U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON 2013

PROJECT MANUAL
AS BUILT DOCUMENTATION
2013/08/22

AIR HOUSE

TEAM CZECH REPUBLIC: CZECH TECHNICAL UNIVERSITY

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SUMMARY OF CHANGES

Significant changes to the project manual that have occurred between submissions are outlined below. The Construction Drawings should also be reviewed for relevant revisions.

2012/10/11 REVISION

No changes have been made yet.

2012/11/20 REVISION

Location	Change
Structural calculations	Calculations updated with the correct wind speed. Earthquake calculations added. Calculations enclosed in Appendix A.
Interconnection application form	Inverter type changed from Sunny Boy 250 U to Sunny MINI CENTRAL 6000TL.
Energy analysis results and discussions	Inverter type changed from Sunny Boy 250 U to Sunny MINI CENTRAL 6000TL.
Quantity takeoff of competition prototype house	Chapter added
08 41 13	Section name changed from 08 42 26
08 41 26	Section name changed from 08 80 00
23 56 13.13	Chapter updated – glycol is not to be used.
25 00 00	Section updated
26 05 19 **26 05 26** **26 27 26** **26 31 00** **26 50 00**	Sections added
27 21 29 **27 21 33** **27 22 23** **27 25 33**	Sections updated
31 68 00	Section erased
43 01 00	Section updated – glycol is not to be used.
48 19 16	Section added

2013/02/14 REVISION

All chapters have been updated for Construction Documentation.

2013/04/05 REVISION

Location	Change
Interconnection Application form	Inverter type changed
05 12 23	Section added
05 52 00	Aluminum material for railings replaced by lacquered steel

05 54 00	Section added
07 21 13	Fire resistance class for Steico Protect boards added
41 56 16	Distance for noise level provided

2013/08/22 REVISION

All chapters have been updated for As-Built Documentation.

COMPLIANCE CHECKLIST

RULE	RULE DESCRIPTION	LOCATION DESCRIPTION	LOCATION PM = project manual D = drawings
Rule 4-2	Construction Equipment	Drawing(s) showing the assembly and disassembly sequences and the movement of heavy machinery on the competition site	D: O-101, O-102, O-103, O-104, O-105, O-106, O-107, O-108, O-109, O-121, O-122, O-123, O-124, O-701, O-901, O-902, O-903, O-904, O-905, O-906, O-907, O-908, O-909, O-910, O-911, O-912
Rule 4-2	Construction Equipment	Specifications for heavy machinery	PM: 01 50 00, 01 54 19, 41 22 13.23
Rule 4-3	Ground Penetration	Drawing(s) showing the locations and depths of all ground penetrations on the competition site	D: S-101
Rule 4-4	Impact within the Solar Envelope	Drawing(s) showing the location, contact area, and bearing pressure of every component resting directly within the solar envelope	D: S-101
Rule 4-5	Generators	Specifications for generators (including sound rating)	PM: 41 65 16
Rule 4-6	Spill Containment	Drawing(s) showing the locations of all equipment, containers, and pipes that will contain liquids at any point during the event	D: P-101, P-102, P-401, P-402, P-403, P-501, P-502, M-101, M-503
Rule 4-6	Spill Containment	Specifications for all equipment, containers, and pipes that will contain fluids at any point during the event	PM: 11 31 13, 11 31 23, 21 13 00, 21 30 00, 21 40 00, 22 11 16, 22 11 19, 22 11 23, 22 12 19, 22 13 16, 22 13 29, 22 13 43, 22 13 53, 22 13 63, 22 13 73, 22 33 30, 22 41 13, 22 41 16, 22 41 23, 22 41 39, 23 21 13, 23 21 16, 23 21 23, 23 23 23, 23 56 13.13, 23 71 13, 23 82 42, 23 83 16, 23 84 16
Rule 4-7	Lot Conditions	Calculations showing that the structural design remains compliant even if 18 in. (45.7 cm) of vertical elevation change occurred	PM: Appendix 1 - Structural Calculations

Rule 4-7	Lot Conditions	Drawing(s) showing shimming methods and materials to be used if 18 in. (45.7 cm) of vertical elevation change occurred on the lot	D: A-522, A-525, A-526, S-501
Rule 5-2	Solar Envelope Dimensions	Drawing(s) showing the location of all house and site components relative to the solar envelope	D: G-201, G-202
Rule 5-2	Solar Envelope Dimensions	List of solar envelope exemption requests accompanied by justifications and drawing references	N/A
Rule 6-1	Structural Design Approval	List of, or marking on, all drawing and project manual sheets that will be stamped by the qualified, licensed design professional in the stamped structural submission; the stamped submission shall consist entirely of sheets that also appear in the drawings and project manual	PM: Appendix 1 - Structural Calculations, D: S-101 – S-503
Rule 6-2	Finished Square Footage	Drawing(s) showing all information needed by the rules officials to measure the finished square footage electronically	D: G-101
Rule 6-2	Finished Square Footage	Drawing(s) showing all movable components that may increase the finished square footage if operated during contest week	N/A
Rule 6-3	Entrance and Exit Routes	Drawing(s) showing the accessible public tour route	D: G-103
Rule 7-1	Placement	Drawing(s) showing the location of all vegetation and, if applicable, the movement of vegetation designed as part of an integrated mobile system	D: L-101
Rule 7-2	Watering Restrictions	Drawing(s) showing the layout and operation of greywater irrigation systems	D: P-102, P-403, P-501, P-505
Rule 8-1	PV Technology Limitations	Specifications for photovoltaic components	PM: Interconnection Application Form, 26 05 19, 26 24 16, 26 31 00, 48 19 16,
Rule 8-3	Batteries	Drawing(s) showing the location(s) and quantity of all primary and secondary batteries and stand-alone, PV-powered devices	N/A
Rule 8-3	Batteries	Specifications for all primary and secondary batteries and stand-alone, PV-powered devices	N/A
Rule 8-4	Desiccant Systems	Drawing(s) describing the operation of the desiccant system	N/A
Rule 8-4	Desiccant Systems	Specifications for desiccant system components	PM: 23 09 13, 23 72 00, 23 81 26, 42 01 00

Rule 8-5	Village Grid	Completed interconnection application form	PM: Interconnection Application Form
Rule 8-5	Village Grid	Drawing(s) showing the locations of the photovoltaic, inverter(s), terminal box, meter housing, service equipment, and grounding means	D: Section E
Rule 8-5	Village Grid	Specifications for the photovoltaic, inverter(s), terminal box, meter housing, service equipment, and grounding means	PM: Interconnection application form, 26 05 19, 26 05 26, 26 24 16, 26 31 00, 48 19 16"
Rule 8-5	Village Grid	One-line electrical diagram	D: Section E
Rule 8-5	Village Grid	Calculation of service/feeder net computed load per NEC 220	PM: 26 05 19
Rule 8-5	Village Grid	Site plan showing the house, decks, ramps, tour paths, and terminal box	D: C-103, G-103, A-111
Rule 8-5	Village Grid	Elevation(s) showing the meter housing, main utility disconnect, and other service equipment	D: Section E
Rule 9-1	Container Locations	Drawing(s) showing the location of all liquid containers relative to the finished square footage	D: P-101, P-102, G-101
Rule 9-1	Container Locations	Drawing(s) demonstrating that the primary supply water tank(s) is fully shaded from direct solar radiation between 9 a.m. and 5 p.m. PDT or between 8 a.m. and 4 p.m. solar time on October 1	D: P-403
Rule 9-2	Team-Provided Liquids	Quantity, specifications , and delivery date(s) of all team-provided liquids for irrigation, thermal mass, hydronics system pressure testing, and thermodynamic system operation	PM: Detailed Water Budget
Rule 9-3	Greywater Reuse	Drawing(s) showing the layout and operation of greywater reuse systems	D: L-201, P-403, P-102, P-502
Rule 9-4	Rainwater Collection	Drawing(s) showing the layout and operation of rainwater collection systems	D: P-402, P-403
Rule 9-6	Thermal Mass	Drawing(s) showing the locations of liquid-based thermal mass systems	D: M-101
Rule 9-6	Thermal Mass	Specifications for components of liquid-based thermal mass systems	PM: 23 83 16, M-101
Rule 9-7	Greywater Heat Recovery	Drawing(s) showing the layout and operation of greywater heat recovery systems	N/A
Rule 9-8	Water Delivery	Drawing(s) showing the complete sequence of water delivery and distribution events	D: O-701

Rule 9-8	Water Delivery	Specifications for the containers to which water will be delivered	PM: 22 12 19
Rule 9-9	Water Removal	Drawing(s) showing the complete sequence of water consolidation and removal events	D: P-103
Rule 9-9	Water Removal	Specifications for the containers from which water will be removed	PM: 21 40 00, 22 12 19, 22 13 53, 22 13 63
Rule 11-4	Public Exhibit	Interior and exterior plans showing entire accessible tour route	D: G-103

STRUCTURAL CALCULATIONS

PART 1 - INPUTS

1.01 DESIGN CODES

A. International Building Code (IBC)

B. International Residential Code (IRC)

C. 2013 SD Building Code Requirements

D. European standards:

1. EN 1990: Basis of structural design
2. EN 1991-1-1: Action on structures – Densities, self-weight and imposed loads
3. EN 1991-1-3: Action on structures – Snow loads
4. EN 1991-1-4: Action on structures – Wind loads
5. EN 1993: Design of steel structures
6. EN 1995: Design of timber structures
7. EN 338: Structural timber. Strength classes
8. EN 1194: Timber structures. Glued laminated timber. Strength classes and determination of characteristic values

1.02 SOFTWARE

A. RFEM v.4.10.1301 – 3D analysis of complete structures

B. Additional modules to RFEM:

1. RF - LAMINATE – Laminated slabs design (for CLT elements)
2. RF - COMBI 2006 – Load group and combinations generator
3. RF – TIMBER Pro – Timber cross sections check
4. RF – STEEL EC3 – Steel cross sections check
5. RF – DYNAM – Dynamic analysis and Earthquake design

C. MS EXCEL 2010 – Spread sheet calculations

1.03 LOADS

A. DEAD LOADS – SELF WEIGHT

Type of structure	characteristic value	
SK01 Exterior wall	0,94	[kN/m²]
SK02 Interior floor	1,95	
SK03 Roof of interior	1,58	
SK04 Photofoltaic panels	0,31	
SK05 Exterior timber wall	0,23	

B. LIVE LOADS

1. 2013 SD BUILDING CODE REQUIREMENTS

structure	psf	[kN/m²]
interior floors	50	2,39
exterior floors	100	4,79
roof	20	0,96

2. IMPOSED LOADS – ACCORDING TO EN 1991-1-1

Category of loaded areas	characteristic value	
Residential area - Category A	1,5	[kN/m2]
Space, where people can gather Category C3	3,0	
Roofs - Category H	0,75	

3. SNOW LOADS – ACCORDING TO EN 1991-1-3

Snow load is calculated according to Czech National Annex of EN 1991-1-3, where ground snow load map of the Czech Republic is included. Characteristic ground snow load for Prague area is s_k=0,7 kN/m^2.

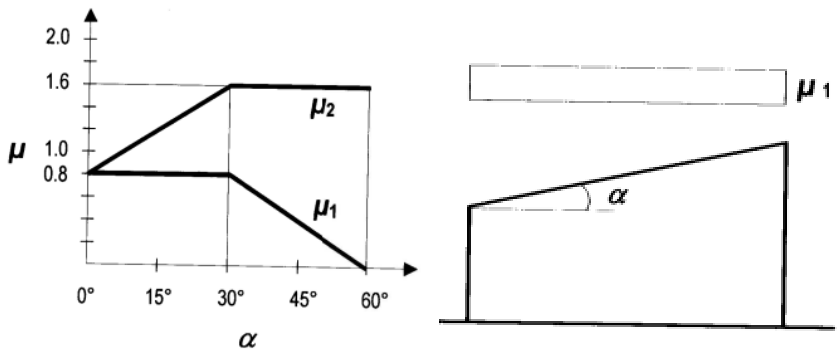
Characteristic value of snow load on the roof:

$$s = \mu_i \cdot C_e \cdot C_t \cdot s_k$$

C_e is exposure factor. Recommended value is 1,0

C_e is heat factor. Recommended value is 1,0

μ_i is roof shape factor, for flat roofs is 0,8 (see figure 3.1)



C. **Figure 3.1**: Roof shape factor for flat roofs.

$$s_{CZ} = \mu_i \cdot C_e \cdot C_t \cdot s_k = 0{,}8 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 = \mathbf{0{,}8\ kN/m^2}$$

$$s_{US} = \mathbf{0{,}96\ kN/m^2}$$

Event Condition is governing the design.

4. WIND LOADS – ACCORDING TO EN 1991-1-4

SD Building Code requires a wind speed of 85 mph (38.0 m/s) in 3-second gust. According to [1] is possible to converse this value to 10 minutes mean velocity by equation:

$$v_{b,0} = v_{ref}^{10min} = \frac{2}{3} \cdot v_{ref}^{3sec}$$

a. Basic wind velocity

The fundamental value of the basic wind velocity is the characteristic 10 minutes mean wind velocity, irrespective of wind direction and time of year, at 10 m above ground level in open country terrain with low vegetation such as grass and isolated obstacles with separations of at least 20 obstacle heights. The fundamental value of the basic wind velocity for SD Rules requirements is:

$$v_{b,0} = v_{ref}^{10min} = \frac{2}{3} \cdot v_{ref}^{3sec} = \frac{2}{3} \cdot 38{,}0 = 25{,}3\ m/s$$

The fundamental value of the basic wind velocity according to wind velocity map of the Czech Republic and according to National Annex of EN 1991-1-4 is:

$$v_{b,0} = 25{,}0\ m/s$$

The basic wind velocity should be calculated using expression:

$$v_b = C_{DIR} \cdot C_{SEASON} \cdot v_{b,0}$$

C_{DIR} is a wind direction factor. Recommended value is 1.0.
C_{SEASON} is a season factor. Recommended value is 1.0.

$$v_{b,US} = 1{,}0 \cdot 1{,}0 \cdot 25{,}3 = 25{,}3\ m/s$$

$$v_{b,CZ} = 1{,}0 \cdot 1{,}0 \cdot 25{,}0 = 25{,}0\ m/s$$

b. Basic velocity pressure

$$q_{b,US} = \frac{1}{2} \cdot \rho \cdot v_b^2\ z\ \ = \frac{1}{2} \cdot 1{,}25 \cdot 25{,}3^2 = 400\ N/m^2$$

$$q_{b,CZ} = \frac{1}{2} \cdot \rho \cdot v_b^2\ z\ \ = \frac{1}{2} \cdot 1{,}25 \cdot 25{,}0^2 = 391\ N/m^2$$

ρ is the air density, which depends on the altitude, temperature and barometric pressure to be expected in the region during wind storms. Recommended value is 1,25 kg/m^3 (0,0775 lb/cu.ft).

c. Peak velocity pressure

The peak velocity pressure $q_p(z)$ at height z, which includes mean and short-term velocity fluctuations, should be determined by expression:

$$q_b\ z\ \ = C_e\ z\ \ \cdot q_b$$

$C_e(z)$ is exposure factor determined by EN 1991-1-4, see figure 3.1

$C_e(z)$ for US conditions and building height 5,0m is 1,95.

$C_e(z)$ for CZ conditions and building height 5,0m is 1,2.

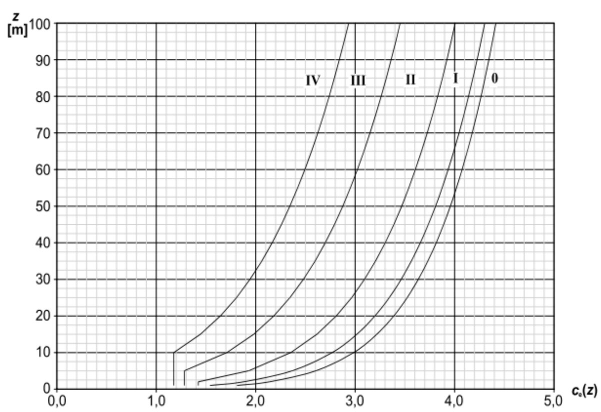


Figure 4.1: Exposure factor.

Roman numerals in figure 3.1 describe the terrain roughness. The terrain roughness to be used for a given wind direction depends on the ground roughness and the distance with uniform terrain roughness in an angular sector around the wind direction. Small areas (less than 10% of the area under consideration) with deviating roughness may be ignored. Description of terrain category is given in figure 3.2.

$$q_{b,US}(z) = C_e(z) \cdot q_b$$

Terrain category		z_0 m	z_{min} m
0	Sea or coastal area exposed to the open sea	0,003	1
I	Lakes or flat and horizontal area with negligible vegetation and without obstacles	0,01	1
II	Area with low vegetation such as grass and isolated obstacles (trees, buildings) with separations of at least 20 obstacle heights	0,05	2
III	Area with regular cover of vegetation or buildings or with isolated obstacles with separations of maximum 20 obstacle heights (such as villages, suburban terrain, permanent forest)	0,3	5
IV	Area in which at least 15 % of the surface is covered with buildings and their average height exceeds 15 m	1,0	10
NOTE: The terrain categories are illustrated in A.1.			

Figure 4.2: Terrain categories and terrain parameters.

$$q_{p,US}(z) = C_{e,US}(z) \cdot q_{b,US} = 1{,}93 \cdot 400 = 772\ N/m^2$$

$$q_{p,CZ}(z) = C_{e,CZ}(z) \cdot q_{b,CZ} = 1{,}38 \cdot 391 = 543\ N/m^2$$

Higher value of calculated peak velocity pressures of two different area conditions will be used for further calculation of wind loads.

d. Wind pressure on surfaces

$$w_e = q_{p,US}(z_e) \cdot C_{pe}$$

C_{pe} is the pressure coefficient for the external pressure.

z_e is the reference height for the external pressure (for Airhouse is 5,0m)

Pressure coefficient is calculated for both walls and flat roof. Four wind directions are considered

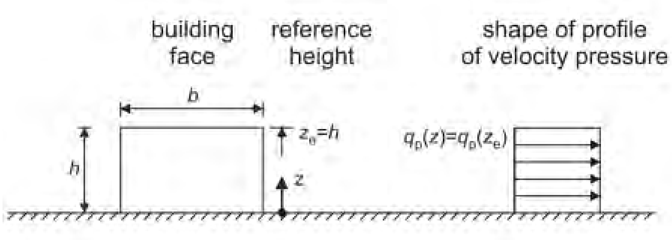


Figure 4.3: Reference high for Airhouse.

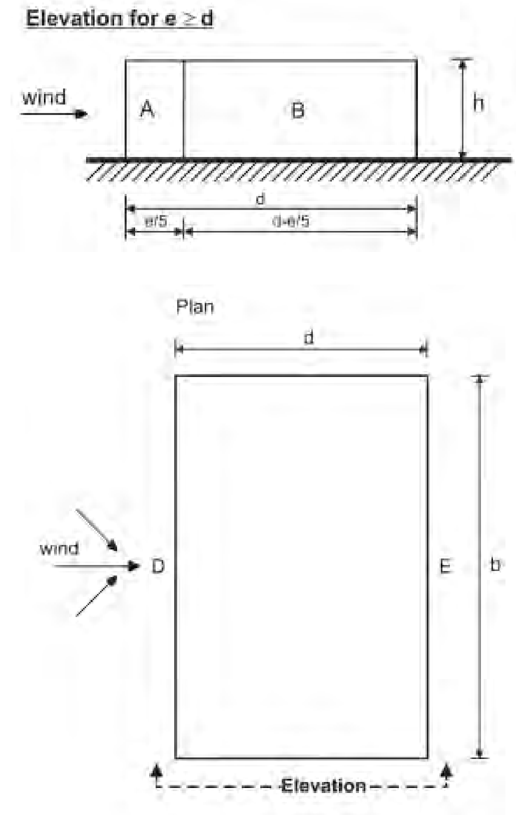


Figure 4.4: Key for vertical load.

Zone	**A**		**B**		**C**		**D**		**E**	
h/d	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$
5	-1,2	-1,4	-0,8	-1,1	-0,5		+0,8	+1,0	-0,7	
1	-1,2	-1,4	-0,8	-1,1	-0,5		+0,8	+1,0	-0,5	
≤ 0,25	-1,2	-1,4	-0,8	-1,1	-0,5		+0,7	+1,0	-0,3	

Figure 4.5: Recommended values of external pressure coefficients for vertical walls of rectangular plan buildings.

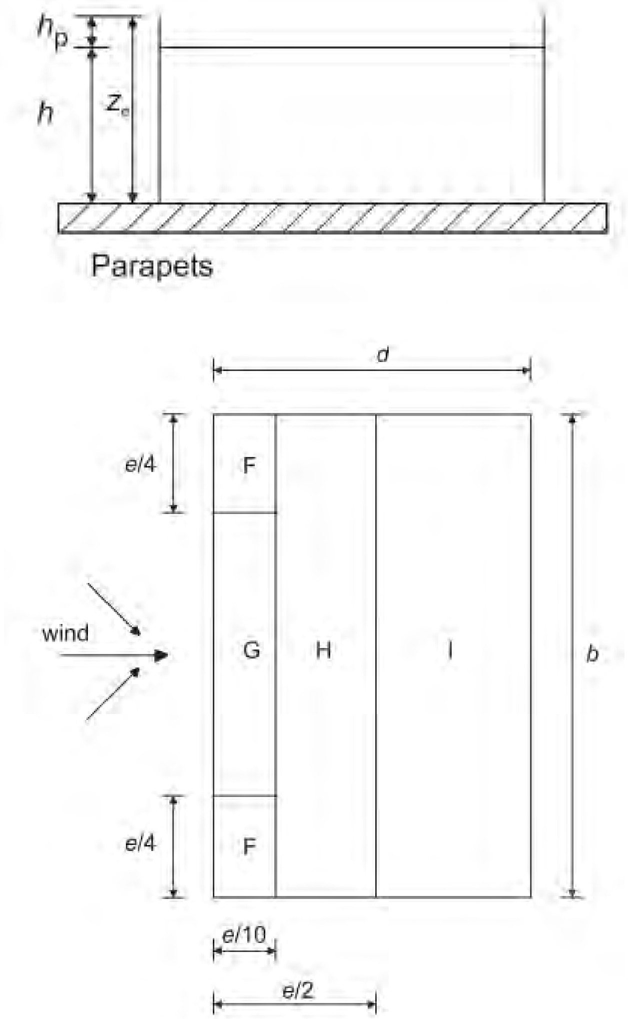
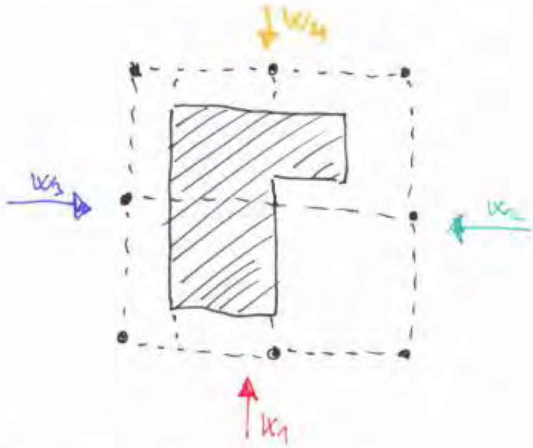


Figure 4.6: Key for flat roofs.

Roof type		Zone F $c_{pe,10}$	F $c_{pe,1}$	G $c_{pe,10}$	G $c_{pe,1}$	H $c_{pe,10}$	H $c_{pe,1}$	I $c_{pe,10}$	I $c_{pe,1}$
Sharp eaves		-1,8	-2,5	-1,2	-2,0	-0,7	-1,2	+0,2 -0,2	
With Parapets	h_p/h=0,025	-1,6	-2,2	-1,1	-1,8	-0,7	-1,2	+0,2 -0,2	
	h_p/h=0,05	-1,4	-2,0	-0,9	-1,6	-0,7	-1,2	+0,2 -0,2	
	h_p/h=0,10	-1,2	-1,8	-0,8	-1,4	-0,7	-1,2	+0,2 -0,2	

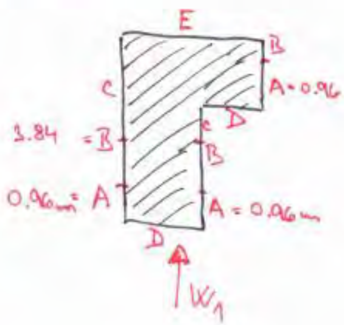
Figure 4.7: External pressure coefficients for flat roofs.

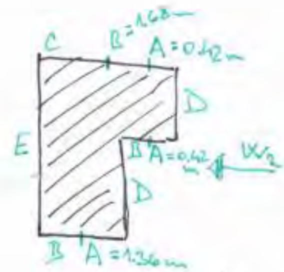
WIND DIRECTIONS AND PRESSURE COEFFICIENT

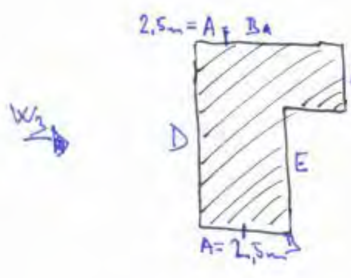


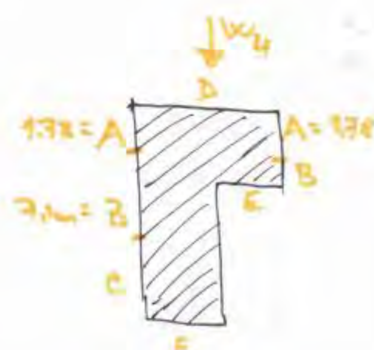
Pressure coefficients for walls :

WIND W_1









C_{pe} coefficients for W1

Wind directon W1, left facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-0,98	-0,5	0,73	-0,36

Wind directon W1, right long facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,08	-0,5	0,75	-0,39

Wind directon W1, right short facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,19	-0,5	0,8	-0,57

C_{pe} coefficients for W2

Wind directon W2, left long facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,39	-0,5	0,8	-0,5

Wind directon W2, left short facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,22	-0,5	0,8	-0,56

Wind directon W2, right facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,16	-0,5	0,76	-0,42

C_{pe} coefficients for W3

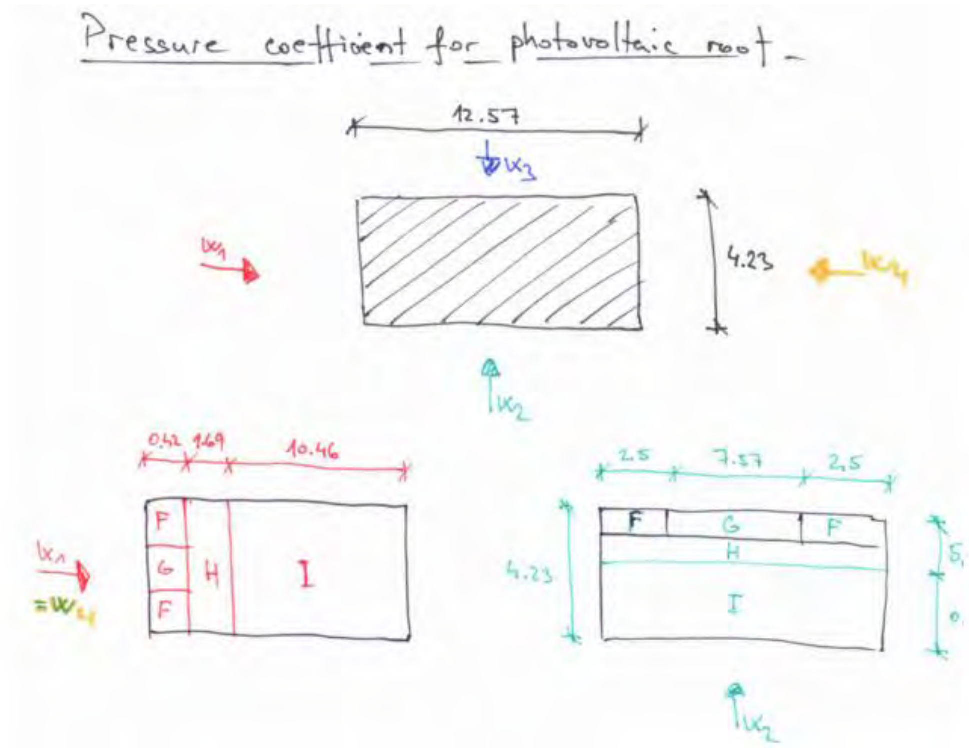
Wind directon W3, right facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,39	-0,5	0,8	-0,5

Wind directon W3, left facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,16	-0,5	0,76	-0,42

C_{pe} coefficients for W4

Wind directon W4, right facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-0,98	-0,5	0,73	-0,36

Wind directon W4, left facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,19	-0,5	0,8	-0,57



Wind directon W1 - External pressure coefficients				
zone	F	G	H	I
$C_{pe,10}$	-1,4	-0,9	-0,7	-0,2

1.04 LOAD COMBINATIONS

A. Ultimate limit states (ULS)

To satisfy the ultimate limit state, the structure must not collapse when subjected to the peak of loads for which it was designed. The failure mechanisms that must be checked are bending, shear, compression/tension and buckling for elements of the structural system. For the whole structure sliding, uplift and lateral stability are checked. The load combination in Ultimate limit state is:

$$\gamma_G.G_k \oplus \gamma_Q.Q_k \oplus \underset{i>1}{\quad} \gamma_{Q,i}.\psi_{0,i}\, Q_{k,i}$$

γ_G is a partial safety factor for dead loads, it's value depends on the nature of the effect caused by the dead loads.

γ_G = 1,35 for generally negative effects

γ_G = 1,00 for generally positive effects

γ_Q is a partial safety factor for variable loads, it's value depends on the nature of the effect caused by the variable load (e.g. wind loads, live load).

γ_Q = 1,50 for generally negative effects

γ_Q = 1,00 for generally positive effects

ψ_o is a factor for a combination of variable loads. Its purpose is to take in account the improbability that all variable loads will peak at the same time.

ψ_o = 0,7 for live loads

ψ_o = 0,5 for snow loads

ψ_o = 0,6 for wind loads

Note that ⊕ is not an algebraic summation because the load can be different in nature an occurrence.

This method, prescribed by the Eurocode 1990, is based on a probability of failure of 1/1000 during a lifetime of 100 years.

B. Serviceability limit states (SLS)

To satisfy the serviceability limit state criteria, a structure must remain functional for its intended use subject to routine (everyday) loading, and as such the structure must not cause occupant discomfort under routine conditions. This implies that the deformations must be limited to certain values.

The load combination in Serviceability limit state is:

$$G_k \oplus \gamma_Q.Q_k \oplus \sum_{i>1} \gamma_{Q,i}.\psi_{0,i}\ Q_{k,i}$$

γ_Q is a partial safety factor for variable loads , the values are different than those used in ULS.

γ_Q = 1,00 for generally negative effects

γ_Q = 0,00 for generally positive effects

The combination factors are the same as those in Ultimate limit state.

C. Load groups and combinations

1. All load groups and calculations were automatically generated by additional RFEM module RF COMBI. Results are in **Appendix 1 - Structural Calculations** of this document.

PART 2 - EARTHQUAKE DESIGN

2.01 Earthquake design was performed according to sd 2013 rules and ibc 2009 and asce 7. Earthquake design parameters are as follows:

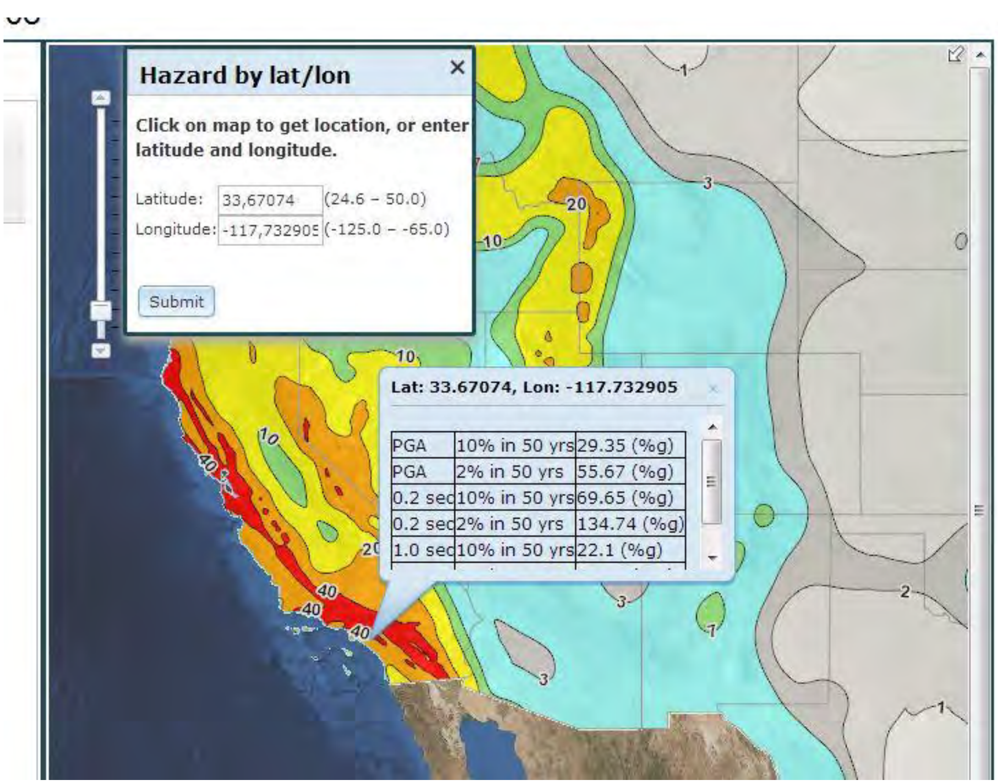


Figure 4.8: Interactive map of hazards for Competition site. (Source: http://earthquake.usgs.gov/hazards/apps/map/).

