	4623	-4.09e-01	6.01e-01	2.42e-02	-6.86e-05	6.95e-04	9.99e-02
	4623	-4.34e-01	6.01e-01	2.42e-02	-6.86e-05	3.72e-03	2.48e-02
	4623	-4.60e-01	6.01e-01	2.42e-02	-6.86e-05	6.74e-03	-5.04e-02
	4623	-4.85e-01	6.01e-01	2.42e-02	-6.86e-05	9.77e-03	-1.26e-01
	4623	-5.11e-01	6.01e-01	2.42e-02	-6.86e-05	1.28e-02	-2.01e-01
C09	4601	-7.68e+00	9.34e-03	-8.86e-02	1.08e-04	1.74e-01	7.57e-05
	4601	-7.71e+00	9.34e-03	-8.86e-02	1.08e-04	1.63e-01	-1.09e-03
	4601	-7.74e+00	9.34e-03	-8.86e-02	1.08e-04	1.52e-01	-2.26e-03
	4601	-7.76e+00	9.34e-03	-8.85e-02	1.08e-04	1.41e-01	-3.43e-03
	4601	-7.79e+00	9.34e-03	-8.85e-02	1.08e-04	1.30e-01	-4.60e-03
	4596	-8.33e+00	-9.58e-02	2.44e-03	-1.80e-05	-9.78e-03	-1.25e-01
	4596	-8.19e+00	-9.58e-02	2.57e-03	-1.80e-05	-8.11e-03	-6.12e-02
	4596	-8.06e+00	-9.58e-02	2.71e-03	-1.80e-05	-6.36e-03	2.50e-03
	4596	-7.92e+00	-9.58e-02	2.85e-03	-1.80e-05	-4.51e-03	6.62e-02
	4596	-7.79e+00	-9.58e-02	2.98e-03	-1.80e-05	-2.58e-03	1.30e-01
	4624	-4.48e-01	5.89e-01	1.24e-01	-8.56e-05	-1.68e-02	1.24e-01
	4624	-4.74e-01	5.89e-01	1.24e-01	-8.56e-05	-1.32e-03	5.06e-02
	4624	-4.99e-01	5.89e-01	1.24e-01	-8.56e-05	1.42e-02	-2.30e-02
	4624	-5.25e-01	5.89e-01	1.24e-01	-8.56e-05	2.97e-02	-9.66e-02
	4624	-5.50e-01	5.89e-01	1.24e-01	-8.56e-05	4.51e-02	-1.70e-01
C10	4602	-7.67e+00	-1.68e-02	-9.64e-02	9.77e-05	1.97e-01	-3.82e-02
	4602	-7.70e+00	-1.68e-02	-9.64e-02	9.77e-05	1.85e-01	-3.61e-02
	4602	-7.73e+00	-1.68e-02	-9.64e-02	9.77e-05	1.73e-01	-3.40e-02
	4602	-7.75e+00	-1.68e-02	-9.63e-02	9.77e-05	1.61e-01	-3.19e-02
	4602	-7.78e+00	-1.68e-02	-9.63e-02	9.77e-05	1.49e-01	-2.98e-02
	4595	-8.32e+00	-1.05e-01	-1.89e-02	-7.10e-06	2.75e-02	-1.28e-01
	4595	-8.18e+00	-1.05e-01	-1.87e-02	-7.10e-06	1.50e-02	-5.85e-02
	4595	-8.05e+00	-1.05e-01	-1.86e-02	-7.10e-06	2.61e-03	1.11e-02
	4595	-7.91e+00	-1.05e-01	-1.85e-02	-7.10e-06	-9.72e-03	8.07e-02
	4595	-7.78e+00	-1.05e-01	-1.84e-02	-7.10e-06	-2.20e-02	1.50e-01
	4625	-4.86e-01	5.56e-01	-2.40e-01	-9.40e-05	2.17e-02	1.29e-01
	4625	-5.11e-01	5.56e-01	-2.40e-01	-9.40e-05	-8.31e-03	5.98e-02
	4625	-5.37e-01	5.56e-01	-2.40e-01	-9.40e-05	-3.84e-02	-9.62e-03
	4625	-5.62e-01	5.56e-01	-2.40e-01	-9.40e-05	-6.84e-02	-7.91e-02
	4625	-5.88e-01	5.56e-01	-2.40e-01	-9.40e-05	-9.85e-02	-1.49e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-7.67e+00	3.20e-02	-1.09e-01	1.25e-04	2.17e-01	4.73e-02
	4603	-7.69e+00	3.20e-02	-1.09e-01	1.25e-04	2.03e-01	4.33e-02
	4603	-7.72e+00	3.20e-02	-1.09e-01	1.25e-04	1.90e-01	3.93e-02
	4603	-7.74e+00	3.20e-02	-1.09e-01	1.25e-04	1.76e-01	3.53e-02
	4603	-7.77e+00	3.20e-02	-1.09e-01	1.25e-04	1.62e-01	3.13e-02
	4594	-8.31e+00	-1.21e-01	1.09e-02	-3.60e-05	-1.82e-02	-1.56e-01
	4594	-8.17e+00	-1.21e-01	1.10e-02	-3.60e-05	-1.10e-02	-7.57e-02
	4594	-8.04e+00	-1.21e-01	1.11e-02	-3.60e-05	-3.68e-03	4.51e-03
	4594	-7.90e+00	-1.21e-01	1.12e-02	-3.60e-05	3.71e-03	8.47e-02
	4594	-7.77e+00	-1.21e-01	1.13e-02	-3.60e-05	1.12e-02	1.65e-01
	4626	-5.06e-01	5.60e-01	1.18e-01	-9.75e-05	-3.15e-02	1.54e-01
	4626	-5.32e-01	5.60e-01	1.18e-01	-9.75e-05	-1.67e-02	8.37e-02
	4626	-5.57e-01	5.60e-01	1.18e-01	-9.75e-05	-1.93e-03	1.36e-02
	4626	-5.83e-01	5.60e-01	1.18e-01	-9.75e-05	1.29e-02	-5.64e-02
	4626	-6.08e-01	5.60e-01	1.18e-01	-9.75e-05	2.77e-02	-1.26e-01
C12	4604	-7.74e+00	2.78e-02	-1.14e-01	1.07e-04	2.24e-01	4.25e-02
	4604	-7.77e+00	2.78e-02	-1.14e-01	1.07e-04	2.10e-01	3.91e-02
	4604	-7.79e+00	2.78e-02	-1.14e-01	1.07e-04	1.96e-01	3.56e-02
	4604	-7.82e+00	2.78e-02	-1.14e-01	1.07e-04	1.81e-01	3.21e-02
	4604	-7.84e+00	2.78e-02	-1.14e-01	1.07e-04	1.67e-01	2.86e-02
	4593	-8.38e+00	-1.25e-01	1.09e-02	-3.49e-05	-1.65e-02	-1.63e-01
	4593	-8.25e+00	-1.25e-01	1.10e-02	-3.49e-05	-9.18e-03	-7.97e-02
	4593	-8.11e+00	-1.25e-01	1.11e-02	-3.49e-05	-1.83e-03	3.20e-03
	4593	-7.98e+00	-1.25e-01	1.12e-02	-3.49e-05	5.57e-03	8.61e-02
	4593	-7.84e+00	-1.25e-01	1.13e-02	-3.49e-05	1.30e-02	1.69e-01
	4627	-5.03e-01	5.65e-01	6.56e-02	-9.11e-05	-3.27e-02	1.60e-01
	4627	-5.29e-01	5.65e-01	6.56e-02	-9.11e-05	-2.45e-02	8.96e-02
	4627	-5.54e-01	5.65e-01	6.56e-02	-9.11e-05	-1.63e-02	1.90e-02
	4627	-5.79e-01	5.65e-01	6.56e-02	-9.11e-05	-8.09e-03	-5.16e-02
	4627	-6.05e-01	5.65e-01	6.56e-02	-9.11e-05	1.14e-04	-1.22e-01
C13	4605	-7.66e+00	3.70e-02	-9.84e-02	9.99e-05	2.12e-01	7.75e-02
	4605	-7.69e+00	3.70e-02	-9.84e-02	9.99e-05	1.99e-01	7.29e-02
	4605	-7.71e+00	3.70e-02	-9.84e-02	9.99e-05	1.87e-01	6.83e-02
	4605	-7.74e+00	3.70e-02	-9.83e-02	9.99e-05	1.75e-01	6.36e-02
	4605	-7.76e+00	3.70e-02	-9.83e-02	9.99e-05	1.62e-01	5.90e-02
	4592	-8.31e+00	-1.12e-01	-4.39e-04	-6.06e-05	9.79e-03	-1.25e-01
	4592	-8.17e+00	-1.12e-01	-3.57e-04	-6.06e-05	9.53e-03	-5.05e-02
	4592	-8.04e+00	-1.12e-01	-2.75e-04	-6.06e-05	9.32e-03	2.39e-02
	4592	-7.90e+00	-1.12e-01	-1.94e-04	-6.06e-05	9.16e-03	9.83e-02
	4592	-7.76e+00	-1.12e-01	-1.12e-04	-6.06e-05	9.06e-03	1.73e-01
	4628	-4.51e-01	-5.68e-01	2.20e-01	-1.24e-04	9.35e-03	-1.25e-01
	4628	-4.76e-01	-5.68e-01	2.20e-01	-1.24e-04	3.68e-02	-5.39e-02
	4628	-5.02e-01	-5.68e-01	2.20e-01	-1.24e-04	6.43e-02	1.71e-02
	4628	-5.27e-01	-5.68e-01	2.20e-01	-1.24e-04	9.17e-02	8.81e-02
	4628	-5.53e-01	-5.68e-01	2.20e-01	-1.24e-04	1.19e-01	1.59e-01
C14	4606	-4.08e+00	-1.67e-01	1.81e-01	-1.38e-04	-1.85e-01	-3.63e-01
	4606	-4.11e+00	-1.67e-01	1.81e-01	-1.38e-04	-1.63e-01	-3.42e-01
	4606	-4.13e+00	-1.67e-01	1.81e-01	-1.38e-04	-1.40e-01	-3.21e-01
	4606	-4.16e+00	-1.67e-01	1.81e-01	-1.38e-04	-1.17e-01	-3.00e-01
	4606	-4.19e+00	-1.67e-01	1.81e-01	-1.38e-04	-9.47e-02	-2.80e-01
	4591	-4.73e+00	-1.43e-01	-1.98e-01	1.71e-04	3.95e-01	-1.15e-01
	4591	-4.59e+00	-1.43e-01	-1.98e-01	1.71e-04	2.63e-01	-2.00e-02
	4591	-4.46e+00	-1.43e-01	-1.98e-01	1.71e-04	1.32e-01	7.48e-02
	4591	-4.32e+00	-1.43e-01	-1.98e-01	1.71e-04	5.77e-05	1.70e-01
	4591	-4.19e+00	-1.43e-01	-1.98e-01	1.71e-04	-1.31e-01	2.64e-01
	4629	-8.54e-01	-2.07e-01	3.88e+00	-2.89e-04	-3.95e-01	-1.13e-01
	4629	-8.80e-01	-2.07e-01	3.88e+00	-2.89e-04	8.95e-02	-8.73e-02
	4629	-9.05e-01	-2.07e-01	3.88e+00	-2.89e-04	5.74e-01	-6.14e-02
	4629	-9.31e-01	-2.07e-01	3.88e+00	-2.89e-04	1.06e+00	-3.56e-02
	4629	-9.56e-01	-2.07e-01	3.88e+00	-2.89e-04	1.54e+00	-9.73e-03

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-4.22e+00	3.94e-01	1.85e-01	-6.65e-05	-2.18e-01	3.90e-01
	4608	-4.25e+00	3.94e-01	1.85e-01	-6.65e-05	-1.95e-01	3.41e-01
	4608	-4.27e+00	3.94e-01	1.85e-01	-6.65e-05	-1.72e-01	2.92e-01
	4608	-4.30e+00	3.94e-01	1.85e-01	-6.65e-05	-1.49e-01	2.43e-01
	4608	-4.33e+00	3.94e-01	1.85e-01	-6.65e-05	-1.26e-01	1.94e-01
	4607	-4.33e+00	3.04e-01	3.11e-01	-1.84e-04	-1.87e-01	1.36e-01
	4607	-4.46e+00	3.04e-01	3.11e-01	-1.84e-04	2.03e-02	-6.58e-02
	4607	-4.60e+00	3.04e-01	3.12e-01	-1.84e-04	2.27e-01	-2.68e-01
	4607	-4.73e+00	3.04e-01	3.12e-01	-1.84e-04	4.35e-01	-4.70e-01
	4607	-4.87e+00	3.04e-01	3.12e-01	-1.84e-04	6.42e-01	-6.72e-01
	4615	1.13e+00	-1.75e+00	6.85e+00	1.35e-03	-7.33e-01	5.71e-01
	4615	1.10e+00	-1.75e+00	6.85e+00	1.35e-03	1.23e-01	7.90e-01
	4615	1.08e+00	-1.75e+00	6.85e+00	1.35e-03	9.80e-01	1.01e+00
	4615	1.05e+00	-1.75e+00	6.85e+00	1.35e-03	1.84e+00	1.23e+00
	4615	1.02e+00	-1.75e+00	6.85e+00	1.35e-03	2.69e+00	1.45e+00
C02	4610	-7.83e+00	-7.88e-02	-8.25e-02	-9.58e-05	1.27e-01	-1.16e-01
	4610	-7.85e+00	-7.88e-02	-8.25e-02	-9.58e-05	1.16e-01	-1.06e-01
	4610	-7.88e+00	-7.88e-02	-8.25e-02	-9.58e-05	1.06e-01	-9.64e-02
	4610	-7.90e+00	-7.88e-02	-8.24e-02	-9.58e-05	9.58e-02	-8.65e-02
	4610	-7.93e+00	-7.88e-02	-8.24e-02	-9.58e-05	8.55e-02	-7.67e-02
	4609	-7.93e+00	1.10e-01	-4.72e-02	9.98e-05	5.35e-02	1.02e-01
	4609	-8.06e+00	1.10e-01	-4.71e-02	9.98e-05	2.22e-02	2.84e-02
	4609	-8.20e+00	1.10e-01	-4.70e-02	9.98e-05	-9.06e-03	-4.49e-02
	4609	-8.33e+00	1.10e-01	-4.68e-02	9.98e-05	-4.02e-02	-1.18e-01
	4609	-8.47e+00	1.10e-01	-4.67e-02	9.98e-05	-7.13e-02	-1.91e-01
	4614	3.39e+00	-5.77e-01	7.55e-01	2.56e-04	-2.04e-01	1.70e-02
	4614	3.37e+00	-5.77e-01	7.55e-01	2.56e-04	-1.09e-01	8.91e-02
	4614	3.34e+00	-5.77e-01	7.55e-01	2.56e-04	-1.47e-02	1.61e-01
	4614	3.32e+00	-5.77e-01	7.55e-01	2.56e-04	7.98e-02	2.33e-01
	4614	3.29e+00	-5.77e-01	7.55e-01	2.56e-04	1.74e-01	3.05e-01
C03	4612	-7.99e+00	6.85e-03	-9.75e-02	-7.30e-05	1.14e-01	1.72e-02
	4612	-8.02e+00	6.85e-03	-9.74e-02	-7.30e-05	1.02e-01	1.63e-02
	4612	-8.04e+00	6.85e-03	-9.74e-02	-7.30e-05	8.99e-02	1.55e-02
	4612	-8.07e+00	6.85e-03	-9.74e-02	-7.30e-05	7.78e-02	1.46e-02
	4612	-8.09e+00	6.85e-03	-9.73e-02	-7.30e-05	6.56e-02	1.38e-02
	4611	-8.09e+00	1.09e-01	1.90e-03	-1.43e-05	-5.08e-03	6.69e-02
	4611	-8.23e+00	1.09e-01	2.06e-03	-1.43e-05	-3.74e-03	-5.34e-03
	4611	-8.36e+00	1.09e-01	2.21e-03	-1.43e-05	-2.32e-03	-7.75e-02
	4611	-8.50e+00	1.09e-01	2.37e-03	-1.43e-05	-8.00e-04	-1.50e-01
	4611	-8.63e+00	1.09e-01	2.53e-03	-1.43e-05	8.27e-04	-2.22e-01
	4613	3.47e+00	4.57e-02	-9.52e-01	2.28e-04	2.20e-01	-3.23e-02
	4613	3.45e+00	4.57e-02	-9.52e-01	2.28e-04	1.01e-01	-3.80e-02
	4613	3.42e+00	4.57e-02	-9.52e-01	2.28e-04	-1.84e-02	-4.37e-02
	4613	3.40e+00	4.57e-02	-9.52e-01	2.28e-04	-1.37e-01	-4.94e-02
	4613	3.37e+00	4.57e-02	-9.52e-01	2.28e-04	-2.56e-01	-5.51e-02
C04	4617	-7.91e+00	-3.99e-03	-7.49e-02	-6.61e-05	6.46e-02	6.95e-04
	4617	-7.93e+00	-3.99e-03	-7.49e-02	-6.61e-05	5.53e-02	1.19e-03
	4617	-7.96e+00	-3.99e-03	-7.48e-02	-6.61e-05	4.59e-02	1.69e-03
	4617	-7.98e+00	-3.99e-03	-7.48e-02	-6.61e-05	3.66e-02	2.19e-03
	4617	-8.01e+00	-3.99e-03	-7.48e-02	-6.61e-05	2.72e-02	2.69e-03
	4616	-8.01e+00	8.57e-02	-3.93e-03	-3.51e-05	6.12e-04	2.73e-02
	4616	-8.14e+00	8.57e-02	-3.75e-03	-3.51e-05	-1.94e-03	-2.96e-02
	4616	-8.28e+00	8.57e-02	-3.57e-03	-3.51e-05	-4.37e-03	-8.66e-02
	4616	-8.41e+00	8.57e-02	-3.40e-03	-3.51e-05	-6.69e-03	-1.44e-01
	4616	-8.55e+00	8.57e-02	-3.22e-03	-3.51e-05	-8.89e-03	-2.01e-01
	4621	3.41e+00	-5.77e-01	7.83e-01	1.99e-04	-1.67e-01	-1.11e-01
	4621	3.38e+00	-5.77e-01	7.83e-01	1.99e-04	-6.96e-02	-3.85e-02
	4621	3.36e+00	-5.77e-01	7.83e-01	1.99e-04	2.83e-02	3.37e-02
	4621	3.33e+00	-5.77e-01	7.83e-01	1.99e-04	1.26e-01	1.06e-01
	4621	3.31e+00	-5.77e-01	7.83e-01	1.99e-04	2.24e-01	1.78e-01
C05	4619	-7.02e+00	-5.14e-02	-2.48e-01	-9.93e-05	1.52e-01	-8.73e-03
	4619	-7.04e+00	-5.14e-02	-2.48e-01	-9.93e-05	1.21e-01	-2.30e-03
	4619	-7.07e+00	-5.14e-02	-2.48e-01	-9.93e-05	9.02e-02	4.13e-03
	4619	-7.10e+00	-5.14e-02	-2.48e-01	-9.93e-05	5.92e-02	1.06e-02
	4619	-7.12e+00	-5.14e-02	-2.48e-01	-9.93e-05	2.81e-02	1.70e-02
	4618	-7.12e+00	2.69e-01	-9.70e-03	-9.33e-05	-2.01e-02	2.60e-02
	4618	-7.26e+00	2.69e-01	-9.48e-03	-9.33e-05	-2.65e-02	-1.53e-01
	4618	-7.39e+00	2.69e-01	-9.27e-03	-9.33e-05	-3.27e-02	-3.32e-01
	4618	-7.53e+00	2.69e-01	-9.06e-03	-9.33e-05	-3.88e-02	-5.11e-01
	4618	-7.66e+00	2.69e-01	-8.85e-03	-9.33e-05	-4.47e-02	-6.90e-01
	4620	1.07e+00	2.91e+00	3.08e+00	9.28e-04	-6.58e-01	-2.14e-01
	4620	1.05e+00	2.91e+00	3.08e+00	9.28e-04	-2.73e-01	-5.77e-01
	4620	1.02e+00	2.91e+00	3.08e+00	9.28e-04	1.12e-01	-9.41e-01
	4620	9.95e-01	2.91e+00	3.08e+00	9.28e-04	4.97e-01	-1.30e+00
	4620	9.70e-01	2.91e+00	3.08e+00	9.28e-04	8.82e-01	-1.67e+00