On the base of abovementioned data, all other coefficients for equivalent lateral loads calculation were obtained. Summary of these data is in figure 4.9 and 4.10.

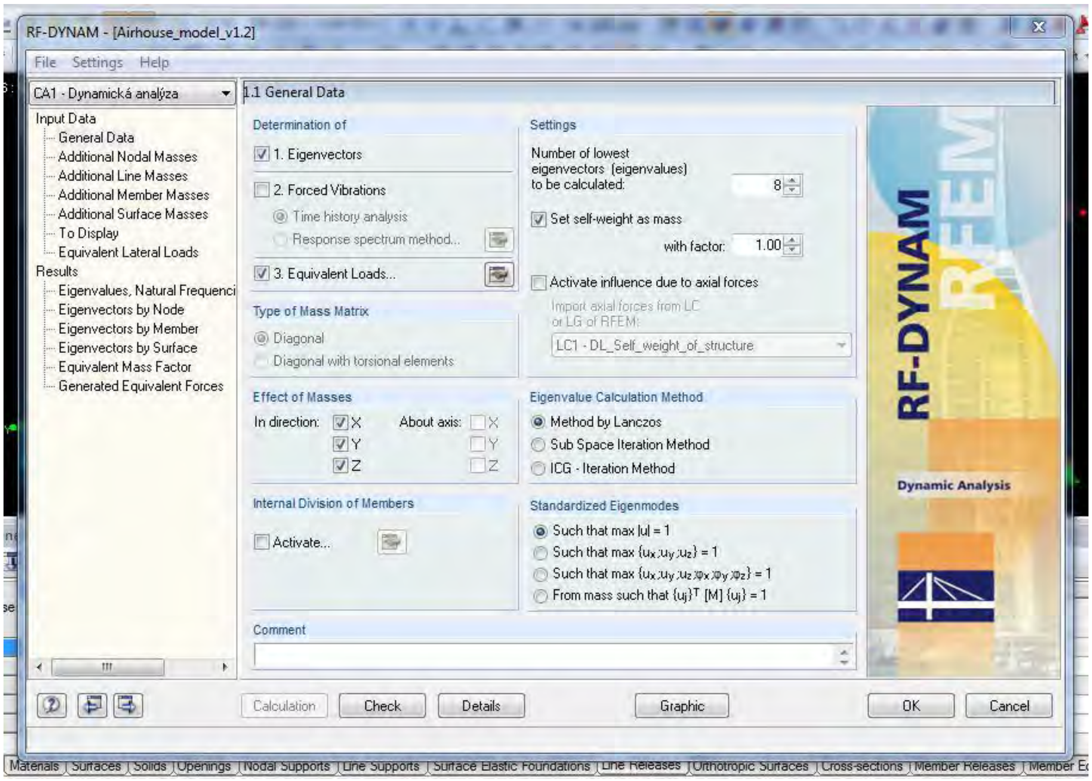


Figure 4.9: General data for dynamic analysis.

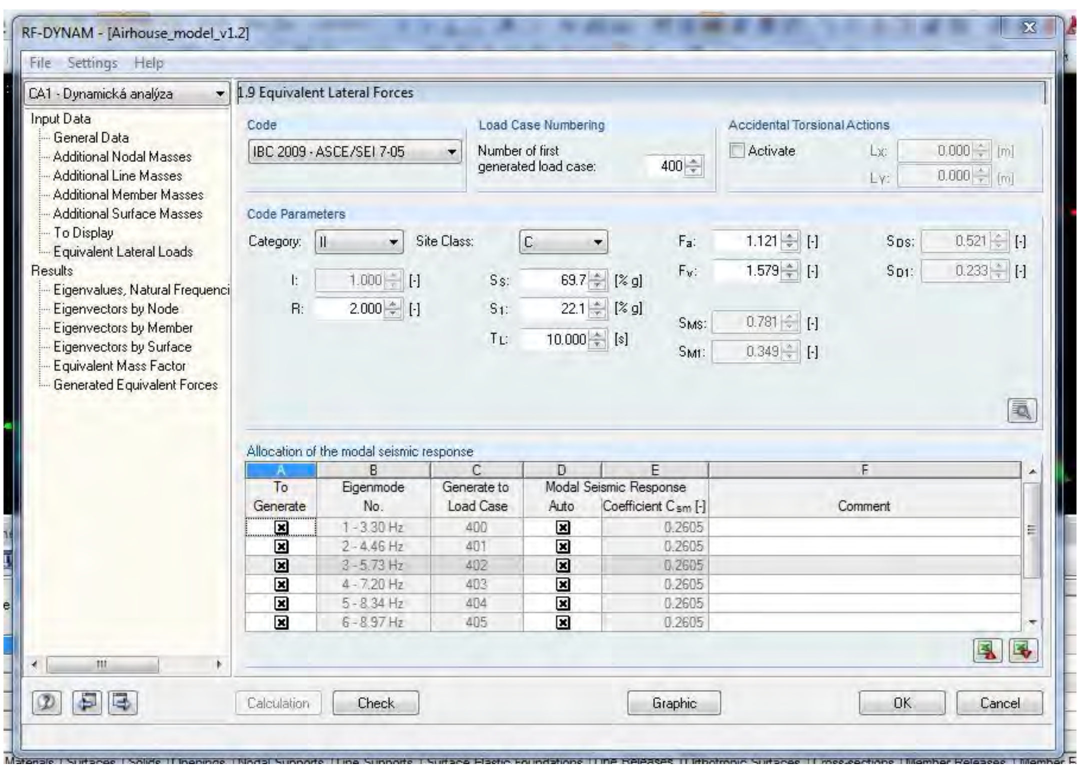


Figure 4.10: Equivalent lateral forces for earthquake analysis.

2.02 Lateral forces transmission

To satisfy the stability of structure, no uplift, slide or overturning must not appear. All forces have to be transmitted to supports by contact friction between substructure and an asphalt runway surface. Those forces, which are not transmitted via friction have to be transmitted with anchoring system (1 inch thick steel rods punched to drilled holes).

Lateral forces on canopy grid are transmitted to fixed supports above the CLT (cross laminated timber) building by tension rods (steel rods Ø20mm). Then all lateral forces are transmitted with CLT massive timber panels to steel substructure frame and with tension steel rods to glulam bottom grid of Canopy. Self-weight of all structure and lateral bracing between CLT building and Canopy grid where all lateral forces are concentrated is important part of structural design.

Some uplift and shear forces occur in some load combination situations. All these forces are transmitted with satisfactory reserves.

PART 3 - STRUCTURE PARTS

3.01 LATERAL FORCES TRANSMISSION

Structure model and calculations are divided to three independent parts:

- Overall model of building and Canopy.
- Model of 3D steel frame for technology.
- Steel ramps.

DETAILED WATER BUDGET

FUNCTION	WATER USE (GALLONS)	CALCULATIONS		NOTES
		GAL	EVENTS	
Hot Water Draws	272	17	16	
Water Vaporization	4	1	4	
Dishwasher	18.5	3.7	5	
Clothes Washer	179.6	22.45	8	
Vegetation	21	21	1	
Constructed wetlands	345	345	1	
Fire Protection	120	120	1	
Thermal Storage Tanks	40	5	8	
Testing	40	40	1	
Initial Systems Fill	5	5	1	
Solar Thermal Collectors	-	-	-	
Aesthetic Purpose	18	18	1	
Radiant Flooring	10%			
Safety Factor	272	17	16	
WATER REQUIRED	**1170**			

SUMMARY OF UNLISTED ELECTRICAL COMPONENTS

All electrical components used in the design of the Czech Technical University Solar Decathlon Team house shall carry an approved agency's listing per Section 6.7 of the Solar Decathlon 2013 Building Code.

SUMMARY OF RECONFIGURABLE FEATURES

No reconfigurable features are used in AIR House.

INTERCONNECTION APPLICATION FORM

Team Czech Republic, Lot 103

PV SYSTEMS

MODULE MANUFACTURER	SHORT DESCRIPTION OF ARRAY	DC RATING OF ARRAY (SUM OF THE DC RATINGS)
Aide Solar XZST-185W/24V	Pmax 185Wp +/- 5%; Voc 44,50V; Vmp 36,8V; Isc 5,5A; Imp 5,1A; monocrystalline PV panel	6 105 kW

Total DC power of all arrays is **6,1 kW** (in tenths)

INVERTERS

INVERTER MANUFACTURER	MODEL NUMBER	VOLTAGE	RATING (KVA OR KW)	QUANTITY
SMA	Sunny Boy 5000-US	240	5,0kW	1

Total AC power of all inverters is **5 kW (**in whole numbers)

REQUIRED INFORMATION

The following information must be included in the project manual or construction documents. If located in the construction documents, list the drawing locations in this section of the project manual. (Example: B3/E-201)

	Location
One-Line Electric Schema	In Drawing E-601, E-602, E-603
Calculations of service/feeder net computed load and neutral load (NEC 220)	E-611
Plan view of the lot showing the house, decks, ramps, tour paths, the service point, and the distribution panel or load center	G-103, E-102

Provide the Team's "Electrical Engineer" contact in the "Team Officer Contact Info" database on the Yahoo Group as required per Rule 3-2.

ENERGY ANALYSIS RESULTS AND DISCUSSION

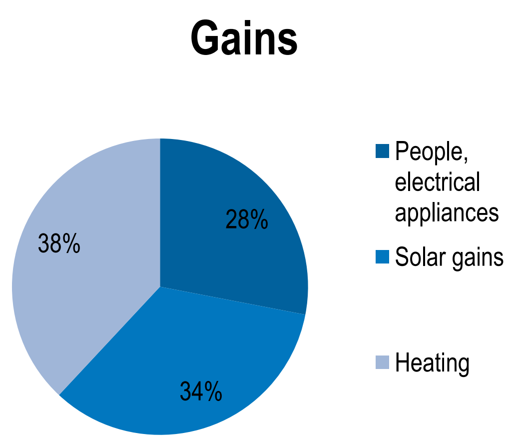
PART 1 - INTRODUCTION

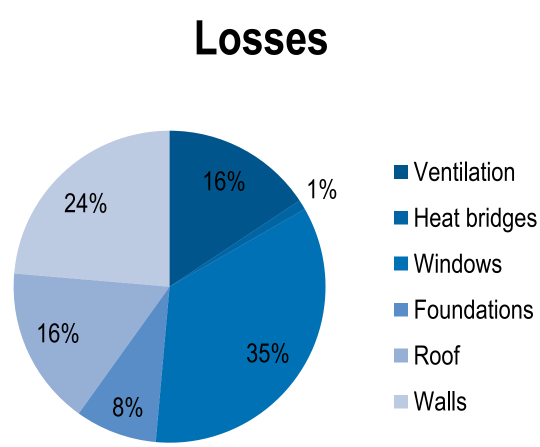
1.01 State of the art

The low-energy building tradition in the Czech Republic is about ten years long. At present, the low-energy and passive houses are becoming more frequent even without considerable government support or subsidies. Groups of investors span from general public investors building small family houses, to investors building residential developments via developers, who take the chance that the marketing power of low-energy buildings will govern itself, but who should keep the public interest in their eye in order to support sustainable projects.

For the first time, a team from the Czech Republic competes in the U.S. Department of Energy Solar Decathlon. We want to demonstrate a sustainable house suitable for both, the Czech Republic and California conditions.

In the Czech Republic, the tradition of modern style passive housing is about ten years long. At present, we are also beginning to talk about zero-energy houses and even about plus houses (those producing more energy than they consume) and we have many good examples of such houses. For a family house there are two heat demand limits for heating in the Czech Republic: a house with heat demand lower than 50 kWh/(m^2a) is considered a low-energy house, and a house with heat demand lower than 15 kWh/(m^2a) is called a passive house. A standard, new house has an average heat demand of about 120 kWh/ (m^2a).





Basic examples of energy demand and energy sources of a typical Czech passive house are given in the preceding graphs. Real data valid for a passive house built in the Czech Republic are presented. The house has a total heating energy demand of 38,9 kW/m^2a.

European Directive on the Energy Performance of Buildings has already affected building in the Czech Republic. It will, however, be much more strict in the future because, as of 2020, all new built houses should be close to zero (should have almost zero energy consumption).

Recently, energy performance certificates are processed for all newly constructed or reconstructed sold and leased buildings. This should help improve ecological behavior of the population.

Since 2011, a new technical standard ČSN 73 5040-2 is valid. In this standard, there are, for example, requirements for the internal surface temperature, airtightness or heat transfer coefficient (reverse thermal resistance) of structures. Also, an almost-zero-energy house and a zero-energy house are newly defined. The difference between them is in the primary energy demand from non-renewable sources (it is zero in zero-energy houses).

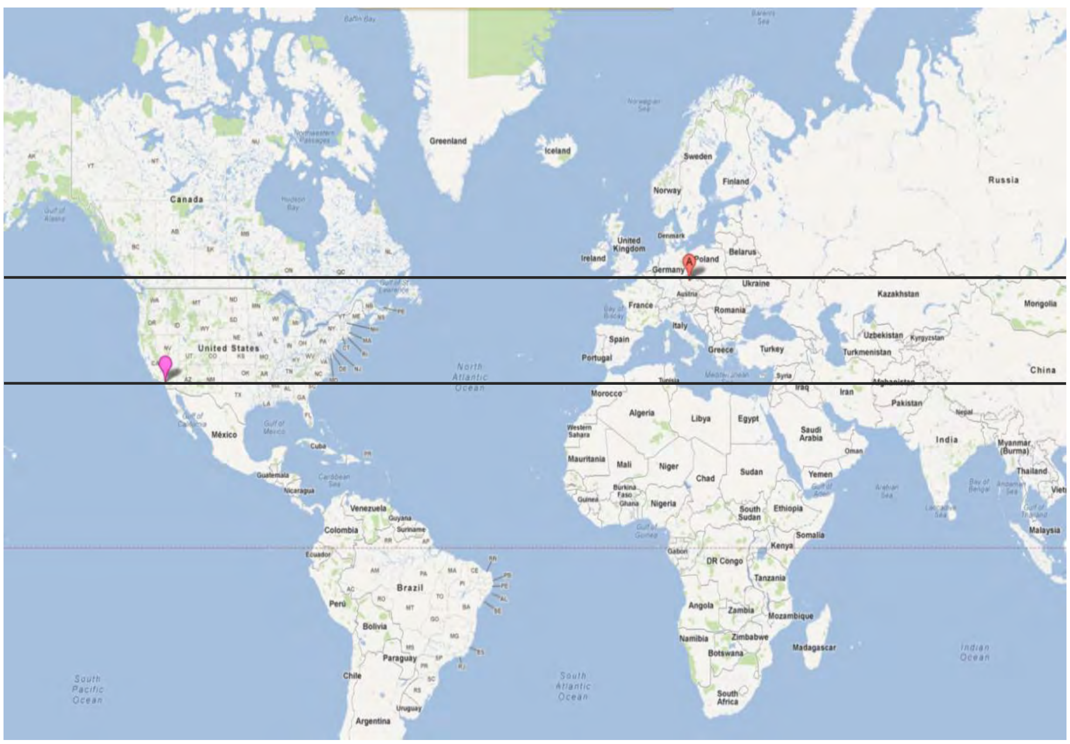
Another important standard, TNI 73 0329, is also valid for family houses. This standard deals with the classification of low-energy family houses. It uses many procedures, including the PHPP methodology used in Germany and Austria.

Since 2009, all newly built buildings in the Czech Republic must be delivered with an Energy Performance Certificate that shows assumed efficiency of the whole building. Such a certificate will also be delivered for the newly built AIR House.

1.02 **Climate**

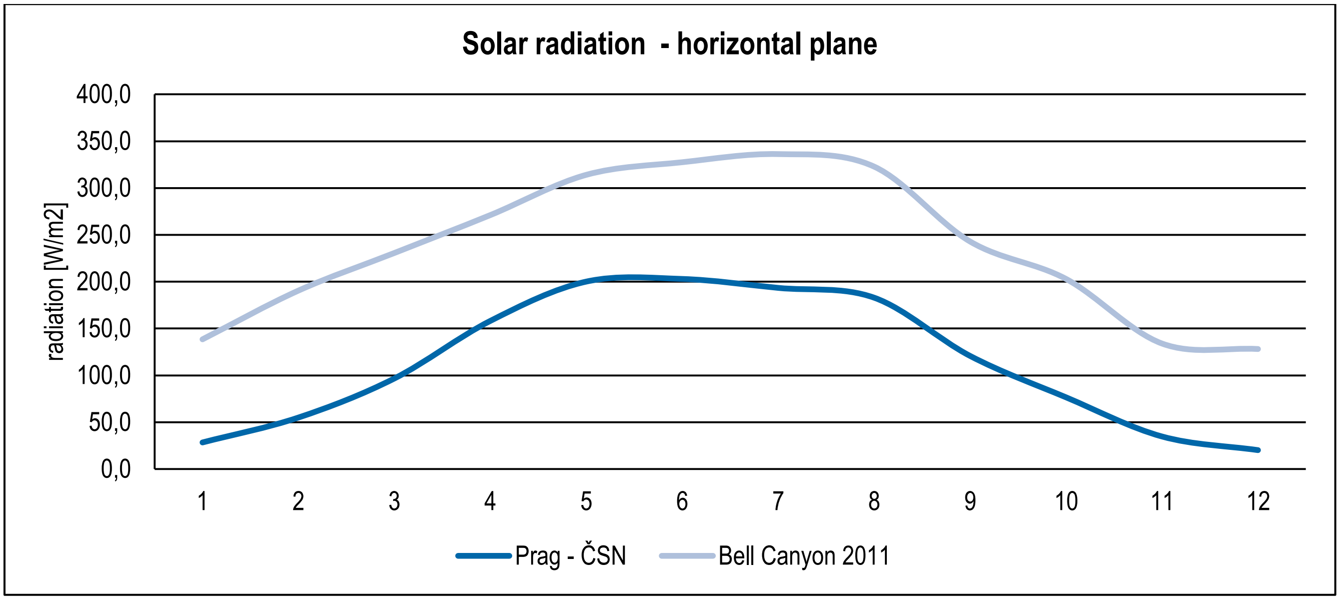
The climate difference between the two selected construction sites is enormous. This difference was taken into account during the whole design process. The main differences in the energy field are summed up in the following paragraphs.

The main difference is in the geographic location. Prague lies on the 50th parallel and Los Angeles is situated on the 33rd as it is demonstrated in the following picture:



This also influences the height of the Sun in the sky. In Prague, the Sun is 40° high on the equinox and 63,5° high on the summer solstice. In Los Angeles, the height of the Sun is 57° on the equinox. This means that the sun radiation in Los

Angeles impacts at a larger angle. That also influences many other things, for example the length of a roof overhang, shading design or the photovoltaic system design.

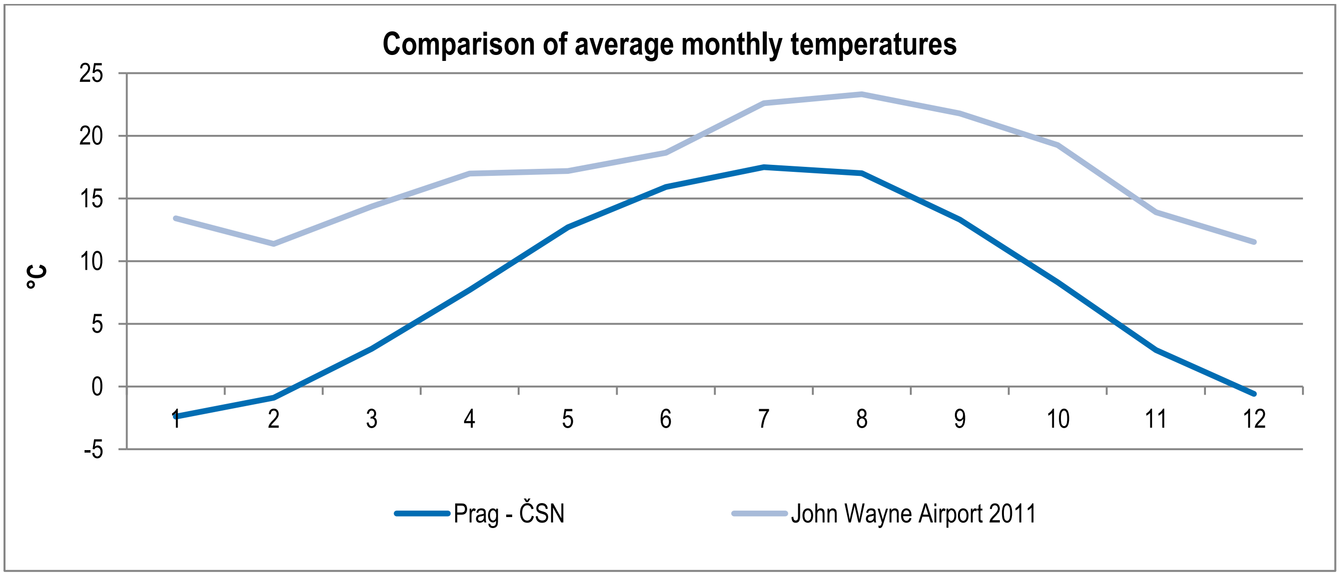


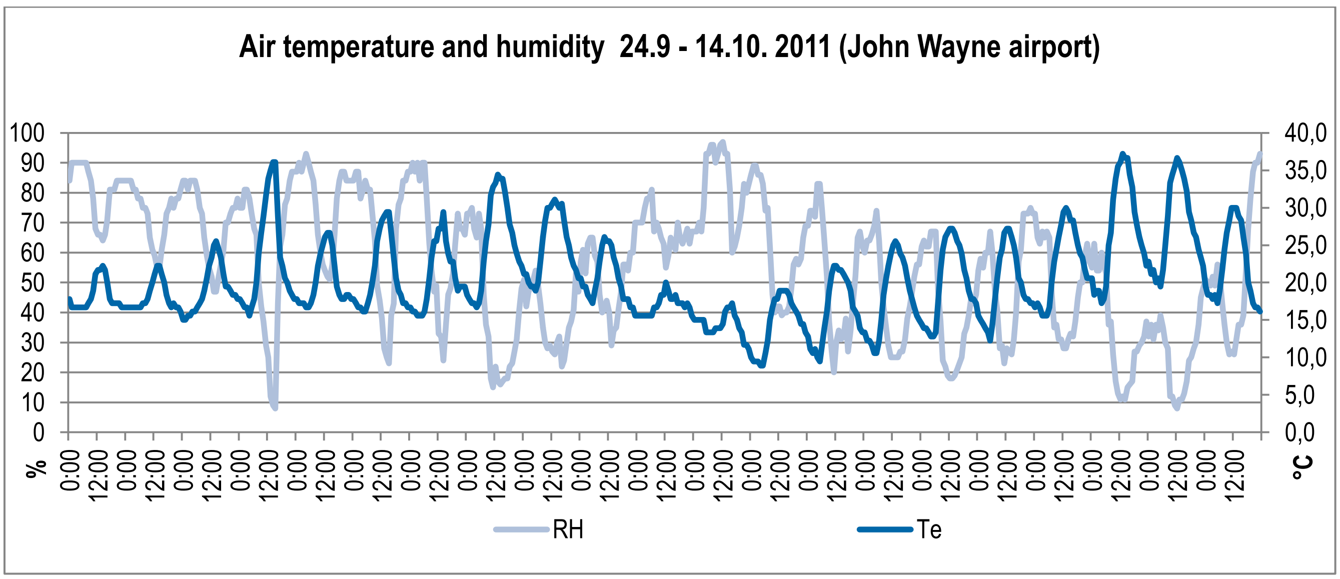
On the above Solar radiation graph it is easy to see the differences in solar gains which we are able to use in the house. In the California conditions, building up a photovoltaic system is more preferable than in the Czech Republic. Average (annual) global radiation is 205–230 W/m^2 in California, whereas the same parameter has a value of 114 W/m^2 in the Czech Republic. In other words, in the Czech Republic we would need about two times more panels than we would in California to meet the same energy demand. That is why we decided to design a number of photovoltaic panels needed to meet the energy demand in California and with the California sun conditions.

In the Czech Republic, the main energy demand rests on heating, cooling is generally used only in office buildings – there is no need to cool a well-designed house in the summer. The heat stability of a building during the summer period is possible to be reached by complying to clear and traditional building rules, such as building orientation, amount of openings, etc. This is the reason why the heating energy demand is more important.

There is less air humidity but very frequent rain in the Central European climate. In California, morning fogs are common but the climate is rather drier. In addition, thanks to the Pacific Ocean proximity, the Orange County Great Park has much more stable weather throughout the whole year. In our country, temperatures under -15 °C during winter are not unusual.

For our first simulation, we have used climate data of two locations from the Western Regional Climate Center – Bell Canyon and John Wayne airport. Then we compared them with data from other sources and with the Prague (Meteonorm) climate data. Finally, the most representative values had been chosen for the competition. Then, computer simulations with these hourly data had been carried out.





For the final simulations, climatic data from Prague–Karlov 2010 had been used for simulating Czech conditions and IES_VE Los Angeles data had been used to simulate the California ones.

1.03 **Passive Design**

One of the main rules, that should be applied when designing a passive house, is to set the building perfectly into the environment the house is built in. As we demonstrated in the previous chapter, there are outstanding differences between both construction sites. The most important differences are in:

- twice as much solar gain in L.A. than in Prague
- higher average temperatures during the year in L.A., higher peak temperatures in summer

These circumstances led us to the decision to design one house for both climates with the necessity of accommodating proper modifications. The AIR House must be perfectly functional in the conditions of hot California summer and cold Czech winter alike.

The main modification will be the house orientation. In California, the open part of the house with a large window and terrace will be oriented north, to get a shaded and comfortable space during hot weather, and in the Czech Republic, it will be oriented south to open up to the sun and get maximum solar gains.

We designed a house of a simple shape which helps to minimize heat loss. Its size is minimal – which means that its area related energy demand seems to be high. The second roof, canopy, is made of photovoltaic and solar thermal panels. It is detached from the roof of the house so air can flow through the panels and improve their affectivity. The solar thermal panels are well insulated.

All the “wet“ processes are grouped together in the “wet core“ (technical room, kitchen, bathroom) and this part of the house will be transported together.

1.04 **Heat Storage vs. Public Exhibit**

Our idea is to build our house full of light with low thermal capacity. This means that heat from the outside and from people quickly warms up the space but it is also much easier to cool it afterwards. This should help us after the public exhibit when we will need to cool the inside space down during a short time. Cross ventilation and shading should provide pleasant environment during the public exhibit. Secondarily, the heavier structure we design, the more unsustainable the house will be because of its transport across the world. Anyway, we have carried out a simulation, which compares different construction variants to verify whether our presumptions are correct.

We assume two different scenarios for the behavior of the house during the competition. During the public exhibit the windows and doors will be open and air will flow naturally (cross ventilation). HVAC will be off. After the exhibit, the air conditioning unit will turn on, and it will quickly cool and dehumidify the closed space.

PART 2 - SIMULATION

2.01 Introduction

Since it is rather difficult to estimate thermal performance of a well-insulated building where gains and losses are similarly large numbers, and even more difficult to estimate it for two different climates – throughout a year in the Czech Republic and during the contest week in California – we made a model of the building and analyzed the influence of certain significant parameters for both climates. The results of these analyses guided and improved further design and helped within the decision making process.

2.02 Calculation Method

For the energy performance analyses, a simplified dynamic simulation method with hourly time step had been used, based on one-node model (effective capacitance model).

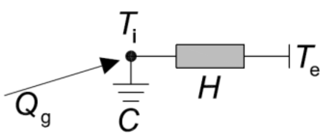


Figure 8-1: The RC scheme of one-node model used for the analyses

Main equation:

$$C_{eff} \frac{dT_i}{d\tau} = Q_g - H (T_i - T_e)$$

where:

- C_{eff} is effective heat capacity [J/K],
- H total heat transfer coefficient ($H = H_T + H_V$) [W/K]
- Q_g total heat gains ($Q_g = Q_{int} + Q_{sol} + Q_h$) [W],
- T_i internal free-floating temperature [K],
- T_e external temperature [K],
- τ time [s].

This method allows us to simulate the building with sufficient accuracy with reduced number of input data. The output of this method is the so called free-floating internal temperature, meaning a temperature pattern with no heating or cooling considered. Based on this temperature, the amount of energy needed for heating or cooling can be obtained. Moreover, the thermal behavior of the building itself and its response to certain influences can be followed and design strategies or goals can be defined.

Basic input data and assumptions as well as simulated variants are described in the following text.

PART 3 - INPUT DATA

3.01 Constructions

Only layers that have impact on the total heat resistance of the construction are presented.

The other components used as simulation variants are virtual.

Table 8-1: External walls

	Layer	*d* [mm]	□ [W/(m.K)]	*R* [(m2.K)/W]	*d* [mm]	*U* [W/(m2.K)]
	Inner surface			0.13		
1	CLT panel	80	0.13	0.615		
2	OSB (oriented strand board)	6	0.13	0.046		
3	Wood-fiber thermal insulation / laths	60	0.052*	1.154	321	**0.19**
4	Wood-fiber thermal insulation / beams	160	0.053*	3.019		
5	Hard insulation fiberboard	15	0.07	0.214		
	Outer surface (ventilated space)			0.13		

*) equivalent thermal conductivity calculated according to EN ISO 6946.

Table 8-2: Roof of the living space

	Layer	*d* [mm]	□ [W/(m.K)]	*R* [(m2.K)/W]	*d* [mm]	*U* [W/(m2.K)]
	Inner surface			0.10		
1	OSB	22	0.13	0.169		
2	Wood-fiber thermal insulation / timbers	240	0.053*	4.528		
3	OSB	15	0.13	0.115	373	**0.15****
4	Wood-fiber thermal insul. in slope / beams	60–120	0.052*	1.731**		
5	Hard insulation fiberboard	6	0.13	0.046		
	Outer surface (ventilated space)			0.10		

*) equivalent thermal conductivity calculated according to EN ISO 6946.
**) average thermal resistance

Table 8-3: Roof of the technological box

	Layer	*d* [mm]	□ [W/(m.K)]	*R* [(m^2.K)/W]	*d* [mm]	*U* [W/(m^2.K)]
	Inner surface			0.10		
1	CLT panel	100	0.13	0.769		
2	Wood-fiber thermal insulation / laths	60	0.056*	1.071		
3	Wood-fiber thermal insulation / beams	120	0.052*	2.308	376	**0.16****
4	Wood-fiber thermal insul. in slope / beams	60–120	0.052*	1.731**		
5	Hard fiberboard	6	0.13	0.046		
	Outer surface (ventilated space)			0.10		

*) equivalent thermal conductivity calculated according to EN ISO 6946.
**) average value

Table 8-4: Floor

	Layer	*d* [mm]	□ [W/(m.K)]	*R* [(m^2.K)/W]	*d* [mm]	*U* [W/(m^2.K)]
	Inner surface			0.17		
1	Flooring (wood)	20	0.18	0.111		
2	OSB	15	0.13	0.115		
3	Hard insulation fiberboard	60	0.07	0.857		
4	OSB	15	0.13	0.115	390	**0.16**
5	OSB	25	0.13	0.192		
6	Wood-fiber thermal insulation / beams	240	0.053*	4.528		
7	Hard fiberboard	15	0.07	0.214		
	Outer surface			0.04		

*) equivalent thermal conductivity calculated according to EN ISO 6946.

3.02 **Heat capacity**

The heat capacity of the zone was calculated in accordance with ISO 13786. Two construction variants had been followed. First, lightweight timber structure corresponding with the real design, with a time constant of approximately 25 hours. Since for the Czech Republic masonry structures are typical, the comparison to heavy weight structures was of interest. The time constant for this variant equals approximately 80 hours. In the variant with the heavy construction, masonry walls, concrete slabs for roof and floor had been assumed. The thermal resistance parameters were set similar to the light structures.

3.03 **Windows**

High-quality windows with aluminum frames are used. At the beginning a question whether double- or triple-glazed windows should be used was of interest. Therefore, two variants of glazing had been assumed within the simulation, with the following parameters:

Table 8-5: Glazing and windows parameters

Glazing	U_f [W/(m²K)] Window / door / shifting door	U_g [W/(m2K)]	$U_{w,mean}$ [W/(m2K)]	Solar energy transmittance of glazing *g* [-]
2-glazed	1.6 / 1.89 / 2.80	1.0	1.4	0.6
3-glazed		0.7	0.95	0.5

3.04 **Shading**

Since solar gains are of great influence on the building's thermal performance, external shading by a timber canopy and the building itself had been simulated in detail. Several variants of the canopy had been simulated to optimize its design with respect to the desired level of shading in both Czech and Californian climates. Hourly shading correction factors had been calculated for each variant of the canopy, using a 3D shading tool developed in Matlab (Staněk, K.) and using SketchUp module. Shading from surrounding buildings and landscape has so far been neglected, as no specific information regarding the surroundings has been known yet, especially for the Czech locality. Based on the energy balance results, the canopy design had been optimized.

1. CANOPY CONTRIBUTION TO THE INTERNAL THERMAL COMFORT

As the "house in a house" concept is rather rarely used in contemporary architecture, the contribution of shading by the canopy to the internal thermal comfort and energy balance was of interest. Thus, another simulation of the house had been performed with the canopy components being neglected. Hourly shading correction factors had been calculated the same way as for the shaded variants. Internal temperature and annual energy need for heating and cooling for variants with and without the canopy had been compared. This comparison had been carried out only for the Czech locality since an all year-long effect was of interest.

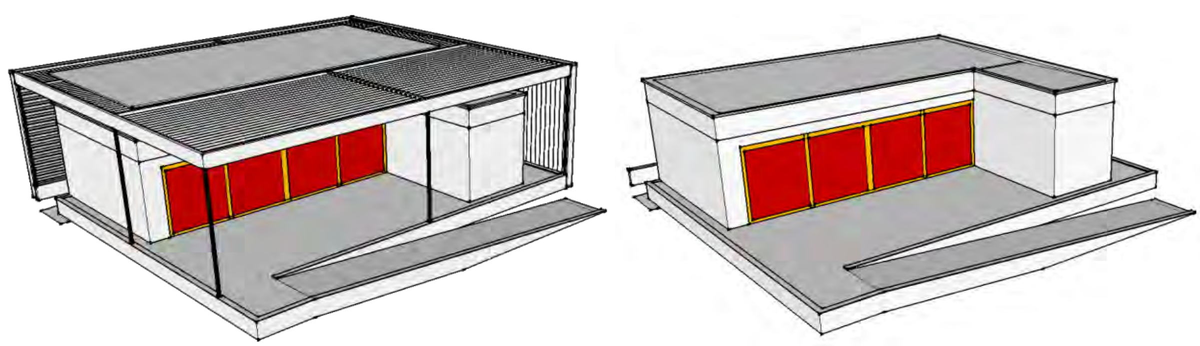


Figure 8-2: Models in Google SketchUp used for the calculation of shading correction factors for variant with the canopy (left) and without the canopy (right)

3.05 **Occupancy and internal gains patterns**

Internal gains due to occupants, appliances and lighting loads had been simulated. Hourly patterns for the Contest week analyses had been considered according to the competition schedule to ensure greater accuracy. For the Czech Republic situation, different patterns which describe better potential of the real use had been simulated. Moreover, two different patterns had been considered for the Czech Republic simulations as a difference had been assumed between the house being used by a working couple 50+, who left to work every working day, and retirees, who spend majority of time at home.

To diminish internal gains in the conditions of L.A., ventilation to the exterior for the refrigerator and clothes washer had been installed. This is not possible in the Czech Republic because of vapor condensation and large heat losses through the openings, so these internal gains were also taken into account for simulations under the Czech conditions.

Appliances and lighting, contributing to the internal heat gains, are listed in table 8-1. The following figures show the total internal heat gain patterns which enter the calculations.

Table 8-6: Main internal heat sources and their input

Source	Input [W]	
	California	The Czech Republic
Persons	100/pers	80/awake; 50/sleeping pers.
Refrigerator + Freezer	0	26
Cooking	4000	150
Clothes Washer	0	–
Clothes Dryer	1300	1300
Computer	80	80
TV	59	150
Lightning	400	400

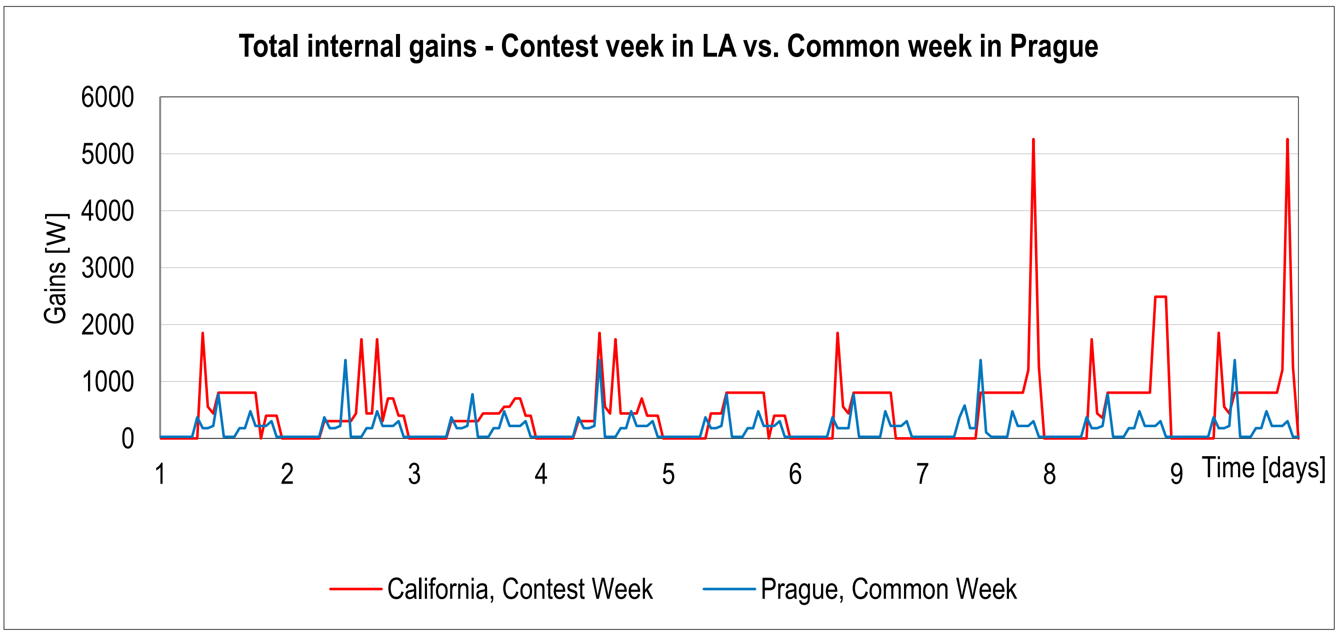


Figure 8-3: Total internal heat gain patterns within the contest week in California and a common week in Prague (working couple)

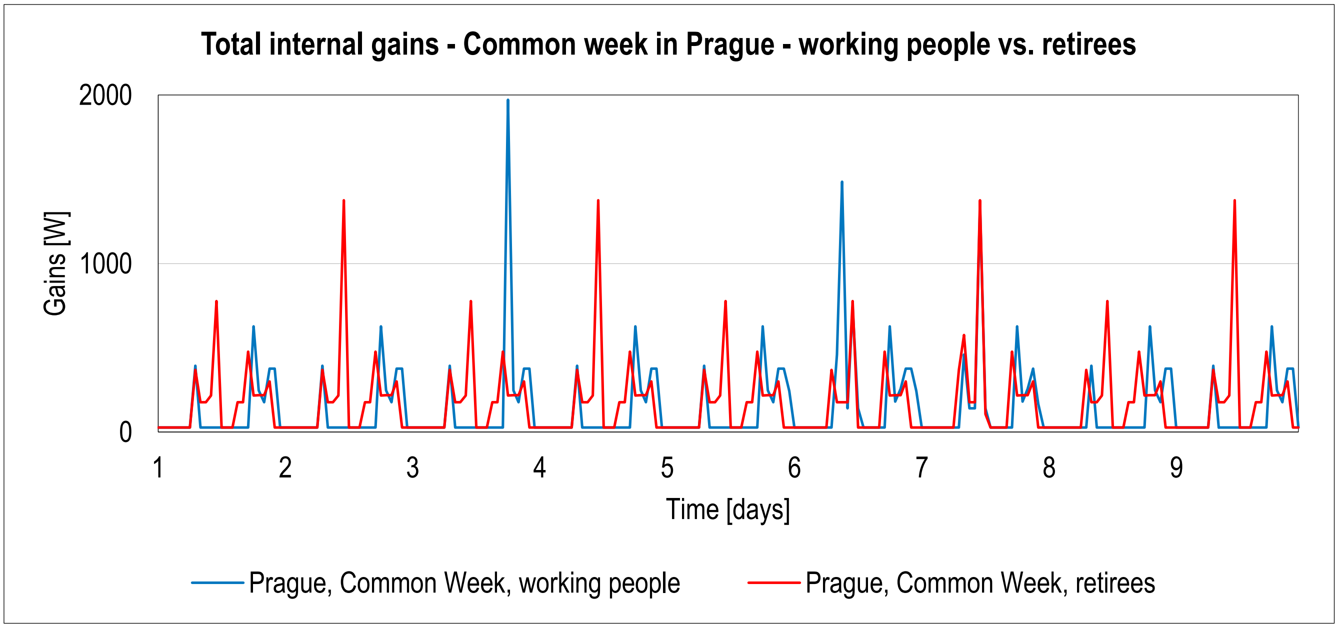


Figure 8-4: Total internal heat gain patterns within a common week in Prague for working couple and retirees

3.06 **Ventilation**

Since ventilation can significantly influence the thermal behavior of a building in both right and bad way, two scenarios of ventilation had been simulated (see the following table) – constant ventilation and dynamic ventilation, controlled by regulation unit. It is assumed, that the unit of dynamic ventilation system evaluates differences between internal, external and set-point temperatures, and controls the air-change-rate in response to a particular situation. In reality, the control unit and the ventilation system will take into account more aspects than only the temperatures; however, for the purpose of this calculation such a simplification had been introduced. Although a basic schedule – constant ventilation – is not realistic since the ventilation system should respond to the building operation as needed, compared to the intelligent regulation schedule it provides information on how significant the differences are.

Table 8-7: Ventilation scenarios

Ventilation schedule	Temperatures relation		Air change rate	
	Internal (T_i) to set-point (T_{min}) temperature	Internal (T_i) to external (T_e) temperature		
basic	-	-	constant all-day 0.5 h^{-1}	
intelligent regulation	$T_i < T_{min}$	-	0,5 h^{-1}	basic
	$T_i > T_{min}$	$T_i > T_e$	3 h^{-1}	increased
		$T_i < T_e$	0,5 h^{-1}	basic

A. **Energy need for heating and cooling, set-point temperature**

Energy need for heating and cooling had been calculated based on the free-floating temperature patterns and set-point temperatures. For the California contest week, set-point temperatures had been defined in accordance with the competition comfort temperature requirements whilst for Prague, the set-point temperatures come out from national standard ČSN 730540-2 requirements.

Table 8-8: Set-point temperatures

Set-point temperature	California	Prague
Heating / Cooling	21.7 / 24.4	20 / 27

3.07 **Climatic data**

The building had been analyzed for both Czech and Californian climates. As an external boundary condition for the Czech Republic, climatic data from Prague–Karlov 2010 had been used. For California, IES_VE Los Angeles data had been used.

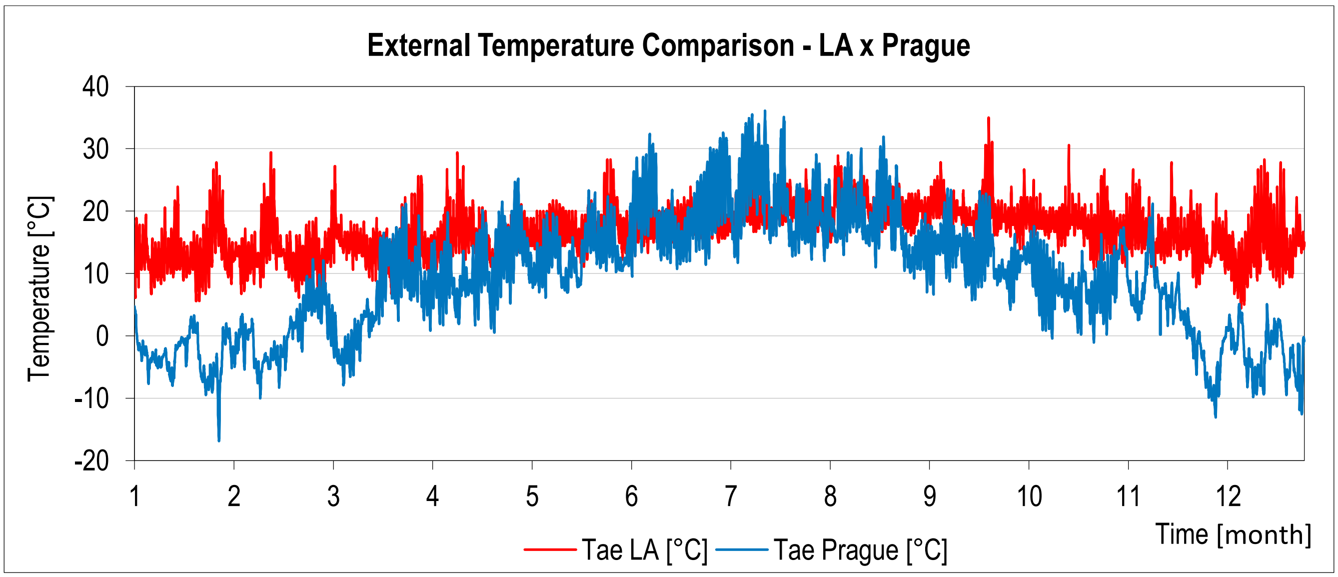


Figure 8-5: Annual external temperature for LA and Prague

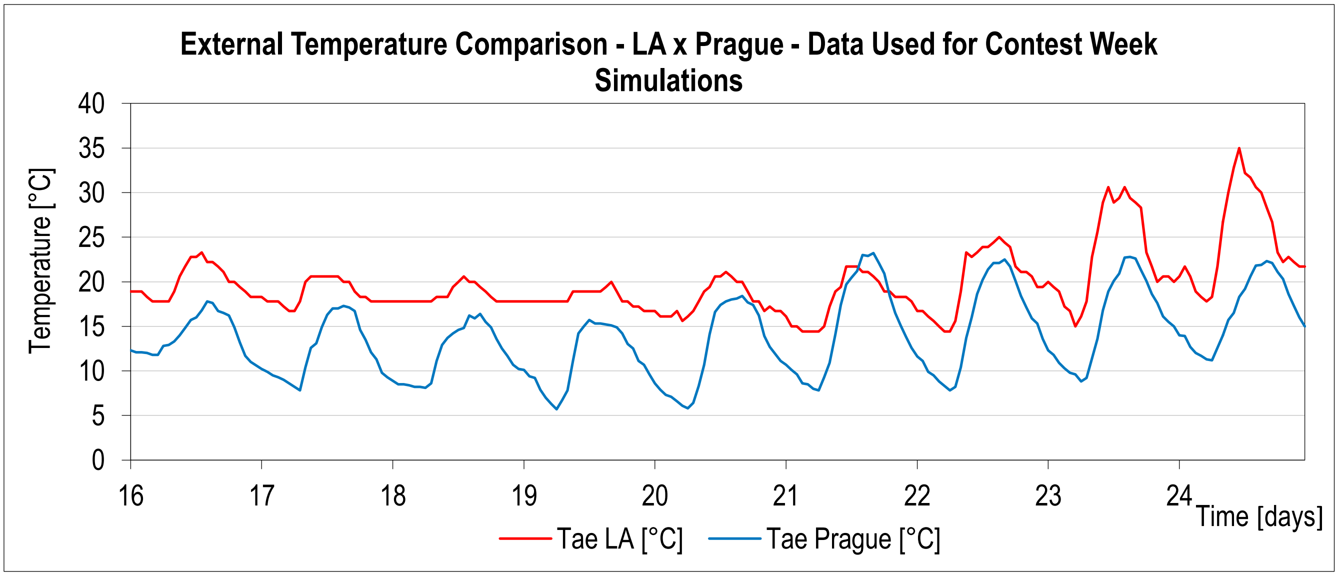


Figure 8-6: External temperature for LA and Prague approximately in the period of the contest week, LA data had been used for the contest week calculations

3.08 Variants

Several variants had been simulated to analyze the influence of certain parameters on thermal performance from the point of view of both Czech and California climate. Based on the results, the building design had been adjusted.

Table 8-9: Parameters of the building

Parameters common for all variants	Values		
External building volume [m³]	210		
Internal air volume (headed space) [m³]	123		
Building thermal envelope area [m²]	234		
Floor area (heated) [m²]	14,4		
Heat recovery efficiency [-]	0.75		
airtightness n_{50} [h^{-1}]	1.5		
Variable parameters	**Values for variants**		
U-value – walls / roofs&floors [W/(m²K)]	poorly insulated 0,40 / 0,35	basic 0,19 / 0,15	well insulated 0,12 / 0,11
Surface heat capacity [kJ/m²K] / Time constant (approx.) [h]	light-weight* 42 / 25	heavy-weight* 180 / 80	
Windows U-value – frame/glazing/whole window (aver.) [W/(m²K)]	2-glazing 1,6 / 1,0 / 1,4	3-glazing 1,6 / 0,7 / 0,95	
solar energy transmittance of glazing *g* [-]	2-glazing 0,6	3-glazing 0,5	

* Time constant τ of approximately 25 h for a light-weight construction corresponds to surface heat capacity 42 kJ/m²K and τ 80 h for a heavy-weight variant corresponds to 180 kJ/m²K according to ISO 13786: 2007.

Table 8-10: Combinations taken into account for energy analyses for the contest week only

<table>
<tr><th>Var.</th><th>Climatic data</th><th>U-values</th><th>Glazing</th><th>Thermal mass</th><th>Ventilation</th></tr>
<tr><td>A0</td><td rowspan="4">LA</td><td rowspan="8">basic</td><td>2-glazed</td><td rowspan="10">light-weight</td><td rowspan="2">constant</td></tr>
<tr><td>A1</td><td>3-glazed</td></tr>
<tr><td>A2</td><td>2-glazed</td><td rowspan="2">intelligent</td></tr>
<tr><td>A3</td><td>3-glazed</td></tr>
<tr><td>A4</td><td rowspan="4">CR
(180° different orientation then in LA)</td><td>2-glazed</td><td rowspan="2">constant</td></tr>
<tr><td>A5</td><td>3-glazed</td></tr>
<tr><td>A6</td><td>2-glazed</td><td rowspan="4">intelligent</td></tr>
<tr><td>A7</td><td>3-glazed</td></tr>
<tr><td>A8</td><td rowspan="2">LA</td><td>well insulated</td><td>3-glazed</td></tr>
<tr><td>A9</td><td>poorly insulated</td><td>2-glazed</td></tr>
</table>

Table 8-11: Combinations taken into account for year-long energy analyses

<table>
<tr><th>Var.</th><th>Climatic data</th><th>U-values</th><th>Glazing</th><th>Thermal mass</th><th>Ventilation</th></tr>
<tr><td>B0</td><td rowspan="8">CR</td><td rowspan="4">basic</td><td>2-glazed</td><td rowspan="2">light-weight</td><td rowspan="8">intelligent, with heat recovery</td></tr>
<tr><td>B1</td><td>3-glazed</td></tr>
<tr><td>B2</td><td>2-glazed</td><td rowspan="2">heavy-weight</td></tr>
<tr><td>B3</td><td>3-glazed</td></tr>
<tr><td>B4</td><td>poorly insulated</td><td>2-glazed</td><td rowspan="2">light-weight</td></tr>
<tr><td>B5</td><td>well insulated</td><td>3-glazed</td></tr>
<tr><td>B6</td><td>poorly insulated</td><td>2-glazed</td><td rowspan="2">heavy-weight</td></tr>
<tr><td>B7</td><td>well insulated</td><td>3-glazed</td></tr>
</table>

PART 4 - RESULTS

4.01 Ventilation

Two scenarios of ventilation schedule had been simulated to watch the influence of ventilation on internal temperature and on thermal comfort. As can be seen on the following picture, optimized ventilation can significantly contribute to the improvement of thermal comfort.

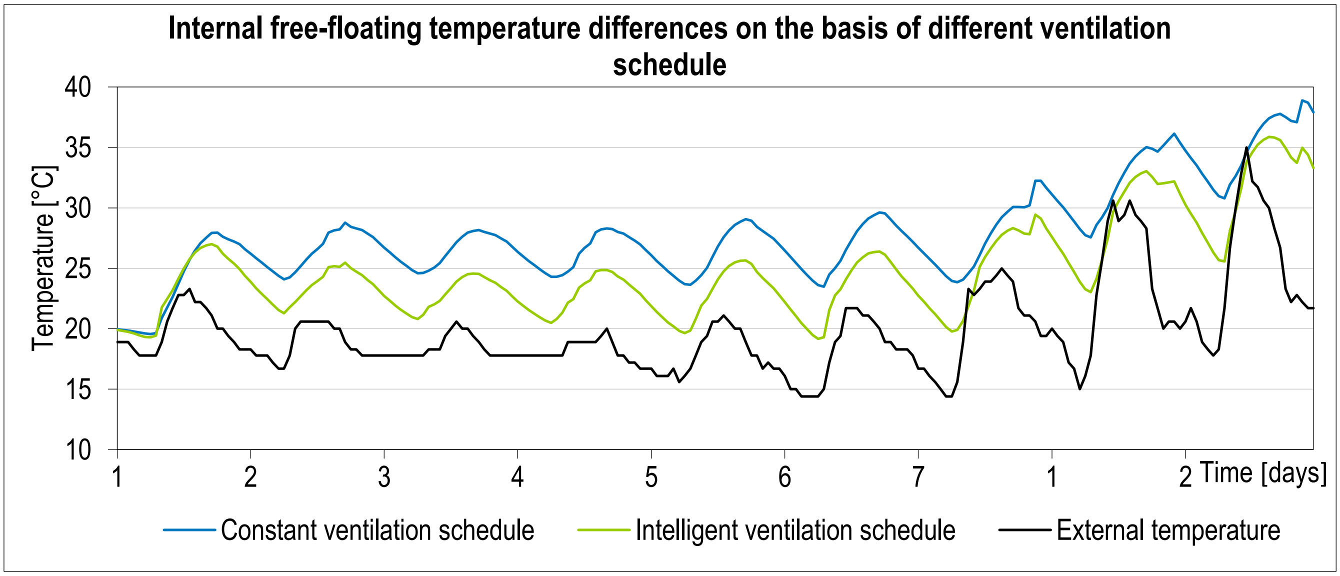


Figure 8-7: Internal temperature differences based on different ventilation schedules for the contest week in LA

4.02 **Thermal insulation level / U-value**

It is sometimes rather difficult to estimate whether higher insulation level would improve the energy situation by decreasing the energy requirement for heating or, on the contrary, worsens the thermal comfort due to overheating so significantly that potential energy saving in winter cannot counterbalance it. In our case, differences in internal temperature for the variants were more considerable during cold days with no sun than in summer and sunny days. In summer, the ell insulated variant works better than the poorly and basically insulated ones, as the temperature peaks are lower and also the amplitude is smaller. This ensures more stable internal environment which is more comfortable for the occupants. In winter, the well-insulated variant has lower heat loss then the other variants and thus higher free-floating temperature is reached. Moreover, surface temperatures are higher in well insulated buildings in winter, therefore from that point of view they are more comfortable for the occupants. For a heavy construction the influence is even more significant and thermal mass makes the temperature much more stable, see the following.

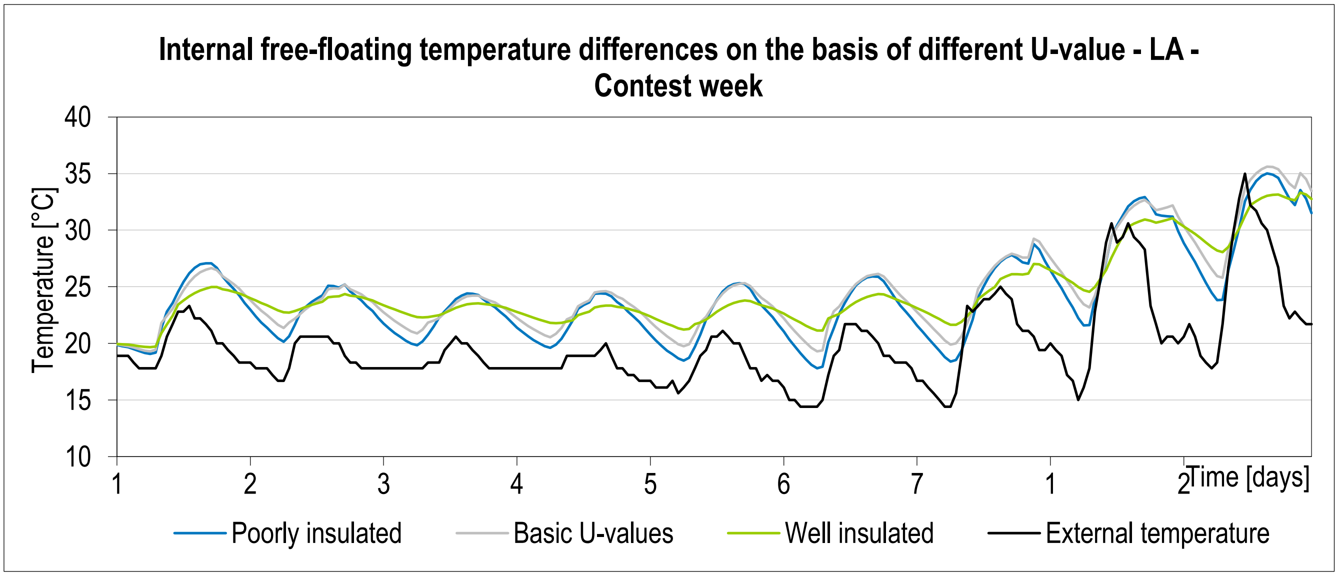


Figure 8-8: Internal temperature differences based on different insulation level for the contest week in LA

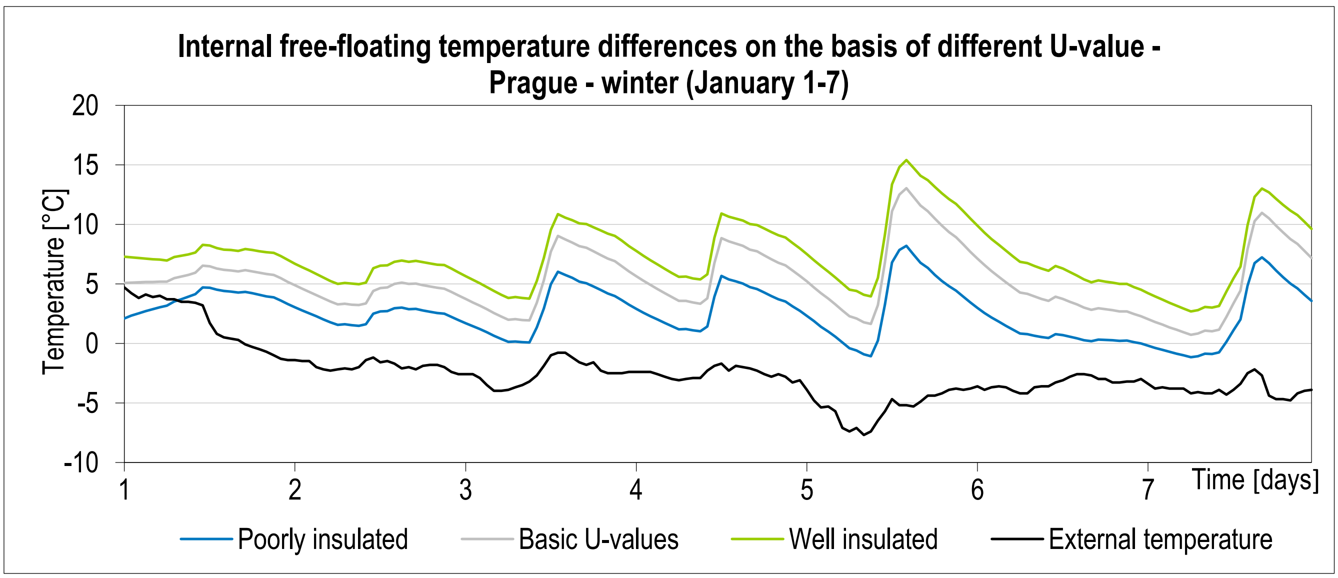


Figure 8-9: Internal temperature differences based on different insulation level for the first January week in Prague (January 1–7)

As for the energy need, high differences in energy need for heating and almost no differences in cooling need have been observed, for the Prague climate data they were as follows:

Table 8-12: Annual energy need differences based on different insulation level for the Prague climate data

Energy need [kWh/(m²a)]	Insulation level variants		
	poorly insulated	basically insulated	well insulated
Energy need for heating	151.7	76.2	44.6

Energy need for cooling	10.3	10.7	8.8

It is therefore obvious that the higher insulation level, the better. It seems that, in this case, there is no risk of overheating connected with the well-insulated envelope.

4.03 **Thermal mass influence**

The influence and optimum of thermal mass was of interest. As for the contest week, fast cooling down is desired, in order for the internal temperature to be lowered to the required values within half an hour after the public exhibits. On one hand, it is common knowledge that, higher thermal mass would help keep the internal temperature lower for a longer time as gains would be stored in the structures and thus the building would respond slower to the increase of external temperatures or over-gains (solar or internal). On the other hand, with respect to unpredictable weather during the contest week and the construction period before, light-weight-structure building would be easier to regulate from the internal temperature requirements point of view. Moreover, light-weight structures are more advantageous as far as transport and construction are concerned. That is why thermal mass influence was analysed only for the Czech climate and operation (in the Czech Republic, heavy-weight construction has a longer tradition). For the competition building, light-weight structures had been chosen.

In the summer period, heavy-weight building works better, as it inhibits the temperature fluctuation, dampens internal temperature peaks and thus increases thermal comfort. The same effect is perceptible in the winter period, which, however, leads to gentle increase of energy need for heating. Energy need for heating/cooling for the well-insulated variant in the Prague climate is in the following table.