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-5.02e+00	4.68e-01	1.98e-01	1.40e-04	-3.37e-01	1.32e+00
	4589	-4.86e+00	4.68e-01	1.98e-01	1.40e-04	-1.81e-01	9.54e-01
	4589	-4.70e+00	4.68e-01	1.99e-01	1.40e-04	-2.39e-02	5.85e-01
	4589	-4.54e+00	4.68e-01	1.99e-01	1.40e-04	1.33e-01	2.15e-01
	4589	-4.37e+00	4.68e-01	1.99e-01	1.40e-04	2.90e-01	-1.55e-01
	4590	3.25e+00	3.93e+00	-6.26e+00	-8.20e-04	1.98e+00	2.69e+00
	4590	3.28e+00	3.93e+00	-6.26e+00	-8.20e-04	1.19e+00	2.20e+00
	4590	3.30e+00	3.93e+00	-6.26e+00	-8.20e-04	4.11e-01	1.71e+00
	4590	3.33e+00	3.93e+00	-6.26e+00	-8.20e-04	-3.72e-01	1.22e+00
	4590	3.36e+00	3.93e+00	-6.26e+00	-8.20e-04	-1.15e+00	7.31e-01
C07	4599	-6.84e+00	7.23e-02	-1.79e-01	1.40e-04	1.67e-01	4.22e-02
	4599	-6.87e+00	7.23e-02	-1.79e-01	1.40e-04	1.45e-01	3.32e-02
	4599	-6.89e+00	7.23e-02	-1.79e-01	1.40e-04	1.23e-01	2.41e-02
	4599	-6.92e+00	7.23e-02	-1.79e-01	1.40e-04	1.00e-01	1.51e-02
	4599	-6.94e+00	7.23e-02	-1.79e-01	1.40e-04	7.78e-02	6.04e-03
	4598	-7.49e+00	-1.59e-01	1.13e-01	3.81e-05	-2.74e-01	-3.49e-01
	4598	-7.35e+00	-1.59e-01	1.14e-01	3.81e-05	-1.99e-01	-2.44e-01
	4598	-7.22e+00	-1.59e-01	1.14e-01	3.81e-05	-1.23e-01	-1.38e-01
	4598	-7.08e+00	-1.59e-01	1.14e-01	3.81e-05	-4.76e-02	-3.27e-02
	4598	-6.94e+00	-1.59e-01	1.14e-01	3.81e-05	2.82e-02	7.28e-02
	4622	1.03e+00	-8.22e-01	-3.13e+00	-4.04e-04	3.09e-01	-3.19e-01
	4622	1.00e+00	-8.22e-01	-3.13e+00	-4.04e-04	-8.20e-02	-2.16e-01
	4622	9.79e-01	-8.22e-01	-3.13e+00	-4.04e-04	-4.73e-01	-1.13e-01
	4622	9.54e-01	-8.22e-01	-3.13e+00	-4.04e-04	-8.63e-01	-1.06e-02
	4622	9.29e-01	-8.22e-01	-3.13e+00	-4.04e-04	-1.25e+00	9.22e-02
C08	4600	-7.78e+00	-4.63e-03	-4.90e-02	7.23e-05	7.64e-02	-1.91e-02
	4600	-7.80e+00	-4.63e-03	-4.90e-02	7.23e-05	7.03e-02	-1.86e-02
	4600	-7.83e+00	-4.63e-03	-4.90e-02	7.23e-05	6.42e-02	-1.80e-02
	4600	-7.86e+00	-4.63e-03	-4.90e-02	7.23e-05	5.80e-02	-1.74e-02
	4600	-7.88e+00	-4.63e-03	-4.89e-02	7.23e-05	5.19e-02	-1.68e-02
	4597	-8.42e+00	-5.63e-02	-8.93e-03	2.84e-05	1.11e-02	-9.64e-02
	4597	-8.29e+00	-5.63e-02	-8.77e-03	2.84e-05	5.24e-03	-5.90e-02
	4597	-8.15e+00	-5.63e-02	-8.61e-03	2.84e-05	-5.35e-04	-2.15e-02
	4597	-8.02e+00	-5.63e-02	-8.46e-03	2.84e-05	-6.21e-03	1.59e-02
	4597	-7.88e+00	-5.63e-02	-8.30e-03	2.84e-05	-1.18e-02	5.33e-02
	4623	3.16e+00	9.84e-01	5.15e-02	-3.82e-05	6.69e-03	9.68e-02
	4623	3.14e+00	9.84e-01	5.15e-02	-3.82e-05	1.31e-02	-2.62e-02
	4623	3.11e+00	9.84e-01	5.15e-02	-3.82e-05	1.96e-02	-1.49e-01
	4623	3.09e+00	9.84e-01	5.15e-02	-3.82e-05	2.60e-02	-2.72e-01
	4623	3.06e+00	9.84e-01	5.15e-02	-3.82e-05	3.24e-02	-3.95e-01
C09	4601	-7.90e+00	3.02e-03	-7.62e-02	7.78e-05	1.28e-01	-1.63e-02
	4601	-7.93e+00	3.02e-03	-7.62e-02	7.78e-05	1.18e-01	-1.67e-02
	4601	-7.95e+00	3.02e-03	-7.61e-02	7.78e-05	1.09e-01	-1.71e-02
	4601	-7.98e+00	3.02e-03	-7.61e-02	7.78e-05	9.94e-02	-1.75e-02
	4601	-8.00e+00	3.02e-03	-7.61e-02	7.78e-05	8.99e-02	-1.79e-02
	4596	-8.54e+00	-8.37e-02	-4.30e-03	5.30e-06	-5.75e-03	-1.32e-01
	4596	-8.41e+00	-8.37e-02	-4.16e-03	5.30e-06	-8.56e-03	-7.68e-02
	4596	-8.27e+00	-8.37e-02	-4.03e-03	5.30e-06	-1.13e-02	-2.11e-02
	4596	-8.14e+00	-8.37e-02	-3.89e-03	5.30e-06	-1.39e-02	3.45e-02
	4596	-8.00e+00	-8.37e-02	-3.75e-03	5.30e-06	-1.65e-02	9.02e-02
	4624	3.08e+00	9.68e-01	2.28e-01	-6.62e-05	-1.32e-02	1.32e-01
	4624	3.06e+00	9.68e-01	2.28e-01	-6.62e-05	1.53e-02	1.10e-02
	4624	3.03e+00	9.68e-01	2.28e-01	-6.62e-05	4.38e-02	-1.10e-01
	4624	3.01e+00	9.68e-01	2.28e-01	-6.62e-05	7.23e-02	-2.31e-01
	4624	2.98e+00	9.68e-01	2.28e-01	-6.62e-05	1.01e-01	-3.52e-01
C10	4602	-7.91e+00	-3.10e-02	-8.56e-02	7.79e-05	1.62e-01	-5.95e-02
	4602	-7.93e+00	-3.10e-02	-8.56e-02	7.79e-05	1.51e-01	-5.56e-02
	4602	-7.96e+00	-3.10e-02	-8.56e-02	7.79e-05	1.40e-01	-5.18e-02
	4602	-7.99e+00	-3.10e-02	-8.56e-02	7.79e-05	1.30e-01	-4.79e-02
	4602	-8.01e+00	-3.10e-02	-8.55e-02	7.79e-05	1.19e-01	-4.40e-02
	4595	-8.55e+00	-9.50e-02	-3.37e-02	1.39e-05	5.14e-02	-1.31e-01
	4595	-8.42e+00	-9.50e-02	-3.36e-02	1.39e-05	2.90e-02	-6.82e-02
	4595	-8.28e+00	-9.50e-02	-3.35e-02	1.39e-05	6.65e-03	-5.03e-03
	4595	-8.15e+00	-9.50e-02	-3.34e-02	1.39e-05	-1.56e-02	5.81e-02
	4595	-8.01e+00	-9.50e-02	-3.33e-02	1.39e-05	-3.77e-02	1.21e-01
	4625	3.00e+00	9.18e-01	-3.48e-01	-7.49e-05	4.54e-02	1.34e-01
	4625	2.97e+00	9.18e-01	-3.48e-01	-7.49e-05	1.93e-03	1.87e-02
	4625	2.95e+00	9.18e-01	-3.48e-01	-7.49e-05	-4.16e-02	-9.60e-02
	4625	2.92e+00	9.18e-01	-3.48e-01	-7.49e-05	-8.51e-02	-2.11e-01
	4625	2.90e+00	9.18e-01	-3.48e-01	-7.49e-05	-1.29e-01	-3.26e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-7.92e+00	2.61e-02	-1.07e-01	1.09e-04	1.91e-01	2.88e-02
	4603	-7.94e+00	2.61e-02	-1.07e-01	1.09e-04	1.78e-01	2.56e-02
	4603	-7.97e+00	2.61e-02	-1.07e-01	1.09e-04	1.65e-01	2.23e-02
	4603	-7.99e+00	2.61e-02	-1.06e-01	1.09e-04	1.51e-01	1.90e-02
	4603	-8.02e+00	2.61e-02	-1.06e-01	1.09e-04	1.38e-01	1.58e-02
	4594	-8.56e+00	-1.17e-01	5.13e-03	-1.51e-05	-1.55e-02	-1.73e-01
	4594	-8.43e+00	-1.17e-01	5.23e-03	-1.51e-05	-1.20e-02	-9.48e-02
	4594	-8.29e+00	-1.17e-01	5.33e-03	-1.51e-05	-8.53e-03	-1.69e-02
	4594	-8.16e+00	-1.17e-01	5.44e-03	-1.51e-05	-4.95e-03	6.11e-02
	4594	-8.02e+00	-1.17e-01	5.54e-03	-1.51e-05	-1.30e-03	1.39e-01
	4626	2.94e+00	9.26e-01	2.27e-01	-8.32e-05	-3.02e-02	1.71e-01
	4626	2.91e+00	9.26e-01	2.27e-01	-8.32e-05	-1.82e-03	5.51e-02
	4626	2.89e+00	9.26e-01	2.27e-01	-8.32e-05	2.66e-02	-6.07e-02
	4626	2.86e+00	9.26e-01	2.27e-01	-8.32e-05	5.50e-02	-1.77e-01
	4626	2.84e+00	9.26e-01	2.27e-01	-8.32e-05	8.34e-02	-2.92e-01
C12	4604	-7.98e+00	2.22e-02	-1.12e-01	9.57e-05	2.00e-01	2.71e-02
	4604	-8.00e+00	2.22e-02	-1.12e-01	9.57e-05	1.86e-01	2.43e-02
	4604	-8.03e+00	2.22e-02	-1.12e-01	9.57e-05	1.72e-01	2.15e-02
	4604	-8.05e+00	2.22e-02	-1.12e-01	9.57e-05	1.58e-01	1.88e-02
	4604	-8.08e+00	2.22e-02	-1.12e-01	9.57e-05	1.44e-01	1.60e-02
	4593	-8.62e+00	-1.22e-01	5.40e-03	-1.64e-05	-1.22e-02	-1.79e-01
	4593	-8.49e+00	-1.22e-01	5.49e-03	-1.64e-05	-8.62e-03	-9.77e-02
	4593	-8.35e+00	-1.22e-01	5.57e-03	-1.64e-05	-4.95e-03	-1.68e-02
	4593	-8.21e+00	-1.22e-01	5.66e-03	-1.64e-05	-1.21e-03	6.41e-02
	4593	-8.08e+00	-1.22e-01	5.75e-03	-1.64e-05	2.58e-03	1.45e-01
	4627	3.02e+00	9.39e-01	1.49e-01	-7.79e-05	-3.01e-02	1.76e-01
	4627	3.00e+00	9.39e-01	1.49e-01	-7.79e-05	-1.14e-02	5.91e-02
	4627	2.97e+00	9.39e-01	1.49e-01	-7.79e-05	7.22e-03	-5.82e-02
	4627	2.95e+00	9.39e-01	1.49e-01	-7.79e-05	2.59e-02	-1.76e-01
	4627	2.92e+00	9.39e-01	1.49e-01	-7.79e-05	4.45e-02	-2.93e-01
C13	4605	-7.86e+00	1.63e-02	-9.64e-02	7.49e-05	1.91e-01	3.25e-02
	4605	-7.88e+00	1.63e-02	-9.64e-02	7.49e-05	1.79e-01	3.04e-02
	4605	-7.91e+00	1.63e-02	-9.63e-02	7.49e-05	1.67e-01	2.84e-02
	4605	-7.93e+00	1.63e-02	-9.63e-02	7.49e-05	1.55e-01	2.64e-02
	4605	-7.96e+00	1.63e-02	-9.63e-02	7.49e-05	1.43e-01	2.43e-02
	4592	-8.50e+00	-1.04e-01	-1.99e-02	-3.44e-05	3.40e-02	-1.33e-01
	4592	-8.37e+00	-1.04e-01	-1.98e-02	-3.44e-05	2.08e-02	-6.40e-02
	4592	-8.23e+00	-1.04e-01	-1.97e-02	-3.44e-05	7.70e-03	5.23e-03
	4592	-8.09e+00	-1.04e-01	-1.96e-02	-3.44e-05	-5.36e-03	7.44e-02
	4592	-7.96e+00	-1.04e-01	-1.95e-02	-3.44e-05	-1.84e-02	1.44e-01
	4628	3.11e+00	-9.38e-01	2.81e-01	-1.02e-04	-1.33e-02	-1.37e-01
	4628	3.08e+00	-9.38e-01	2.81e-01	-1.02e-04	2.19e-02	-1.95e-02
	4628	3.06e+00	-9.38e-01	2.81e-01	-1.02e-04	5.71e-02	9.77e-02
	4628	3.03e+00	-9.38e-01	2.81e-01	-1.02e-04	9.23e-02	2.15e-01
	4628	3.01e+00	-9.38e-01	2.81e-01	-1.02e-04	1.27e-01	3.32e-01
C14	4606	-4.28e+00	-1.97e-01	2.56e-01	-1.61e-04	-2.42e-01	-4.02e-01
	4606	-4.31e+00	-1.97e-01	2.56e-01	-1.61e-04	-2.10e-01	-3.77e-01
	4606	-4.33e+00	-1.97e-01	2.56e-01	-1.61e-04	-1.78e-01	-3.53e-01
	4606	-4.36e+00	-1.97e-01	2.56e-01	-1.61e-04	-1.46e-01	-3.28e-01
	4606	-4.38e+00	-1.97e-01	2.56e-01	-1.61e-04	-1.14e-01	-3.04e-01
	4591	-4.92e+00	-1.62e-01	-2.76e-01	1.72e-04	5.79e-01	-1.45e-01
	4591	-4.79e+00	-1.62e-01	-2.76e-01	1.72e-04	3.96e-01	-3.71e-02
	4591	-4.65e+00	-1.62e-01	-2.76e-01	1.72e-04	2.13e-01	7.04e-02
	4591	-4.52e+00	-1.62e-01	-2.76e-01	1.72e-04	2.93e-02	1.78e-01
	4591	-4.38e+00	-1.62e-01	-2.76e-01	1.72e-04	-1.54e-01	2.86e-01
	4629	7.71e-01	-3.72e-01	5.70e+00	-4.08e-04	-5.80e-01	-1.42e-01
	4629	7.45e-01	-3.72e-01	5.70e+00	-4.08e-04	1.32e-01	-9.58e-02
	4629	7.20e-01	-3.72e-01	5.70e+00	-4.08e-04	8.45e-01	-4.93e-02
	4629	6.94e-01	-3.72e-01	5.70e+00	-4.08e-04	1.56e+00	-2.84e-03
	4629	6.69e-01	-3.72e-01	5.70e+00	-4.08e-04	2.27e+00	4.36e-02