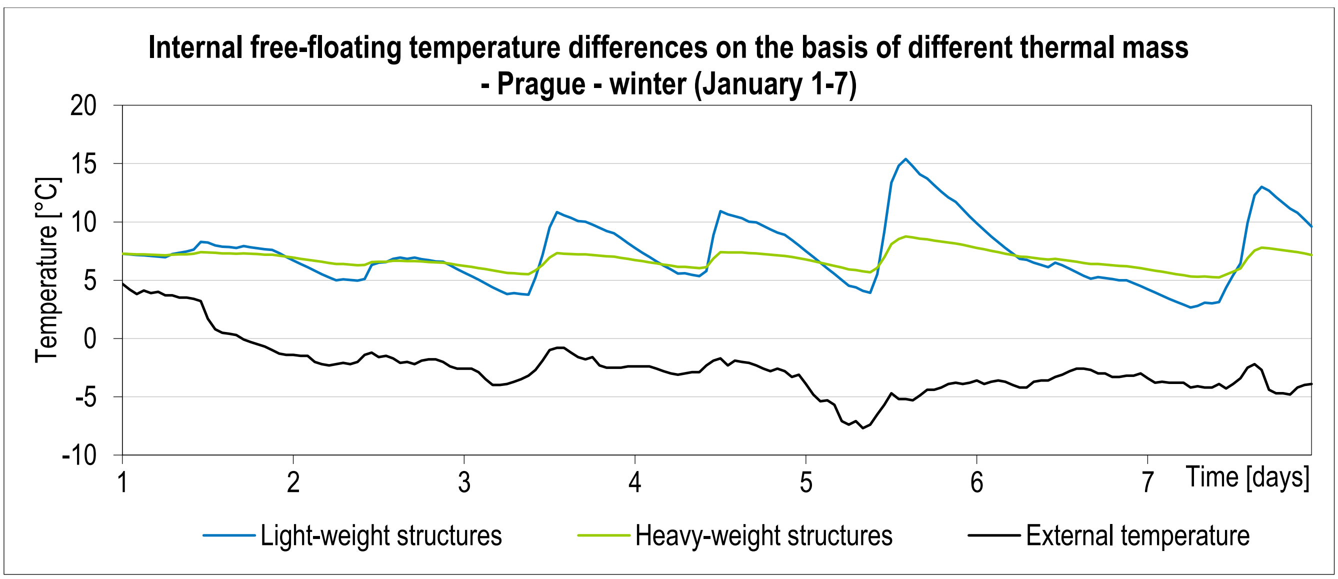


Figure 8-10: Internal temperature differences based on different thermal mass for the first January week in Prague (January 1–7)

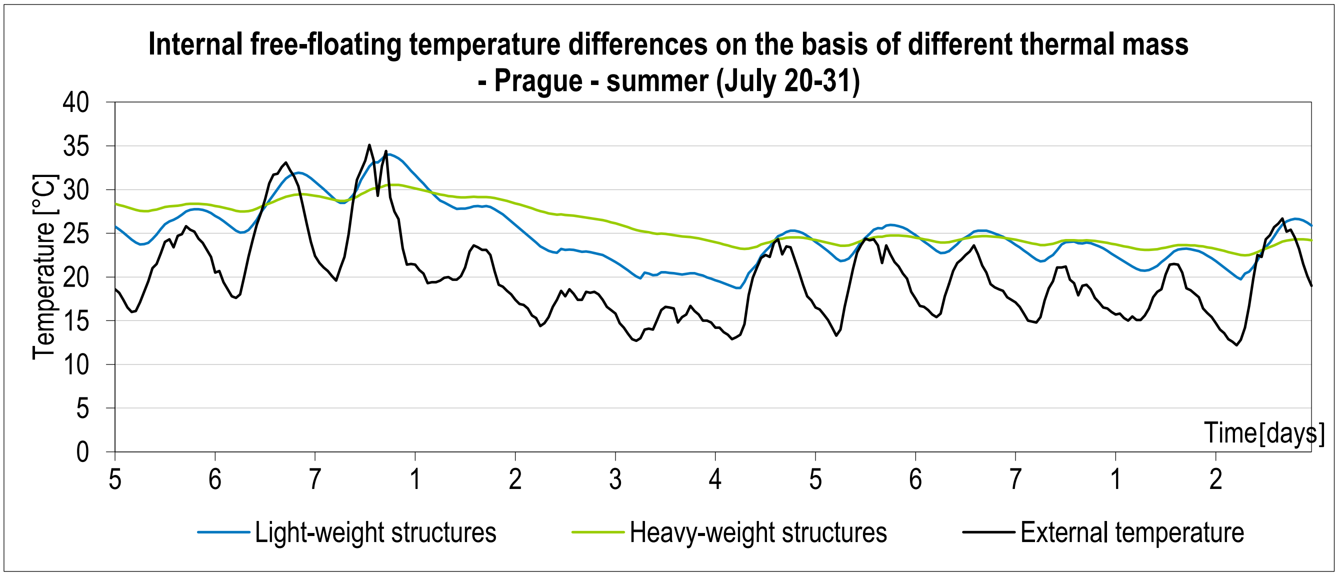


Figure 8-11: Internal free-floating temperature differences based on different thermal mass, Prague summer days (July 20–31)

Table 8-13: Annual energy need differences based on different thermal mass for Prague climate data

Energy need [kWh/(m²a)]	Thermal mass variants	
	light-weight	heavy-weight
Energy need for heating	44.6	50.9
Energy need for cooling	8.8	6.7

4.04 **Glazing**

The following charts display the difference between glazing types. Almost no differences in temperature had been perceptible throughout the contest week in LA nor within a whole year in Prague. Rather small differences were observable in the annual energy need for heating – 76.2 kWh/(m²a) with 2-glazed and 61.4 kWh/(m²a) with 3-glazed windows and cooling – 10.7 kWh/(m²a) with 2-glazed and 8.6 kWh/(m²a) with 3-glazed windows. With this in mind, another aspect had been taken into account for the decision about which type of glazing to choose. As the double glazed windows are lighter and thus easier to transport and assemble, double glazed windows had been chosen for the final design.

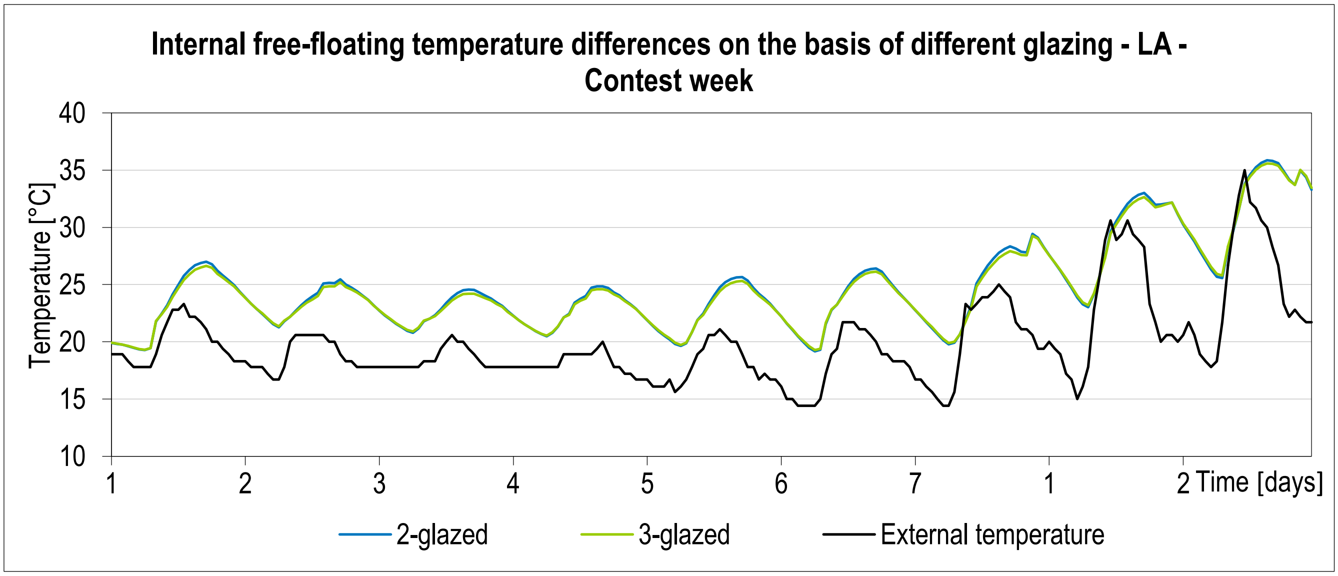


Figure 8-12: Internal temperature differences based on different glazing for the contest week in LA

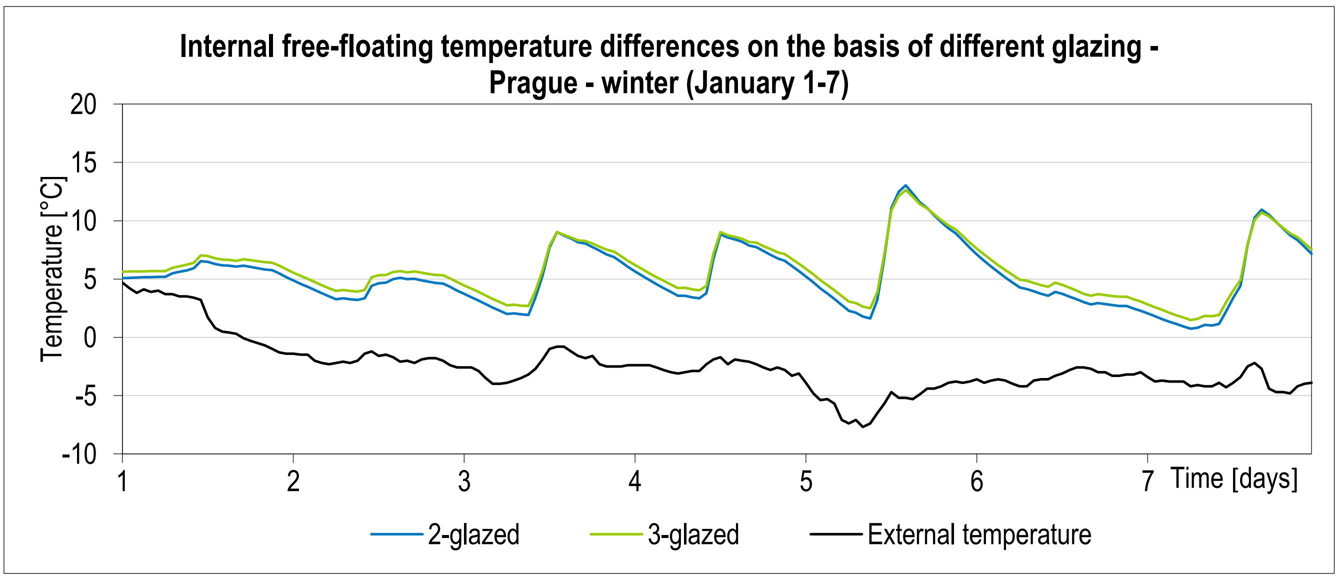


Figure 8-13: Internal temperature differences based on different glazing for the first January week in Prague (January 1-7)

Table 8-14: Annual energy need differences based on different glazing for Prague climate data

Energy need [kWh/(m²a)]	Glazing variants	
	2-glazed	3-glazed
Energy need for heating	76.2	61.4
Energy need for cooling	10.7	8.6

4.05 Influence of shading by the canopy

Based on the simulation results, a canopy has a significant effect on thermal comfort in the summer and transitional periods, and hardly noticeable effect in the winter period. In the summer and transitional periods, a canopy substantially contributes to the preservation of acceptable internal thermal comfort. The first of the following charts shows the year-round internal temperature, where almost no effect of the canopy is visible in the winter period. On the other hand, from approximately March to October, a canopy decreases the temperature amplitudes and thus inhibits peaks caused by solar radiation. Without a canopy, the house would cope with rather high internal temperatures from March to October, while with the canopy the temperatures are up to 10 degrees lower (see March 18th on the second chart for example). A canopy causes internal temperature to be comfortable almost all year-round, apart from approximately one month in summer when additional precautions should be used (for example increased night ventilation; active cooling if necessary).

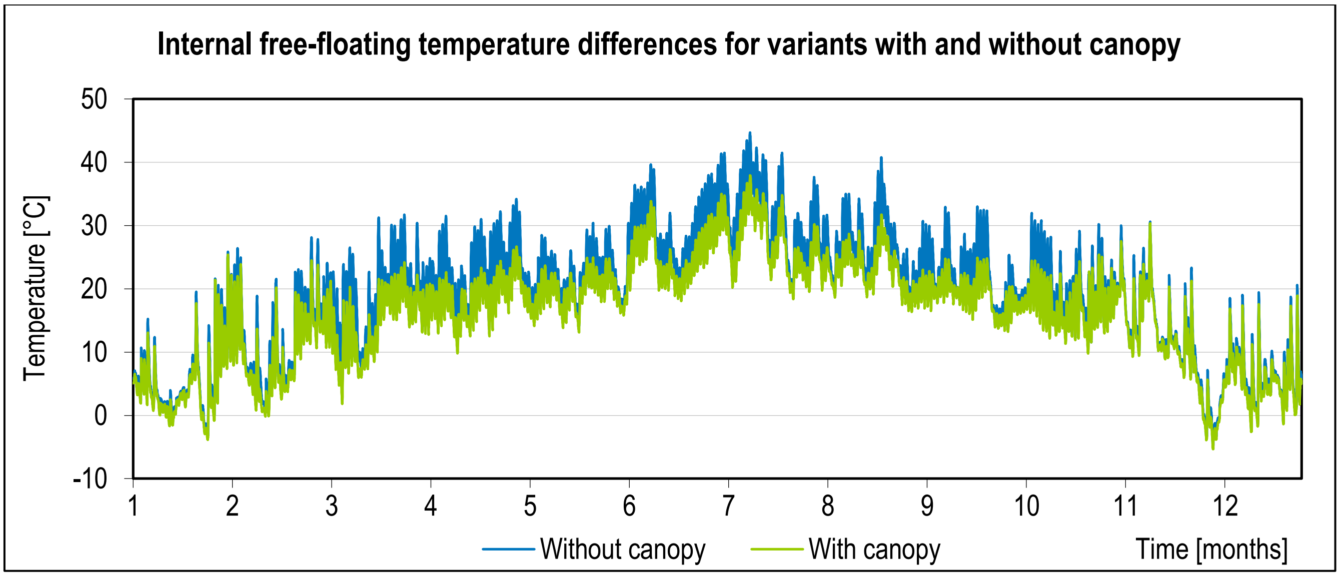


Figure 8-14: Internal temperature differences for variants with and without canopy, year-long, Prague

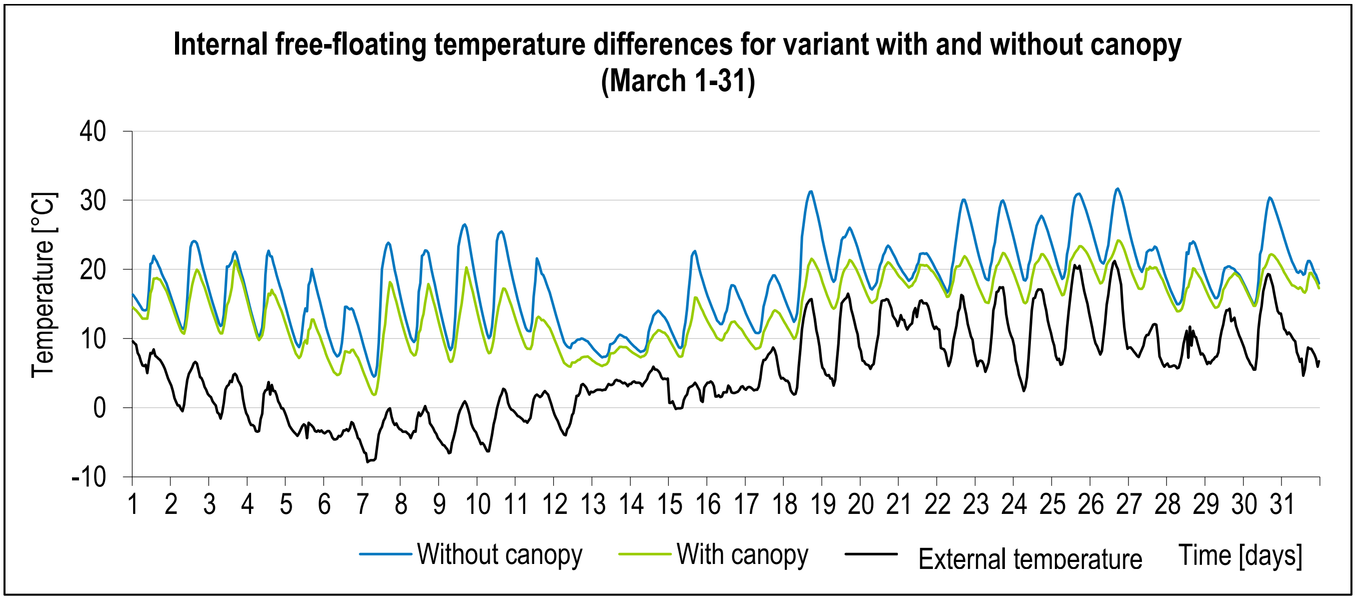


Figure 8-15: Internal temperature differences for variants with and without canopy, March, Prague

As for the energy need for heating and cooling, a canopy causes mild increase in energy need for heating by slightly reducing solar gains, and substantially decreases potential energy need for cooling by shading high and strong solar radiation from approximately March to October, see the following table.

Table 8-15: Annual energy need differences based on canopy shading for Prague climate data

Energy need [kWh/(m²a)]	Canopy-shading variant		Percentage difference
	with canopy	without canopy	
Energy need for heating	76.2	64.4	-15 %
Energy need for cooling	10.7	36.7	+240 % !

4.06 **Occupancy**

The extent of occupants' influence to energy balance within the Czech conditions was of interest – whether, compared to retirees, working people can affect thermal performance significantly more or not. As can be seen in the following charts, the influence on internal temperature is rather small. The effect is more perceptible in winter cloudy days than in summer sunny days, as the ratio of internal and solar gains is more balanced in the winter period.

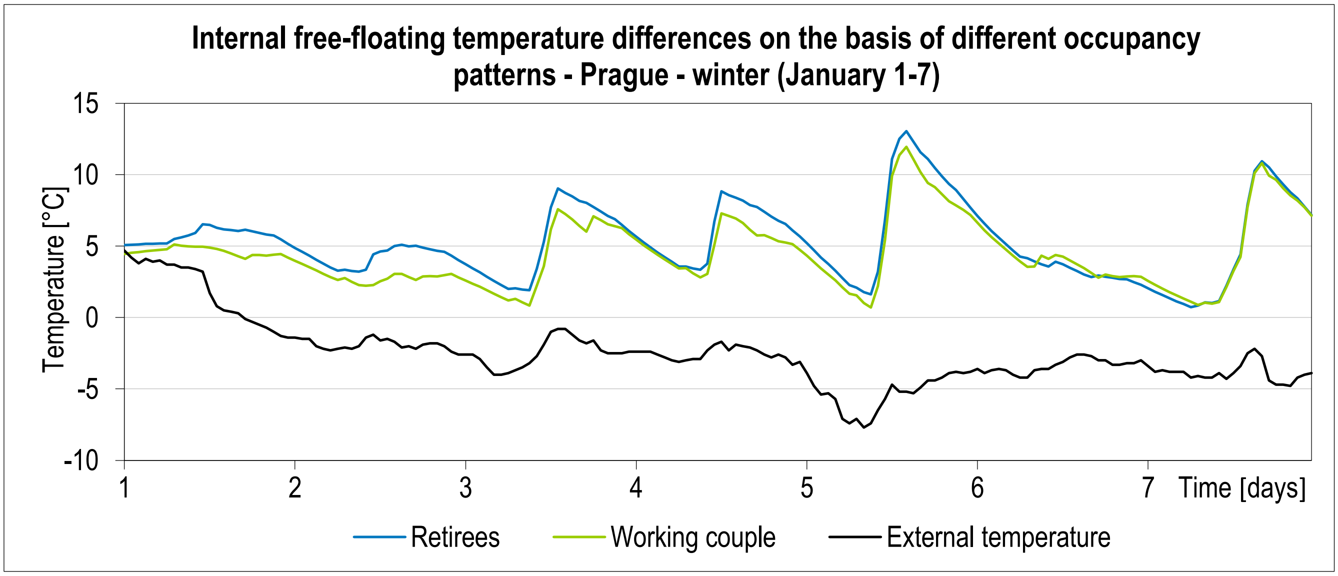


Figure 8-16: Internal temperature differences based on different occupancy patterns for the first January week in Prague (January 1–7)

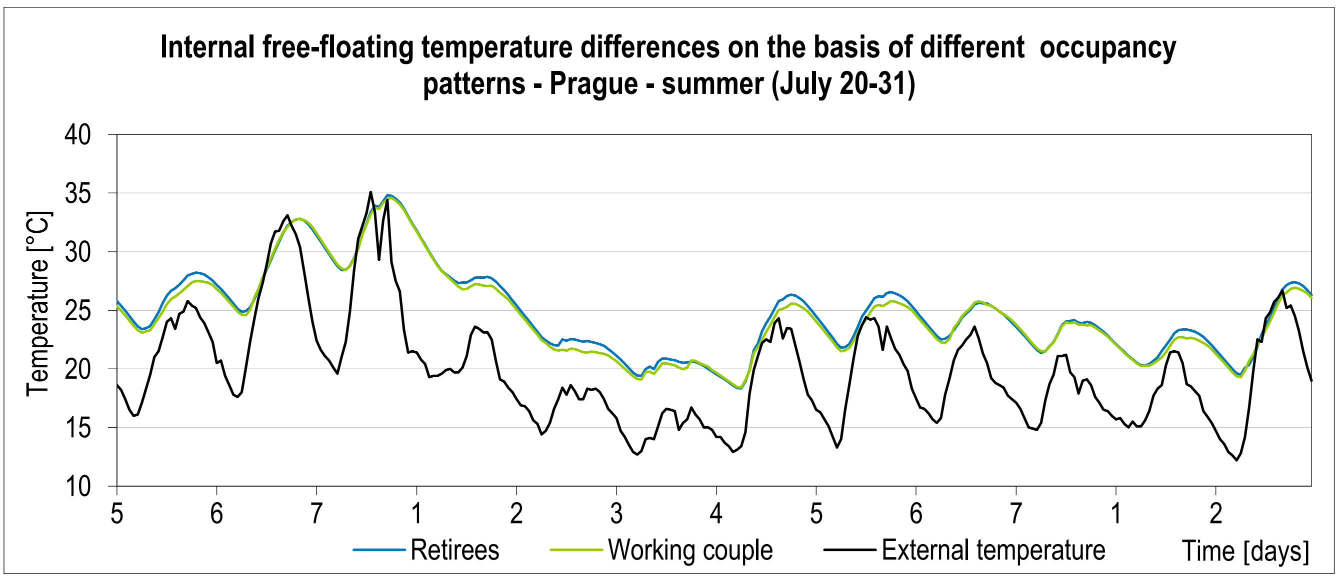


Figure 8-17: Internal temperature differences based on different occupancy patterns for Prague summer days (July 20–31)

When calculating energy need for heating and cooling, we had assumed a set-back temperature when no one is at home. Thus, the set-point temperature for heating decreased to 18°C and no upper limit of internal temperature was set for unoccupied hours. Rather a negligible difference is perceptible in energy need for heating. However, appreciable reduction of energy need for cooling can be achieved if the internal temperature will not be regulated during hot sunny days, even though higher performance of cooling systems should be necessary to ensure a comfortable temperature at the moment people arrive.

Table 8-16: Annual energy need differences based on different occupancy for Prague climate data

Energy need [kWh/(m²a)]	Occupancy variant		Percentage difference
	retirees	working couple	
Energy need for heating	76.2	75.2	-1 %
Energy need for cooling	10.7	7.4	-31 %

4.07 **Conclusion**

Based on the analyses performed, several significant influences and important correlations had been identified. The ventilation schedule proves to be very important to deal with as it can influence the thermal comfort significantly. On the contrary, glazing type turned out to be negligible and thus other aspects were taken into account when deciding which to choose. For both climates, higher insulation level, even if combined with light-weight structure, emerged as a better solution than a poorly insulated building. This is also positive from the sustainability point of view, as less energy is consumed for heating in the conditions of the Czech Republic. Furthermore, shading by the canopy proved to be a crucial factor contributing to a high thermal comfort. It had been established that it pays off to deal with a detailed design and optimization of such shading components, as no active solution is comparable to the effect of passive shading obstacles, not only from the sustainability point of view.

When building design is being optimized, further improvement (or the contrary) can be achieved by the optimization of the setting of the building systems. Reasonable operation of the house can bring further reduction of energy need.

For this kind of task it turned out to be crucial to perform detailed analyses and comparisons between the California and Czech climates, and to prove that the building can work on both sites.

PART 5 - MECHANICAL

5.01 Introduction

Through comprehensive thermal modeling, we have developed a high performance thermal envelope specifically designed to perform both, in the climate of Irvine (California) during the contest week, and in the climate of Prague (Czech Republic) all year-round. This will reduce our reliance on mechanical forms of heating and cooling but will also improve their efficiency.

Through simulations we have shown that during a year in Prague, in order to maintain a comfortable internal temperature the system will use very little energy especially on cooling. The biggest loads, that we have had to design for, are for cooling during the contest in Irvine. This created an interesting challenge where we have had to design a system meeting two quite different demands.

We have made a specific effort to design a system that is simple and affordable. This helps to keep costs down, and also allows easier maintenance in the long term.

5.02 System Design

A. Overview

The domestic hot water will be provided by Flat-plate solar thermal collectors. This solar hot water system will be supplemented by an air-to-water heat pump, for periods of low solar insolation.

In the AIR House, space heating and cooling are provided by radiant chilled ceiling with reverse cycle air-to-water heat pump. Space heating, cooling and ventilation in the AIR House are provided by convection system air heating/cooling and ventilation unit with a reverse cycle air-to- water heat pump, together with a fresh air energy recovery unit. Space dehumidification is provided by a convection system with mechanical dehumidification units.

The air heating/cooling and ventilation energy recovery unit functions by recovering energy from the exhaust air from the house, where it is passed through the heat exchanger. Here useful energy is recovered before the exhaust air is expelled to the exterior. Fresh outdoor air is then drawn in and filtered, before being passed though the exchanger where it is preheated or cooled, as required, by the recovered energy from the return air. The air is then distributed to outlet diffusers throughout the house via the supply air duct in the services bulkhead.

The use of the heat exchanger minimizes the energy demand of the heat pump by reducing the difference between the input air temperature and the required output temperature, while at the same time ensuring there is ample fresh air ventilation.

5.03 Solar Collectors

Hot water bills amount up to a quarter of the costs for energy use of an average Czech Republic home. Sufficiently high levels of sunshine throughout the whole of the Czech Republic, and improving solar hot water technology are making solar hot water an accessible, convenient and affordable way of reducing energy use in the Czech Republic homes.

The hot water system in the AIR House is designed to function as follows:

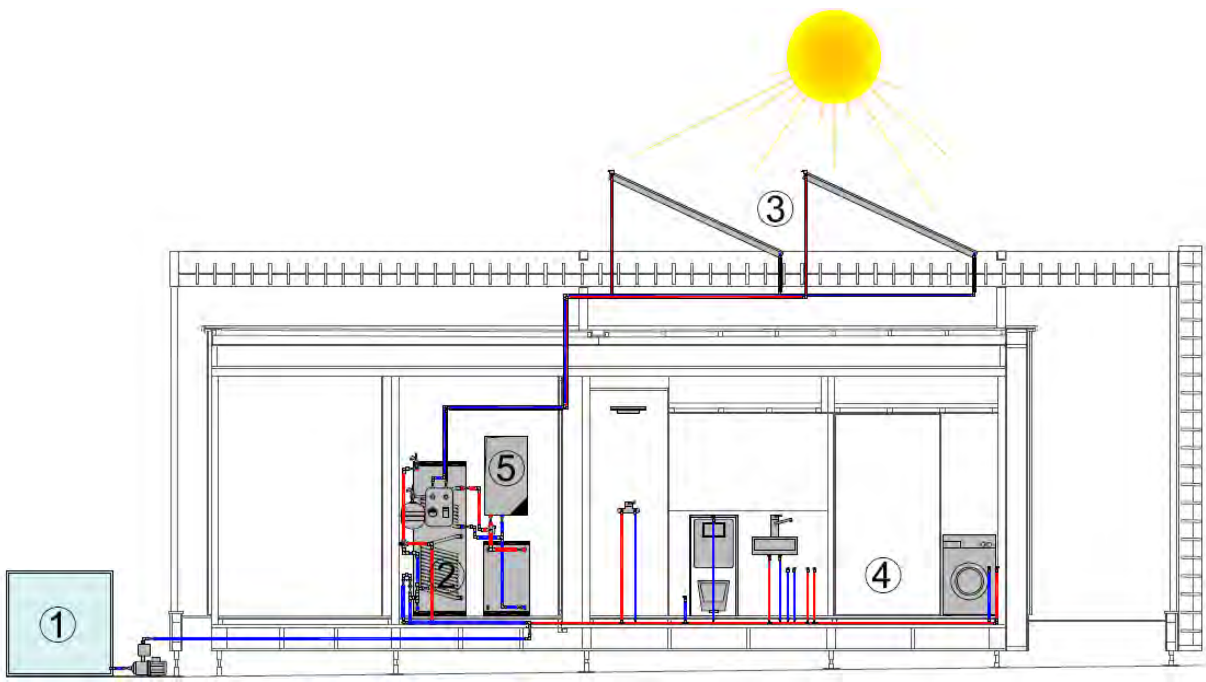
(1) Fresh water from the supply water tank is pumped into the bottom of the hot water tank, where a hot water exchanger is located

(2) An 92 gal, super insulated hot water storage tank stores hot water generated by the solar panels

(3) Two flat-plate solar thermal collectors, release solar energy to heat up water, within the flat-plate heat exchanger a solar controller senses the rise in temperature and pumps water up to the canopy to be heated

(4) A hot water manifold supplies hot water to the house, via separate hot water lines running to each outlet.

(5) An air-to-water heat pump provides back up heating for the system for periods of low sunshine



A. FLAT-PLATE SOLAR THERMAL COLLECTORS

The AIR House has flat solar collectors designed for solar domestic hot water heating (DHW). Solar radiation penetrates the glass and is intercepted by an efficient absorption layer applied to an all-aluminum absorber. The heat is then transferred into heat transfer fluid. The absorber is sealed in a compact frame with high quality thermal insulation.

The collectors are designed for year round operation, that’s why they work in a separate primary circuit filled with antifreeze heat carrier.

The flat solar collectors have low optical losses. On sunny days, these flat solar collectors can exceed 248 °F very quickly.

As the heat is conducted to the top of the solar panel, a solar controller senses the rise in temperature and pumps the water to the panel on the canopy to be heated. The heated water is then circulated back to the thermal heat storage tank cylinder and through the house.

B. ENERGY FOR DOMESTIC HOT WATER HEATING (DHW)

Energy balance is determined during the competition in Irvine.

Energy for the AIR House domestic hot water heating: 74 kWh

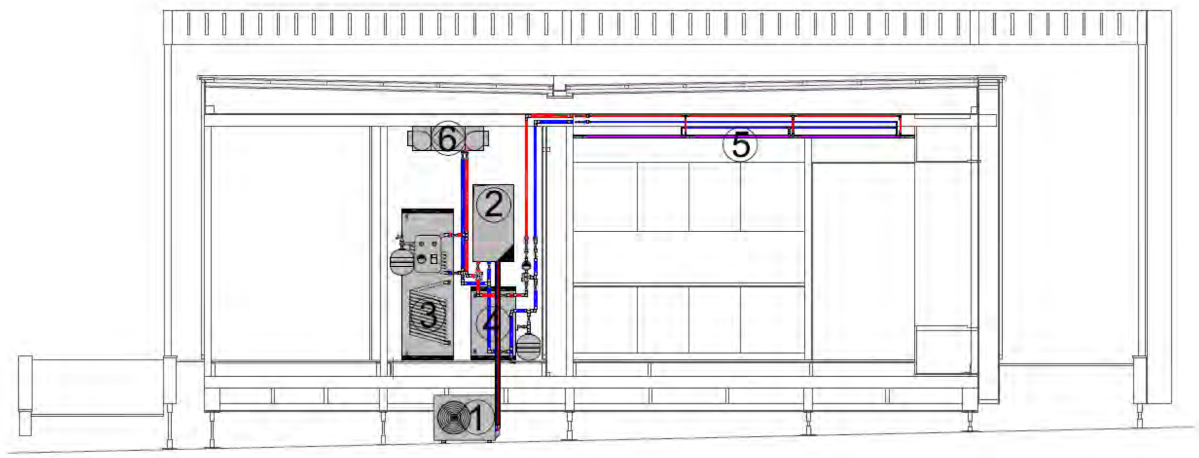
Energy for the solar thermal system: 106 kWh

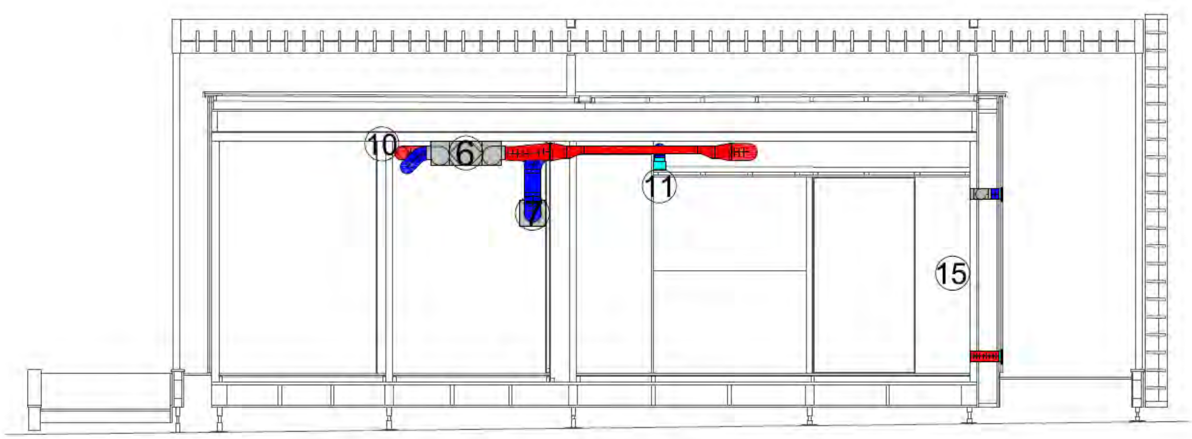
Solar energy produced by the solar system should cover all the energy need for the AIR House domestic hot water heating during the competition.