ULS - LC 1: 1.35DL + 1.35V_0

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-2.68e+00	3.22e-01	1.28e-01	7.79e-05	-2.09e-01	7.93e-01
	4608	-2.72e+00	3.22e-01	1.28e-01	7.79e-05	-1.93e-01	7.52e-01
	4608	-2.75e+00	3.22e-01	1.28e-01	7.79e-05	-1.77e-01	7.12e-01
	4608	-2.79e+00	3.22e-01	1.28e-01	7.79e-05	-1.61e-01	6.72e-01
	4608	-2.82e+00	3.22e-01	1.28e-01	7.79e-05	-1.45e-01	6.32e-01
	4607	-2.82e+00	2.79e-01	2.06e-01	-2.84e-04	-3.03e-01	5.73e-01
	4607	-3.00e+00	2.79e-01	2.06e-01	-2.84e-04	-1.66e-01	3.88e-01
	4607	-3.19e+00	2.79e-01	2.06e-01	-2.84e-04	-2.90e-02	2.03e-01
	4607	-3.37e+00	2.79e-01	2.06e-01	-2.84e-04	1.08e-01	1.75e-02
	4607	-3.55e+00	2.79e-01	2.06e-01	-2.84e-04	2.45e-01	-1.68e-01
	4615	-2.42e+00	-5.24e-01	1.16e+00	1.95e-04	-2.68e-01	1.27e-01
	4615	-2.45e+00	-5.24e-01	1.16e+00	1.95e-04	-1.24e-01	1.93e-01
	4615	-2.49e+00	-5.24e-01	1.16e+00	1.95e-04	2.10e-02	2.58e-01
	4615	-2.52e+00	-5.24e-01	1.16e+00	1.95e-04	1.66e-01	3.24e-01
	4615	-2.55e+00	-5.24e-01	1.16e+00	1.95e-04	3.10e-01	3.89e-01
C02	4610	-4.49e+00	3.00e-02	-2.21e-01	-4.82e-04	6.07e-01	1.85e-02
	4610	-4.52e+00	3.00e-02	-2.21e-01	-4.82e-04	5.79e-01	1.48e-02
	4610	-4.55e+00	3.00e-02	-2.21e-01	-4.82e-04	5.51e-01	1.10e-02
	4610	-4.59e+00	3.00e-02	-2.20e-01	-4.82e-04	5.24e-01	7.28e-03
	4610	-4.62e+00	3.00e-02	-2.20e-01	-4.82e-04	4.96e-01	3.54e-03
	4609	-4.62e+00	2.16e-01	8.30e-02	1.64e-05	-1.10e-01	4.84e-01
	4609	-4.81e+00	2.16e-01	8.32e-02	1.64e-05	-5.46e-02	3.40e-01
	4609	-4.99e+00	2.16e-01	8.34e-02	1.64e-05	7.34e-04	1.97e-01
	4609	-5.17e+00	2.16e-01	8.36e-02	1.64e-05	5.62e-02	5.29e-02
	4609	-5.35e+00	2.16e-01	8.38e-02	1.64e-05	1.12e-01	-9.08e-02
	4614	-3.08e+00	9.22e-02	8.77e-03	8.26e-05	-4.57e-02	-1.37e-01
	4614	-3.11e+00	9.22e-02	8.78e-03	8.26e-05	-4.46e-02	-1.48e-01
	4614	-3.14e+00	9.22e-02	8.79e-03	8.26e-05	-4.35e-02	-1.60e-01
	4614	-3.18e+00	9.22e-02	8.79e-03	8.26e-05	-4.24e-02	-1.71e-01
	4614	-3.21e+00	9.22e-02	8.80e-03	8.26e-05	-4.13e-02	-1.83e-01
C03	4612	-4.43e+00	1.28e-01	-1.70e-01	-2.74e-04	5.35e-01	2.87e-01
	4612	-4.46e+00	1.28e-01	-1.70e-01	-2.74e-04	5.14e-01	2.71e-01
	4612	-4.49e+00	1.28e-01	-1.70e-01	-2.74e-04	4.92e-01	2.55e-01
	4612	-4.53e+00	1.28e-01	-1.70e-01	-2.74e-04	4.71e-01	2.39e-01
	4612	-4.56e+00	1.28e-01	-1.70e-01	-2.74e-04	4.50e-01	2.23e-01
	4611	-4.56e+00	1.91e-01	1.09e-01	-4.02e-05	-1.62e-01	4.75e-01
	4611	-4.75e+00	1.91e-01	1.09e-01	-4.02e-05	-8.95e-02	3.48e-01
	4611	-4.93e+00	1.91e-01	1.09e-01	-4.02e-05	-1.70e-02	2.21e-01
	4611	-5.11e+00	1.91e-01	1.09e-01	-4.02e-05	5.56e-02	9.45e-02
	4611	-5.29e+00	1.91e-01	1.10e-01	-4.02e-05	1.28e-01	-3.25e-02
	4613	-2.98e+00	-1.04e-01	1.77e-02	-6.50e-06	5.12e-02	1.22e-01
	4613	-3.01e+00	-1.04e-01	1.77e-02	-6.50e-06	5.35e-02	1.35e-01
	4613	-3.05e+00	-1.04e-01	1.77e-02	-6.50e-06	5.57e-02	1.48e-01
	4613	-3.08e+00	-1.04e-01	1.77e-02	-6.50e-06	5.79e-02	1.61e-01
	4613	-3.12e+00	-1.04e-01	1.77e-02	-6.50e-06	6.01e-02	1.74e-01
C04	4617	-4.30e+00	1.23e-01	-1.77e-01	-2.78e-04	4.47e-01	2.56e-01
	4617	-4.33e+00	1.23e-01	-1.77e-01	-2.78e-04	4.25e-01	2.40e-01
	4617	-4.36e+00	1.23e-01	-1.77e-01	-2.78e-04	4.03e-01	2.25e-01
	4617	-4.40e+00	1.23e-01	-1.77e-01	-2.78e-04	3.80e-01	2.10e-01
	4617	-4.43e+00	1.23e-01	-1.77e-01	-2.78e-04	3.58e-01	1.94e-01
	4616	-4.43e+00	1.97e-01	1.06e-01	-7.82e-05	-1.50e-01	3.79e-01
	4616	-4.62e+00	1.97e-01	1.06e-01	-7.82e-05	-7.89e-02	2.48e-01
	4616	-4.80e+00	1.97e-01	1.07e-01	-7.82e-05	-8.07e-03	1.17e-01
	4616	-4.98e+00	1.97e-01	1.07e-01	-7.82e-05	6.29e-02	-1.36e-02
	4616	-5.16e+00	1.97e-01	1.07e-01	-7.82e-05	1.34e-01	-1.44e-01
	4621	-2.88e+00	1.23e-01	8.69e-02	6.06e-05	-3.81e-02	-1.93e-01
	4621	-2.91e+00	1.23e-01	8.69e-02	6.06e-05	-2.73e-02	-2.09e-01
	4621	-2.94e+00	1.23e-01	8.69e-02	6.06e-05	-1.64e-02	-2.24e-01
	4621	-2.98e+00	1.23e-01	8.69e-02	6.06e-05	-5.56e-03	-2.39e-01
	4621	-3.01e+00	1.23e-01	8.69e-02	6.06e-05	5.31e-03	-2.55e-01
C05	4619	-3.94e+00	1.10e-01	-1.47e-01	-1.08e-04	4.05e-01	2.07e-01
	4619	-3.97e+00	1.10e-01	-1.47e-01	-1.08e-04	3.87e-01	1.93e-01
	4619	-4.01e+00	1.10e-01	-1.47e-01	-1.08e-04	3.69e-01	1.79e-01
	4619	-4.04e+00	1.10e-01	-1.47e-01	-1.08e-04	3.50e-01	1.66e-01
	4619	-4.07e+00	1.10e-01	-1.46e-01	-1.08e-04	3.32e-01	1.52e-01
	4618	-4.07e+00	1.43e-01	1.34e-01	2.30e-05	-1.89e-01	3.13e-01
	4618	-4.26e+00	1.43e-01	1.34e-01	2.30e-05	-1.00e-01	2.18e-01
	4618	-4.44e+00	1.43e-01	1.34e-01	2.30e-05	-1.10e-02	1.23e-01
	4618	-4.62e+00	1.43e-01	1.34e-01	2.30e-05	7.82e-02	2.84e-02
	4618	-4.81e+00	1.43e-01	1.35e-01	2.30e-05	1.68e-01	-6.63e-02
	4620	-2.04e+00	-3.69e-01	-6.40e-02	7.96e-05	4.71e-04	-1.80e-01
	4620	-2.08e+00	-3.69e-01	-6.40e-02	7.96e-05	-7.53e-03	-1.34e-01
	4620	-2.11e+00	-3.69e-01	-6.40e-02	7.96e-05	-1.55e-02	-8.79e-02
	4620	-2.15e+00	-3.69e-01	-6.39e-02	7.96e-05	-2.35e-02	-4.17e-02
	4620	-2.18e+00	-3.69e-01	-6.39e-02	7.96e-05	-3.15e-02	4.49e-03

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-4.95e+00	1.34e-01	1.15e-01	-5.82e-06	-1.18e-01	3.25e-01
	4589	-4.73e+00	1.34e-01	1.15e-01	-5.82e-06	-2.73e-02	2.19e-01
	4589	-4.51e+00	1.34e-01	1.16e-01	-5.82e-06	6.40e-02	1.13e-01
	4589	-4.30e+00	1.34e-01	1.16e-01	-5.82e-06	1.56e-01	6.93e-03
	4589	-4.08e+00	1.34e-01	1.16e-01	-5.82e-06	2.47e-01	-9.91e-02
	4590	-2.81e+00	1.03e+00	-1.71e+00	-1.45e-04	5.46e-01	6.71e-01
	4590	-2.77e+00	1.03e+00	-1.71e+00	-1.45e-04	3.32e-01	5.42e-01
	4590	-2.74e+00	1.03e+00	-1.71e+00	-1.45e-04	1.18e-01	4.13e-01
	4590	-2.70e+00	1.03e+00	-1.71e+00	-1.45e-04	-9.55e-02	2.84e-01
	4590	-2.67e+00	1.03e+00	-1.71e+00	-1.45e-04	-3.09e-01	1.55e-01
C07	4599	-3.89e+00	-1.76e-01	-1.90e-01	1.57e-04	4.16e-01	-3.69e-01
	4599	-3.92e+00	-1.76e-01	-1.90e-01	1.57e-04	3.92e-01	-3.47e-01
	4599	-3.96e+00	-1.76e-01	-1.90e-01	1.57e-04	3.68e-01	-3.24e-01
	4599	-3.99e+00	-1.76e-01	-1.90e-01	1.57e-04	3.44e-01	-3.02e-01
	4599	-4.02e+00	-1.76e-01	-1.90e-01	1.57e-04	3.21e-01	-2.80e-01
	4598	-4.75e+00	-2.37e-01	-1.19e-01	-2.12e-05	1.39e-01	-2.42e-01
	4598	-4.57e+00	-2.37e-01	-1.19e-01	-2.12e-05	6.03e-02	-8.48e-02
	4598	-4.39e+00	-2.37e-01	-1.19e-01	-2.12e-05	-1.86e-02	7.29e-02
	4598	-4.21e+00	-2.37e-01	-1.18e-01	-2.12e-05	-9.73e-02	2.31e-01
	4598	-4.02e+00	-2.37e-01	-1.18e-01	-2.12e-05	-1.76e-01	3.88e-01
	4622	-1.94e+00	-1.22e-01	4.01e-01	-3.26e-04	-1.14e-01	-2.55e-01
	4622	-1.98e+00	-1.22e-01	4.01e-01	-3.26e-04	-6.36e-02	-2.40e-01
	4622	-2.01e+00	-1.22e-01	4.01e-01	-3.26e-04	-1.35e-02	-2.25e-01
	4622	-2.05e+00	-1.22e-01	4.01e-01	-3.26e-04	3.65e-02	-2.10e-01
	4622	-2.08e+00	-1.22e-01	4.01e-01	-3.26e-04	8.66e-02	-1.94e-01
C08	4600	-4.20e+00	-7.79e-02	-2.47e-01	3.82e-04	5.21e-01	-1.75e-01
	4600	-4.23e+00	-7.79e-02	-2.47e-01	3.82e-04	4.90e-01	-1.65e-01
	4600	-4.27e+00	-7.79e-02	-2.47e-01	3.82e-04	4.59e-01	-1.55e-01
	4600	-4.30e+00	-7.79e-02	-2.47e-01	3.82e-04	4.28e-01	-1.46e-01
	4600	-4.34e+00	-7.79e-02	-2.47e-01	3.82e-04	3.97e-01	-1.36e-01
	4597	-5.07e+00	-2.57e-01	-5.94e-02	4.36e-05	5.94e-02	-2.75e-01
	4597	-4.89e+00	-2.57e-01	-5.92e-02	4.36e-05	2.00e-02	-1.04e-01
	4597	-4.70e+00	-2.57e-01	-5.89e-02	4.36e-05	-1.93e-02	6.69e-02
	4597	-4.52e+00	-2.57e-01	-5.87e-02	4.36e-05	-5.84e-02	2.38e-01
	4597	-4.34e+00	-2.57e-01	-5.85e-02	4.36e-05	-9.74e-02	4.09e-01
	4623	-2.71e+00	-5.73e-02	7.30e-02	-1.46e-04	4.67e-02	2.77e-01
	4623	-2.74e+00	-5.73e-02	7.31e-02	-1.46e-04	5.58e-02	2.84e-01
	4623	-2.78e+00	-5.73e-02	7.31e-02	-1.46e-04	6.50e-02	2.92e-01
	4623	-2.81e+00	-5.73e-02	7.31e-02	-1.46e-04	7.41e-02	2.99e-01
	4623	-2.84e+00	-5.73e-02	7.31e-02	-1.46e-04	8.32e-02	3.06e-01
C09	4601	-4.32e+00	-5.48e-02	-3.03e-01	4.01e-04	6.38e-01	-1.25e-01
	4601	-4.36e+00	-5.48e-02	-3.03e-01	4.01e-04	6.00e-01	-1.18e-01
	4601	-4.39e+00	-5.48e-02	-3.03e-01	4.01e-04	5.62e-01	-1.11e-01
	4601	-4.43e+00	-5.48e-02	-3.03e-01	4.01e-04	5.24e-01	-1.04e-01
	4601	-4.46e+00	-5.48e-02	-3.03e-01	4.01e-04	4.87e-01	-9.75e-02
	4596	-5.19e+00	-3.08e-01	-5.53e-02	1.02e-05	5.60e-02	-3.31e-01
	4596	-5.01e+00	-3.08e-01	-5.51e-02	1.02e-05	1.93e-02	-1.26e-01
	4596	-4.83e+00	-3.08e-01	-5.49e-02	1.02e-05	-1.72e-02	7.87e-02
	4596	-4.64e+00	-3.08e-01	-5.47e-02	1.02e-05	-5.36e-02	2.83e-01
	4596	-4.46e+00	-3.08e-01	-5.45e-02	1.02e-05	-8.99e-02	4.88e-01
	4624	-2.84e+00	-1.08e-01	8.30e-02	-1.67e-04	3.73e-02	3.33e-01
	4624	-2.87e+00	-1.08e-01	8.30e-02	-1.67e-04	4.76e-02	3.47e-01
	4624	-2.91e+00	-1.08e-01	8.31e-02	-1.67e-04	5.80e-02	3.60e-01
	4624	-2.94e+00	-1.08e-01	8.31e-02	-1.67e-04	6.84e-02	3.74e-01
	4624	-2.98e+00	-1.08e-01	8.31e-02	-1.67e-04	7.88e-02	3.87e-01
C10	4602	-4.39e+00	-8.45e-02	-3.34e-01	3.69e-04	7.06e-01	-1.91e-01
	4602	-4.43e+00	-8.45e-02	-3.34e-01	3.69e-04	6.65e-01	-1.80e-01
	4602	-4.46e+00	-8.45e-02	-3.34e-01	3.69e-04	6.23e-01	-1.69e-01
	4602	-4.49e+00	-8.45e-02	-3.34e-01	3.69e-04	5.81e-01	-1.59e-01
	4602	-4.53e+00	-8.45e-02	-3.34e-01	3.69e-04	5.39e-01	-1.48e-01
	4595	-5.26e+00	-3.42e-01	-7.13e-02	3.09e-05	6.90e-02	-3.64e-01
	4595	-5.08e+00	-3.42e-01	-7.12e-02	3.09e-05	2.16e-02	-1.36e-01
	4595	-4.89e+00	-3.42e-01	-7.10e-02	3.09e-05	-2.57e-02	9.15e-02
	4595	-4.71e+00	-3.42e-01	-7.09e-02	3.09e-05	-7.28e-02	3.19e-01
	4595	-4.53e+00	-3.42e-01	-7.07e-02	3.09e-05	-1.20e-01	5.47e-01
	4625	-2.91e+00	-1.45e-01	3.07e-02	-2.16e-04	5.26e-02	3.66e-01
	4625	-2.94e+00	-1.45e-01	3.07e-02	-2.16e-04	5.65e-02	3.84e-01
	4625	-2.98e+00	-1.45e-01	3.07e-02	-2.16e-04	6.03e-02	4.03e-01
	4625	-3.01e+00	-1.45e-01	3.07e-02	-2.16e-04	6.41e-02	4.21e-01
	4625	-3.04e+00	-1.45e-01	3.07e-02	-2.16e-04	6.80e-02	4.39e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-4.42e+00	-4.30e-03	-3.62e-01	4.21e-04	7.66e-01	-1.38e-02
	4603	-4.46e+00	-4.30e-03	-3.62e-01	4.21e-04	7.20e-01	-1.33e-02
	4603	-4.49e+00	-4.30e-03	-3.62e-01	4.21e-04	6.75e-01	-1.28e-02
	4603	-4.53e+00	-4.30e-03	-3.62e-01	4.21e-04	6.30e-01	-1.22e-02
	4603	-4.56e+00	-4.30e-03	-3.62e-01	4.21e-04	5.85e-01	-1.17e-02
	4594	-5.29e+00	-3.63e-01	-5.34e-02	-5.60e-06	5.77e-02	-3.87e-01
	4594	-5.11e+00	-3.63e-01	-5.32e-02	-5.60e-06	2.23e-02	-1.46e-01
	4594	-4.93e+00	-3.63e-01	-5.31e-02	-5.60e-06	-1.30e-02	9.59e-02
	4594	-4.74e+00	-3.63e-01	-5.29e-02	-5.60e-06	-4.83e-02	3.37e-01
	4594	-4.56e+00	-3.63e-01	-5.28e-02	-5.60e-06	-8.34e-02	5.79e-01
	4626	-2.94e+00	-1.63e-01	6.65e-02	-1.55e-04	2.43e-02	3.91e-01
	4626	-2.97e+00	-1.63e-01	6.65e-02	-1.55e-04	3.26e-02	4.11e-01
	4626	-3.01e+00	-1.63e-01	6.65e-02	-1.55e-04	4.09e-02	4.31e-01
	4626	-3.04e+00	-1.63e-01	6.66e-02	-1.55e-04	4.93e-02	4.52e-01
	4626	-3.08e+00	-1.63e-01	6.66e-02	-1.55e-04	5.76e-02	4.72e-01
C12	4604	-4.48e+00	-2.26e-02	-3.73e-01	3.44e-04	7.88e-01	-5.32e-02
	4604	-4.51e+00	-2.26e-02	-3.73e-01	3.44e-04	7.42e-01	-5.03e-02
	4604	-4.55e+00	-2.26e-02	-3.73e-01	3.44e-04	6.95e-01	-4.75e-02
	4604	-4.58e+00	-2.26e-02	-3.73e-01	3.44e-04	6.49e-01	-4.47e-02
	4604	-4.62e+00	-2.26e-02	-3.73e-01	3.44e-04	6.02e-01	-4.19e-02
	4593	-5.35e+00	-3.74e-01	-6.09e-02	7.80e-06	6.38e-02	-3.98e-01
	4593	-5.16e+00	-3.74e-01	-6.08e-02	7.80e-06	2.34e-02	-1.50e-01
	4593	-4.98e+00	-3.74e-01	-6.06e-02	7.80e-06	-1.69e-02	9.89e-02
	4593	-4.80e+00	-3.74e-01	-6.05e-02	7.80e-06	-5.72e-02	3.47e-01
	4593	-4.62e+00	-3.74e-01	-6.04e-02	7.80e-06	-9.74e-02	5.96e-01
	4627	-3.00e+00	-1.75e-01	5.83e-02	-1.26e-04	2.36e-02	4.02e-01
	4627	-3.04e+00	-1.75e-01	5.83e-02	-1.26e-04	3.09e-02	4.24e-01
	4627	-3.07e+00	-1.75e-01	5.83e-02	-1.26e-04	3.82e-02	4.46e-01
	4627	-3.11e+00	-1.75e-01	5.83e-02	-1.26e-04	4.55e-02	4.68e-01
	4627	-3.14e+00	-1.75e-01	5.83e-02	-1.26e-04	5.28e-02	4.90e-01
C13	4605	-4.47e+00	6.99e-02	-3.60e-01	4.46e-04	7.73e-01	1.62e-01
	4605	-4.51e+00	6.99e-02	-3.60e-01	4.46e-04	7.28e-01	1.53e-01
	4605	-4.54e+00	6.99e-02	-3.60e-01	4.46e-04	6.83e-01	1.45e-01
	4605	-4.57e+00	6.99e-02	-3.60e-01	4.46e-04	6.38e-01	1.36e-01
	4605	-4.61e+00	6.99e-02	-3.60e-01	4.46e-04	5.93e-01	1.27e-01
	4592	-5.34e+00	-3.69e-01	-4.27e-02	-2.87e-05	6.15e-02	-3.77e-01
	4592	-5.16e+00	-3.69e-01	-4.26e-02	-2.87e-05	3.31e-02	-1.31e-01
	4592	-4.97e+00	-3.69e-01	-4.25e-02	-2.87e-05	4.87e-03	1.14e-01
	4592	-4.79e+00	-3.69e-01	-4.23e-02	-2.87e-05	-2.33e-02	3.59e-01
	4592	-4.61e+00	-3.69e-01	-4.22e-02	-2.87e-05	-5.14e-02	6.05e-01
	4628	-3.00e+00	1.71e-01	3.20e-02	-2.21e-04	-3.33e-03	-3.82e-01
	4628	-3.04e+00	1.71e-01	3.20e-02	-2.21e-04	6.69e-04	-4.03e-01
	4628	-3.07e+00	1.71e-01	3.20e-02	-2.21e-04	4.67e-03	-4.25e-01
	4628	-3.11e+00	1.71e-01	3.20e-02	-2.21e-04	8.67e-03	-4.46e-01
	4628	-3.14e+00	1.71e-01	3.20e-02	-2.21e-04	1.27e-02	-4.67e-01
C14	4606	-2.76e+00	-4.06e-01	8.70e-02	-4.35e-04	-1.19e-01	-9.87e-01
	4606	-2.79e+00	-4.06e-01	8.71e-02	-4.35e-04	-1.08e-01	-9.36e-01
	4606	-2.83e+00	-4.06e-01	8.72e-02	-4.35e-04	-9.69e-02	-8.85e-01
	4606	-2.86e+00	-4.06e-01	8.72e-02	-4.35e-04	-8.60e-02	-8.35e-01
	4606	-2.89e+00	-4.06e-01	8.73e-02	-4.35e-04	-7.51e-02	-7.84e-01
	4591	-3.63e+00	-3.92e-01	-1.39e-01	3.99e-04	1.88e-01	-2.75e-01
	4591	-3.44e+00	-3.92e-01	-1.38e-01	3.99e-04	9.60e-02	-1.43e-02
	4591	-3.26e+00	-3.92e-01	-1.38e-01	3.99e-04	4.04e-03	2.46e-01
	4591	-3.08e+00	-3.92e-01	-1.38e-01	3.99e-04	-8.79e-02	5.06e-01
	4591	-2.89e+00	-3.92e-01	-1.38e-01	3.99e-04	-1.80e-01	7.67e-01
	4629	-2.47e+00	2.88e-01	1.11e+00	-7.14e-04	-1.89e-01	-2.74e-01
	4629	-2.51e+00	2.88e-01	1.11e+00	-7.14e-04	-5.08e-02	-3.10e-01
	4629	-2.54e+00	2.88e-01	1.11e+00	-7.14e-04	8.76e-02	-3.46e-01
	4629	-2.57e+00	2.88e-01	1.11e+00	-7.14e-04	2.26e-01	-3.82e-01
	4629	-2.61e+00	2.88e-01	1.11e+00	-7.14e-04	3.64e-01	-4.18e-01