5.04 **Heat Pump**

A. OVERVIEW

The AIR House has one heat pump. Reverse cycle air-to-water heat pump manufactures hot or cold water for the radiant chilled ceiling, for the air heating/cooling and ventilation energy recovery unit and domestic hot water.





(1) A highly efficient outdoor condenser draws warmth from the outside air and transfers it to the indoor heat pump unit

(2) A heat pump produces heat or cool energy for the radiant chilled ceiling, for the air heating/cooling and ventilation energy recovery unit and for domestic hot water

(3) A 92 gallon thermal heat storage tank for the storage of heat energy from the heat pump and solar system. Heat energy is used for space heating and domestic hot water

(4) A 26 gallon thermal heat storage tank for storage of cool energy from the heat pump. Cool energy is used for space cooling

(5) A radiant chilled ceiling creates a comfortable living environment throughout the entire space

(6) An air heating/cooling and ventilation energy recovery unit recovers useful energy from outgoing stale air before it is expelled to the outside

(7) A mechanical dehumidification unit is used for space dehumidification with a convection system

(8) Specially designed air diffusers spread air into the space creating a comfortable living environment throughout the entire area

(9) Air diffusers are used for return air

(10) An energy recovery unit system draws in fresh outside air

(11) Specially designed air diffusers drain air from the space

(12) Air diffusers exhaust air outside

(13) Exhaust hood drains air outside from the cooking area

(14) Air diffusers spread air into the cooking area

(15) Air exchange system for the fridge and freezer

B. AIR-TO-WATER HEAT PUMP

Daikin Altherma low temperature uses a range of efficient compressors, limiting electrical compressor inputs to its maximum. This results in optimal efficiencies at several rated conditions, providing excellent ratings, complying with incentive and certification schemes (e.g. EPBD regulations) throughout Europe.

Daikin Altherma low temperature maintains its high heating capacities down to low outdoor temperatures. The electrical back-up heater assistance is no longer required or only very limited.

When the heat load is lower than the maximum capacity of the heat pump system, the compressor can turn in partial load operation. The new Daikin Altherma low temperature has a high modulating range, meaning the compressor can modulate down to low frequencies to offer the highest efficiencies over the relevant temperature range.

The heat pump output is rated at 5.0 kW for cooling and 4.4 kW for heating, with a rated input of 1.8 kW and 1.13 kW respectively, resulting in a co-efficient of performance (COP) of 2.78 for cooling and 3.89 for heating. The unit is capable of water flow in the range of 0.022 – 0.11 gallons/s. This is well within the requirements as determined with the thermal simulations.

C. RADIANT CHILLED CEILING

The radiant chilled ceiling consist of 12 chilled ceiling panels 60” x 50”.of high cooling performance up to 76 W/m^2.

Simple integration of ventilation, lighting and acoustic systems into building elements. Visual high quality, seamless ceiling layout according to the architectural requirements.

Simple and quick assembly using pre-drilled fixing grids and standard installation techniques, and high rigidity. RAUTHERM S pipe integrated during manufacture.

Two perforated gypsum plaster boards bonded to each other. Hole patterns are identical within each board type. All four sides are finished as a sharp edge for precise jointing.

Tried and tested RAUTHERM S pipe (10.1 x 1.1mm) with REHAU EVERLOCTM jointing technology. Specially-matched acoustic non-woven material bonded to the rear.

D. AIR HEATING/COOLING AND VENTILATION ENERGY RECOVERY (ERV) UNIT

Air heating/cooling and ventilation energy recovery (ERV) unit also equipped with energy-saving EC fans, characterized by compactness - normally contain shutoff valve supply air automatic by-pass, hot water heater and space for additional installation of coolers. Standard regulation allows the use of a wide range of inputs and outputs - IAQ, control of bathrooms and kitchens, heating control systems and heat sources.

The air heating/cooling unit has an airflow capacity of 30 - 380 cfm and a power consumption of 10 - 140 W. The air heating/cooling unit output is rated at 2.5 kW for cooling and 3.0 kW for heating.

In order to maintain a healthy and comfortable indoor air quality it is necessary to introduce a certain amount of fresh outdoor air. This air is often significantly cooler or warmer than the internal conditioned temperature and thus requires significant energy to bring it to the required temperature. The purpose of the ERV is to precondition this air using energy from the exhaust air from the space. This occurs in a heat exchanger, which allows the transfer of sensible and latent heat from the return air to the supply air. It does this without contaminating the supply air with the moisture and pollutants that may be present in the stale return air.

The ERV has an airflow capacity of 30 - 200 cfm and a power consumption of 10 - 100 W.

The ERV functions by drawing extract air from the house where it is passed through the heat exchangers. Here the useful energy is recovered before the air is expelled to the exterior. Fresh, outdoor air is then drawn in and filtered, before being passed though the exchangers where it is pre heated or cooled as required, by the recovered energy from the return air. The air is then distributed to outlet diffuser throughout the house.

The use of the ERV minimizes the energy use of the heat pump by reducing the difference between the input air temperature and the required output temperature, while at the same time ensuring there is ample fresh air ventilation.

E. MECHANICAL DEHUMIDIFICATION UNITS

Honeywell TrueDRY™ Dehumidification systems are a more effective and energy-efficient way to remove humidity. And all Honeywell TrueDRY Dehumidifiers are ENERGY STAR® Rated. They can be installed "out of sight, out of mind" in the central heating and cooling system - or as standalone to remove moisture from specific problem areas. And with several sizes available, TrueDRY Dehumidification Systems, Honeywell gives you one brand for every application.

5.05 **HVAC Controller**

A centralized building management system, acts as the brains of the system controlling the temperature and humidity, making sure that it is always within the comfort bracket outlined for the competition. The system can be controlled via a simple and easy to use touch screen interface that has been specifically designed for the competition.

PART 6 - ELECTRIC

6.01 Electric Appliances

The electric energy demand needs to be assessed for the contest design. Find below electric appliances installed in the AIR house:

	annual consumption / max. consumption – cycle power input	hours/cycle	hourly input	contest
Refrigerator	230 kWh/a 160 W	-	26,26 W	*Contest 8-1. Appliances - to keep refrigerator temperature between 1,11 and 4,44 °C*
Freezer	230 kWh/a 160 W	-	26,26 W	*Contest 8-2. Appliances - to keep freezer temperature between -28,9 and -15,0 °C*
Clothes Washer	215 kWh/a / 1,53 kWh/cycle 1850 W	1:45	874 W	*Contest 8-3. Appliances - to wash 8 loads of laundry*
Clothes Dryer	257.9 kWh/a / 2,16 kWh/cycle 1050 W	1	2160 W	*Contest 8-4. Appliances - to dry 8 loads of laundry*
Dishwasher	265 kWh/a / 1,30 kWh/cycle 2040 W	1:20	975 W	*Contest 8-5. Appliances - to wash 5 loads of dishes and reach the temperature 48,9 °C*
Cooktop	8000 W	-		*Contest 9-2. Cooking - to evaporate 2,268 kg of water Contest 9-3. Dinner party - to cook 2 times dinner for 8 people*
Oven	3650 W	-		*Contest 9-3. Dinner party - to cook 2 times dinner for 8 people*
Microwave Oven	2800 W	-		*Contest 9-3. Dinner party - to cook 2 times dinner for 8 people*
Exhaust Hood	300 W	-		*Contest 9-2. Cooking - to evaporate 2,268 kg of water Contest 9-3. Dinner party - to cook 2 times dinner for 8 people*
TV	40 W	-		*Contest 9-4. Home Electronics Contest 9-5. Movie Night*
Audio System	310 + 16 W	-		*Contest 9-4. Home Electronics Contest 9-5. Movie Night*
Notebook	80 W	-		*Contest 9-4. Home Electronics*

We estimate that during a standard, all year-round operation of the house, the average consumption of all electric appliances will be about 2,95kWh a day, which makes 1078kWh/ the electric energy needed just for the electric appliances.

The demand for the contest week will be solved separately.

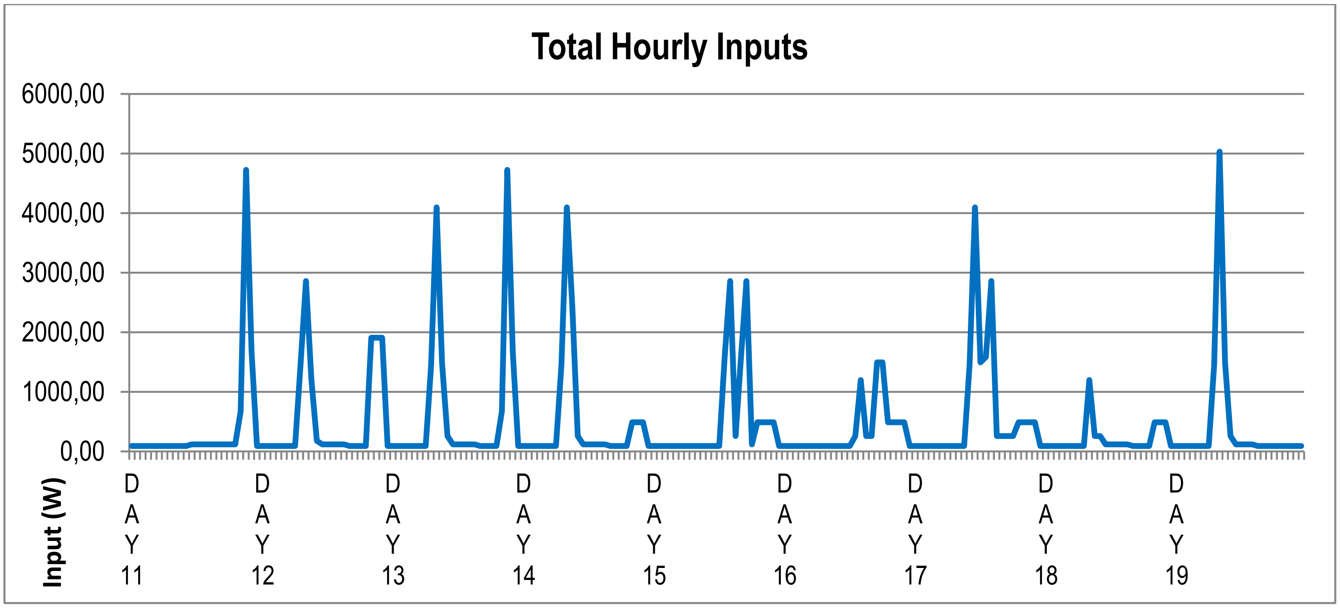
A. **Lighting**

Mark	Description	Position	Type	Quantity (Feet/m)	Wattage	Mounting
26 51 00 A1	SLOTLIGHT II Single Luminaire (Zumtobel)	Interior – Living Space	T16	3	2 x 49 W	ceiling recessed
26 51 00 A2	SLOTLIGHT II Single Luminaire (Zumtobel)	Interior – Bathroom	T16	1	49 W	ceiling recessed
26 51 00 A3	SLOTLIGHT II Single Luminaire (Zumtobel)	Interior – Entrance	T16	1	54 W	ceiling recessed
26 51 00 B1	PERLUCE Luminaire (Zumtobel)	Interior – Outdoor Storage	T16	1	35 W	ceiling mounted
26 51 00 B2	PERLUCE Luminaire (Zumtobel)	Interior – Mechanical Closet	T16	1	28 W	ceiling mounted
26 51 00 C	LED Strip WW (Greenlux)	Interior – Living Space, Bathroom	LED	22.835 f /6.96 m	2 x 30 W	under cabinet recessed, ceiling recessed
26 51 00 D1	Tolomeo parete Aluminium (Artemide)	Interior – Living Space	LED	3	9.5 W	wall mounted
26 51 00 D2	Tolomeo terra Aluminium (Artemide)	Interior – Living Space	LED	1	9.5 W	free standing
26 56 00 A	LED Strip WW (Greenlux)	Exterior – Terrace, Ramp around the AIR House, Outdoor Kitchen	LED	110.564 f /33.7 m	2 x 75 W 1 x 30 W	under handrail recessed, wall recessed, under cabinet recessed
26 56 00 B	LEDOS III Luminaire (Zumtobel)	Exterior – Terrace	LED	2	2,1 W	floor recessed
26 56 00 C	LED wall luminaire (Bega)	Exterior – Terrace	LED	2	8.6 W	wall mounted

Again, we estimate that during a normal all year-round operation of the house, the average need of lighting will be about 6hrs a day and about 33% of all lights will be used at the same moment. This amounts to the total need of electricity for lighting of about 72Wh/d, which makes 26,5kWh/a a year.

B. **Photovoltaic System Design for the Contest Week**

While creating the Contest Week consumption profile the consumption of those appliances had been taken into account. We have prepared a scenario for running the appliances and got an overview of the electric energy consumption, for both, lights and electric appliances.



For this consumption profile, we have created a separate calculation for each variant of the building and obtained the required area of the solar panel.

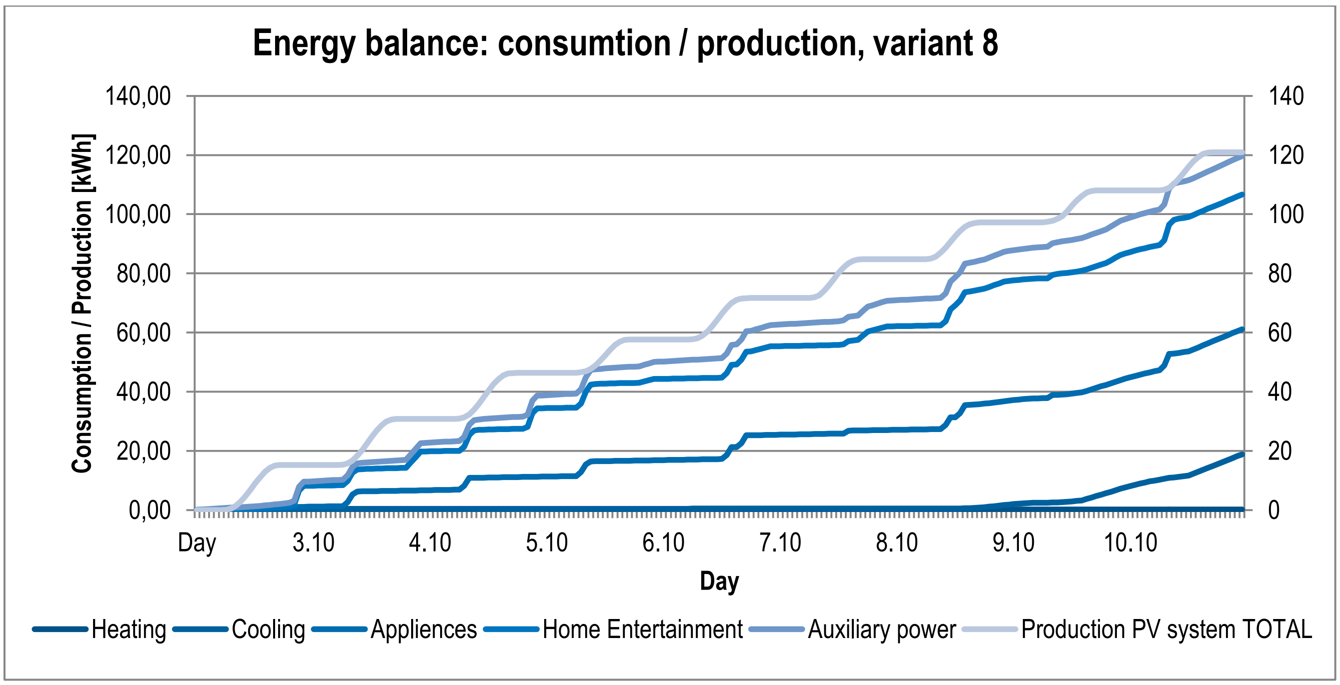
The input assumptions are:

- Solar gains data for LA
- 15% efficiency of the panels
- 80% efficiency of the system as a whole

The results are presented in the following chart:

	Estimated		Needed
Variant	Consumtion [kWh/a]	Production [kWh/a]	Area of PV [m2]
0	135,4	136,7	26
1	132,3	134,1	25,5
2	133,1	134,1	25,5
3	129,6	134,1	25,5
4	118,0	118,3	22,5
5	115,2	115,7	22
6	120,4	120,9	23
7	118,9	120,9	23
8	119,7	120,9	23
9	135,9	136,7	26

The best performance was demonstrated by **variant 8** (climatic data L.A., well-insulated house, intelligent regulation). The minimal effective area of the PV installation should be **23 m²**.



AIR HOUSE SUSTAINABILITY ASSESSMENT

Methodology

For the AIR House sustainability assessment, the only national methodology developed in Czech Republic - SBToolCZ was used. This tool is being developed at the faculty of Civil Engineering at the CTU in Prague and the AIR house was used as a pilot project evaluated by a new variant for family houses.

SB Method and SB Tool family

The SB Method is developed by the International Initiative for Sustainable Built Environment iiSBE. It is described as a generic framework for rating the sustainable performance of buildings and projects. It may also be thought of as a toolkit that assists local organizations to develop SBTool rating systems.

The SB Method can be used by authorized third parties to establish adapted SBTool versions as rating systems to suit their own regions and building types. The system covers a wide range of sustainable building issues, not just green building concerns, but the scope of the system can be modified to be as narrow or as broad as desired, ranging from 100+ criteria to half a dozen. SB Method takes into account region-specific and site-specific context factors, and these are used to switch off or reduce certain weights, as well as provide background information for all parties. Weighting is at one level and can be partly modified by authorized third parties. The system is set up to allow easy insertion of local criteria and/or language. It handles all four major phases:

- new and renovation projects or a mix;
- up to five occupancy types in a single project;
- handles buildings up to 100 floors in height;
- provides relative and absolute outputs.

SBToolCZ

SBToolCZ is a fully localized Czech national assessment tool for stating the building quality in terms of the sustainable building principles. The assessment methodology was first introduced at an international conference Central Europe for Sustainable Buildings 2010 – CESB10 in June 2010.

To developers, architects or designers SBToolCZ offers:

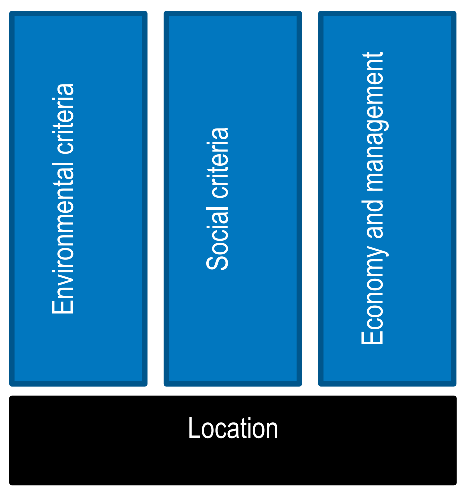
- marketing tool – certification of building qualities in compliance with principles of sustainable development
- building's environmental impact assessment including the possible impact after optimization
- inspiration to find innovative solutions that minimize the environmental impact of the building
- building's technical solution assessment
- help with lowering the building's running costs and rising the user comfort
- building site quality assessment.

The methodology is developed by a team of experts from the research center CIDEAS at the Faculty of Civil Engineering and since its introduction, there were already 19 buildings certified and further project certifications are being prepared. The SBToolCZ methodology belongs to the family of world's SBTool methodologies developed by an international non-profit organization International Initiative for Sustainable Built Environment (iiSBE). SBTool methodology is used in many countries and a certification SBTool at the national level is carried out in Spain, Italy and Portugal. IiSBE representative for the Czech Republic is the Czech Society for Sustainable Building located at the Faculty of Civil Engineering, CTU.

Assessment

Generally

SBToolCZ methodology is based on a multi-criteria approach, where the evaluation includes a set of various criteria that take into account the principles of sustainable construction. Ranges of criteria that enter the evaluation process vary according to the type of building (residential, office buildings, etc.) and according to the phases of the life cycle, which is assessed (the design, construction, commissioning or operation of the building). In the case of family houses in the design phase SBToolCZ assess 36 criteria. The system of criteria and their weights is designed to meet the needs and protect the public interest and the quality of the built environment.



The structure of the evaluated criteria is divided into three basic groups:

(1) Environmental criteria (environment)

(2) Social criteria (or socio-cultural)

(3) Economics and management.

These are complemented by a fourth set of criteria relating to the location of the building, which is evaluated and the result is present, but does not enter into the final certificate of quality:

(4) Location.

Each criterion is evaluated according to an algorithm using criteria limits (the benchmarks), this value is normalized to a uniform scale, which means that the value of the indicator criteria is converted to a scale from 0 to +10.

This scale has the following meaning:

- interval 0-4 - indicator value of the criterion corresponds to the usual situation in the Czech Republic or to meet legislative or normative requirements (if defined) - this state can be called standard
- Interval 4-6 - indicator value corresponds to the superior (good) quality,
- Interval 6-8 - indicator value corresponds to high quality,
- Interval 8-10 - indicator value corresponds to the highest (best) quality, in some cases achieving BAT (ie. the best available technology), or directly to the set of trends in sustainable construction.

The resulting points from criteria are then multiplied by weights, weighted points of criteria are added together to give the final overall result (again, in the range 0-10), which represents the quality level of the assessed building.

AIR house assessment

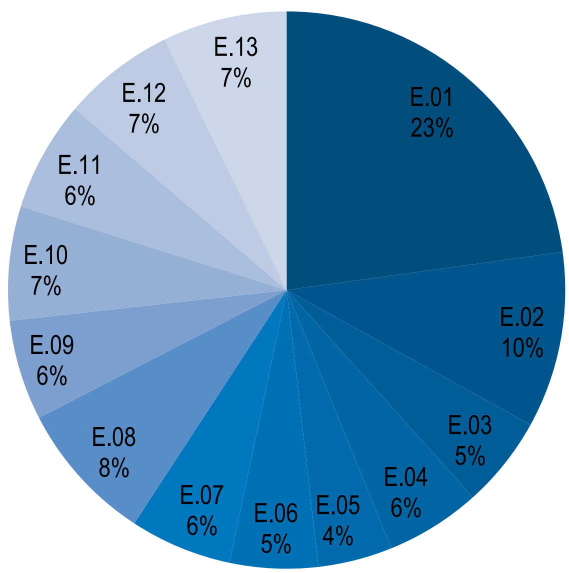
For the AIR house sustainability assessment, it was necessary to set a few parameters and borders to get comparable results: the assessment should show the quality of a real family house, not just the prototype that the AIR house actually is. First, the assumed construction site was set to the most probable place – the CTU University Centre for Environmentally Effective Buildings (UCEEB CTU) in Kladno, Czech Republic. After the Solar Decathlon 2013 event, the house will be re-assembled there and will be operated as a family house offering accommodation for UCEEB's employees. The orientation of the house was changed: the house will be rotated so that the main terrace will be heading south. Finally, all the information needed for the assessment were taken from the Project Manual or from other project documentation, only marginal analyses were carried out to get enough information for assessment.

The methodology was used in a brand new version for family houses and the developers received feedback during the process. Based on the comments, changes or further development in particular criteria can be made. Even though, the AIR House project helped with building sustainability in the Czech Republic, the assessment method is not yet the approved commercial SBToolCZ version. That still allows us to determine and describe weak spots or highlights of the entire project. Finally, we also got the real assessment showing us how well can the AIR House perform in the real sustainable construction industry.

Results

See a table listing all the assessed criteria and the resulting points with the final result of the AIR house.

E - Environmental criteria



Environmental criteria				
Criteria	**Name**	**Score**	**Weight**	**Total score**
E01	Primary energy consumption	10,00	22,82%	2,28
E02	Global warming potential	10,00	10,22%	1,02
E03	Acidification potential	8,20	5,32%	0,44
E04	Eutrophication potential	10,00	5,52%	0,55
E05	Ozone depletion potential	7,50	4,32%	0,32
E06	Photochemical ozone creation potential	0,00	5,12%	0,00
E07	Renewable energy production	10,00	5,92%	0,59
E08	Use of construction materials	6,50	8,22%	0,53
E09	Use of certified construction materials	3,33	5,82%	0,19
E10	Drinking water consumption	4,00	6,62%	0,26
E11	Capturing the rainwater	9,00	6,42%	0,58
E12	Land use	7,00	6,52%	0,46
E13	Greenery on the building and the land	4,50	7,22%	0,32
Total score				**7,56**

E.01 PRIMARY ENERGY CONSUMPTION

Assessment goal

Emphasis on reducing the primary energy consumption from non-renewable sources in the operational phase of a family house.

Indicator

Specific annual consumption of primary energy from non-renewable sources in MJ per 1 m2 of total floor area - MJ / (m2.a).

E.01result comment

Due to the main aim of the project, the AIR house was designed as an active house. The house was optimized for the Californian conditions, but will be fully functional at its final destination also. According to our simulations, in the conditions of the Czech Republic, the PV system produces still more energy (about 3100MJ/a), than the house consumes and that causes just marginal primary energy consumption.

Result: 10pts.

E.02 GLOBAL WARMING POTENTIAL

Assessment goal

Mitigating the impact of a building on global warming based on the reduction of CO_2 equivalent emissions from the house operation.

Indicator

Specific annual CO_2 equivalent emission production in kg on 1m^2 of total floor area – kg $CO_{2,eq.}$/(m^2.a).

Result: 10pts.

E.03 ACIDIFICATION POTENTIAL

Assessment goal

Lowering the building's impact on the acidification of the environment, or emphasis on reducing sulfur dioxide equivalent emissions released during the operation of the house.

Indicator

Specific annual production of SO_2 equivalent emissions in kg over 1 m^2 of total floor area – kg $SO_{2,eq.}$/(m^2.a).

Result: 8,2pts.

E.04 EUTROPHICATION POTENTIAL

Assessment goal

Lowering the building's impact on the environment eutrophication, or emphasis on reducing PO_4^{3-}equivalent emissions released during the operation of the house.

Indicator

Specific annual production of PO_4^{3-} equivalent emissions in kg over 1 m^2 of total floor area - kg $PO_4^{3-}{}_{,eq.}$/(m^2.a).

Result: 10pts.

E.05 OZONE DEPLETION POTENTIAL

Assessment goal

Lowering the building's impact on the Earth's ozone layer destruction, or emphasis on the R11 equivalent emissions released during the operation of the house.

Indicator

Specific annual production of R11 equivalent emissions in kg over 1 m^2 of total floor area – kg $R11_{,eq.}$/(m^2.a).

Result: 7,5pts.

E.06 PHOTOCHEMICAL OZONE CREATION POTENTIAL

Assessment goal

Mitigating the impact of the building on the creation of photochemical ozone, or emphasis on reducing emissions equivalent ethene (ethylene) arising from the house operation.

Indicator

Specific annual production of C_2H_4 equivalent emissions in kg over 1 m^2 of total floor area – kg $C_2H_{4,eq.}$/(m^2.a).

Result: 0pts.

E.02-E.06 result comment

The amount of all the emissions from the AIR house operation is very low. The reason is the coverage of the consumption by solar energy – photovoltaic and thermal panels are actually the best available technology in terms of the environment pollution prevention. In E.06, there is a noticeable influence of the large embodied emissions in the photovoltaic panels which brings zero result.

E.07 RENEWABLE ENERGY PRODUCTION

Assessment goal

In addition to reducing operation energy needs, it is also important to ensure the coverage of those needs by renewable energy sources. This not only reduces operating costs of covering the energy needs by energy supplied to the building from the outside, but also leads to a reduction of energy dependence and environmental load of the building.

Indicator

Ratio between the renewable energy produced at the building site to total energy consumption [%].

Result: 10pts.

E.07 result comment

The AIR house's PV system produces about 3100MJ/a above the assumed consumption, which means the house is able to cover its whole year-round demand itself. The result complies with the best available technology solution.

E.08 USE OF CONSTRUCTION MATERIALS

Assessment goal

Maximizing the use of renewable, recycled and regionally produced construction materials in the building construction.

Indicator

Credit evaluation based on the following parameters:

- Use of renewable materials in the main structures;
- Use of recycled materials in the components of main structures;
- Use of regionally produced construction materials.

Result: 6,5pts.

E.08 result comment

There was a large effort to use natural, recycled or renewable materials in the structure of the AIR House. This gained points for the building in this criterion – all the main materials are recycled or renewable. Loosing points is caused by the type of the project, the building also uses materials the team received from the sponsors and those are spread all over the country. In the real, commercial consequences it would be easier to use materials that are produced locally.

E.09 USE OF CERTIFIED CONSTRUCTION MATERIALS

Assessment goal

Maximizing the use of building products certified by proven methodologies that ensure a positive approach to the environment and sustainable development.

Indicator

The credit evaluation based on the following parameters:

- Use of construction products certified EPD
- Use of building wood-based products with certified PEFC or FSC

Result: 3,3pts.

E.09 result comment

As mentioned above, the materials used for the construction of the AIR House were materials which the team received from the sponsors. We asked for certified timber, which in 95% we really received. The other part of this criterion focuses on the EPD certificates that are not present. To get better result, the developers should persuade their contractor to offer materials with EPD.

E.10 DRINKING WATER CONSUMPTION

Assessment goal

Reducing the consumption of drinking water from the water supply system by savings and consumption of rainwater or gray water, sewage water and water from a well.

Indicator

Credit evaluation of drinking water from supply system savings.

Result: 4,0pts.

E.10 result comment

The house is designed for two different types of conditions, the US and the Czech Republic. The reuse of grey water is not allowed by the US law. In the conditions of the Czech Republic grey water will be treated and cleaned and can be reused. This would get the house 10pts.

E.11 CAPTURING RAINWATER

Assessment goal

Reducing the amount of rainwater drained off the land to lower the sewer system loads, reduce flood risk and protect the small water cycle.

Indicator

Ratio of rainwater captured on the site and a total amount of water that falls on the site - PDV [%].

Result: 9,0pts.

E.11 result comment

The house will be situated in the area for the experimental houses in Kladno, where simple, grass surface is assumed. Also, rainwater storage is included in the project. This combined brings outstanding result in this criterion.

E.12 LAND USE

Assessment goal

Biodiversity, nature and landscape protection, protection of the agriculturally usable land. Attracting the construction to previously used areas (brownfields). The purpose of this evaluation is to favor sustainable houses, whose construction is not damaging to quality agricultural land. According to the principle of evaluation, houses built on a greenfield in flat terrain, have the worst results. On the contrary, house built on a brownfield and situated in a steep slope, receive the best evaluation.

Indicator

Credit evaluation based on the land location.

Result: 7,0pts.

E.12 result comment

UCEEB's building site is a brownfield in an industrial zone of the city of Kladno. Building the family house and recultivating the site to a comfortable area brings good score in this criterion.

E.13 GREENERY ON THE BUILDING AND THE LAND

Assessment goal

Promoting greenery placement on the building envelope and land adjacent to maximizing surface area covered by vegetation of the original plant material of the site, including a plan of further care development and subsequent maintenance.

Indicator

Credit evaluation based on the percentage of greenery coverage of facades, roofs and free land, and the existence of a plan of further care development and subsequent maintenance.