ULS - LC 2: 1.35DL + 1.35V_0 + 1.50LL

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-3.74e+00	5.88e-01	1.56e-01	-7.28e-05	-2.23e-01	1.63e+00
	4608	-3.78e+00	5.88e-01	1.56e-01	-7.28e-05	-2.04e-01	1.56e+00
	4608	-3.81e+00	5.88e-01	1.56e-01	-7.28e-05	-1.84e-01	1.49e+00
	4608	-3.85e+00	5.88e-01	1.56e-01	-7.28e-05	-1.65e-01	1.41e+00
	4608	-3.88e+00	5.88e-01	1.57e-01	-7.28e-05	-1.45e-01	1.34e+00
	4607	-3.88e+00	5.30e-01	3.01e-01	-8.04e-04	-4.85e-01	1.26e+00
	4607	-4.06e+00	5.30e-01	3.01e-01	-8.04e-04	-2.85e-01	9.06e-01
	4607	-4.25e+00	5.30e-01	3.01e-01	-8.04e-04	-8.46e-02	5.54e-01
	4607	-4.43e+00	5.30e-01	3.01e-01	-8.04e-04	1.16e-01	2.02e-01
	4607	-4.61e+00	5.30e-01	3.02e-01	-8.04e-04	3.16e-01	-1.50e-01
	4615	-3.99e+00	-6.35e-01	4.16e-01	-4.12e-04	-3.36e-01	9.84e-02
	4615	-4.02e+00	-6.35e-01	4.16e-01	-4.12e-04	-2.84e-01	1.78e-01
	4615	-4.06e+00	-6.35e-01	4.16e-01	-4.12e-04	-2.32e-01	2.57e-01
	4615	-4.09e+00	-6.35e-01	4.16e-01	-4.12e-04	-1.80e-01	3.36e-01
	4615	-4.13e+00	-6.35e-01	4.16e-01	-4.12e-04	-1.28e-01	4.16e-01
C02	4610	-5.93e+00	1.74e-01	-5.50e-01	-1.03e-03	1.51e+00	2.23e-01
	4610	-5.96e+00	1.74e-01	-5.50e-01	-1.03e-03	1.44e+00	2.02e-01
	4610	-6.00e+00	1.74e-01	-5.50e-01	-1.03e-03	1.37e+00	1.80e-01
	4610	-6.03e+00	1.74e-01	-5.50e-01	-1.03e-03	1.30e+00	1.58e-01
	4610	-6.06e+00	1.74e-01	-5.50e-01	-1.03e-03	1.23e+00	1.36e-01
	4609	-6.06e+00	5.10e-01	2.96e-01	-4.08e-05	-3.98e-01	1.18e+00
	4609	-6.25e+00	5.10e-01	2.96e-01	-4.08e-05	-2.01e-01	8.38e-01
	4609	-6.43e+00	5.10e-01	2.97e-01	-4.08e-05	-3.80e-03	4.99e-01
	4609	-6.61e+00	5.10e-01	2.97e-01	-4.08e-05	1.93e-01	1.60e-01
	4609	-6.79e+00	5.10e-01	2.97e-01	-4.08e-05	3.91e-01	-1.78e-01
	4614	-5.51e+00	4.68e-01	-2.39e-01	5.39e-05	-2.95e-02	-4.29e-01
	4614	-5.54e+00	4.68e-01	-2.39e-01	5.39e-05	-5.94e-02	-4.87e-01
	4614	-5.58e+00	4.68e-01	-2.39e-01	5.39e-05	-8.92e-02	-5.45e-01
	4614	-5.61e+00	4.68e-01	-2.39e-01	5.39e-05	-1.19e-01	-6.04e-01
	4614	-5.65e+00	4.68e-01	-2.38e-01	5.39e-05	-1.49e-01	-6.62e-01
C03	4612	-5.87e+00	3.80e-01	-3.95e-01	-6.77e-04	1.33e+00	8.21e-01
	4612	-5.90e+00	3.80e-01	-3.95e-01	-6.77e-04	1.28e+00	7.74e-01
	4612	-5.94e+00	3.80e-01	-3.95e-01	-6.77e-04	1.23e+00	7.26e-01
	4612	-5.97e+00	3.80e-01	-3.95e-01	-6.77e-04	1.18e+00	6.79e-01
	4612	-6.01e+00	3.80e-01	-3.95e-01	-6.77e-04	1.14e+00	6.31e-01
	4611	-6.01e+00	4.50e-01	3.31e-01	-1.79e-04	-4.77e-01	1.21e+00
	4611	-6.19e+00	4.50e-01	3.31e-01	-1.79e-04	-2.57e-01	9.10e-01
	4611	-6.37e+00	4.50e-01	3.31e-01	-1.79e-04	-3.72e-02	6.11e-01
	4611	-6.55e+00	4.50e-01	3.31e-01	-1.79e-04	1.83e-01	3.12e-01
	4611	-6.74e+00	4.50e-01	3.32e-01	-1.79e-04	4.03e-01	1.33e-02
	4613	-5.44e+00	-3.27e-01	3.89e-01	-1.99e-04	4.70e-02	4.01e-01
	4613	-5.47e+00	-3.27e-01	3.89e-01	-1.99e-04	9.56e-02	4.42e-01
	4613	-5.51e+00	-3.27e-01	3.89e-01	-1.99e-04	1.44e-01	4.83e-01
	4613	-5.54e+00	-3.27e-01	3.89e-01	-1.99e-04	1.93e-01	5.23e-01
	4613	-5.57e+00	-3.27e-01	3.89e-01	-1.99e-04	2.41e-01	5.64e-01
C04	4617	-5.63e+00	3.89e-01	-4.60e-01	-7.22e-04	1.19e+00	7.83e-01
	4617	-5.66e+00	3.89e-01	-4.60e-01	-7.22e-04	1.13e+00	7.35e-01
	4617	-5.70e+00	3.89e-01	-4.60e-01	-7.22e-04	1.08e+00	6.86e-01
	4617	-5.73e+00	3.89e-01	-4.60e-01	-7.22e-04	1.02e+00	6.37e-01
	4617	-5.77e+00	3.89e-01	-4.60e-01	-7.22e-04	9.61e-01	5.89e-01
	4616	-5.77e+00	5.12e-01	3.37e-01	-2.81e-04	-4.69e-01	1.03e+00
	4616	-5.95e+00	5.12e-01	3.38e-01	-2.81e-04	-2.44e-01	6.85e-01
	4616	-6.13e+00	5.12e-01	3.38e-01	-2.81e-04	-1.97e-02	3.45e-01
	4616	-6.32e+00	5.12e-01	3.38e-01	-2.81e-04	2.05e-01	4.37e-03
	4616	-6.50e+00	5.12e-01	3.38e-01	-2.81e-04	4.30e-01	-3.36e-01
	4621	-5.21e+00	5.63e-01	-7.91e-02	1.70e-05	-1.94e-02	-5.45e-01
	4621	-5.25e+00	5.63e-01	-7.91e-02	1.70e-05	-2.93e-02	-6.16e-01
	4621	-5.28e+00	5.63e-01	-7.91e-02	1.70e-05	-3.92e-02	-6.86e-01
	4621	-5.31e+00	5.63e-01	-7.91e-02	1.70e-05	-4.91e-02	-7.56e-01
	4621	-5.35e+00	5.63e-01	-7.91e-02	1.70e-05	-5.90e-02	-8.27e-01
C05	4619	-5.16e+00	3.63e-01	-3.06e-01	-2.66e-04	1.11e+00	6.18e-01
	4619	-5.19e+00	3.63e-01	-3.06e-01	-2.66e-04	1.07e+00	5.73e-01
	4619	-5.23e+00	3.63e-01	-3.06e-01	-2.66e-04	1.03e+00	5.28e-01
	4619	-5.26e+00	3.63e-01	-3.06e-01	-2.66e-04	9.92e-01	4.82e-01
	4619	-5.29e+00	3.63e-01	-3.06e-01	-2.66e-04	9.54e-01	4.37e-01
	4618	-5.29e+00	2.75e-01	4.05e-01	1.16e-04	-5.43e-01	8.98e-01
	4618	-5.48e+00	2.75e-01	4.05e-01	1.16e-04	-2.74e-01	7.15e-01
	4618	-5.66e+00	2.75e-01	4.05e-01	1.16e-04	-4.47e-03	5.33e-01
	4618	-5.84e+00	2.75e-01	4.06e-01	1.16e-04	2.65e-01	3.50e-01
	4618	-6.02e+00	2.75e-01	4.06e-01	1.16e-04	5.35e-01	1.68e-01
	4620	-1.49e+00	-2.86e+00	-1.78e+00	-2.59e-04	3.54e-01	-4.35e-01
	4620	-1.52e+00	-2.86e+00	-1.78e+00	-2.59e-04	1.32e-01	-7.70e-02
	4620	-1.56e+00	-2.86e+00	-1.78e+00	-2.59e-04	-9.07e-02	2.81e-01
	4620	-1.59e+00	-2.86e+00	-1.78e+00	-2.59e-04	-3.13e-01	6.38e-01
	4620	-1.63e+00	-2.86e+00	-1.78e+00	-2.59e-04	-5.35e-01	9.96e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-1.05e+01	1.29e-01	1.68e-02	4.39e-06	5.38e-02	3.69e-01
	4589	-1.03e+01	1.29e-01	1.71e-02	4.39e-06	6.72e-02	2.67e-01
	4589	-1.01e+01	1.29e-01	1.75e-02	4.39e-06	8.09e-02	1.65e-01
	4589	-9.88e+00	1.29e-01	1.78e-02	4.39e-06	9.48e-02	6.33e-02
	4589	-9.67e+00	1.29e-01	1.81e-02	4.39e-06	1.09e-01	-3.87e-02
	4590	-8.56e+00	1.03e+00	-1.68e+00	-6.65e-04	6.24e-01	8.21e-01
	4590	-8.52e+00	1.03e+00	-1.68e+00	-6.65e-04	4.15e-01	6.92e-01
	4590	-8.49e+00	1.03e+00	-1.68e+00	-6.65e-04	2.05e-01	5.63e-01
	4590	-8.45e+00	1.03e+00	-1.68e+00	-6.65e-04	-4.83e-03	4.34e-01
	4590	-8.42e+00	1.03e+00	-1.68e+00	-6.65e-04	-2.15e-01	3.06e-01
C07	4599	-5.04e+00	-5.62e-01	-4.34e-01	3.58e-04	1.10e+00	-1.09e+00
	4599	-5.07e+00	-5.62e-01	-4.34e-01	3.58e-04	1.05e+00	-1.02e+00
	4599	-5.11e+00	-5.62e-01	-4.34e-01	3.58e-04	9.94e-01	-9.45e-01
	4599	-5.14e+00	-5.62e-01	-4.34e-01	3.58e-04	9.40e-01	-8.75e-01
	4599	-5.18e+00	-5.62e-01	-4.34e-01	3.58e-04	8.86e-01	-8.05e-01
	4598	-5.91e+00	-5.83e-01	-4.19e-01	-1.24e-04	5.97e-01	-4.70e-01
	4598	-5.73e+00	-5.83e-01	-4.18e-01	-1.24e-04	3.19e-01	-8.21e-02
	4598	-5.54e+00	-5.83e-01	-4.18e-01	-1.24e-04	4.11e-02	3.06e-01
	4598	-5.36e+00	-5.83e-01	-4.18e-01	-1.24e-04	-2.37e-01	6.93e-01
	4598	-5.18e+00	-5.83e-01	-4.18e-01	-1.24e-04	-5.14e-01	1.08e+00
	4622	-1.35e+00	-1.02e-01	3.28e+00	-7.14e-04	-5.46e-01	-5.29e-01
	4622	-1.39e+00	-1.02e-01	3.28e+00	-7.14e-04	-1.37e-01	-5.16e-01
	4622	-1.42e+00	-1.02e-01	3.28e+00	-7.14e-04	2.73e-01	-5.03e-01
	4622	-1.45e+00	-1.02e-01	3.28e+00	-7.14e-04	6.82e-01	-4.90e-01
	4622	-1.49e+00	-1.02e-01	3.28e+00	-7.14e-04	1.09e+00	-4.77e-01
C08	4600	-5.30e+00	-2.39e-01	-6.42e-01	1.01e-03	1.36e+00	-5.21e-01
	4600	-5.33e+00	-2.39e-01	-6.42e-01	1.01e-03	1.28e+00	-4.91e-01
	4600	-5.37e+00	-2.39e-01	-6.42e-01	1.01e-03	1.20e+00	-4.61e-01
	4600	-5.40e+00	-2.39e-01	-6.42e-01	1.01e-03	1.12e+00	-4.31e-01
	4600	-5.43e+00	-2.39e-01	-6.42e-01	1.01e-03	1.04e+00	-4.01e-01
	4597	-6.17e+00	-6.67e-01	-1.83e-01	1.60e-04	1.87e-01	-6.95e-01
	4597	-5.98e+00	-6.67e-01	-1.83e-01	1.60e-04	6.48e-02	-2.52e-01
	4597	-5.80e+00	-6.67e-01	-1.83e-01	1.60e-04	-5.68e-02	1.91e-01
	4597	-5.62e+00	-6.67e-01	-1.83e-01	1.60e-04	-1.78e-01	6.34e-01
	4597	-5.43e+00	-6.67e-01	-1.83e-01	1.60e-04	-3.00e-01	1.08e+00
	4623	-4.95e+00	-5.68e-01	1.79e-01	-3.19e-04	1.55e-01	7.03e-01
	4623	-4.98e+00	-5.68e-01	1.79e-01	-3.19e-04	1.77e-01	7.74e-01
	4623	-5.02e+00	-5.68e-01	1.79e-01	-3.19e-04	1.99e-01	8.45e-01
	4623	-5.05e+00	-5.68e-01	1.79e-01	-3.19e-04	2.22e-01	9.16e-01
	4623	-5.08e+00	-5.68e-01	1.79e-01	-3.19e-04	2.44e-01	9.87e-01
C09	4601	-5.49e+00	-1.74e-01	-7.45e-01	9.87e-04	1.58e+00	-3.77e-01
	4601	-5.53e+00	-1.74e-01	-7.45e-01	9.87e-04	1.49e+00	-3.55e-01
	4601	-5.56e+00	-1.74e-01	-7.45e-01	9.87e-04	1.39e+00	-3.33e-01
	4601	-5.60e+00	-1.74e-01	-7.45e-01	9.87e-04	1.30e+00	-3.11e-01
	4601	-5.63e+00	-1.74e-01	-7.45e-01	9.87e-04	1.21e+00	-2.90e-01
	4596	-6.36e+00	-7.53e-01	-1.69e-01	6.63e-05	1.76e-01	-7.89e-01
	4596	-6.18e+00	-7.53e-01	-1.68e-01	6.63e-05	6.43e-02	-2.89e-01
	4596	-5.99e+00	-7.53e-01	-1.68e-01	6.63e-05	-4.76e-02	2.12e-01
	4596	-5.81e+00	-7.53e-01	-1.68e-01	6.63e-05	-1.59e-01	7.12e-01
	4596	-5.63e+00	-7.53e-01	-1.68e-01	6.63e-05	-2.71e-01	1.21e+00
	4624	-5.16e+00	-6.55e-01	1.83e-01	-3.54e-04	1.31e-01	7.98e-01
	4624	-5.19e+00	-6.55e-01	1.83e-01	-3.54e-04	1.54e-01	8.80e-01
	4624	-5.22e+00	-6.55e-01	1.83e-01	-3.54e-04	1.77e-01	9.62e-01
	4624	-5.26e+00	-6.55e-01	1.83e-01	-3.54e-04	2.00e-01	1.04e+00
	4624	-5.29e+00	-6.55e-01	1.83e-01	-3.54e-04	2.23e-01	1.13e+00
C10	4602	-5.61e+00	-2.26e-01	-7.94e-01	9.05e-04	1.69e+00	-4.97e-01
	4602	-5.64e+00	-2.26e-01	-7.94e-01	9.05e-04	1.59e+00	-4.68e-01
	4602	-5.68e+00	-2.26e-01	-7.94e-01	9.05e-04	1.50e+00	-4.40e-01
	4602	-5.71e+00	-2.26e-01	-7.94e-01	9.05e-04	1.40e+00	-4.12e-01
	4602	-5.75e+00	-2.26e-01	-7.94e-01	9.05e-04	1.30e+00	-3.84e-01
	4595	-6.48e+00	-8.10e-01	-1.89e-01	1.22e-04	1.87e-01	-8.38e-01
	4595	-6.29e+00	-8.10e-01	-1.89e-01	1.22e-04	6.16e-02	-3.00e-01
	4595	-6.11e+00	-8.10e-01	-1.89e-01	1.22e-04	-6.41e-02	2.39e-01
	4595	-5.93e+00	-8.10e-01	-1.89e-01	1.22e-04	-1.90e-01	7.77e-01
	4595	-5.75e+00	-8.10e-01	-1.89e-01	1.22e-04	-3.15e-01	1.32e+00
	4625	-5.27e+00	-7.13e-01	1.60e-01	-4.46e-04	1.50e-01	8.45e-01
	4625	-5.31e+00	-7.13e-01	1.60e-01	-4.46e-04	1.70e-01	9.35e-01
	4625	-5.34e+00	-7.13e-01	1.60e-01	-4.46e-04	1.90e-01	1.02e+00
	4625	-5.37e+00	-7.13e-01	1.60e-01	-4.46e-04	2.10e-01	1.11e+00
	4625	-5.41e+00	-7.13e-01	1.60e-01	-4.46e-04	2.30e-01	1.20e+00

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-5.66e+00	-5.48e-02	-8.47e-01	9.73e-04	1.80e+00	-1.14e-01
	4603	-5.69e+00	-5.48e-02	-8.47e-01	9.73e-04	1.70e+00	-1.07e-01
	4603	-5.73e+00	-5.48e-02	-8.47e-01	9.73e-04	1.59e+00	-1.00e-01
	4603	-5.76e+00	-5.48e-02	-8.47e-01	9.73e-04	1.49e+00	-9.34e-02
	4603	-5.80e+00	-5.48e-02	-8.47e-01	9.73e-04	1.38e+00	-8.65e-02
	4594	-6.53e+00	-8.39e-01	-1.64e-01	3.83e-05	1.80e-01	-8.71e-01
	4594	-6.35e+00	-8.39e-01	-1.64e-01	3.83e-05	7.10e-02	-3.13e-01
	4594	-6.16e+00	-8.39e-01	-1.64e-01	3.83e-05	-3.79e-02	2.45e-01
	4594	-5.98e+00	-8.39e-01	-1.64e-01	3.83e-05	-1.47e-01	8.03e-01
	4594	-5.80e+00	-8.39e-01	-1.64e-01	3.83e-05	-2.56e-01	1.36e+00
	4626	-5.32e+00	-7.43e-01	1.45e-01	-2.96e-04	1.05e-01	8.83e-01
	4626	-5.35e+00	-7.43e-01	1.45e-01	-2.96e-04	1.23e-01	9.76e-01
	4626	-5.39e+00	-7.43e-01	1.45e-01	-2.96e-04	1.41e-01	1.07e+00
	4626	-5.42e+00	-7.43e-01	1.45e-01	-2.96e-04	1.59e-01	1.16e+00
	4626	-5.46e+00	-7.43e-01	1.45e-01	-2.96e-04	1.77e-01	1.25e+00
C12	4604	-5.80e+00	-9.40e-02	-8.68e-01	8.06e-04	1.85e+00	-1.99e-01
	4604	-5.84e+00	-9.40e-02	-8.68e-01	8.06e-04	1.75e+00	-1.87e-01
	4604	-5.87e+00	-9.40e-02	-8.68e-01	8.06e-04	1.64e+00	-1.76e-01
	4604	-5.91e+00	-9.40e-02	-8.68e-01	8.06e-04	1.53e+00	-1.64e-01
	4604	-5.94e+00	-9.40e-02	-8.68e-01	8.06e-04	1.42e+00	-1.52e-01
	4593	-6.67e+00	-8.62e-01	-1.79e-01	7.77e-05	1.92e-01	-8.91e-01
	4593	-6.49e+00	-8.62e-01	-1.79e-01	7.77e-05	7.28e-02	-3.18e-01
	4593	-6.31e+00	-8.62e-01	-1.79e-01	7.77e-05	-4.59e-02	2.55e-01
	4593	-6.12e+00	-8.62e-01	-1.78e-01	7.77e-05	-1.64e-01	8.28e-01
	4593	-5.94e+00	-8.62e-01	-1.78e-01	7.77e-05	-2.83e-01	1.40e+00
	4627	-5.46e+00	-7.68e-01	1.38e-01	-2.21e-04	1.01e-01	9.05e-01
	4627	-5.50e+00	-7.68e-01	1.38e-01	-2.21e-04	1.19e-01	1.00e+00
	4627	-5.53e+00	-7.68e-01	1.38e-01	-2.21e-04	1.36e-01	1.10e+00
	4627	-5.57e+00	-7.68e-01	1.38e-01	-2.21e-04	1.53e-01	1.19e+00
	4627	-5.60e+00	-7.68e-01	1.38e-01	-2.21e-04	1.71e-01	1.29e+00
C13	4605	-5.73e+00	1.21e-01	-8.55e-01	1.02e-03	1.84e+00	2.97e-01
	4605	-5.77e+00	1.21e-01	-8.55e-01	1.02e-03	1.73e+00	2.81e-01
	4605	-5.80e+00	1.21e-01	-8.55e-01	1.02e-03	1.62e+00	2.66e-01
	4605	-5.84e+00	1.21e-01	-8.55e-01	1.02e-03	1.51e+00	2.51e-01
	4605	-5.87e+00	1.21e-01	-8.55e-01	1.02e-03	1.41e+00	2.36e-01
	4592	-6.60e+00	-8.59e-01	-1.39e-01	-2.93e-05	1.83e-01	-8.67e-01
	4592	-6.42e+00	-8.59e-01	-1.39e-01	-2.93e-05	9.11e-02	-2.97e-01
	4592	-6.24e+00	-8.59e-01	-1.39e-01	-2.93e-05	-9.52e-04	2.74e-01
	4592	-6.05e+00	-8.59e-01	-1.38e-01	-2.93e-05	-9.30e-02	8.45e-01
	4592	-5.87e+00	-8.59e-01	-1.38e-01	-2.93e-05	-1.85e-01	1.42e+00
	4628	-5.40e+00	7.65e-01	-1.83e-02	-4.72e-04	-4.90e-02	-8.85e-01
	4628	-5.43e+00	7.65e-01	-1.83e-02	-4.72e-04	-5.13e-02	-9.81e-01
	4628	-5.47e+00	7.65e-01	-1.83e-02	-4.72e-04	-5.36e-02	-1.08e+00
	4628	-5.50e+00	7.65e-01	-1.83e-02	-4.72e-04	-5.59e-02	-1.17e+00
	4628	-5.53e+00	7.65e-01	-1.83e-02	-4.72e-04	-5.82e-02	-1.27e+00
C14	4606	-3.76e+00	-8.10e-01	7.21e-02	-6.56e-04	-8.89e-02	-1.99e+00
	4606	-3.79e+00	-8.10e-01	7.21e-02	-6.56e-04	-7.99e-02	-1.89e+00
	4606	-3.83e+00	-8.10e-01	7.22e-02	-6.56e-04	-7.09e-02	-1.78e+00
	4606	-3.86e+00	-8.10e-01	7.23e-02	-6.56e-04	-6.19e-02	-1.68e+00
	4606	-3.90e+00	-8.10e-01	7.23e-02	-6.56e-04	-5.28e-02	-1.58e+00
	4591	-4.63e+00	-7.94e-01	-1.77e-01	1.03e-03	2.05e-01	-5.50e-01
	4591	-4.44e+00	-7.94e-01	-1.77e-01	1.03e-03	8.73e-02	-2.19e-02
	4591	-4.26e+00	-7.94e-01	-1.77e-01	1.03e-03	-3.01e-02	5.06e-01
	4591	-4.08e+00	-7.94e-01	-1.76e-01	1.03e-03	-1.47e-01	1.03e+00
	4591	-3.90e+00	-7.94e-01	-1.76e-01	1.03e-03	-2.65e-01	1.56e+00
	4629	-4.05e+00	7.40e-01	4.76e-01	-1.20e-03	-2.07e-01	-5.49e-01
	4629	-4.08e+00	7.40e-01	4.76e-01	-1.20e-03	-1.48e-01	-6.41e-01
	4629	-4.11e+00	7.40e-01	4.76e-01	-1.20e-03	-8.81e-02	-7.34e-01
	4629	-4.15e+00	7.40e-01	4.76e-01	-1.20e-03	-2.86e-02	-8.26e-01
	4629	-4.18e+00	7.40e-01	4.76e-01	-1.20e-03	3.09e-02	-9.19e-01