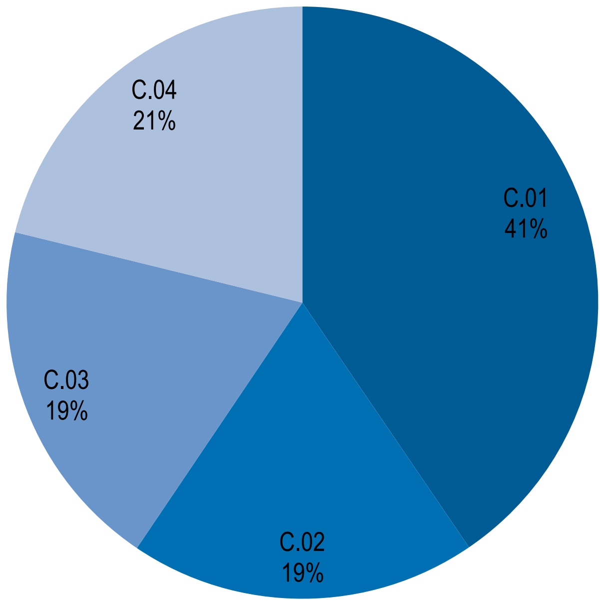
Result: 4,5pts.

E.11 result comment

The amount of greenery on the building is low. However, casting the greenery on the building's envelope would be possible on the final building site and can be provided for the house built in the real conditions. The AIR house prototype project design counts on flowerpots installed on the terraces around the house, and those might represent the foundations for façade greenery.

E – Economy and management

Economy and management



Economy and management				
Criteria	**Name**	**Score**	**Weight**	**Total score**
C01	Life cycle costs	0,00	40,48%	0,00
C02	Building and operational documentation	9,50	18,98%	1,80
C03	Energy and water consumption measurement	9,00	19,38%	1,74
C04	Management of sorted waste	5,50	21,18%	1,16
Total score				**4,71**

C.01 LIFE CYCLE COST

Assessment goal

Life cycle cost analysis is a direct tool to improve the sustainability of buildings. A clear and coherent concept of the building's life cycle project in an economic context.

Indicator

Credit evaluation of the project preparation in terms of assessment life cycle cost analysis.

C.01 result comment

Life cycle assessment, investigation and evaluation of the environmental impacts of the AIR House have not been carried out. The AIR House could gain 10 points in case of the life cycle cost analysis evaluation..

Result: 0,0pts.

C.02 BUILDING AND OPERATIONAL DOCUMENTATION

Assessment goal

The aim is an efficient operation of the building and the consciousness of its inhabitants. Ensuring the availability of documentation of the real state of building construction (construction drawings, professions and building documents for final approval), and user manuals for the building equipment for the building owner and the building inhabitants.

Indicator

Credit evaluation of the quality and content of the documents.

C.02 result comment

Rating of the AIR House documentation consists of two parts:

1) Quality and content of the documents transmitted to the future house owners
2) Evaluation of user manuals intended for the owner or inhabitants of the house.

A delivery of complete sets of the following documentation in electronic and paper form is expected:

- building documents for final building approval- documentation of the real state of the building construction
- documentation for building operation and maintenance, including user manuals, instructions for use and maintenance of building service equipment.

Furthermore, accurate and extensive project manual was processed for each component of the AIR House.

Result: 9,5pts.

C.03 ENERGY AND WATER CONSUMPTION MEASUREMENT

Assessment goal

The purpose is to achieve easier access to information on energy and water consumption. Direct control of the current consumption helps users identify sites that can be used to optimize consumption.

Indicator

The indicator is an ISE index expressing the opportunity of the inhabitants of the house to have an overview of the energy and water consumption, and easyly modify and control the parameters of the internal environment.

C.03 result comment

The AIR House developed an intelligent measuring and control system. This device allows the control of the internal environment parameters. Data on current usage and control options are also available via internet connection.

Result: 9,0pts.

C.04 SORTED WASTE MANAGEMENT

Assessment goal

Creating conditions within the building and motivating the building users to sort waste and recycle.

Indicator

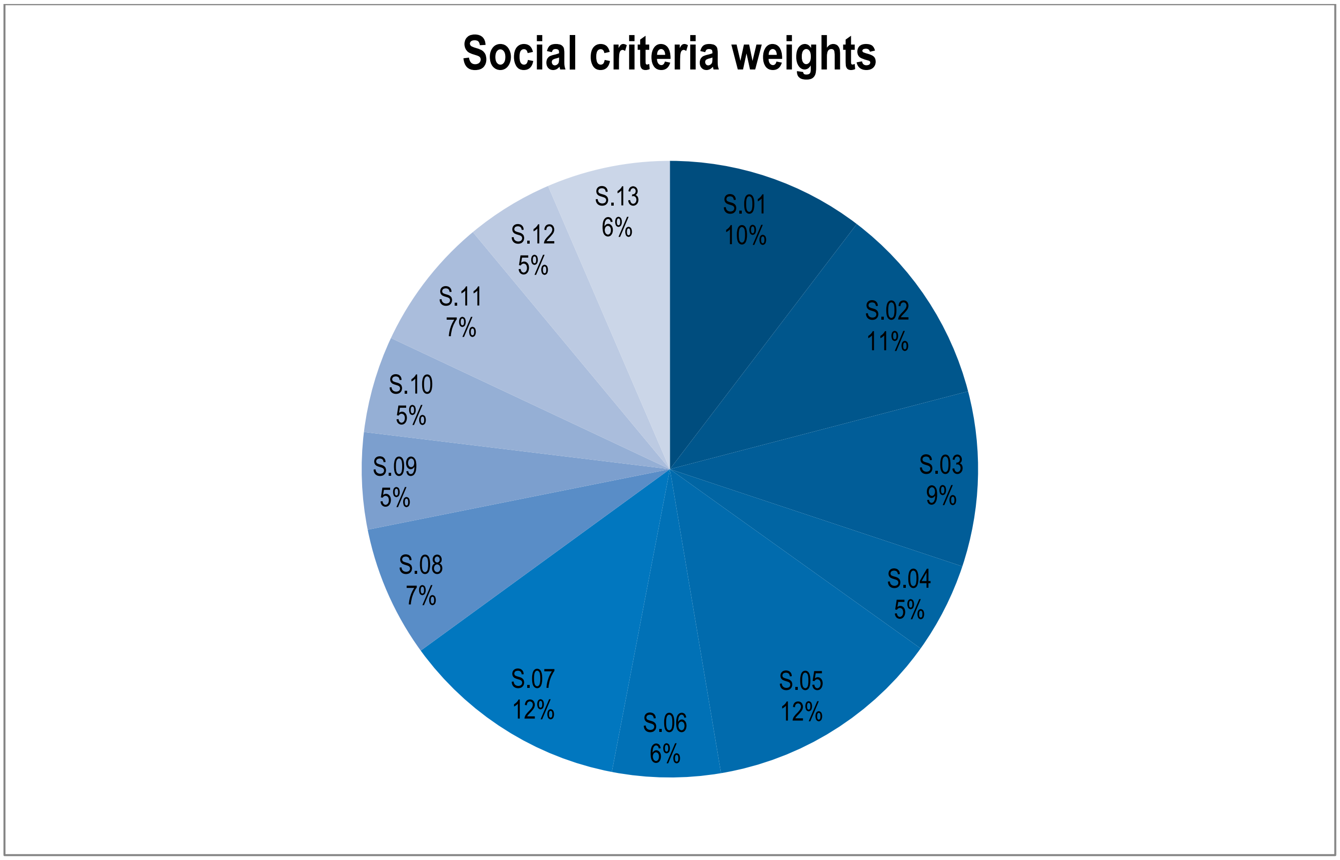
Credits awarded for following sub-indicators: sorted waste collecting spots created, number of the kinds of the sorted waste, containers capacity, and overall sorted waste treatment in the building.

C.04 result comment

Collection points are clearly marked, there is no mixing of graded commodities. The owner of the building and its inhabitants can sort four types of waste. ´Had we built a special collecting spot on the property, we would have gotten extra 10 points.

Result: 5,5pts.

S – Social criteria



Social criteria				
Criteria	**Name**	**Score**	**Weight**	**Total score**
S01	Visual comfort	9,50	10,37%	0,99
S02	Acoustic comfort	4,00	10,57%	0,42
S03	Thermal comfort in the summer	8,00	9,17%	0,73
S04	Thermal comfort in the winter	6,40	4,77%	0,31
S05	Indoor air quality	8,70	12,47%	1,08
S06	Radon protection	7,50	5,67%	0,43
S07	Health safety of materials	7,00	11,97%	0,84
S08	User comfort	3,00	6,87%	0,21
S09	Building’s flexibility	4,00	5,07%	0,20
S10	Space efficiency	6,00	5,07%	0,30
S11	Accessibility for handicapped	7,50	6,97%	0,52
S12	Rate of land fencing	0,00	4,57%	0,00
S13	Building’s security	0,00	6,47%	0,00
Total score				**6,03**

S.01 VISUAL COMFORT

Assessment goal

Improving the visual comfort quality of the house inhabitants.

Indicator

Credit evaluation of daylight factor and the distances between the house and the surrounding buildings.

S.01 result comment

The southern wall contains a large terrace window and the construction site in Kladno has generous surrounding space without any important obstacles – this make the visual comfort of the AIR House very good.

Result: 9,5pts.

S.02 ACOUSTIC COMFORT

Assessment goal

Excellent acoustic comfort is one of the most important criteria that we place on buildings, especially those designated for housing. Optimization and improvement of the acoustic parameters not only increases the users' comfort, but also improves their recovery and feeling "at home".

Indicator

Credit rating based on the quality of the building design, its various areas of structural acoustics and protection against noise from stationary sources inside and outside the building.

S.02 result comment

The criteria was not assessed in detail, an acoustic specialist would be necessary. The worst possible acoustic category of the building (to allow the construction by law) is category C, which was achieved. Detailed evaluation can bring the investor a better score.

Result: 4,0pts.

S.02 THERMAL COMFORT IN THE SUMMER

Assessment goal

Ensure thermal stability of the living space in the summer.

Indicator

Credit evaluation of the summer overheating risk elimination in the rooms with emphasis on the structural design of the building and passive systems.

S.02 result comment

A number of energy analyses were performed including the canopy shading calculation. In the conditions of LA, the house will be oriented with the main terrace facing north whereas in the Czech Republic, the orientation will be opposite. This brings better solar gains during winter (which is convenient), but also a higher risk of overheating. Therefore it is necessary, to get a good score and bear with the problem to install additional external shading elements into the large window. A calculation proved that the semi-opaque curtains or window blinds will be sufficient.

Result: 8,0pts.

S.04 THERMAL COMFORT IN THE WINTER

Assessment goal

Ensure thermal stability of the living space in the winter.

Indicator

Credit evaluation of the requirements for thermal stability in winter and floor surface temperature drop.

S.04 result comment

The house has a very good thermal stability during the winter period, but improvement could be achieved in the floor surface - a carpet could gain more credits for this criterion.

Result: 6,4pts.

S.05 INDOOR AIR QUALITY

Assessment goal

Reduce health risks and increase comfort of the people in relation to the indoor air quality.

Indicator

Credit evaluation based on an assessment of the most fundamental quantitative and qualitative parameters of the indoor air temperature, except computationally identified and subsequently measured parameters.

S.05 result comment

The house can be working in two ventilation regimes: cross-sectional natural ventilation brings generous amount of fresh air in the first, and the CO_2 sensor controlled air-conditioning can do the work in the other cases. To get the top score, an AC service contract should be signed.

Result: 8,7pts.

S.06 RADON PROTECTION

Assessment goal

Reducing health risks (especially lung cancer) caused by the occurrence of radon in the subsoil.

Indicator

Credit evaluation based on radon index, quality of the proposed protection against radon, and then on the findings of radon in indoor air.

S.06 result comment

The AIR House construction site is situated in an area with low radon index. Our advantage is the footings foundation, which allows ventilation under the living space.

Result: 7,5pts.

S.07 HEALTH SAFETY OF MATERIALS

Assessment goal

Control and eliminate the use of materials that can cause health risks.

Indicator

Credit rating of building materials and furniture with emphasis on the content of substances that can cause health problems (especially VOC and formaldehyde).

S.07 result comment

Our aim was to design a user friendly house with a natural felling without any health threatening materials. We determined the demanded quality of all the materials used in the building. To get more points, the missing health safety manual could be provided.

Result: 7,0pts.

S.08 USER COMFORT

Assessment goal

Increasing user comfort in the house. Comfort mainly refers to the space in the house and its surroundings, especially to its unchanging parts.

Indicator

Index of user comfort IUK, which summarizes the credit value of sub-areas focusing on various aspects of user experience.

S.06 result comment

Our house is a minimal house offering maximal possibilities. Despite the small area resulting from the transportability of the house, we offer storage room to the house inhabitants. Also, the surrounding garden in the UCEEB will be generous; therefore the house received the maximum of possible points.

Result: 3,0pts.

S.09 BUILDING'S FLEXIBILITY

Assessment goal

Increasing the house usage flexibility, which ensures longer life of the structure and reduces the financial and environmental impact of a change in the users' needs.

Indicator

Degree of flexibility F defined on the basis of the structural system used; the presence of fixed or demountable partitions and the building design type.

S.09 result comment

The house offer large open space without any partition walls, but still, it is very compact house and the load bearing structures must stand the transportation. Higher score can be obtained by providing design study of possible building's extensions.

Result: 4,0pts.

S.10 SPACE EFFICIENCY

Assessment goal

Optimizing the use of internal space of the house in relation to its area occupied by the load bearing and other structures and areas used directly by inhabitants of the house.

Indicator

Spatial efficiency factor FE [-].

S.10 result comment

The AIR House construction site is situated in an area with low radon index. The advantage is the footings foundation, which allows ventilation under the living space.

Result: 6,0pts.

S.11 ACCESSIBILITY FOR HANDICAPPED

Assessment goal

Creating a higher movement comfort for persons entering the building, and facilitating the movement of persons with reduced mobility or orientation in the building even in building types, where it is not required by law and the variability of the apartments with the possibility of the apartment usage by a person with limited mobility or orientation.

Indicator

Credit rating including easy access and movement in the first floor of the house and in the first floor facilities of the house.

S.11 result comment

The building allows easy entrance for handicapped people, but is not suitable for permanent living of handicapped people. To gain more points, a different bathroom design would be necessary.

Result: 7,5pts.

S.12 RATE OF LAND FENCING

Assessment goal

The purpose of this evaluation is to favor sustainable villas with private lands that are not surrounded by any artificial terrain obstacles. The principle of the evaluation is to state that family houses with land completely separated from the surrounding terrain by artificial barriers, have the worst results. On the contrary, a family house with land not separated from the surrounding terrain by an artificial barrier at all, will receive the best evaluation.

Indicator

The land fencing rate [%].

S.12 result comment

Whereas the AIR House will be placed in an enclosed area of an experimental center, the whole plot will be fenced. In the commercial sphere, the fencing rate can be much lower and the score higher.

Result: 0pts.

S.13 BUILDING'S SECURITY

Assessment goal

Determination of security level of individual parts of the dwelling and its immediate surroundings to reduce the risk of crimes against persons and property according to CSN P CEN / TS 14383-3.

Indicator

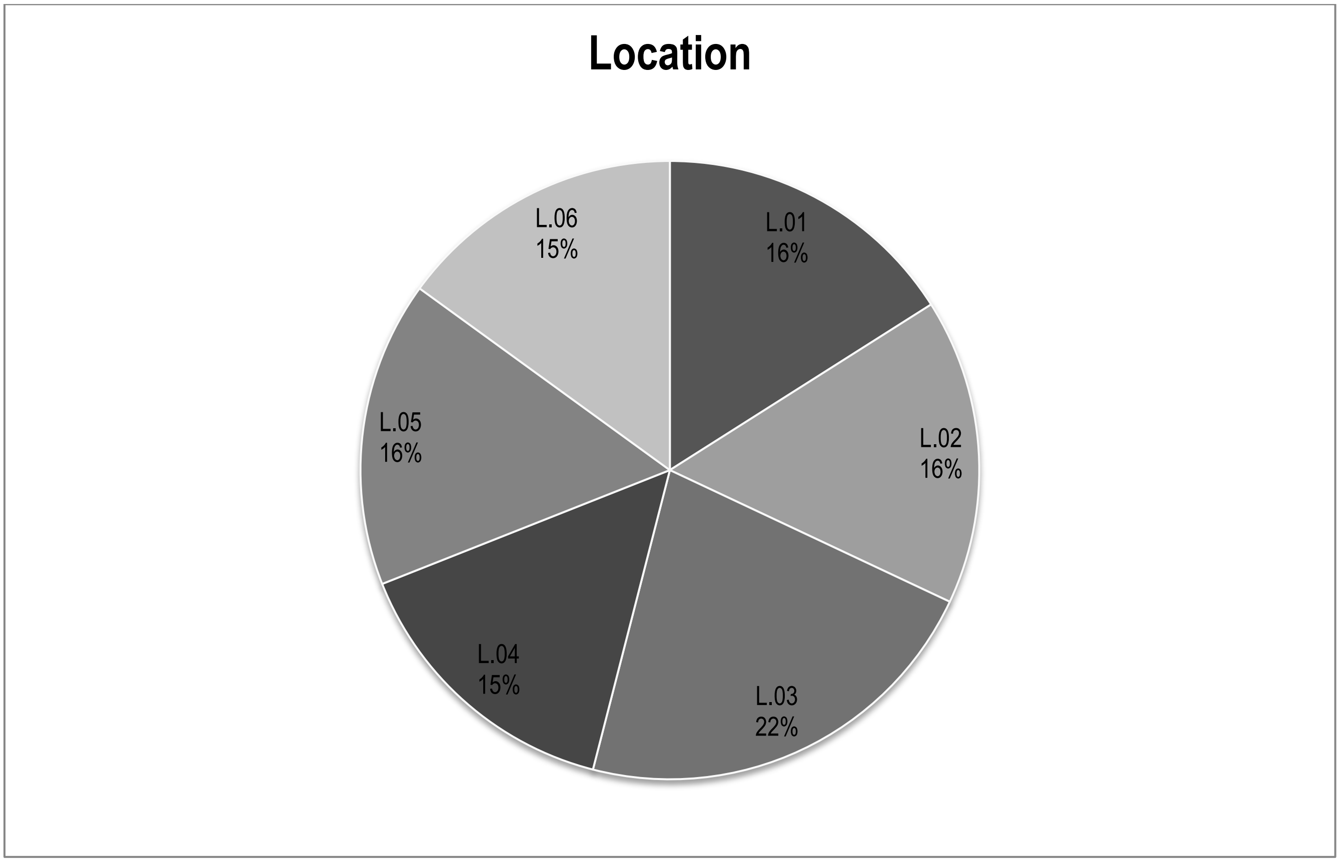
Comparison of the proposed security level of individual parts of the dwelling and the recommended resistance class.

S.13 result comment

The criterion was not reached; the house is not specially secured. Focusing on security assessment can bring additional score.

Result: 0pts.

L – Location



Location				
Criteria	**Name**	**Score**	**Weight**	**Total score**
L01	Availability of public places for relaxation	3,50	0,16	0,56
L02	Key amenities - provision and proximity	2,50	0,16	0,40
L03	Public transport accessibility	3,00	0,22	0,66
L04	Natural risk	10,00	0,15	1,50
L05	Local air quality	5,50	0,16	0,88
L06	Site security	0,00	0,15	0,00
Total score				**4,00**

L.01 AVAILABILITY OF PUBLIC PLACES FOR RELAXATION

Assessment goal

Assessment of the location quality based on distance, frequency and variety of accessible public places for relaxation. The existence of these sites contributes to psychological and physical well-being of the inhabitants of the location.

Indicator

Awarding credits for following sub-indicators: the distance of and the kind of public places for relaxation.

Result commentary

We evaluated the existence and frequency of public places for relaxation, their diversity and distance from the building. A forest and three playgrounds are located within 600 meters of the house, therefore we received 3.5 points. A public sports facility could be located nearby to get better evaluation.

Result: 3,5pts.

L.02 KEY AMENITIES - PROVISION AND PROXIMITY

Assessment goal

Assessment of available services in the surroundings of the building. The purpose is to ensure the integrity of the community, providing easy access to services and ultimate reduction of emissions and energy consumption as a result of reductions in travel services.

Indicator

Awarding credits based on an assessment of availability of different types of services and their distance.

Result commentary

We estimated the location of each service type and their distance from the AIR House in UCEEB CTU in Kladno through using GIS - Geographic information system. The majority of services are situated nearby, such as groceries, primary school, kindergarten, doctor office, church etc. To get the top score, these services should be located within 600m of the AIR House.

Result: 2,5pts.

L.03 PUBLIC TRANSPORT ACCESSIBILITY

Assessment goal

Assessment of the building's links to the public transport to reduce pollution caused by motor-vehicle traffic and increased mobility for inhabytants of the building.

Indicator

Index of public transport (IDVD [-]) based on the distance of public transport from the main entrance to the building, the frequency of transport links and the state of roads in the neighborhood of the building.

Result commentary

A bus stop is available in a distance of 1-2 km. The AIR House will be located in the Buštěhrad village, which has no public transport. Therefore we received only three points.

Result: 3,0pts.

L.04 NATURAL RISK

Assessment goal

Assessment of the risk of damage to the building caused by floods, technical seismicity and location in the undermined area.

Indicator

Credit evaluation of the building location in terms of risks such as damaging floods, seismic and technical risks associated with building placement on the undermined area.

Result commentary

We received maximum points because the AIR House will be located on a site not threatened by seismicity, is not in an undermined area and is located outside the floodplain.

Result: 10,0pts.

L.05 LOCAL AIR QUALITY

Assessment goal

Evaluation of air quality, which directly affects the lives and health of the population in the area.

Indicator

The annual average PM10 concentration in mg/m^3.

Result commentary

The source of the annual average concentration is the Czech Hydro meteorological Institute web site. The average annual concentration in Kladno is 28.9 mg/m^3 , therefore we received 5.5 points.

Result: 5,5pts.

L.06 SITE SECURITY

Assessment goal

Evaluation of the risk of crime and fear of crime in the area.

Indicator

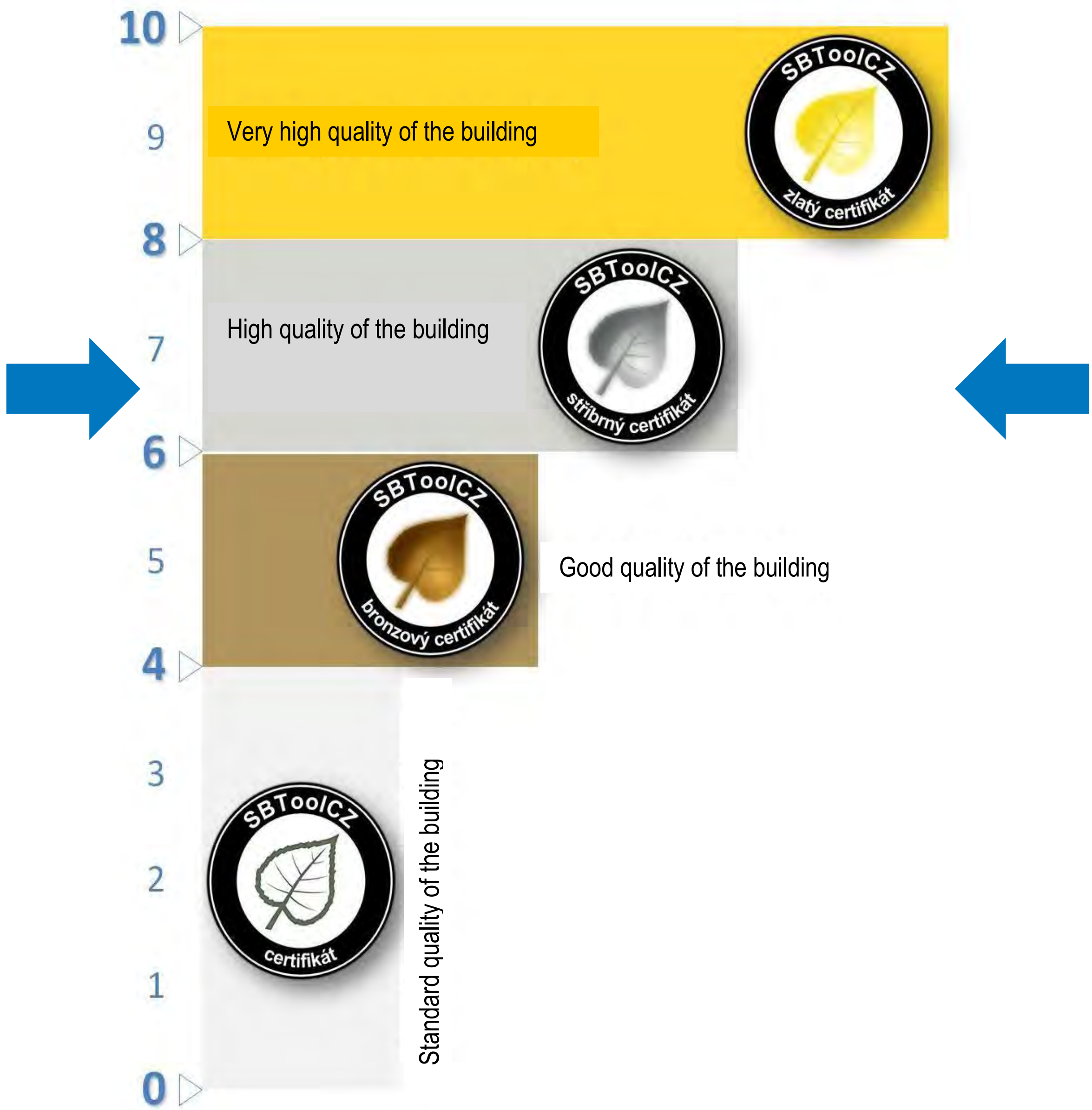
Performing particular steps in the process of complex multi-criteria approach by ČSN P CEN / TS 14383-2.

Result commentary

There is no solution to crime prevention in that location; therefore we received 0 points.

Result: 0,0pts.

Final result



		Score	Weight	Total score
Environment		7,56	50%	**3,78**
Economy and management		4,71	15%	**0,71**
Social criteria		6,03	355	**2,11**
Location		4,00	0	**0,00**
Total score				**6,60**

It is obvious, the AIR House is very strong in the environmental criteria but it is losing important points in the Social and Economy sections. Better and more detailed design process with bigger emphasis on the material certificates, LCC and other lower parameters can bring the house additional points. Overall, the house is performing very well, offers very high quality and desires the silver SBToolCZ certificate.

QUANTITY TAKEOFF OF COMPETITION PROTOTYPE HOUSE

SPECIFICATION NUMBER	BRIEF DESCRIPTION	DETAILED DESCRIPTION	QTY	UNIT	NOTES
DIVISION 01	**GENERAL REQUIREMENTS**				
01 50 XX	MOBILE GENERATORS	Honda Engines, EU 6500iS, 120/240V 6500W max. (54.1/27.1A) 5500W rated (45.8/22.9A)	1	Each	
01 50 XX	Typical Mobile Crane	LIEBHERR LTM 1050-3.1, 50-ton truck-mounted crane, plus crew. Grove TMS870, 70 ton truck-mounted crane, plus crew	60	hours	
01 50 XX	SCAFFOLDING	Harsco Infrastructure	2462	S.F.	
01 50 XX	BARRICADES	Inline Barricades & METAL PRODUCTS, INC., barricade model in-312	393,701	L.F.	Temporary for Competition Purpose
01 53 XX	BUILDING FOUNDATIONS - Building Footings	Fabricated by Quality Steel size: 200x200 mm	84	Each	Temporary for Competition Purpose
DIVISION 02	**EXISTING CONDITIONS**				
02 21 13	Site Survey, locate project on site	Boundary & survey markers	0,1952	Acre	
DIVISION 05	**METALS**				
05 12 00	STRUCTURAL STEEL FRAMING	STRUCTURAL STEEL Cold formed rectangular, HTR, IPE, KR, P, TR, U, M 30 and M 42	7,2	tons	
05 58 00	FORMED METAL FABRICATIONS	Perforated metal sheets L-profile 25x130x1900 mm in average	9	Each	
DIVISION 06	**WOOD, PLASTICS AND COMPOSITES**				

06 11 00	WOOD FRAMING LUMBER	Battens for façade siding. Northern spruce. Maximum moisture content: 20% and 12% for interior elements.	9,5	C.F.
06 11 13	ENGINEERED WOOD PRODUCTS - Glued laminated timber, KVH, DUO, TRIO beams	Used profiles for exterior not concealed canopy frame are 100 x 400 mm and 160 x 450mm for canopy beam foundations. Used profiles for interior frame are 200 x 300 mm for a beam and rounded columns Ø 120 mm. For major bearing beams, 180 x 240 mm and 100 x 240 mm are used for. Adhesives TYPE 1 according to EN 301 has to be used for glulam used in exterior conditions. For interior framing, adhesives TYPE 2 according to EN 301 are allowed.	290	Cubic .F.
06 12 00	STRUCTURAL PANELS	PREFABRICATED STRUCTURAL ROOF PANEL - Prefabricated structural roof panel is a self-made sandwich panel.	845	S.F.
06 13 00	HEAVY TIMBER CONSTRUCTION	CROSS LAMINATED TIMBER (CLT) thickness 60 mm (0,2 ft)	400	S.F.
06 13 00	HEAVY TIMBER CONSTRUCTION	CROSS LAMINATED TIMBER (CLT) thickness 80 mm (0,26 ft)	1423	S.F.
06 13 00	HEAVY TIMBER CONSTRUCTION	CROSS LAMINATED TIMBER (CLT) thickness 100 mm (0,328 ft)	237	S.F.
06 16 00	SHEATHING	SHEATHING FOR ROOF AND FACADE INSULATING PANELS – DHF BOARDS	96	C.F.
06 16 00	SHEATHING	SHEATHING FOR ROOF AND FACADE INSULATING PANELS – DHF BOARDS	96	C.F.
06 16 00	SHEATHING	OSB BOARD	459	C.F.
06 18 00	GLUED LAMINATED TIMBER	STRUCTURAL GLUED LAMINATED TIMBER	530	C.F.