ULS - LC 3: $1.35DL + 1.35V_0 + 1.50WL$

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-6.42e+00	4.52e-01	4.11e-01	-4.91e-04	-4.91e-01	2.32e-02
	4608	-6.45e+00	4.52e-01	4.11e-01	-4.91e-04	-4.40e-01	-3.33e-02
	4608	-6.49e+00	4.52e-01	4.11e-01	-4.91e-04	-3.88e-01	-8.98e-02
	4608	-6.52e+00	4.52e-01	4.11e-01	-4.91e-04	-3.37e-01	-1.46e-01
	4608	-6.56e+00	4.52e-01	4.11e-01	-4.91e-04	-2.85e-01	-2.03e-01
	4607	-6.56e+00	3.34e-01	5.11e-01	-4.92e-04	-2.24e-01	-2.69e-01
	4607	-6.74e+00	3.34e-01	5.11e-01	-4.92e-04	1.16e-01	-4.91e-01
	4607	-6.92e+00	3.34e-01	5.11e-01	-4.92e-04	4.55e-01	-7.13e-01
	4607	-7.11e+00	3.34e-01	5.11e-01	-4.92e-04	7.95e-01	-9.35e-01
	4607	-7.29e+00	3.34e-01	5.12e-01	-4.92e-04	1.14e+00	-1.16e+00
	4615	3.58e+00	-2.71e+00	1.25e+01	3.02e-03	-1.30e+00	9.64e-01
	4615	3.55e+00	-2.71e+00	1.25e+01	3.02e-03	2.63e-01	1.30e+00
	4615	3.51e+00	-2.71e+00	1.25e+01	3.02e-03	1.83e+00	1.64e+00
	4615	3.48e+00	-2.71e+00	1.25e+01	3.02e-03	3.39e+00	1.98e+00
	4615	3.44e+00	-2.71e+00	1.25e+01	3.02e-03	4.96e+00	2.32e+00
C02	4610	-1.22e+01	-1.25e-01	6.13e-02	2.95e-04	-3.83e-01	-1.36e-01
	4610	-1.23e+01	-1.25e-01	6.14e-02	2.95e-04	-3.76e-01	-1.20e-01
	4610	-1.23e+01	-1.25e-01	6.15e-02	2.95e-04	-3.68e-01	-1.04e-01
	4610	-1.23e+01	-1.25e-01	6.15e-02	2.95e-04	-3.60e-01	-8.89e-02
	4610	-1.24e+01	-1.25e-01	6.16e-02	2.95e-04	-3.52e-01	-7.33e-02
	4609	-1.24e+01	-1.32e-02	-1.18e-01	8.04e-05	1.47e-01	-3.29e-01
	4609	-1.26e+01	-1.32e-02	-1.17e-01	8.04e-05	6.91e-02	-3.20e-01
	4609	-1.27e+01	-1.32e-02	-1.17e-01	8.04e-05	-8.94e-03	-3.11e-01
	4609	-1.29e+01	-1.32e-02	-1.17e-01	8.04e-05	-8.68e-02	-3.02e-01
	4609	-1.31e+01	-1.32e-02	-1.17e-01	8.04e-05	-1.65e-01	-2.94e-01
	4614	8.49e+00	-1.39e+00	1.55e+00	4.03e-04	-3.33e-01	5.09e-02
	4614	8.45e+00	-1.39e+00	1.55e+00	4.03e-04	-1.39e-01	2.24e-01
	4614	8.42e+00	-1.39e+00	1.55e+00	4.03e-04	5.42e-02	3.97e-01
	4614	8.38e+00	-1.39e+00	1.55e+00	4.03e-04	2.48e-01	5.71e-01
	4614	8.35e+00	-1.39e+00	1.55e+00	4.03e-04	4.41e-01	7.44e-01
C03	4612	-1.25e+01	-1.28e-01	-2.59e-02	1.37e-04	-3.26e-01	-2.80e-01
	4612	-1.26e+01	-1.28e-01	-2.58e-02	1.37e-04	-3.29e-01	-2.64e-01
	4612	-1.26e+01	-1.28e-01	-2.58e-02	1.37e-04	-3.33e-01	-2.48e-01
	4612	-1.26e+01	-1.28e-01	-2.57e-02	1.37e-04	-3.36e-01	-2.32e-01
	4612	-1.27e+01	-1.28e-01	-2.57e-02	1.37e-04	-3.39e-01	-2.16e-01
	4611	-1.27e+01	2.64e-02	-1.18e-01	2.42e-05	1.70e-01	-3.65e-01
	4611	-1.28e+01	2.64e-02	-1.18e-01	2.42e-05	9.11e-02	-3.82e-01
	4611	-1.30e+01	2.64e-02	-1.18e-01	2.42e-05	1.28e-02	-4.00e-01
	4611	-1.32e+01	2.64e-02	-1.18e-01	2.42e-05	-6.54e-02	-4.17e-01
	4611	-1.34e+01	2.64e-02	-1.17e-01	2.42e-05	-1.43e-01	-4.35e-01
	4613	8.46e+00	4.68e-01	-2.02e+00	5.01e-04	4.08e-01	-2.07e-01
	4613	8.42e+00	4.68e-01	-2.02e+00	5.01e-04	1.55e-01	-2.65e-01
	4613	8.39e+00	4.68e-01	-2.02e+00	5.01e-04	-9.78e-02	-3.24e-01
	4613	8.35e+00	4.68e-01	-2.02e+00	5.01e-04	-3.51e-01	-3.82e-01
	4613	8.32e+00	4.68e-01	-2.02e+00	5.01e-04	-6.04e-01	-4.41e-01
C04	4617	-1.24e+01	-1.50e-01	4.96e-02	1.63e-04	-3.57e-01	-2.89e-01
	4617	-1.25e+01	-1.50e-01	4.97e-02	1.63e-04	-3.50e-01	-2.70e-01
	4617	-1.25e+01	-1.50e-01	4.97e-02	1.63e-04	-3.44e-01	-2.51e-01
	4617	-1.25e+01	-1.50e-01	4.98e-02	1.63e-04	-3.38e-01	-2.33e-01
	4617	-1.26e+01	-1.50e-01	4.98e-02	1.63e-04	-3.32e-01	-2.14e-01
	4616	-1.26e+01	-4.87e-02	-1.29e-01	2.34e-05	1.72e-01	-3.55e-01
	4616	-1.28e+01	-4.87e-02	-1.29e-01	2.34e-05	8.68e-02	-3.23e-01
	4616	-1.29e+01	-4.87e-02	-1.28e-01	2.34e-05	1.46e-03	-2.90e-01
	4616	-1.31e+01	-4.87e-02	-1.28e-01	2.34e-05	-8.37e-02	-2.58e-01
	4616	-1.33e+01	-4.87e-02	-1.28e-01	2.34e-05	-1.69e-01	-2.26e-01
	4621	8.28e+00	-1.54e+00	1.39e+00	3.21e-04	-2.82e-01	3.93e-03
	4621	8.24e+00	-1.54e+00	1.39e+00	3.21e-04	-1.07e-01	1.97e-01
	4621	8.21e+00	-1.54e+00	1.40e+00	3.21e-04	6.69e-02	3.90e-01
	4621	8.17e+00	-1.54e+00	1.40e+00	3.21e-04	2.41e-01	5.83e-01
	4621	8.14e+00	-1.54e+00	1.40e+00	3.21e-04	4.16e-01	7.76e-01
C05	4619	-1.22e+01	-2.17e-01	-3.25e-01	-1.08e-04	-7.42e-02	-2.40e-01
	4619	-1.22e+01	-2.17e-01	-3.25e-01	-1.08e-04	-1.15e-01	-2.13e-01
	4619	-1.22e+01	-2.17e-01	-3.25e-01	-1.08e-04	-1.55e-01	-1.86e-01
	4619	-1.23e+01	-2.17e-01	-3.25e-01	-1.08e-04	-1.96e-01	-1.58e-01
	4619	-1.23e+01	-2.17e-01	-3.25e-01	-1.08e-04	-2.37e-01	-1.31e-01
	4618	-1.23e+01	3.77e-01	-1.56e-01	-1.17e-04	1.58e-01	-2.20e-01
	4618	-1.25e+01	3.77e-01	-1.55e-01	-1.17e-04	5.41e-02	-4.71e-01
	4618	-1.27e+01	3.77e-01	-1.55e-01	-1.17e-04	-4.91e-02	-7.21e-01
	4618	-1.28e+01	3.77e-01	-1.55e-01	-1.17e-04	-1.52e-01	-9.72e-01
	4618	-1.30e+01	3.77e-01	-1.55e-01	-1.17e-04	-2.55e-01	-1.22e+00
	4620	2.21e+00	5.34e+00	5.77e+00	1.73e-03	-1.23e+00	-2.16e-01
	4620	2.17e+00	5.34e+00	5.77e+00	1.73e-03	-5.09e-01	-8.83e-01
	4620	2.14e+00	5.34e+00	5.77e+00	1.73e-03	2.12e-01	-1.55e+00
	4620	2.10e+00	5.34e+00	5.77e+00	1.73e-03	9.32e-01	-2.22e+00
	4620	2.07e+00	5.34e+00	5.77e+00	1.73e-03	1.65e+00	-2.89e+00

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-6.88e+00	1.02e+00	4.00e-01	3.46e-04	-7.49e-01	2.95e+00
	4589	-6.66e+00	1.02e+00	4.01e-01	3.46e-04	-4.32e-01	2.14e+00
	4589	-6.44e+00	1.02e+00	4.01e-01	3.46e-04	-1.16e-01	1.33e+00
	4589	-6.22e+00	1.02e+00	4.01e-01	3.46e-04	2.01e-01	5.23e-01
	4589	-6.01e+00	1.02e+00	4.01e-01	3.46e-04	5.17e-01	-2.86e-01
	4590	1.15e+01	8.60e+00	-1.38e+01	-1.80e-03	4.32e+00	5.93e+00
	4590	1.15e+01	8.60e+00	-1.38e+01	-1.80e-03	2.60e+00	4.85e+00
	4590	1.15e+01	8.60e+00	-1.38e+01	-1.80e-03	8.77e-01	3.78e+00
	4590	1.16e+01	8.60e+00	-1.38e+01	-1.80e-03	-8.47e-01	2.71e+00
	4590	1.16e+01	8.60e+00	-1.38e+01	-1.80e-03	-2.57e+00	1.63e+00
C07	4599	-1.18e+01	2.86e-01	-1.53e-01	9.42e-05	-5.92e-02	4.09e-01
	4599	-1.18e+01	2.86e-01	-1.53e-01	9.42e-05	-7.83e-02	3.73e-01
	4599	-1.19e+01	2.86e-01	-1.53e-01	9.42e-05	-9.75e-02	3.37e-01
	4599	-1.19e+01	2.86e-01	-1.53e-01	9.42e-05	-1.17e-01	3.01e-01
	4599	-1.19e+01	2.86e-01	-1.53e-01	9.42e-05	-1.36e-01	2.66e-01
	4598	-1.27e+01	-7.79e-02	3.05e-01	3.49e-05	-5.98e-01	-4.14e-01
	4598	-1.25e+01	-7.79e-02	3.06e-01	3.49e-05	-3.95e-01	-3.62e-01
	4598	-1.23e+01	-7.79e-02	3.06e-01	3.49e-05	-1.92e-01	-3.10e-01
	4598	-1.21e+01	-7.79e-02	3.06e-01	3.49e-05	1.17e-02	-2.59e-01
	4598	-1.19e+01	-7.79e-02	3.06e-01	3.49e-05	2.15e-01	-2.07e-01
	4622	2.20e+00	-1.66e+00	-5.70e+00	-4.90e-04	6.37e-01	-3.50e-01
	4622	2.16e+00	-1.66e+00	-5.70e+00	-4.90e-04	-7.51e-02	-1.43e-01
	4622	2.13e+00	-1.66e+00	-5.70e+00	-4.90e-04	-7.87e-01	6.41e-02
	4622	2.09e+00	-1.66e+00	-5.70e+00	-4.90e-04	-1.50e+00	2.71e-01
	4622	2.06e+00	-1.66e+00	-5.70e+00	-4.90e-04	-2.21e+00	4.79e-01
C08	4600	-1.22e+01	7.35e-02	1.82e-01	-2.85e-04	-4.35e-01	1.48e-01
	4600	-1.22e+01	7.35e-02	1.82e-01	-2.85e-04	-4.12e-01	1.39e-01
	4600	-1.22e+01	7.35e-02	1.83e-01	-2.85e-04	-3.89e-01	1.29e-01
	4600	-1.23e+01	7.35e-02	1.83e-01	-2.85e-04	-3.67e-01	1.20e-01
	4600	-1.23e+01	7.35e-02	1.83e-01	-2.85e-04	-3.44e-01	1.11e-01
	4597	-1.30e+01	1.78e-01	4.17e-02	1.52e-05	-3.44e-02	1.19e-01
	4597	-1.29e+01	1.78e-01	4.19e-02	1.52e-05	-6.57e-03	1.01e-03
	4597	-1.27e+01	1.78e-01	4.21e-02	1.52e-05	2.14e-02	-1.17e-01
	4597	-1.25e+01	1.78e-01	4.23e-02	1.52e-05	4.94e-02	-2.35e-01
	4597	-1.23e+01	1.78e-01	4.26e-02	1.52e-05	7.76e-02	-3.53e-01
	4623	7.66e+00	2.11e+00	-5.46e-02	9.70e-05	-2.89e-02	-1.20e-01
	4623	7.63e+00	2.11e+00	-5.46e-02	9.70e-05	-3.57e-02	-3.85e-01
	4623	7.59e+00	2.11e+00	-5.46e-02	9.70e-05	-4.25e-02	-6.49e-01
	4623	7.56e+00	2.11e+00	-5.46e-02	9.70e-05	-4.93e-02	-9.13e-01
	4623	7.52e+00	2.11e+00	-5.46e-02	9.70e-05	-5.62e-02	-1.18e+00
C09	4601	-1.23e+01	6.62e-02	1.80e-01	-2.81e-04	-4.38e-01	1.08e-01
	4601	-1.24e+01	6.62e-02	1.80e-01	-2.81e-04	-4.15e-01	9.96e-02
	4601	-1.24e+01	6.62e-02	1.80e-01	-2.81e-04	-3.93e-01	9.13e-02
	4601	-1.24e+01	6.62e-02	1.80e-01	-2.81e-04	-3.70e-01	8.30e-02
	4601	-1.25e+01	6.62e-02	1.80e-01	-2.81e-04	-3.48e-01	7.47e-02
	4596	-1.32e+01	1.69e-01	5.03e-02	-7.39e-06	-6.53e-02	9.91e-02
	4596	-1.30e+01	1.69e-01	5.04e-02	-7.39e-06	-3.18e-02	-1.30e-02
	4596	-1.28e+01	1.69e-01	5.06e-02	-7.39e-06	1.78e-03	-1.25e-01
	4596	-1.26e+01	1.69e-01	5.08e-02	-7.39e-06	3.55e-02	-2.37e-01
	4596	-1.25e+01	1.69e-01	5.10e-02	-7.39e-06	6.93e-02	-3.49e-01
	4624	7.60e+00	2.13e+00	2.53e-01	4.43e-05	-5.96e-02	-1.03e-01
	4624	7.57e+00	2.13e+00	2.53e-01	4.43e-05	-2.80e-02	-3.68e-01
	4624	7.54e+00	2.13e+00	2.53e-01	4.43e-05	3.58e-03	-6.34e-01
	4624	7.50e+00	2.13e+00	2.53e-01	4.43e-05	3.52e-02	-9.00e-01
	4624	7.47e+00	2.13e+00	2.53e-01	4.43e-05	6.67e-02	-1.17e+00
C10	4602	-1.23e+01	2.55e-02	1.86e-01	-2.46e-04	-4.30e-01	7.84e-02
	4602	-1.23e+01	2.55e-02	1.86e-01	-2.46e-04	-4.07e-01	7.52e-02
	4602	-1.24e+01	2.55e-02	1.86e-01	-2.46e-04	-3.83e-01	7.20e-02
	4602	-1.24e+01	2.55e-02	1.87e-01	-2.46e-04	-3.60e-01	6.89e-02
	4602	-1.24e+01	2.55e-02	1.87e-01	-2.46e-04	-3.37e-01	6.57e-02
	4595	-1.32e+01	1.75e-01	4.44e-03	-9.73e-06	3.52e-02	1.26e-01
	4595	-1.30e+01	1.75e-01	4.61e-03	-9.73e-06	3.82e-02	9.33e-03
	4595	-1.28e+01	1.75e-01	4.77e-03	-9.73e-06	4.14e-02	-1.07e-01
	4595	-1.26e+01	1.75e-01	4.94e-03	-9.73e-06	4.46e-02	-2.24e-01
	4595	-1.24e+01	1.75e-01	5.10e-03	-9.73e-06	4.79e-02	-3.40e-01
	4625	7.49e+00	2.06e+00	-8.03e-01	7.61e-05	4.08e-02	-1.24e-01
	4625	7.46e+00	2.06e+00	-8.03e-01	7.61e-05	-5.95e-02	-3.81e-01
	4625	7.42e+00	2.06e+00	-8.03e-01	7.61e-05	-1.60e-01	-6.38e-01
	4625	7.39e+00	2.06e+00	-8.03e-01	7.61e-05	-2.60e-01	-8.95e-01
	4625	7.36e+00	2.06e+00	-8.03e-01	7.61e-05	-3.60e-01	-1.15e+00

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-1.23e+01	5.80e-02	1.71e-01	-2.24e-04	-4.24e-01	8.04e-02
	4603	-1.23e+01	5.80e-02	1.71e-01	-2.24e-04	-4.02e-01	7.31e-02
	4603	-1.24e+01	5.80e-02	1.71e-01	-2.24e-04	-3.81e-01	6.59e-02
	4603	-1.24e+01	5.80e-02	1.71e-01	-2.24e-04	-3.60e-01	5.86e-02
	4603	-1.24e+01	5.80e-02	1.71e-01	-2.24e-04	-3.38e-01	5.14e-02
	4594	-1.32e+01	1.50e-01	6.67e-02	-3.39e-05	-8.56e-02	6.83e-02
	4594	-1.30e+01	1.50e-01	6.68e-02	-3.39e-05	-4.12e-02	-3.11e-02
	4594	-1.28e+01	1.50e-01	6.70e-02	-3.39e-05	3.29e-03	-1.31e-01
	4594	-1.26e+01	1.50e-01	6.71e-02	-3.39e-05	4.79e-02	-2.30e-01
	4594	-1.24e+01	1.50e-01	6.73e-02	-3.39e-05	9.25e-02	-3.29e-01
	4626	7.40e+00	2.08e+00	2.49e-01	-1.00e-05	-7.94e-02	-7.54e-02
	4626	7.37e+00	2.08e+00	2.49e-01	-1.00e-05	-4.83e-02	-3.36e-01
	4626	7.33e+00	2.08e+00	2.49e-01	-1.00e-05	-1.71e-02	-5.96e-01
	4626	7.30e+00	2.08e+00	2.49e-01	-1.00e-05	1.40e-02	-8.57e-01
	4626	7.26e+00	2.08e+00	2.49e-01	-1.00e-05	4.52e-02	-1.12e+00
C12	4604	-1.23e+01	6.80e-02	1.72e-01	-1.70e-04	-4.31e-01	1.15e-01
	4604	-1.24e+01	6.80e-02	1.72e-01	-1.70e-04	-4.09e-01	1.07e-01
	4604	-1.24e+01	6.80e-02	1.72e-01	-1.70e-04	-3.88e-01	9.82e-02
	4604	-1.24e+01	6.80e-02	1.72e-01	-1.70e-04	-3.66e-01	8.96e-02
	4604	-1.25e+01	6.80e-02	1.73e-01	-1.70e-04	-3.45e-01	8.11e-02
	4593	-1.32e+01	1.52e-01	7.39e-02	-4.70e-05	-8.43e-02	6.86e-02
	4593	-1.30e+01	1.52e-01	7.40e-02	-4.70e-05	-3.52e-02	-3.25e-02
	4593	-1.28e+01	1.52e-01	7.41e-02	-4.70e-05	1.40e-02	-1.34e-01
	4593	-1.27e+01	1.52e-01	7.42e-02	-4.70e-05	6.33e-02	-2.35e-01
	4593	-1.25e+01	1.52e-01	7.43e-02	-4.70e-05	1.13e-01	-3.36e-01
	4627	7.63e+00	2.12e+00	9.06e-02	-2.62e-05	-7.70e-02	-7.67e-02
	4627	7.60e+00	2.12e+00	9.06e-02	-2.62e-05	-6.57e-02	-3.42e-01
	4627	7.56e+00	2.12e+00	9.07e-02	-2.62e-05	-5.43e-02	-6.07e-01
	4627	7.53e+00	2.12e+00	9.07e-02	-2.62e-05	-4.30e-02	-8.73e-01
	4627	7.49e+00	2.12e+00	9.07e-02	-2.62e-05	-3.17e-02	-1.14e+00
C13	4605	-1.21e+01	-3.44e-02	1.93e-01	-3.31e-04	-4.38e-01	-8.37e-02
	4605	-1.21e+01	-3.44e-02	1.93e-01	-3.31e-04	-4.13e-01	-7.94e-02
	4605	-1.21e+01	-3.44e-02	1.93e-01	-3.31e-04	-3.89e-01	-7.51e-02
	4605	-1.22e+01	-3.44e-02	1.93e-01	-3.31e-04	-3.65e-01	-7.08e-02
	4605	-1.22e+01	-3.44e-02	1.94e-01	-3.31e-04	-3.41e-01	-6.65e-02
	4592	-1.29e+01	1.84e-01	1.23e-02	-7.18e-05	2.52e-03	1.43e-01
	4592	-1.28e+01	1.84e-01	1.24e-02	-7.18e-05	1.07e-02	2.10e-02
	4592	-1.26e+01	1.84e-01	1.25e-02	-7.18e-05	1.90e-02	-1.01e-01
	4592	-1.24e+01	1.84e-01	1.26e-02	-7.18e-05	2.74e-02	-2.23e-01
	4592	-1.22e+01	1.84e-01	1.27e-02	-7.18e-05	3.58e-02	-3.46e-01
	4628	7.83e+00	-2.13e+00	6.58e-01	1.39e-06	-2.43e-02	1.41e-01
	4628	7.79e+00	-2.13e+00	6.58e-01	1.39e-06	5.79e-02	4.07e-01
	4628	7.76e+00	-2.13e+00	6.58e-01	1.39e-06	1.40e-01	6.74e-01
	4628	7.72e+00	-2.13e+00	6.58e-01	1.39e-06	2.22e-01	9.40e-01
	4628	7.69e+00	-2.13e+00	6.58e-01	1.39e-06	3.05e-01	1.21e+00
C14	4606	-6.29e+00	-1.29e-02	4.58e-01	1.59e-04	-4.53e-01	1.16e-01
	4606	-6.32e+00	-1.29e-02	4.58e-01	1.59e-04	-3.95e-01	1.17e-01
	4606	-6.36e+00	-1.29e-02	4.58e-01	1.59e-04	-3.38e-01	1.19e-01
	4606	-6.39e+00	-1.29e-02	4.59e-01	1.59e-04	-2.81e-01	1.21e-01
	4606	-6.43e+00	-1.29e-02	4.59e-01	1.59e-04	-2.23e-01	1.22e-01
	4591	-7.16e+00	4.72e-02	-4.50e-01	6.95e-05	9.91e-01	-2.57e-02
	4591	-6.98e+00	4.72e-02	-4.50e-01	6.95e-05	6.92e-01	-5.70e-02
	4591	-6.79e+00	4.72e-02	-4.50e-01	6.95e-05	3.93e-01	-8.84e-02
	4591	-6.61e+00	4.72e-02	-4.50e-01	6.95e-05	9.39e-02	-1.20e-01
	4591	-6.43e+00	4.72e-02	-4.50e-01	6.95e-05	-2.05e-01	-1.51e-01
	4629	3.04e+00	-1.04e+00	1.02e+01	-2.14e-05	-9.91e-01	-2.16e-02
	4629	3.00e+00	-1.04e+00	1.02e+01	-2.14e-05	2.88e-01	1.08e-01
	4629	2.97e+00	-1.04e+00	1.02e+01	-2.14e-05	1.57e+00	2.38e-01
	4629	2.93e+00	-1.04e+00	1.02e+01	-2.14e-05	2.84e+00	3.68e-01
	4629	2.90e+00	-1.04e+00	1.02e+01	-2.14e-05	4.12e+00	4.99e-01

ULS - LC 4: 1.35DL + 1.35V_0 + 1.35LL + 1.35WL

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C01	4608	-5.17e+00	4.67e-01	3.07e-01	-2.27e-04	-3.72e-01	4.60e-01
	4608	-5.20e+00	4.67e-01	3.07e-01	-2.27e-04	-3.33e-01	4.02e-01
	4608	-5.23e+00	4.67e-01	3.07e-01	-2.27e-04	-2.95e-01	3.43e-01
	4608	-5.27e+00	4.67e-01	3.07e-01	-2.27e-04	-2.57e-01	2.85e-01
	4608	-5.30e+00	4.67e-01	3.07e-01	-2.27e-04	-2.18e-01	2.27e-01
	4607	-5.30e+00	3.74e-01	4.15e-01	-4.10e-04	-2.69e-01	1.63e-01
	4607	-5.49e+00	3.74e-01	4.15e-01	-4.10e-04	6.27e-03	-8.60e-02
	4607	-5.67e+00	3.74e-01	4.15e-01	-4.10e-04	2.82e-01	-3.35e-01
	4607	-5.85e+00	3.74e-01	4.15e-01	-4.10e-04	5.58e-01	-5.84e-01
	4607	-6.03e+00	3.74e-01	4.15e-01	-4.10e-04	8.34e-01	-8.33e-01
	4615	1.41e+00	-2.02e+00	8.50e+00	2.11e-03	-9.54e-01	6.92e-01
	4615	1.38e+00	-2.02e+00	8.50e+00	2.11e-03	1.08e-01	9.44e-01
	4615	1.34e+00	-2.02e+00	8.50e+00	2.11e-03	1.17e+00	1.20e+00
	4615	1.31e+00	-2.02e+00	8.50e+00	2.11e-03	2.23e+00	1.45e+00
	4615	1.27e+00	-2.02e+00	8.50e+00	2.11e-03	3.30e+00	1.70e+00
C02	4610	-9.44e+00	-5.38e-02	-1.03e-01	-1.07e-04	1.35e-01	-6.03e-02
	4610	-9.48e+00	-5.38e-02	-1.03e-01	-1.07e-04	1.22e-01	-5.35e-02
	4610	-9.51e+00	-5.38e-02	-1.03e-01	-1.07e-04	1.09e-01	-4.68e-02
	4610	-9.55e+00	-5.38e-02	-1.03e-01	-1.07e-04	9.62e-02	-4.01e-02
	4610	-9.58e+00	-5.38e-02	-1.02e-01	-1.07e-04	8.34e-02	-3.34e-02
	4609	-9.58e+00	1.27e-01	-1.70e-02	4.44e-05	1.47e-02	8.86e-02
	4609	-9.76e+00	1.27e-01	-1.68e-02	4.44e-05	3.44e-03	4.12e-03
	4609	-9.95e+00	1.27e-01	-1.67e-02	4.44e-05	-7.70e-03	-8.04e-02
	4609	-1.01e+01	1.27e-01	-1.65e-02	4.44e-05	-1.87e-02	-1.65e-01
	4609	-1.03e+01	1.27e-01	-1.63e-02	4.44e-05	-2.96e-02	-2.49e-01
	4614	4.52e+00	-6.63e-01	1.01e+00	2.96e-04	-2.44e-01	-6.00e-02
	4614	4.49e+00	-6.63e-01	1.01e+00	2.96e-04	-1.17e-01	2.29e-02
	4614	4.45e+00	-6.63e-01	1.01e+00	2.96e-04	9.03e-03	1.06e-01
	4614	4.42e+00	-6.63e-01	1.01e+00	2.96e-04	1.35e-01	1.89e-01
	4614	4.38e+00	-6.63e-01	1.01e+00	2.96e-04	2.62e-01	2.72e-01
C03	4612	-9.56e+00	-2.76e-03	-1.20e-01	-8.34e-05	1.26e-01	-1.41e-03
	4612	-9.59e+00	-2.76e-03	-1.20e-01	-8.34e-05	1.11e-01	-1.07e-03
	4612	-9.62e+00	-2.76e-03	-1.20e-01	-8.34e-05	9.63e-02	-7.22e-04
	4612	-9.66e+00	-2.76e-03	-1.20e-01	-8.34e-05	8.14e-02	-3.77e-04
	4612	-9.69e+00	-2.76e-03	-1.20e-01	-8.34e-05	6.64e-02	-3.20e-05
	4611	-9.69e+00	1.32e-01	-9.00e-03	-5.59e-06	8.73e-03	6.58e-02
	4611	-9.88e+00	1.32e-01	-8.78e-03	-5.59e-06	2.82e-03	-2.17e-02
	4611	-1.01e+01	1.32e-01	-8.57e-03	-5.59e-06	-2.95e-03	-1.09e-01
	4611	-1.02e+01	1.32e-01	-8.36e-03	-5.59e-06	-8.58e-03	-1.97e-01
	4611	-1.04e+01	1.32e-01	-8.15e-03	-5.59e-06	-1.41e-02	-2.84e-01
	4613	4.60e+00	9.99e-02	-1.21e+00	3.05e-04	2.79e-01	-5.63e-02
	4613	4.56e+00	9.99e-02	-1.21e+00	3.05e-04	1.27e-01	-6.88e-02
	4613	4.53e+00	9.99e-02	-1.21e+00	3.05e-04	-2.42e-02	-8.13e-02
	4613	4.49e+00	9.99e-02	-1.21e+00	3.05e-04	-1.76e-01	-9.38e-02
	4613	4.46e+00	9.99e-02	-1.21e+00	3.05e-04	-3.28e-01	-1.06e-01
C04	4617	-9.45e+00	-1.82e-02	-8.50e-02	-7.22e-05	6.03e-02	-2.50e-02
	4617	-9.48e+00	-1.82e-02	-8.50e-02	-7.22e-05	4.97e-02	-2.27e-02
	4617	-9.51e+00	-1.82e-02	-8.49e-02	-7.22e-05	3.90e-02	-2.05e-02
	4617	-9.55e+00	-1.82e-02	-8.49e-02	-7.22e-05	2.84e-02	-1.82e-02
	4617	-9.58e+00	-1.82e-02	-8.48e-02	-7.22e-05	1.78e-02	-1.59e-02
	4616	-9.58e+00	9.63e-02	-1.75e-02	-2.77e-05	1.79e-02	1.58e-02
	4616	-9.77e+00	9.63e-02	-1.72e-02	-2.77e-05	6.42e-03	-4.83e-02
	4616	-9.95e+00	9.63e-02	-1.70e-02	-2.77e-05	-4.94e-03	-1.12e-01
	4616	-1.01e+01	9.63e-02	-1.67e-02	-2.77e-05	-1.61e-02	-1.76e-01
	4616	-1.03e+01	9.63e-02	-1.65e-02	-2.77e-05	-2.72e-02	-2.40e-01
	4621	4.52e+00	-7.74e-01	9.70e-01	2.56e-04	-2.10e-01	-1.19e-01
	4621	4.49e+00	-7.74e-01	9.70e-01	2.56e-04	-8.92e-02	-2.24e-02
	4621	4.45e+00	-7.74e-01	9.70e-01	2.56e-04	3.20e-02	7.44e-02
	4621	4.42e+00	-7.74e-01	9.70e-01	2.56e-04	1.53e-01	1.71e-01
	4621	4.39e+00	-7.74e-01	9.70e-01	2.56e-04	2.75e-01	2.68e-01
C05	4619	-8.48e+00	-8.06e-02	-3.05e-01	-1.26e-04	1.62e-01	-3.86e-02
	4619	-8.51e+00	-8.06e-02	-3.05e-01	-1.26e-04	1.23e-01	-2.85e-02
	4619	-8.54e+00	-8.06e-02	-3.05e-01	-1.26e-04	8.52e-02	-1.85e-02
	4619	-8.58e+00	-8.06e-02	-3.05e-01	-1.26e-04	4.70e-02	-8.30e-03
	4619	-8.61e+00	-8.06e-02	-3.05e-01	-1.26e-04	8.90e-03	1.70e-03
	4618	-8.61e+00	3.33e-01	-2.95e-02	-1.07e-04	-2.71e-03	8.67e-03
	4618	-8.80e+00	3.33e-01	-2.92e-02	-1.07e-04	-2.22e-02	-2.13e-01
	4618	-8.98e+00	3.33e-01	-2.89e-02	-1.07e-04	-4.15e-02	-4.34e-01
	4618	-9.16e+00	3.33e-01	-2.86e-02	-1.07e-04	-6.06e-02	-6.55e-01
	4618	-9.34e+00	3.33e-01	-2.83e-02	-1.07e-04	-7.95e-02	-8.76e-01
	4620	1.27e+00	3.79e+00	3.94e+00	1.19e-03	-8.43e-01	-2.51e-01
	4620	1.23e+00	3.79e+00	3.94e+00	1.19e-03	-3.51e-01	-7.24e-01
	4620	1.20e+00	3.79e+00	3.94e+00	1.19e-03	1.41e-01	-1.20e+00
	4620	1.16e+00	3.79e+00	3.94e+00	1.19e-03	6.34e-01	-1.67e+00
	4620	1.13e+00	3.79e+00	3.94e+00	1.19e-03	1.13e+00	-2.14e+00