DIVISION 07	THERMAL AND MOISTURE PROTECTION			
07 14 16	COLD FLUID-APPLIED WATERPROOFING	SikaRoof MTC Systems including: Sikalastic 601 BC - Base coat; A cold applied, highly elastic, aliphatic, single component, moisture-triggered polyurethane base coat designed for easy application as part of Sikalastic RoofPro roofing and waterproofing systems. Color: Oxide red	655	S.F.
07 14 16	COLD FLUID-APPLIED WATERPROOFING	SikaRoof MTC Systems including: SIKALASTIC 621 TC - Top coat; Sikalastic 621 TC (US) is a cold applied, highly elastic, aliphatic, single component, moisture-triggered polyurethane base and top coat designed for easy application as part of Sikalastic RoofPro roofing and waterproofing systems. Color: Steel gray	655	S.F.
07 14 16	COLD FLUID-APPLIED WATERPROOFING	SikaRoof MTC Systems including: SIKA FLEXITAPE HEAVY - Polyamide knitted reinforcement for use with Sikalastic RoofPro and Sikagard wall coating systems. To be used to rainforce all joints.	655	S.F.
07 14 16	COLD FLUID-APPLIED WATERPROOFING	SikaRoof MTC Systems including: SIKA REEMAT PREMIUM - Fibre glass rainforcement fabric. To be used for rainforcement in all surface	40	S.F.
07 21 13	THERMAL BOARD INSULATION	FLEXIBLE INSULATION - STEICO FLEX. Wood fiber flexible insulation, sustainable and FSC® certified, good fire resistance (according to EN 13501-1). Board dimensions: 1220/575 mm. Thicknesses: wall SIP– 160 mm and 100 + 120 mm, substructure SIP– 180 mm, roof SIP– 100 + 120 mm.	2093	C.F.
07 21 13	THERMAL BOARD INSULATION	STEICO THERM - Description: wood fibrerigid insulation, good fire resistance (according to EN 13501-1), high compression strength.	123	C.F.

		dimensions: 1350/600, Thicknesses: wall SIP – 60 mm, Roof of technological box – 100 + 100-200 mm.		
07 26 00	VAPOR RETARDERS -	ISOCELL OMEGA 140G -: water-resistive barrier with extreme UV resistance	985	S.F.
07 46 00	SIDING	WATERPROOF PLYWOOD; THICKNESS: 12 MM; Moisture: max. 12%	1324	S.F.
DIVISION 08	**OPENINGS**			
08 14 29	PREFINISHED WOOD DOORS	Insulated wood door with plywood finish, Wood door leaf, Door leaf dimensions: 875 x 2285 mm (34.453 x 89.953 in), The load bearing construction of the exterior wood door is composed of lumber profiles. Space between them is filled with flexible wood fibre insulation. Exterior side is covered with varnish or blackboard paint treated plywood boards, interior side with untreated plywood.	2	Each
08 14 29	PREFINISHED WOOD DOORS	Uninsulated wood door with plywood finish, Wood door leaf, Door leaf dimensions: 875 x 2285 mm (34.453 x 89.953 in), The load bearing construction of the exterior wood door is composed of lumber profiles. Exterior side is covered with varnish or blackboard paint treated plywood boards, interior side with untreated plywood..	1	Each
08 41 13	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS	The Schüco Door ADS 70.HI (High Insulation) has outstanding thermal insulation quality. The basic depth of 70 mm ensures a high degree of stability. The product will serve as the main entrance door. The clear, timeless design is to be combined with the certified Schüco window systems. The entrance door is	1	Each

		combined into one product with bathroom window casement Schüco Window AWS 70.HI – described separately in Section 08 51 13. Total product size: 1750 x 2395 mm (68.897 x 94.291 in). Door leaf dimension: 1067 x 2250 mm (42.008 x 88.583 in). U value: Frame Uf 1.89 W/m2K, Glazing Ug 1.0 W/m2k; Glazing: double glazing, tempered safety glazing, interior surface treated with matt foil; Frame finish color: black, RAL 9004; Burglar resistance in accordance with DIN V ENV 1627 to 1630: WK2.		
08 41 13	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS	The sliding door is composed of 4 sections moving on a double rail. The profiles used are Schüco Sliding System ASS 70.HI Type 2A. Total size: 8010 x 2400 mm (315.354 x 94.489 in); Net leaf size: 2040 x 2250 mm (80.314 x 88.583 in).U value: Frame Uf 2.8 W/m2K, Glazing Ug 1.0 W/m2k. Glazing: double glazing, tempered safety glazing. System: double rail. Frame paint color: black, RAL 9004. Burglar resistance in accordance with DIN V ENV 1627 to 1630: WK 2. Air permeability DIN EN 12207 - Class 4 Weather tightness DIN EN 12208 - 9A; Wind load resistance DIN EN 12210 - B5 C5; Thermal transmittance DIN EN 12412-2Uf =1.5 – 1.9W/(m2K)	1	Each
08 41 26	ALL-GLASS ENTRANCE	Bathroom entrance: Glass wall total dimension: 1275 x 2300 mm (50.197 x 90.551 in); Glass entrance leaf size: 800 x 2300 mm (31.496 x 90.551 in); Glass type: safety glass, matt foil applied	1	Each
08 41 26	ALL-GLASS ENTRANCE	Hallway entrance: Glass wall (=door leaf size): 1200 x 2300 mm (47.244 x 90.551 in); Glass type: safety glass, clear	1	Each
08 51 13	ALUMINUM WINDOWS	The Schüco ventilation window casement is made of window profile AWS 70.HI. Bathroom Window casement dimension: 486 x 2260 mm	1	Each

		(19.134 x 88.976 in). U value: Frame Uf 1.6 W/m2K; Glazing Ug 1.0 W/m2k. Glazing: double glazing, tempered safety glazing. Frame paint color: black, RAL 9004. Barrel hinge, freely adjustable in three dimensions Burglar resistance in accordance with DIN V ENV 1627 to 1630: WK2		
08 51 13	ALUMINUM WINDOWS	The Schüco south window is made using window profile AWS 70.HI. The window casement is motorized and automatically operable. South window total dimensions: 2010 x 1930 mm (79.134 x 75.984 in), South window operable casement dimension: 1952 x 605 mm (76.850 x 23.819 in) U value: Frame Uf 1.6 W/m2K; Glazing Ug 1.0 W/m2k. Glazing: double glazing, tempered safety glazing. Frame paint color: black, RAL 9004. Barrel hinge, freely adjustable in three dimensions Burglar resistance in accordance with DIN V ENV 1627 to 1630: WK2	1	Each
08 70 00	HARDWARE- SFS intec –hinge	Hinge SFS intec, Just-3D-000, stainless steel	9	Each
08 70 00	HARDWARE- handle and plate	Handle and plate, stainless steel	6	Each
08 81 00	GLASS GLAZING	Shower screen - Material: glass, clear float tempered safety type with safety film over coating glass; Anchored to construction with clamp bearings (Geze) – see Section 08 70 00; Size: 675 x 2300 mm (26.575 x 90.551 in); Thickness: 8 mm (0.315 in)	1	Each
08 81 00	GLASS GLAZING	Glazed ceiling in shower - Material: glass, safety laminated glass with safety foil on both surfaces. Lower surface of glazing matt. Size: 875 x 1275 mm (34.449 x 50.197 in); Thickness: 20 mm (0.787 in)	1	Each
08 83 00	MIRRORS	Bathroom Mirror - Material: glass, clear float tempered safety type with copper and silver coating, organic, with safety film over coating glass; Size: 1100 x 1800 mm (43.307 x 70.866 in); Thickness: 4 mm (0.157 in)	1	Each

08 83 00	MIRRORS	Entrance Mirror - Material: glass, clear float tempered safety type with copper and silver coating, organic, with safety film over coating glass; Size: 995 x 1500 mm (39.173 x 59.055 in); Thickness: 4 mm (0.157 in)	1	Each
DIVISION 09	**FINISHES**			
09 21 16	GYPSUM BOARD ASSEMBLIES	2x layer of gypsum board 15mm KNAUF Praha CZE	165,33	S.F.
09 22 16	SUSPENSION SYSTEMS	STEEL FRAMING C shaped and U shaped frames	300	S.F.
09 61 00	FLOOR TREATMENT	OSMo Hard waxy oil - Characteristics: antiskid R11	516	S.F.
09 64 00	WOOD FLOORING	Spruce floor planks 24 mm - Thickness: 24 mm (0.955 in); Widths: 146 mm (5.748 in)	857	F.
09 64 00	WOOD FLOORING	Larch floor planks 27 mm - Thickness: 27 mm (1.063 in); Widths: 138 mm (5.433 in)	1808	F.
09 64 00	WOOD FLOORING	Abachi grid planks – Thickness: 20 mm (3/4 in), Widths: 50mm (1.969 in)	69	F.
09 91 13	EXTERIOR PAINTING	Chalkboard paint - Color: black; Mate, adulterate acrylate latex color	230	S.F.
09 93 13	EXTERIOR STAINING AND TRANSPARENT FINISHING	ICLA LW 400-00 - Color: transparent; waterborn glaze paint with wax for exteriors	15	GAL
09 93 13	EXTERIOR STAINING AND TRANSPARENT FINISHING	ICLA LW 400-01 - Color: white; waterborn glaze paint with wax for exteriors	966	S.F.
09 93 23	INTERIOR STAINING AND TRANSPARENT FINISHING	Sayerlack AT 9950/BB – Color: white, hydro waterborn converter for interior	290	S.F.

09 93 23	INTERIOR STAINING AND TRANSPARENT FINISHING	Sayerlack Line BLu HI 2210/00 – Color: transparent, wax effect waterbased stain for interior	300	S.F.	
09 93 23	INTERIOR STAINING AND TRANSPARENT FINISHING	HD – HARTWACHSSIEGEL 8711-0001 – Color: transparent, High resistance wax for interior treatment	152	S.F.	
DIVISION 10	**SPECIALTIES**				
10 26 23 A	PROTECTIVE WALL COVERING	Living Space Wall Padding - Material: polyurethane foam, woolen felt; Color: white	73,84 0	S.F.	
DIVISION 11	**EQUIPMENT**				
11 31 13 A	RESIDENTIAL KITCHEN APPLIANCES	REFRIGERATOR/FREEZER - Model number: Whirpool ART 480; Location: Living Space – Furniture Wall; Dimensions H x W x D (mm): 1770 x 540 x 545; Weight: 58.0 kg; Finish/Color: varnished MDF panel – color white matte (same as built-in furniture); Refrigerator capacity: 199 l; Freezer capacity: 72 l; Energy class: A++ ; Wattage: 160 W; Voltage: 220 - 240 V; Frequency: 50 Hz; Current: 16 A	1	Each	Alternative product: Summit FFBF245SS
11 31 13 B	RESIDENTIAL KITCHEN APPLIANCES	COOKTOP - Model number: Whirpool ACM 847 BA; Location: Living Space – Interior Kitchen Unit; Dimensions H x W x D (mm): 56 x 580 x 510; Weight: 11.5 kg; Finish/Color: black; Number of Cooktop burners: 4; Wattage: 8000 W; Voltage: 230 V; Frequency: 50 Hz	1	Each	Alternative product: Summit SINC424220
11 31 13 C	RESIDENTIAL KITCHEN APPLIANCES	OVEN - Model number: Whirpool AKZM 660 IX; Location: Living Space – Furniture Wall; Dimensions H x W x D (mm): 595 x 595 x 564; Weight:	1	Each	Alternative product: Summit TEM721DK

		40.0 kg; Finish/Color: stainless steel/black; Oven capacity: 73 l; Energy class: A-20%; Wattage: 3650 W; Voltage: 230 V; Frequency: 50 Hz; Current: 16 A			
11 31 13 D	RESIDENTIAL KITCHEN APPLIANCES	MICROWAVE OVEN - Model number: Whirpool AMW 836 IX; Location: Living Space – Furniture Wall; Dimensions H x W x D (mm): 455 x 595 x 510; Weight: 27.1 kg; Finish/Color: stainless steel/black; Oven capacity: 40 l; Wattage: 2800 W; Voltage: 230 - 240 V; Frequency: 50 Hz; Current: 13 A	1	Each	Alternative product: Summit SCM852 (shelf above oven)
11 31 13 E	RESIDENTIAL KITCHEN APPLIANCES	EXHAUST HOOD - Model number: Whirpool AKR 564 IX; Location: Living Space – Interior Kitchen Unit; Dimensions H x W x D (mm): 395 x 598 x 280-430; Weight: 11.75 kg; Finish:/Color: stainless steel; Wattage: 300 W; Voltage: 230 V; Frequency: 50 Hz; Current: 1.3 A	1	Each	Alternative product: Summit ULT2824SS
11 31 13 F	RESIDENTIAL KITCHEN APPLIANCES	DISHWASHER - Model number: Whirpool ADG 8793 PC TR FD; Location: Living Space – Interior Kitchen Unit; Dimensions H x W x D (mm): 820 x 597 x 555; Weight: 41.0 kg; Finish/Color: varnished MDF panel – color white matte (same as built-in furniture); Capacity: 14 place settings; Energy class: A++; Wattage: 2040 W; Voltage: 220 - 230 V; Frequency: 50 Hz; Current: 10 A	1	Each	Alternative product: Summit DW2432SS
11 31 23 A	RESIDENTIAL LAUNDRY APPLIANCES	CLOTHES WASHER - Model number: Whirpool AWIC 9014; Location: Entrance – Entrance Wall; Dimensions H x W x D (mm): 850 x 595 x 600; Weight: 78.0 kg; Finish/Color: white; Capacity: 9 kg; Energy class: A+++; Wattage: 1850	1	Each	Alternative product: Summit ARWL129NA

		W; Voltage: 220 - 230 V; Frequency: 50 Hz; Current: 10 A			
11 31 23 B	RESIDENTIAL LAUNDRY APPLIANCES	CLOTHES DRYER - Model number: Whirpool AZA 999; Location: Entrance – Entrance Wall; Dimensions H x W x D (mm): 845 x 596 x 632; Weight: 47.0 kg; Finish/Color: white; Capacity: 9 kg; Energy class: A++; Wattage: 1050 W; Voltage: 230 V; Frequency: 50 Hz; Current: 10 A	1	Each	Alternative product: Summit TCL73XNA
11 52 00 A	AUDIO - VISUAL EQUIPMENT	TV - Model number: Samsung UE32F5500AW; Location: Living Space – Interior Entertainment Center; Display Size: 32" (80 cm); Dimensions H x W x D (mm): 509.6 x 738 x 265; Weight: 6.1 kg; Finish/Color: black; Energy class: A; Wattage: 40 W; Voltage: 220 - 240 V; Frequency: 50/60 Hz	1	Each	Alternative product: LED SMART TV Samsung UN32F5500AFXZ A
11 52 00 B	AUDIO - VISUAL EQUIPMENT	AUDIO SYSTEM - Model number: Klipsch HD Theater SB 3 soundbar with wireless subwoofer; Location: Living Space – Interior Entertainment Center; Soundbar Dimensions H x W x D (mm): 117 x 1117 x 79; Soundbar Weight: 5.7 kg; Soundbar Finish/Color: satin black; Subwoofer Dimensions H x W x D (mm): 368 x 330 x 343; Subwoofer Weight: 11.3 kg; Subwoofer Finish/Color: matte black vinyl; Wattage: 300 W	1	Each	
11 52 00 C	AUDIO - VISUAL EQUIPMENT	BLUE-RAY - Model number: Onkyo BD-SP309; Location: Living Space – Interior Entertainment Center; Dimensions H x W x D (mm): 57.3 x 435 x 201; Weight: 1.7 kg;	1	Each	

		Finish/Color: black; Wattage: 16 W; Voltage: 100 - 240 V; Frequency: 50/60 Hz		
DIVISION 12	**FURNISHINGS**			
12 22 13 A	DRAPERIES	Interior Drapes Location: Living Space; Dimensions (H x W): 5000x2570; Material: Linen 40%, Polyester 60%; Colorfasteness: Class 4; Shrinkage: 0%	3	Each
12 22 16 A	DRAPERY TRACK AND ACCESSORIES	Interior Drapery Track - Location: Living Space; Dimensions (L x W x H): 14135 x 40 x 16; Material: MDF with plastic cover; Color: white matte	1	Each
12 53 30 A	RESIDENTIAL CASEWORK	Interior Kitchen Unit - Location: Living Space - south wall - 3 modules next to the entrance / west wall - 4 modules next to the entrance; Dimension: H x W x D (mm): 2720 x 1800 (3 modules) x 650 / 2720 x 2700 (4 modules) x 600; Cabinet Material: waxed birch plywood, thickness 18 mm; Cabinet Color: natural; Door ,Drawer Front Material: painted MDF panel, thickness 18 mm; Door,Drawer Front Color: White matte; Lift, Hinge, Runner and Pull-out systems: Blum s.r.o. Painted MDF: 90.854ft², Waxed birch plywood : 481.74ft²	1	Each
12 53 30 B	RESIDENTIAL CASEWORK	Exterior Kitchen Unit - Location: Terrace; Dimension: H x W x D (mm): 2300 x 1800 x 600; Cabinet Material: waxed birch plywood , Cabinet	1	Each

		color:natural, Shelf and Door Material: painted MDF panel, thickness 18 mm; Shelf and Door Color: white matte; Lift, Hinge, Runner and Pull-out systems: Blum s.r.o. Painted MDF: 32.292ft², Waxed birch plywood : 189 ft²		
12 53 30 C	RESIDENTIAL CASEWORK	Furniture Wall - BUILT-IN CABINET - Location: Living Space – south wall - 7 modules; Dimension H x W x D (mm): 2720 x 6850 (7 modules) x 650; Cabinet Material: waxed birch plywood; Cabinet Color: natural; Shelf Material: : waxed birch plywood, thickness 18 mm; Shelf Color: natural; Door and Drawer Front Material: : waxed birch plywood, thickness 18 mm; Door and Drawer Front Color: natural ; Lift, Hinge, Runner and Pull-out systems: Blum s.r.o. Waxed birch plywood: 269.10ft²	1	Each
12 53 30 D	RESIDENTIAL CASEWORK	Shelf Wall - Location: Living Space – east wall; Dimension H x W x D (mm): 2720 x 3920 x 310; Cabinet Material: waxed birch plywood; Cabinet Color: natural; Shelf Material: waxed birch plywood, thickness 18 mm; Shelf Color: natural; Drawer Front Material: waxed birch plywood, thickness 18 mm; Drawer Front Color: natural; Lift, Hinge, Runner and Pull-out systems: Blum s.r.o. Waxed birch plywood: 64 ft²	1	Each

12 53 30 E	RESIDENTIAL CASEWORK	Entrance Wall - Location: Entrance – south wall; Dimension H x W x D (mm): 2300 x 1990 x 650; Cabinet Material: waxed birch plywood; Cabinet Color: natural; Shelf Material: waxed birch plywood, thickness 18 mm; Shelf Color: natural; Sliding panel Material: painted MDF panel), thickness 18 mm; Sliding panel Color: white matte; Lift, Hinge, Runner and Pull-out systems: Blum s.r.o. Painted MDF: 24.542ft², Waxed birch plywood : 74.271ft²	1	Each
12 53 30 F	RESIDENTIAL CASEWORK	Bathroom Wall - Location: Bathroom - east wall; Dimension H x W x D (mm): 1145 x 320 x 115; Cabinet Material: waxed birch plywood, Shelf material: waxed birch plywood, thickness 18 mm; Shelf and Door Front Color: natural; Lift, Hinge and Pull-out systems: Blum s.r.o. Painted MDF: 24.542ft², Waxed birch plywood : 74.271ft²	1	Each
12 53 30 G	RESIDENTIAL CASEWORK	Bathroom Casework - Location: Bathroom - east wall; Dimension H x W x D (mm): 380 x 550 x 465; Cabinet Material: waxed birch plywood, thickness 18 mm; Material Door Front: painted MDF, Cabinet and Door Front Color: White matte; Shelf Material: plywood in visible quality, thickness 18 mm; Shelf Color: natural; Lift, Hinge and Pull-out systems: Blum s.r.o. Waxed birch plywood : 14 ft² Painted MDF: : 4,3 ft²	1	Each

12 36 19 A	WOOD COUNTERTOPS	Wood Countertop Interior Kitchen Unit - Location: Living Space – Interior Kitchen Unit; Dimensions L x W x D (mm): 2645x 600 x 40; Material: varnished birch plywood panel; Color: natural	1	Each
12 36 19 B	WOOD COUNTERTOPS	Wood Countertop Exterior Kitchen Unit - Location: Terrace; Dimensions L x W x D (mm): 1800 x 600 x 40; Material: varnished birch plywood panel; Color: natural	1	Each
12 58 19 A	DINING TABLES AND CHAIRS	Interior Dining Table - Location: Living Space; Dimension H x W x D (mm): 750 x 1200 x 800; Material: varnished birch plywood 40mm / painted steel legs , Color: natural / white glossy	1	Each
12 58 19 B	DINING TABLES AND CHAIRS	Exterior Dining Table - Location: Terrace; Dimension H x W x D (mm): 750 x 900 x 800; Material: varnished birch plywood 40mm / painted steel legs , Color: natural / white glossy	1	Each
12 58 19 C	DINING TABLES AND CHAIRS	Interior and exterior Chair - Model : Terje; Location: Living Space/Terrace; Dimension H x W x D (mm): total 770 (seat 460) x 440x 510; Weight: 3,02kg; Material: wood; Color: white matte	8	Each
12 58 26 A	ENTERTAINMENT CENTERS	Interior Entertainment Center - Location: Living Space; Dimension H x W x D (mm): 400 (wheels 80 mm) x 1840 x 400; Material: waxed birch plywood 18/40 mm); Color: natural	1	Each
12 58 29 A	BEDS	Double Bed - Location: Living Space; Dimension H x L x W (mm): 410 x 2070 x 1840; Bed Frame: laminated timber wood 60mm (waste arising from the manufacture of structure) Bed Drawers material: birch plywood	1	Each

		in visible quality, thickness 18 mm/ cross laminated timber wood 60mm (waste arising from the manufacture of structure; Bed Frame Color: natural; Components: Lamella Slat, Mattress; Lift, Hinge, Runners and Pull-out systems: Blum s r.o.			
12 58 83 B	CUSTOM RESIDENTIAL FURNITURE	Garden Lounger - Location: Terrace; Dimension W (mm): 590; Weight: 3,3 kg; Material: wood/100% polyester technical fabric; Color: natural/red	1	Each	
DIVISION 14	**CONVEYING EQUIPMENT**				
14 80 00	SCAFFOLDING - Harsco	Harsco infrastructure - Quick erect system scaffold - MODEX	2462	S.F.	
DIVISION 21	**FIRE SUPPRESSION**				
21 13 00 A1	FLUSH PENDANT SPRINKLER	TYCO FIRE PROTECTION PRODUCTS, RAPID RESPONSE SERIES LFII, K-FAKTOR 4,2	3	Each	
21 13 00 A2	PRESSURE SWITCH	Potter Pressure switch Model FF4-2; Size 1/2”	1	Each	
21 13 00 A3	BALL VALVE	TYCO FIRE PROTECTION PRODUCTS	1	Each	
21 13 00 A4	1" CPVC PIPE	AQUATHERM GmBH, FIRESTOP	33,1 10,1	L.F m	
21 13 00 A4	5/4" CPVC PIPE	AQUATHERM GmBH, FIRESTOP	12,3 3,75	L.F m	
21 13 00 A4	2" CPVC PIPE	AQUATHERM GmBH, FIRESTOP	19,7 6	L.F m	
21 24 16	DRY-CHEMICAL FIRE EXTINGUISHER	KIDDE FULL HOME FIRE EXTINGUISHER	1	Each	
21 31 13	ELECTRIC-DRIVE CENTRIFUGAL PUMP	WILO, MHIL 903	1	Each	Temporary for Competition Purpose

21 41 00	STORAGE TANK FOR FIRE SUPPRESION WATER	265 GAL - Plastic Water Storage Tank	2	Each	Temporary for Competition Purpose
DIVISION 22	**PLUMBING**				
22 07 19	INSULATION COLD WATER PIPES	MIRELON PRO	193	L.F.	
22 07 19	INSULATION HOT WATER PIPES	MIRELON PRO	193	L.F.	
22 11 16	DOMESTIC WATER PIPING REHAU	1-1/2" PLASTIC PIPE (RAUTITAN FLEX)	5	L.F.	
22 11 16	DOMESTIC WATER PIPING REHAU	1" PLASTIC PIPE (RAUTITAN FLEX)	50	L.F.	
22 11 16	DOMESTIC WATER PIPING REHAU	3/4" PLASTIC PIPE (RAUTITAN FLEX)	30	L.F.	
22 11 16	DOMESTIC WATER PIPING REHAU	1/2" PLASTIC PIPE (RAUTITAN FLEX)	300	L.F.	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES GIACOMINI	1" BALL VALVE	4	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES GIACOMINI	3/4" BALL VALVE	4	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES GIACOMINI	1/2" BALL VALVE	4	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES GIACOMINI	1" DRAIN VALVE	1	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES GIACOMINI	1/2" DRAIN VALVE	2	Each	

22 11 19	DOMESTIC WATER PIPING SPECIALTIES GIACOMINI	1" CHECK-VALVE	1	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES REGULUS	3/4" THERMOSTATIC MIXING VALVE	1	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES GIACOMINI	1/2" SAFETY VALVE	1	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES SENSUS	1/2" FLOWMETER	1	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES HONEYWELL	3/4" FILTER	1	Each	
22 11 19	DOMESTIC WATER PIPING SPECIALTIES REGULUS	EXPANSION VESSELS	1	Each	
22 11 23	DOMESTIC WATER PUMPS	WILO COR-1 WJ 401 EM	1	Each	Temporary for Competition Purpose
22 12 19	POTABLE-WATER SUPPLY TANK 264 GALLON	OBAL CENTRUM, STANDARD IBC CONTAINERS 1000, UN CODE	2	Each	Temporary for Competition Purpose
22 13 16	DOMESTIC WATER PIPING REHAU	4" PLASTIC PIPE (RAUPIANO PLUS)	10	L.F.	
22 13 16	DOMESTIC WATER PIPING REHAU	3" PLASTIC PIPE (RAUPIANO PLUS)	70	L.F.	
22 13 16	DOMESTIC WATER PIPING REHAU	2" PLASTIC PIPE (RAUPIANO PLUS)	60	L.F.	
22 13 29	SANITARY SEWERAGE PUMPS	WILO TMW 32/8	1	Each	
22 13 43	FACILITY PACKAGED SEWAGE PUMPING	WILO KH 32-0.4 EM	1	Each	Temporary for Competition

	STATIONS			Purpose
22 13 53	FACILITY SEPTIC TANK 106 GALLON	REALPLAST POLYPROPYLENE WELDED TANK	1	Each
22 13 63	FACILITY GRAY WATER TANKS 396 GALLON	REALPLAST POLYPROPYLENE WELDED TANK	1	Each
22 13 73	FACILITY PLANTER	REALPLAST POLYPROPYLENE WELDED TANK	1	Each
22 41 13	WALL MOUNTED CERAMIC TOILET	DURAVIT - DARLING NEW TOILETS 254909	1	Each
22 41 13	IN-WALL TANK SYSTEM	ALCA-PLAST - A1101/1200	1	Each
22 41 13	CORNER VALVES	HANSGROHE - 13903000	1	Each
22 41 16	WALL MOUNTED CERAMIC SINK	DURAVIT - VANITY BASINS WASHBASINS 031555	1	Each
22 41 16	KITCHEN SINK	DURAVIT - VERO KITCHEN SINKS 751445	1	Each
22 41 16	INTERCEPTING TRAP	ALCA-PLAST - A434	1	Each
22 41 16	INTERCEPTING TRAP	ALCA-PLAST - A447P Ø50/40	1	Each
22 41 23	SHOWER DRAIN CHANNELS	ALCA-PLAST - A471CR	1	Each
22 41 39	BATHROOM FAUCET	HANSGROHE AXOR STARCK ORGANIC 2-HANDLE BASIN MIXER 280	1	Each
22 41 39	KITCHEN FAUCET	HANSGROHE AXOR SINGLE LEVER KITCHEN MIXER WITH PULL-OUT SPRAY	1	Each
22 41 39	SHOWER FAUCET	HANSGROHE AXOR THERMOSTATIC SHOWER MIXER FOR EXPOSED FITTING	1	Each
22 41 39	SHOWER SET	HANSGROHE AXOR SHOWER SET	1	Each

22 41 39	CORNER VALVES	HANSGROHE 13903000	4	Each
22 41 39	CORNER VALVES WITH CHECK-VALVE	IVAR 08101013	4	Each
22 41 39	CONCEALED TRAP	ALCA PLAST APS3	1	Each
22 41 39	FLOOR DRAIN	ALCA PLAST APV2324	1	Each
DIVISION 23	**HEATING, VENTILATING, AND AIR-CONDITIONING**			
23 07 19	INSULATION WATER INLET PIPES	ARMACELL AC/ARMAFLEX	230	L.F.
23 07 19	INSULATION WATER RETURN PIPES	ARMACELL AC/ARMAFLEX	230	L.F.
23 21 13	1" COPPER PIPE	VIEGA A1 PROFIPRESS SC-CONTUR	50	L.F.
23 21 13	3/4" COPPER PIPE	VIEGA A1 PROFIPRESS SC-CONTUR	100	L.F.
23 21 13	1/2" MULTILAYER PIPE	REHAU RAUTHERM S	300	L.F.
23 21 16	1" BALL VALVE	GIACOMINI	6	Each
23 21 16	3/4" BALL VALVE	GIACOMINI	12	Each
23 21 16	1/2" DRAIN VALVE	GIACOMINI	4	Each
23 21 16	3/4" CHECK-VALVE	GIACOMINI	3	Each
23 21 16	3/4" T- VALVE	ESBE	2	Each
23 21 16	1/2" MIXING VALVE	SAUTER	3	Each
23 21 16	1" FILTER	GIACOMINI	3	Each
23 21 16	1/2" AUTOMATIC AIR VENT VALVE	GIACOMINI	2	Each
23 21 16	THERMOMANOMETER	GIACOMINI	6	Each
23 21 16	EXPANSION VESSELS	REFLEX	1	Each

	9 GALLON			
23 21 16	1" THERMOSTATIC MIXING VALVE	ESBE	1	Each
23 21 23	HYDRONIC PUMPS	WILO YONOS PICO 1-4	3	Each
23 23 00	1/4"x 1/2" COPPER REFRIGERANT LINE WITH INSULATION	Copper tube: MICROWELL 2010 DUO 6-16 (1/4"x 1/2") with insulation.	30	L.F.
23 31 13	8" ROUND SPIRAL DUCTS	MULTIVAC SONOVAC 25 DS	70	L.F.
23 31 13	6" ROUND SPIRAL DUCTS	MULTIVAC SONOVAC 25 DS	20	L.F.
23 31 13	5" ROUND SPIRAL DUCTS	MULTIVAC SONOVAC 25 DS	20	L.F.
23 31 13	4" ROUND SPIRAL DUCTS	MULTIVAC SONOVAC 25 DS	30	L.F.
23 31 16	9"x4" RECTANGULAR PLASTIC DUCTS	MULTIVAC MULTI-PLAST	20	L.F.
23 31 16	8"x2" RECTANGULAR PLASTIC DUCTS	MULTIVAC MULTI-PLAST	10	L.F.
23 34 13	AXIAL HVAC FANS	MULTIVAC - 2MU7296	1	Each
23 34 16	CENTRIFUGAL HVAC FANS	MULTIVAC - MV17105010C	1	Each
23 37 13	DIFFUSERS A1	TROX - VSD35	11	Each
23 37 13	DIFFUSERS A2	TROX - VSD35	1	Each
23 37 13	DIFFUSERS B1	MULTIVAC - RT350	2	Each
23 37 13	DIFFUSERS B2	MULTIVAC - RT350	3	Each
23 37 13	DIFFUSERS B3	MULTIVAC - RT350	1	Each
23 37 13	DIFFUSERS B4	MULTIVAC - RT350	1	Each

23 37 13	GRILLES	MULTIVAC - C-UM-S-S	3	Each
23 56 13.13	FLAT-PLATE SOLAR PANELS	REGULUS KPG1	2	Each
23 56 13.13	SOLAR PUMP STATIONS	REGULUS S2 SOLAR 3	1	L.F.
23 56 13.13	SOLAR EXPANSION VESSELS 5 GALLON	REGULUS R8 018 IN LINE	1	Each
23 56 13.13	MOUNT AND INTERCONNECTION KIT FOR 2 KPG1 COLLECTORS	REGULUS 10539	2	Each
23 56 13.13	3/8" AUTOMATIC AIR VENT VALVE	REGULUS OV-3/8 SS NP	2	Each
23 56 13.13	3/4" PRE-INSULATED FLEXIBLE PIPES	REGULUS 22.920.410	60	L.F.
23 56 13.13	CONNECTION KIT FOR 1 KPG1	REGULUS REG-7710	2	Each
23 71 13	THERMAL HEAT STORAGE 26 GALLON	DRAZICE UKV 102	1	Each
23 71 13	THERMAL HEAT STORAGE 92 GALLON	ATREA IZT-U-TTS 350	1	Each
23 72 00	ENERGY RECOVERY UNIT	ATREA IZT-U-TTS 350	1	Each
23 83 16	OUTDOOR CONDENSING UNIT	DAIKIN ERLQ004CV3	1	Each
23 83 16	HEAT PUMP INDOOR UNIT	DAIKIN EHBX04C3V	1	Each
23 83 16	CHILLED CEILING DESK 60" X 50"	REHAU 60" X 50"	12	Each
23 84 16	DEHUMIDIFICATION UNIT	HONEYWELL TRUEDRY DR65	1	Each

DIVISION 25	INTEGRATED AUTOMATION		
25 10 00	EY-RC500F001 - Individual control room station Ecos500, BACnet, 4 axes	1	Each.
25 10 00	EY-IO571F001 - Expansion modul of universal inputs/outputs modu571, 16 DI / DO	2	Each.
25 10 00	EY-IO531F001 - Expansion modul of digital inputs modu531, 16 DI	1	Each.
25 10 00	EY-IO532F001 - Expansion modul of universal inputs modu532, 16 UI	1	Each.
25 10 00	EY-IO572F001 - Expansion modul of inputs/outputs modu572, 8 UI / 3 DI / 4 AO	1	Each.
25 10 00	EY-CM721F010 - Communication modul Modbus/RTU (Master, EIA-232/485)	1	Each.
25 10 00	EY-AS525F001 - DDC Automation station modu525, 26-154 I/O, BACnet/IP, Web	1	Each.
25 14 00	EY-OP840F001 - Local control panel OP840, for AS EY-modulo5	1	Each.
25 14 00	0930240541 - Connecting adapter for OP840	1	Each.
25 14 00	0930240511 - A set of fasteners to enclosures	1	Each.
25 14 00	EY-RU346F001 - EcoUnit346 room control unit, LCD, NTC, dXs, 4 buttons	1	Each.
25 14 00	0940240101 - Mounting frame for room control unit	1	Each.