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C06	4589	-5.88e+00	5.76e-01	2.62e-01	1.67e-04	-4.38e-01	1.62e+00
	4589	-5.66e+00	5.76e-01	2.62e-01	1.67e-04	-2.31e-01	1.16e+00
	4589	-5.44e+00	5.76e-01	2.62e-01	1.67e-04	-2.36e-02	7.07e-01
	4589	-5.23e+00	5.76e-01	2.63e-01	1.67e-04	1.84e-01	2.52e-01
	4589	-5.01e+00	5.76e-01	2.63e-01	1.67e-04	3.91e-01	-2.03e-01
	4590	4.29e+00	4.82e+00	-7.69e+00	-9.34e-04	2.42e+00	3.29e+00
	4590	4.32e+00	4.82e+00	-7.69e+00	-9.34e-04	1.46e+00	2.68e+00
	4590	4.36e+00	4.82e+00	-7.69e+00	-9.34e-04	4.94e-01	2.08e+00
	4590	4.39e+00	4.82e+00	-7.69e+00	-9.34e-04	-4.67e-01	1.48e+00
	4590	4.42e+00	4.82e+00	-7.69e+00	-9.34e-04	-1.43e+00	8.75e-01
C07	4599	-8.25e+00	1.11e-01	-2.16e-01	1.64e-04	1.82e-01	9.18e-02
	4599	-8.28e+00	1.11e-01	-2.16e-01	1.64e-04	1.55e-01	7.79e-02
	4599	-8.32e+00	1.11e-01	-2.16e-01	1.64e-04	1.28e-01	6.40e-02
	4599	-8.35e+00	1.11e-01	-2.16e-01	1.64e-04	1.01e-01	5.01e-02
	4599	-8.38e+00	1.11e-01	-2.16e-01	1.64e-04	7.38e-02	3.62e-02
	4598	-9.12e+00	-1.85e-01	1.60e-01	3.95e-05	-3.70e-01	-4.31e-01
	4598	-8.93e+00	-1.85e-01	1.60e-01	3.95e-05	-2.64e-01	-3.08e-01
	4598	-8.75e+00	-1.85e-01	1.60e-01	3.95e-05	-1.57e-01	-1.85e-01
	4598	-8.57e+00	-1.85e-01	1.61e-01	3.95e-05	-5.09e-02	-6.26e-02
	4598	-8.38e+00	-1.85e-01	1.61e-01	3.95e-05	5.59e-02	6.02e-02
	4622	1.22e+00	-1.01e+00	-4.07e+00	-5.06e-04	4.12e-01	-3.91e-01
	4622	1.18e+00	-1.01e+00	-4.07e+00	-5.06e-04	-9.58e-02	-2.65e-01
	4622	1.15e+00	-1.01e+00	-4.07e+00	-5.06e-04	-6.04e-01	-1.38e-01
	4622	1.11e+00	-1.01e+00	-4.07e+00	-5.06e-04	-1.11e+00	-1.24e-02
	4622	1.08e+00	-1.01e+00	-4.07e+00	-5.06e-04	-1.62e+00	1.14e-01
C08	4600	-9.30e+00	2.00e-03	-5.05e-02	7.05e-05	6.98e-02	-6.19e-03
	4600	-9.34e+00	2.00e-03	-5.05e-02	7.05e-05	6.35e-02	-6.44e-03
	4600	-9.37e+00	2.00e-03	-5.05e-02	7.05e-05	5.71e-02	-6.70e-03
	4600	-9.40e+00	2.00e-03	-5.04e-02	7.05e-05	5.08e-02	-6.95e-03
	4600	-9.44e+00	2.00e-03	-5.04e-02	7.05e-05	4.45e-02	-7.20e-03
	4597	-1.02e+01	-5.85e-02	-4.05e-03	2.69e-05	6.76e-03	-1.11e-01
	4597	-9.99e+00	-5.85e-02	-3.84e-03	2.69e-05	4.13e-03	-7.17e-02
	4597	-9.80e+00	-5.85e-02	-3.63e-03	2.69e-05	1.65e-03	-3.28e-02
	4597	-9.62e+00	-5.85e-02	-3.42e-03	2.69e-05	-6.97e-04	6.14e-03
	4597	-9.44e+00	-5.85e-02	-3.21e-03	2.69e-05	-2.90e-03	4.50e-02
	4623	4.18e+00	1.25e+00	4.67e-02	-4.97e-05	1.68e-03	1.11e-01
	4623	4.15e+00	1.25e+00	4.68e-02	-4.97e-05	7.53e-03	-4.56e-02
	4623	4.11e+00	1.25e+00	4.68e-02	-4.97e-05	1.34e-02	-2.02e-01
	4623	4.08e+00	1.25e+00	4.68e-02	-4.97e-05	1.92e-02	-3.58e-01
	4623	4.05e+00	1.25e+00	4.68e-02	-4.97e-05	2.51e-02	-5.15e-01
C09	4601	-9.46e+00	9.59e-03	-8.53e-02	8.17e-05	1.36e-01	-7.16e-03
	4601	-9.50e+00	9.59e-03	-8.53e-02	8.17e-05	1.25e-01	-8.36e-03
	4601	-9.53e+00	9.59e-03	-8.53e-02	8.17e-05	1.15e-01	-9.56e-03
	4601	-9.57e+00	9.59e-03	-8.52e-02	8.17e-05	1.04e-01	-1.08e-02
	4601	-9.60e+00	9.59e-03	-8.52e-02	8.17e-05	9.34e-02	-1.20e-02
	4596	-1.03e+01	-9.43e-02	6.26e-04	-4.45e-07	-1.31e-02	-1.57e-01
	4596	-1.01e+01	-9.43e-02	8.11e-04	-4.45e-07	-1.27e-02	-9.44e-02
	4596	-9.97e+00	-9.43e-02	9.95e-04	-4.45e-07	-1.21e-02	-3.17e-02
	4596	-9.78e+00	-9.43e-02	1.18e-03	-4.45e-07	-1.13e-02	3.09e-02
	4596	-9.60e+00	-9.43e-02	1.36e-03	-4.45e-07	-1.05e-02	9.36e-02
	4624	4.07e+00	1.23e+00	2.65e-01	-8.54e-05	-2.20e-02	1.56e-01
	4624	4.04e+00	1.23e+00	2.65e-01	-8.54e-05	1.12e-02	2.56e-03
	4624	4.01e+00	1.23e+00	2.65e-01	-8.54e-05	4.43e-02	-1.51e-01
	4624	3.97e+00	1.23e+00	2.65e-01	-8.54e-05	7.75e-02	-3.05e-01
	4624	3.94e+00	1.23e+00	2.65e-01	-8.54e-05	1.11e-01	-4.58e-01
C10	4602	-9.48e+00	-3.34e-02	-9.85e-02	8.37e-05	1.81e-01	-6.24e-02
	4602	-9.51e+00	-3.34e-02	-9.85e-02	8.37e-05	1.68e-01	-5.82e-02
	4602	-9.55e+00	-3.34e-02	-9.85e-02	8.37e-05	1.56e-01	-5.40e-02
	4602	-9.58e+00	-3.34e-02	-9.84e-02	8.37e-05	1.44e-01	-4.98e-02
	4602	-9.62e+00	-3.34e-02	-9.84e-02	8.37e-05	1.31e-01	-4.56e-02
	4595	-1.03e+01	-1.10e-01	-3.71e-02	9.54e-06	5.90e-02	-1.58e-01
	4595	-1.02e+01	-1.10e-01	-3.69e-02	9.54e-06	3.44e-02	-8.48e-02
	4595	-9.98e+00	-1.10e-01	-3.67e-02	9.54e-06	9.91e-03	-1.20e-02
	4595	-9.80e+00	-1.10e-01	-3.66e-02	9.54e-06	-1.44e-02	6.08e-02
	4595	-9.62e+00	-1.10e-01	-3.64e-02	9.54e-06	-3.87e-02	1.34e-01
	4625	3.96e+00	1.16e+00	-4.51e-01	-9.71e-05	5.18e-02	1.60e-01
	4625	3.92e+00	1.16e+00	-4.51e-01	-9.71e-05	-4.52e-03	1.46e-02
	4625	3.89e+00	1.16e+00	-4.51e-01	-9.71e-05	-6.09e-02	-1.31e-01
	4625	3.86e+00	1.16e+00	-4.51e-01	-9.71e-05	-1.17e-01	-2.76e-01
	4625	3.82e+00	1.16e+00	-4.51e-01	-9.71e-05	-1.74e-01	-4.22e-01

	N°	N	V2	V3	T	M2	M3
		kN	kN	kN	kN-m	kN-m	kN-m
C11	4603	-9.49e+00	3.61e-02	-1.25e-01	1.25e-04	2.18e-01	4.41e-02
	4603	-9.53e+00	3.61e-02	-1.24e-01	1.25e-04	2.02e-01	3.96e-02
	4603	-9.56e+00	3.61e-02	-1.24e-01	1.25e-04	1.87e-01	3.50e-02
	4603	-9.60e+00	3.61e-02	-1.24e-01	1.25e-04	1.71e-01	3.05e-02
	4603	-9.63e+00	3.61e-02	-1.24e-01	1.25e-04	1.56e-01	2.60e-02
	4594	-1.04e+01	-1.38e-01	1.13e-02	-2.46e-05	-2.40e-02	-2.09e-01
	4594	-1.02e+01	-1.38e-01	1.14e-02	-2.46e-05	-1.64e-02	-1.18e-01
	4594	-1.00e+01	-1.38e-01	1.15e-02	-2.46e-05	-8.81e-03	-2.59e-02
	4594	-9.81e+00	-1.38e-01	1.17e-02	-2.46e-05	-1.09e-03	6.59e-02
	4594	-9.63e+00	-1.38e-01	1.18e-02	-2.46e-05	6.72e-03	1.58e-01
	4626	3.88e+00	1.17e+00	2.63e-01	-1.07e-04	-4.18e-02	2.07e-01
	4626	3.85e+00	1.17e+00	2.63e-01	-1.07e-04	-8.91e-03	5.99e-02
	4626	3.81e+00	1.17e+00	2.63e-01	-1.07e-04	2.40e-02	-8.67e-02
	4626	3.78e+00	1.17e+00	2.63e-01	-1.07e-04	5.69e-02	-2.33e-01
	4626	3.74e+00	1.17e+00	2.63e-01	-1.07e-04	8.99e-02	-3.80e-01
C12	4604	-9.56e+00	3.10e-02	-1.31e-01	1.10e-04	2.28e-01	4.13e-02
	4604	-9.59e+00	3.10e-02	-1.31e-01	1.10e-04	2.12e-01	3.75e-02
	4604	-9.63e+00	3.10e-02	-1.31e-01	1.10e-04	1.96e-01	3.36e-02
	4604	-9.66e+00	3.10e-02	-1.31e-01	1.10e-04	1.79e-01	2.97e-02
	4604	-9.70e+00	3.10e-02	-1.31e-01	1.10e-04	1.63e-01	2.58e-02
	4593	-1.04e+01	-1.43e-01	1.10e-02	-2.62e-05	-1.92e-02	-2.17e-01
	4593	-1.02e+01	-1.43e-01	1.11e-02	-2.62e-05	-1.19e-02	-1.21e-01
	4593	-1.01e+01	-1.43e-01	1.12e-02	-2.62e-05	-4.44e-03	-2.59e-02
	4593	-9.88e+00	-1.43e-01	1.13e-02	-2.62e-05	3.06e-03	6.94e-02
	4593	-9.70e+00	-1.43e-01	1.15e-02	-2.62e-05	1.06e-02	1.65e-01
	4627	4.00e+00	1.19e+00	1.65e-01	-1.01e-04	-4.08e-02	2.14e-01
	4627	3.96e+00	1.19e+00	1.65e-01	-1.01e-04	-2.02e-02	6.49e-02
	4627	3.93e+00	1.19e+00	1.65e-01	-1.01e-04	3.54e-04	-8.38e-02
	4627	3.89e+00	1.19e+00	1.65e-01	-1.01e-04	2.09e-02	-2.33e-01
	4627	3.86e+00	1.19e+00	1.65e-01	-1.01e-04	4.15e-02	-3.81e-01
C13	4605	-9.41e+00	2.22e-02	-1.11e-01	8.36e-05	2.16e-01	4.47e-02
	4605	-9.45e+00	2.22e-02	-1.11e-01	8.36e-05	2.02e-01	4.19e-02
	4605	-9.48e+00	2.22e-02	-1.11e-01	8.36e-05	1.88e-01	3.92e-02
	4605	-9.51e+00	2.22e-02	-1.11e-01	8.36e-05	1.75e-01	3.64e-02
	4605	-9.55e+00	2.22e-02	-1.11e-01	8.36e-05	1.61e-01	3.36e-02
	4592	-1.03e+01	-1.21e-01	-1.99e-02	-4.76e-05	3.76e-02	-1.58e-01
	4592	-1.01e+01	-1.21e-01	-1.98e-02	-4.76e-05	2.44e-02	-7.77e-02
	4592	-9.91e+00	-1.21e-01	-1.97e-02	-4.76e-05	1.13e-02	2.73e-03
	4592	-9.73e+00	-1.21e-01	-1.96e-02	-4.76e-05	-1.73e-03	8.32e-02
	4592	-9.55e+00	-1.21e-01	-1.94e-02	-4.76e-05	-1.47e-02	1.64e-01
	4628	4.10e+00	-1.19e+00	3.67e-01	-1.28e-04	-1.31e-02	-1.62e-01
	4628	4.07e+00	-1.19e+00	3.67e-01	-1.28e-04	3.29e-02	-1.31e-02
	4628	4.03e+00	-1.19e+00	3.67e-01	-1.28e-04	7.88e-02	1.36e-01
	4628	4.00e+00	-1.19e+00	3.67e-01	-1.28e-04	1.25e-01	2.85e-01
	4628	3.97e+00	-1.19e+00	3.67e-01	-1.28e-04	1.71e-01	4.34e-01
C14	4606	-5.15e+00	-2.46e-01	3.19e-01	-2.11e-04	-3.08e-01	-5.02e-01
	4606	-5.19e+00	-2.46e-01	3.20e-01	-2.11e-04	-2.68e-01	-4.71e-01
	4606	-5.22e+00	-2.46e-01	3.20e-01	-2.11e-04	-2.29e-01	-4.40e-01
	4606	-5.26e+00	-2.46e-01	3.20e-01	-2.11e-04	-1.89e-01	-4.09e-01
	4606	-5.29e+00	-2.46e-01	3.20e-01	-2.11e-04	-1.49e-01	-3.79e-01
	4591	-6.02e+00	-2.02e-01	-3.45e-01	2.05e-04	7.18e-01	-1.81e-01
	4591	-5.84e+00	-2.02e-01	-3.45e-01	2.05e-04	4.89e-01	-4.71e-02
	4591	-5.66e+00	-2.02e-01	-3.45e-01	2.05e-04	2.60e-01	8.71e-02
	4591	-5.48e+00	-2.02e-01	-3.44e-01	2.05e-04	3.08e-02	2.21e-01
	4591	-5.29e+00	-2.02e-01	-3.44e-01	2.05e-04	-1.98e-01	3.55e-01
	4629	1.03e+00	-4.69e-01	7.06e+00	-5.22e-04	-7.19e-01	-1.78e-01
	4629	9.93e-01	-4.69e-01	7.06e+00	-5.22e-04	1.63e-01	-1.20e-01
	4629	9.59e-01	-4.69e-01	7.06e+00	-5.22e-04	1.04e+00	-6.11e-02
	4629	9.24e-01	-4.69e-01	7.06e+00	-5.22e-04	1.93e+00	-2.52e-03
	4629	8.90e-01	-4.69e-01	7.06e+00	-5.22e-04	2.81e+00	5.61e-02

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