25 15 16	WS-500 - ModuWeb Vision, BACnet Web Server	1	Each.
25 30 13	ARA643 - Actuator for 2-way and 3-way ball valves (90°=120s), 2P/3P, 24V~	1	Each.
25 30 13	AKM115F122 - Actuator for 2-way and 3-way ball valves (90°=120s), 2P/3P, 24V~	1	Each.
25 30 13	BUN015F310 - 3 way valves, PN16, DN15, kvs=2.5, 8mm, =%,	3	Each.
25 30 13	AVM105SF132 - Three-way valves actuator, continuous actuating 0-10V	3	Each.
25 30 16	EGT356F101 - Cable-type temperature sensor, Ni 1000, L= 1 m	1	Each.
25 30 16	0313214001 - A set of fasteners (holder, paste)	1	Each.
25 30 16	RAK582.4/3726 - Universal-Thermostat, 50-130°C; L=0.8m	2	Each.
25 30 16	CLM36N-11 - Capacitive level sensor CLM36N-11-x-U	1	Each.
25 30 16	WSC-11 - Meteostation - Modbus RTU (ThiesClima)	1	Each.
25 30 16	EE66-VB5 - Air velocity transmitter, 24VAC, 50/60Hz	2	Each.
25 30 16	EE65-VB5 - Air velocity transmitter, 24VAC, 50/60Hz	1	Each.
25 30 16	DDL103F001 - Diff pressure regulator 20-300 Pa	2	Each.
25 30 16	TFL201F601 - Antifreezing thermostat -5..15°C, Xsd=2 K, 6 m	1	Each.
25 30 16	EGT311F101 - Clamp-on	8	Each.

		temperature sensor, Ni 1000		
25 30 16		EGT346F101 - Stemp-type temperature sensor, L= 120mm, Ni 1000	5	Each.
25 30 16		EGT354F101 - Cable-type temperature sensor, Ni 1000, L= 1 m	4	Each.
25 30 16		EGH111F001 - Transducer relative humidity and temperature, in air ducting	1	Each.
25 30 16		EGH130F001 - Transducer relative humidity and temperature, wall mounting	1	Each.
25 30 16		0313347001 - Cover frame 76 x 76	1	Each.
25 30 16		EGQ222F001 - Transducer CO2 and temperature, wall mounting	1	Each.
25 30 16		EGQ120F001 - VOC sensor for indoor air quality, wall mounting	1	Each.
DIVISION 26	**ELECTRICAL**			
26 05 13	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Cable of low voltage JYTY-O 2x1	508	L.F.
26 05 13	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Cable of low voltage JYTY-O 4x1	443	L.F.
26 05 13	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Cable of low voltage JYTY-O 7x1	394	L.F.
26 05 13	LOW-VOLTAGE ELECTRICAL POWER	Cable of low voltage JYTY-O 14x1	82	L.F.

	CONDUCTORS AND CABLES			
26 05 13	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Power supply cable CYKY-J 3x1,5	328	L.F.
26 05 13	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Power supply cable CYKY-J 3x2,5	131	L.F.
26 05 13	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Ethernet cable STP cat.5e	49	L.F.
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Cable of low voltage JY(ST)Y 2x2x0,8	755	L.F.
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Power supply cable CYKY-J 3x4	33	L.F.
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Power supply cable CYKY-J 5x2,5	66	L.F.
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Power supply cable CYKY-J 3x6	17	L.F.
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Fire resistance cable NHXH E90	26	L.F.
26 05 19	LOW-VOLTAGE ELECTRICAL POWER	Photovoltaic cable 3x2xPV1-F 6	50	L.F.

	CONDUCTORS AND CABLES			
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Photovoltaic cable CYSY-J 3x1,5	33	L.F.
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	Photovoltaic cable 3xCYA 70 / AWG 2/0	26	L.F.
26 05 33	FRAMES	SCHNEIDER ELECTRIC - Frame 1-gang Merten M-Plan; Color: white Active; Model: MTN515125	10	Each
26 05 33	FRAMES	SCHNEIDER ELECTRIC - Frame 2-gang Merten M-Plan; Color: white Active; Model: MTN515225	9	Each
26 05 33	FRAMES	SCHNEIDER ELECTRIC - Frame 3-gang Merten M-Plan; Color: white Active; Model: MTN515325	3	Each
26 05 33	FRAME	SCHNEIDER ELECTRIC - Frame 4-gang Merten M-Plan; Color: white Active; Model: MTN515425	3	Each
26 05 33	FRAME	SCHNEIDER ELECTRIC - Frame 5-gang Merten M-Plan; Color: white Active; Model: MTN515525	1	Each
26 05 33 A	WIRING BOXES	KOPOS - Single junction box for residential and light commercial use; Dimension ø x D (mm): 68 x 45	7+3	Each
26 05 33 A	WIRING BOXES	KOPOS - Double junction box for residential and light commercial use; Dimension W x H x D (mm): 142 x 70 x 45	6	Each
26 05 33 A	WIRING BOXES	KOPOS - Three Gang junction box for residential and light commercial use; Dimension W x H x D (mm): 213 x 70	3	Each

		x 45		
26 05 33 A	WIRING BOXES	KOPOS - Four Gang junction box for residential and light commercial use; Dimension W x H x D (mm): 285 x 70 x 45	3	Each
26 05 33 A	WIRING BOXES	KOPOS - Five Gang junction box for residential and light commercial use; Dimension W x H x D (mm): 354 x 70 x 45	1	Each
26 05 33 B	WIRING BOXES	SCHNEIDER ELECTRIC - Single junction box for Merten System M M-Plan for residential and light commercial use; Color: aluminium; Model: MTN510560	3	Each
26 05 33 B	WIRING BOXES	SCHNEIDER ELECTRIC - Double junction box for Merten System M M-Plan for residential and light commercial use; Color: aluminium; Model: MTN510660	3	Each
26 05 33 C	WIRING BOXES	SCHNEIDER ELECTRIC – Surface mounting box for KNX multi-sensor ARGUS; Color: polar white; Model: MTN550619	2	Each
26 05 33	CONNECTING TERMINALS	Wago 222-413 - Terminals for DALI bus and low voltage signals	15	Each
26 05 33	CONNECTING TERMINALS	Wago 222-412 - Terminals for DALI bus and low voltage signals	20	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-103 - Terminals for socket circuits	4	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-113 - Terminals for socket circuits	4	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-101 - Terminals for socket circuits	14	Each
26 05 33	CONNECTING	Wago Winsta Midi 770-503 -	10	Each

	TERMINALS	Terminals for socket circuits		
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-203 - Terminals for socket circuits	7	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-213 - Terminals for socket circuits	7	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-105 - Terminals for socket circuits	3	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-115 - Terminals for socket circuits	3	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-104 - Terminals for socket circuits	2	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta Midi 770-114 - Terminals for socket circuits	2	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta KNX 893-1606 - Terminals for KNX bus	3	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta KNX 893-1002 - Terminals for KNX bus	4	Each
26 05 33	CONNECTING TERMINALS	Wago Winsta KNX 893-1012 - Terminals for KNX bus	6	Each
26 05 33	CONNECTING TERMINALS	Junction boxes K12, IP54 and IP67 - Junction boxes with IP54 and IP67 - 85x85x40 mm, 690 V	8	Each
26 09 23	LIGHTING CONTROL DEVICES	KNX binary inputs modul REG-K/4x10; Model: MTN644492	1	Each
26 09 23	LIGHTING CONTROL DEVICES	Motion sensor KNX ARGUS 220, Polar; Model: MTN632519	1	Each
26 09 23	LIGHTING CONTROL DEVICES	Motion and brightness sensor KNX ARGUS, Polar; Model: MTN630819	1	Each

26 24 16 A	PANEL BOARDS	TPB - Wall mounted metallic board; Dimensions: W x H x D (mm): 600 x 1200 x 300; Voltage system: L+N+PE, 230 V/50 Hz; Main Circuit Breaker: 125 A/B/1P/230 V; Branch Circuit Breakers up to 40A/B/1P/230 V; Maximum main busbar operating current 150 A; Maximum main sub busbar operating current 63 A; Maximum main sub busbar operating current 63 A; Maximum short-circuit current Ik``=10kA	1	Each
26 24 16 B	PANEL BOARDS	RAC - Wall mounted plastic board; Dimensions: W x H x D (mm): 400 x 400 x 150; Service panel for connecting 60 Hz grid with inverter; Voltage system: L1+L2+N+PE, 2x120 V/60 Hz; Main Circuit Breaker: 32/B/2 – ABB S202U-K32A (UL), interrupting cap.10 kA; Surge Breaker: DEHN 240 3W+G (UL)	1	Each
26 24 16 C	PANEL BOARDS	RDC - Wall mounted plastic board; Dimensions: W x H x D (mm): 400 x 400 x 150; Service panel for connecting PV array with inverter; Circuit Breaker: ABB DC 25/C/2 S502UC-B25 (UL); Surge Breaker: DEHN DG MYPV SCI 600 (UL)	1	Each
26 24 16 D	PANEL BOARDS	RLED - Wall mounted metallic board ; Dimensions: W x H x D (mm): 400 x 600 x 210; Voltage system: 1+N+PE, 230 V/50 Hz; Driver LED IP20 75W, Constant Voltage: DC 12V / 75 W for voltage parallel connection LED,	1	Each

		Quantity: 2 (for Exterior); Driver LED IP67 30W, Constant Voltage: DC 12V / 30 W for voltage parallel connection LED, Quantity: 3 (for Interior);		
26 24 16 E	PANEL BOARDS	RMR-1 - Floor standing metallic board; Dimensions: W x H x D (mm): 800 x 2000 x 300; Voltage system: L1+N+PE, 230 V/50 Hz; Main Circuit Breaker: 40/B/1P/230 V; Branch Circuit Breakers up to 20B/1P/230 V; Maximum main busbar operating current 40 A; Maximum short-circuit current Ik``=10kA	1	Each
26 24 16 F	PANEL BOARDS	FPS - Wall mounted metallic board; Dimensions: W x H x D (mm): 400 x 400 x 200; Voltage system: L+N+PE, 230 V/50 Hz; Main Circuit Breaker: Moeller 20A/1P/230 V; Branch Circuit Breaker up to Moeller: 6A/1P/ 230 V; Max Power up to 1.2 kW; Time Relay Elko; Electrical Bell Fire Eater	1	Each
26 27 26 A1	WIRING DEVICES	PUSH-BUTTON (KNX Push-button 4-gang plus) - Model: Schneider Electric Merten System M MTN617425; Location: Interior; Color: white Active	1	Each
26 27 26 A2	WIRING DEVICES	PUSH-BUTTON (KNX Push-button module 1-gang + Rocker) - Model: Schneider Electric Merten System M MTN625199 (KNX Push-button module 1-gang), MTN619125 (Rocker); Location: Interior; Color: white Active	15	Each

26 27 26 B1	WIRING DEVICES	SWITCH (Rocker switch 1-gang) - Model: Schneider Electric Merten System M MTN3150-0000 (Switch 1-gang), MTN432125 (Rocker); Location: Interior; Color: white Active	1	Each
26 27 26 B2	WIRING DEVICES	SWITCH (Rocker switch 1-gang) - Model: Schneider Electric Merten System M MTN3150-0000 (Switch 1-gang), MTN432025 (Rocker); Location: Exterior; Color: white Active; Protection: IP44	3	Each
26 27 26 C1	WIRING DEVICES	SOCKET (SCHUKO Socket outlet) - Model: Schneider Electric Merten System M MTN2600-0325; Location: Interior; Color: white Active; Rated voltage: 250 V; Rated current: 16 A	26	Each
26 27 26 C2	WIRING DEVICES	SOCKET (SCHUKO Socket outlet with hinged lid) - Model: Schneider Electric Merten System M MTN2610-0325; Location: Interior; Color: white Active; Rated voltage: 250 V; Rated current: 16 A	4	Each
26 27 26 C3	WIRING DEVICES	SOCKET (SCHUKO Socket outlet with hinged lid) - Model: Schneider Electric Merten System M MTN2614-0325; Location: Exterior; Color: white Active; Protection: IP44; Rated voltage: 250 V; Rated current: 16 A	2	Each
26 27 26 C4	WIRING DEVICES	SOCKET (Double floor socket) - Model: Stakohome Network Stakohome 8802 E; Location: Interior; Color: stainless steel; Rated voltage: 230 V	2	Each
26 31 00	PHOTOVOLTAIC COLLECTORS	Mono-crystalline photovoltaic module for electricity generation - Model: Aide Solar XZST - 185 W / 24 V; Dimensions: H x W x D (mm): 1580 x	33	Each

		808 x 35		
26 51 00 A1	INTERIOR LIGHTING	SLOTLIGHT II Single Luminaire - Model: Zumtobel SLOT2 2x1/49W PM F LDE IP40; Location: Living Space; Dimensions: L x W x H (mm): 2855 x 72 x 100; Mounting: ceiling recessed; Wattage: 2 x T16 / 49W	3	Each
26 51 00 A2	INTERIOR LIGHTING	SLOTLIGHT II Single Luminaire - Model: Zumtobel SLOT2 1x1/49W PM F LDE IP40; Location: Bathroom; Dimensions: L x W x H (mm): 1485 x 72 x 100; Mounting: ceiling recessed; Wattage: 1 x T16 / 49W	1	Each
26 51 00 A3	INTERIOR LIGHTING	SLOTLIGHT II Single Luminaire - Model: Zumtobel SLOT2 1x1/54W PM F LDE IP40; Location: Entrance; Dimensions: L x W x H (mm): 1185 x 72 x 100; Mounting: ceiling recessed; Wattage: 1 x T16 / 54W	1	Each
26 51 00 B1	INTERIOR LIGHTING	PERLUCE Luminaire - Model: Zumtobel PERLUCE O 1/35W T16 PM IP50; Location: Outdoor Storage; Dimensions: L x W x H (mm): 1520 x 120 x 91; Mounting: ceiling mounted; Wattage: 1 x T16 / 35W	1	Each
26 51 00 B2	INTERIOR LIGHTING	PERLUCE Luminaire – Model: Zumtobel PERLUCE O 1/28W T16 PM IP50; Location: Mechanical Closet; Dimensions: L x W x H (mm): 1220 x 120 x 91; Mounting: ceiling mounted; Wattage: 1 x T16 / 28W	1	Each
26 51 00 C	INTERIOR LIGHTING	LED Strip WW - Model: Greenlux LED Strip IP65 WW 5 m GXLS017; Location: Living Space, Bathroom; Dimensions: L (mm): 2645 (Living Space) + 4310 (Bathroom); Color: hot	22.82	L.F.

		white; Mounting: under cabinet recessed, ceiling recessed; Protection: IP 65; Wattage: 2 x 30 W; Voltage: 12 V		
26 51 00 D1	INTERIOR LIGHTING	Tolomeo parete Aluminium - Model: Tolomeo parete Aluminium 001000 A + R301887; Location: Living Space, Bathroom; Dimensions: L, H (mm): 810 (max 1260), 670 (max 1310); Color: aluminium; Mounting: wall mounted; Wattage: 9.5 W; Voltage: 220 - 240 V	3	Each
26 51 00 D2	INTERIOR LIGHTING	Tolomeo terra Aluminium - Model: Artemide Tolomeo terra Aluminium 001000 A + 012820 A; Location: Living Space, Bathroom; Dimensions: H, L, base diameter (mm):: 1120 (max 2260), 890 (max 1340), 330; Color: aluminium; Mounting: free standing; Wattage: 9.5 W; Voltage: 220 - 240 V	1	Each
26 56 00 A	EXTERIOR LIGHTING	LED Strip WW - Model: Greenlux LED Strip IP65 WW 5 m GXLS017; Location: Terrace, Ramp around the AIR House, Outdoor Kitchen; Dimensions L (mm): 10500 (Terrace) + 20435 (Ramp around the AIR House) +1800 (Outdoor Kitchen); Color: hot white; Mounting: under handrail recessed, wall recessed, under cabinet recessed; Protection: IP 65; Wattage: 2 x 75 W, 1 x 30 W; Voltage: 12 V	107.4 0	L.F.
26 56 00 B	EXTERIOR LIGHTING	LEDOS III Luminaire – Model: Zumtobel LEDOS3 L D89 1/2.1W LED832 230V 1.5M FL; Location: Terrace; Dimensions: H, diameter (mm): 102, 89; Mounting: floor recessed; Protection: IP 67; Wattage:	2	Each

		2.1 W; Voltage: 230 V		
26 56 00 C	EXTERIOR LIGHTING	LED wall luminaire – Model: Bega BE 3328 1/9W LED830 230V; Location: Terrace; Dimensions: H x W x D (mm): 160 x 160 x 180; Mounting: wall mounted; Protection: IP 65; Wattage: 8.6 W; Voltage: 220 - 240 V	2	Each
DIVISION 27	**COMMUNICATIONS**			
DIVISION 28	**ELECTRONIC SAFETY AND SECURITY**			
28 31 46	ELECTRONIC DETECTION AND ALARM	Argus smoke detector Connect 230 V, polar white, with 9V Battery Backup warning, loud 85dB alarm at 10ft.	1	Each
DIVISION 31	**EARTHWORK**			
31 XX XX	Not used.			
DIVISION 32	**EXTERIOR IMPROVEMENTS**			
32 93 00	EXTERIOR IMPROVEMENTS - plants	Fragaria californica - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Mentha arvensis* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Satureja douglasii* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS -	*Solanum lycopersicum* - planted in plastic container -	6	Each

	plants	diameter 8 inch		
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Lavandula dentata* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Rosmarinus officinalis* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Capsicum annuum* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Lactuca sativa L. var. Longifolia* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Petroselinum crispum* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Ocimum basilicum* - planted in plastic container - diameter 8 inch	6	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Salvia mellifera repens* - planted in plastic container - diameter 8 inch	5	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Eriogonum fasciculatum* - planted in plastic container - diameter 8 inch	4	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Encelia californica* - planted in plastic container - diameter 8 inch	4	Each

32 93 00	EXTERIOR IMPROVEMENTS - plants	*Artemisia californica* - planted in plastic container - diameter 8 inch	4	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Eriogonum grande rubescens* - planted in plastic container - diameter 8 inch	5	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Salvia Celestial Blue* - planted in plastic container - diameter 8 inch	5	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Heleocharis macrostachya* - planted in planting bags - diameter 6 inch	45	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Typha domingensis* *- planted in planting bags - diameter 6 inch*	45	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Anemopsis californica* *- planted in planting bags - diameter 6 inch*	45	Each
32 93 00	EXTERIOR IMPROVEMENTS - plants	*Narcissus* *- planted in planting bags - diameter 6 inch*	45	Each
32 93 00	EXTERIOR IMPROVEMENTS - planter	*Planter – 16.9 x 27.5 inch (9.8 inch deep), made of film faced plywood (main usage is for concrete formworks) – 0.6 inch thick*	10	Each
32 93 00	EXTERIOR IMPROVEMENTS – planter	*Planter – 27.6 x 81.9 inch (9.8 inch deep), made of film faced plywood (main usage is for concrete formworks) – 0.6 inch thick*	1	Each
32 XX XX	Ground Cover	*Geo-Textile*	1250	S.F.

DIVISION 41	MATERIAL PROCESSING AND HANDLING EQUIPMENT			
41 22 13.23	Typical Mobile Crane	LIEBHERR LTM 1050-3.1, 50-ton truck-mounted crane, plus crew. Grove TMS870, 70 ton truck-mounted crane, plus crew	60	hours
41 65 16	MOBILE GENERATORS	Honda Engines, EU 6500iS, 120/240V 6500W max. (54.1/27.1A) 5500W rated (45.8/22.9A)	1	Each
DIVISION 42	**PROCESS HEATING, COOLING, AND DRYING EQUIPMENT**			
42 01 XX	Not used.			
DIVISION 43	**PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT**			
43 01 00	OPERATION AND MAINTENANCE OF PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT	Refrigerant: ASHRAE 34; R-410A.	1	Each
DIVISION 48	**ELECTRICAL POWER GENERATION**			
48 19 16	ELECTRICAL POWER GENERATION INVERTERS	Sunny Boy 5000-US - Dimensions: W x H x D (mm / in): 470 x 615 x 240 / 18.5 x 24 x 9; Weight/DC disconnect: 64 kg (141 l) / 3.5 kg (8 lb); Operating temperature range: -25°C - + 45°C (-13 °F - +113°F); Noise emission (typical): 44dB (A); Internal consumption: 0.1 W; Topology: LF transformer, galvanic isolation; Cooling concept: OptiCool; Electronics protection rating / connection area (as per IEC 60529): NEMA 3R / NEMA 3R	1	Each

CONSTRUCTION SPECIFICATIONS

DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

00 31 00 AVAILABLE PROJECT INFORMATION

PART 1 - GENERAL

1.01 SUBMISSION DATE SCHEDULE

A.	Schematic Design Phase	April 19, 2012
B.	Design Development Phase	October 11, 2012
C.	Construction Documentation Phase	February 14, 2012
D.	As Built Phase	September 2013
E.	Competition Phase	October 3 – 13, 2013
F.	Final Report	November 14, 2013

1.02 CONSTRUCTION SCHEDULE

A.	Construction in the Czech Republic	May – June 2013
B.	Construction in the USA	September – October 2013

PART 2 - PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION 00 31 00

DIVISION 01 GENERAL REQUIREMENTS

01 00 00 SUMMARY

PART 1 - GENERAL

1.01 SUMMARY

A. Project: AIR House, Team Czech Republic, Solar Decathlon 2013

B. Owner: Czech Technical University in Prague

C. Architect: Czech Technical University Solar Decathlon Team

D. Construction location

1. Thákurova 9, Prague 6, 166 34, Czech Republic

2. Orange County Great Park, Irvine, California, USA

E. Project Description: AIR House consists of a minimal house, exterior deck and a canopy shown in the referenced drawings and specifications. The house is a massive wood panel construction divided into one technological box and four modular parts that can be separated for transport and then reassembled again.

1.02 WORK RESTRICTIONS

A. Contractor's Use of Site:

1. The contractor will have full use of the area indicated during the whole construction process. Contractor's use of site is limited by Owner's right to employ other contractors on portions of the Project or perform work independently.

B. Driveways, Walkways, and Entrances:

1. Driveways and entrances to the site must be kept clear and available to Owner, Owner's employees, and emergency vehicles at all times.

2. Do not use driveways and entrances for parking or storage of materials.

C. Smoking and alcohol restrictions:

1. Smoking on construction site is strictly prohibited.

2. Alcohol consumption on site is strictly prohibited. People under the influence of alcohol are prohibited to enter the site.

D. Health and safety plan

1. Work must proceed in accordance with the Solar Decathlon Health and Safety Plan.

1.03 SITE ACCESS

A. Authorized access

1. Authorized construction personnel, subcontractors, and the CTU Solar Decathlon team members and faculty advisors are allowed to enter the site during the construction period.

2. All people not listed above are allowed to access the site only with special permit from CTU Solar Decathlon team member or staff.

B. Unauthorized access

1. Any person entering the site without authorization shall be asked politely to leave the site immediately. Refusing leads to immediate contact of local Police department by owner or contractor.

2. All criminal entry must be immediately reported to the police department and, insurance company must be informed.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 10 00

01 25 00 SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all requirements for products' substitution.

1.02 SUBSTITUTION REQUIREMENTS

A. Substitution options – substitutions are discouraged except under these conditions:

1. Specified item is no longer available on the market.
2. Specified item is not available on the local market.
3. Specified item is incompatible or incorrect.
4. Specified item can be replaced with cheaper, better or more modern item of similar function.

B. Visible Item Characteristics

1. Substitution of visible item must be approved by the architect. Item can be rejected for aesthetic purposes alone.

1.03 SUBMITTALS

A. Product substitution shall be documented by:

1. Product data
2. Shop drawings
3. Samples, if required
4. Certificates and manufacturers' instructions

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 25 00

01 33 00 SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUBMITTALS

A. Contractor must submit all shop drawings, product data, samples and other relevant documentation.

B. All documents must be submitted in reasonable time.

C. All parts of the documentation must be submitted in a minimum of 2 copies.

D. All submittals shall be documented. Documentation must include:

1. Date of submission
2. Project title
3. Name of:
   a. Contractor
   b. Subcontractor
   c. Client
   d. Manufacturer
   e. Supplier
4. Identification of section number, location (room number).

1.02 CONTRACTOR'S RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission

B. Verify:

1. Measurements
2. Construction criteria
3. Conformity with specifications and drawings
4. Dimensions and quantities

C. Coordinate each submittal with requirements of the work and of the contract documents.

D. At time of submission, notify the Architect/Engineer, in writing, , of any deviations in the submittals from the requirements of the contract documents.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 33 00

01 43 00 QUALITY ASSURANCE

PART 1 - GENERAL

1.01 GENERAL

A. Comply with applicable codes, regulations, ordinances and requirements of authorities. Submit copies of inspection reports to Construction Manager.

B. Deliver, handle, and store materials in strict accordance with manufacturer's instructions.

C. Use of any supplier or subcontractor is subject to Owners approval.

1.02 RESPONSIBILITIES

A. Architects and Engineer shall be responsible for material, system and equipment determination.

B. The contractor is obligated to inform the architect or engineer if any problem concerning quality of chosen item occurs.

1.03 SHOP DRAWINGS

A. All shop and producers' drawings must be revised by Engineers or Architects before being accepted as a part of project documentation.

1.04 ASSURANCE DOCUMENTS AND RECLAMATION

A. Contractor must submit assurance documentation of all products and construction works.

B. Minimum of 2 year assurance period is provided.

C. Specification of reclamation process shall be part of client's contract.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 43 00

01 45 00 QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes information about product quality control.

1.02 ADMINISTRATIVE REQUIREMENTS AND TESTING PROCEDURES

A. All testing required in contract documentation is arranged by the contractor.

B. Blower door test is arranged when required by client. Client pays for blower door test if not specified differently in the contract.

1.03 RESPONSIBILITIES

A. Workers responsible for quality control are appointed by the contractor, the Solar Decathlon team or the Solar Decathlon organizers.

1.04 ON SITE QUALITY CONTROL

A. Quality control on site is reviewed as followed:

1. Documents, shop drawings, codes, materials, procedures and workers qualification are reviewed by a qualified person.

2. Quality maintenance and proper installation are reviewed personally by a qualified person.

3. Quality tests are done when required after the contractor approves that the construction is ready for testing.

1.05 OBSERVATIONS

A. The contractor allows the Architect to supervise the construction development.

B. Control days on site are scheduled at least once a week.

C. Control day and time is specified at the beginning of the construction process. All relevant people must be notified at least 24 hours in advance, if the schedule is changed.

D. All important occurrences are to be listed in the construction diary.

E. When employees of more than one contractor are present on site, a work safety coordinator must be appointed.

1.06 COMPLETE WORK

A. The architect makes a final inspection before taking over the finished work.

B. All defects found during the final inspection will be repaired at the contractor's expense.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 45 00

01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes information about :

1. Temporary Generator - Electric Power: Available from a portable generator provided by the contractor. Provide connections and extensions of services as required for construction operations.
2. Temporary Crane
3. Temporary Scaffolding
4. Temporary Barricades
5. Sanitary facilities: Temporary toilets, wash facilities, and drinking-water fixtures must be provided, if no permanent facilities can be used. All facilities must be in compliance with regulations and health codes.
6. Lighting: Temporary lighting must be provided when construction works carry on after sunset.

1.02 REFERENCES

A. NPS noise regulation 36CFR2.12, NCCCO

B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Schedule for crane operation times:

1. Construction: 40 hours from 7 a.m. to 11 a.m. and from 1 p.m. to 5 p.m.
2. Deconstruction: 30 hours from 7 a.m. to 11 a.m. and from 1 p.m. to 5 p.m.

1.04 SUBMITTALS

A. Product data

1.05 HANDLING

A. The operation of generators and cranes must be in compatibility with owners and manufacturer's directions.

B. Cranes must be controlled by certified personnel.

C. Scaffolding must follow normatively specified standards and be used in accordance with Health and safety plan.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Generators:

1. EU 6500iS Watt 120 Honda Generator

a) 120/240V 6500W max. (54.1/27.1A) 5500W rated (45.8/22.9A)

b) Full GFCI Protection

c) Noise Level: 60 dB(A) @ rated load, 52 dB(A) @ 1/4 load

B. Crane

1. LIEBHERR LTM 1050-3.1

a) Max. lifting capacity: 50 t at 3 m radius (110,200 lbs at 10 ft)

b) Telescopic boom: 11.3 m - 38 m (37 ft - 125 ft)

c) Lattice jib: 9 m - 16 m (30 ft - 52 ft)

d) Calculus of radius a weight: 10 tons at 12 m (21600 lbs at 40 ft)

2. GROVE TMS870

a) Max. lifting capacity: 140000 lb 63502.9 kg

b) Min Working Radius 10 ft in 3 m; Max Working Radius 100 ft in 30.5 m

c) Min Height @ Max Raise Angle 36 ft in 11 m; Max Height @ Max Raise Angle - no jib 118 ft in 36 m

d) Calculus of radius a weight: 8,5 tons at 12 m (18740 lbs at 40 ft)

C. Scaffolding

1. Harsco Infrastructure

a) Quick Erect System Scaffold

D. Barricades

1. Inline Barricades & METAL PRODUCTS, INC.

a) Barricade Model In-312

E. Sanitary Facilities

1. All this facilities will be used in Orange County Great Park, Irvine, California, USA.

F. Lighting

1. Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and tradic conditions.

PART 3 - EXECUTION

3.01 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

3.02 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion.

END OF SECTION 01 50 00

01 53 00 TEMPORARY FOUNDATION

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Temporary Building Foundations

2. Temporary Deck Foundations of terrace

PART 2 - PRODUCTS

2.01 BUILDING FOUNDATIONS

A. Building Footings

1. Fabricated by Quality Steel

PART 3 - EXECUTION

Not used

END OF SECTION 01 53 00

01 54 19 TEMPORARY CRANES

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. Structural Performance: Temporary cranes will withstand structural loads and lifts incurred in lifting, placing, and handling of all modular components.

B. Submittals: Product Data, and structural analysis data signed and sealed by a qualified professional engineer registered in the state where the project is located.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers

1. Liebherr International

2. Grove Crane

2.02 TEMPORARY CRANES

A. Type: 50 ton (110,200 lbs), Mobile Crane - LTM 1050-3.1

1. Max. lifting capacity: 50 t at 3 m radius (110,200 lbs at 10 ft)

2. Telescopic boom: 11.3 m - 38 m (37 ft - 125 ft)

3. Lattice jib: 9 m - 16 m (30 ft - 52 ft)

4. Crane Engine/Output: Liebherr 6-cylinder, turbo-Diesel, 270 kW

5. Drive/steering: 6 x 6 x 6

6. Travel speed: 80 km/h (50 mile/h)

7. Operational Weight: 36 ton (79,200 lbs)

8. Total Counterweight: 7 ton (15,400 lbs)

9. Calculus of radius a weight: 10 tons at 12 m (21600 lbs at 40 ft)

B. Type: 70 ton (154,300 lbs), Mobile Crane – Grove TMS870

1. Max. lifting capacity: 140000 lb 63502.9 kg

2. Min Height @ Max Raise Angle 36 ft in 11 m; Max Height @ Max Raise Angle - no jib 118 ft in 36 m

3. Min Working Radius 10 ft in 3 m; Max Working Radius 100 ft in 30.5 m

4. Crane Engine/Output: Make Cummins; Model MII 400E; Gross Power 399.6 hp - 298 kw

5. Travel speed: 88,5 km/h (55 mile/h)

6. Operational Weight: 41,3 ton (91,090 lbs)

7. Calculus of radius a weight: 8,5 tons at 12 m (18740 lbs at 40 ft)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Prepare ground by cleaning, removing projections, clearing obstructions, and cordoning off safe working zone, and as otherwise recommended in temporary crane manufacturer's written instructions.

B. Ground crane securely in place, per operational specifications.

C. Allow only licensed operators to operate machinery, manage lifts, and issue signals and commands.

D. Ensure placement of modular components complies with foundational spacing and load requirements.

E. Coordinate operations with structural requirements per specifications of structural engineer and crane operator.

F. Correct deficiencies in or remove and reinstall temporary cranes that do not comply with requirements.

END OF SECTION 01 54 19

01 54 23 TEMPORARY SCAFFOLDING AND PLATFORMS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Structural Performance: Design, engineer, fabricate, and install staging aids and fall protection equipment to withstand structural loads required by OSHA and ANSI Z359.1 standards.

B. Submittals: Product Data. Structural analysis data signed and sealed by a qualified professional engineer registered in the state where Project is located.

C. Structural and Accessory Components shall conform to the following Standards:

1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2. Steel Tubing: Cold-formed steel tubing, ASTM A 500.

3. Aluminum Extrusions: ASTM B 221.

PART 2 - PRODUCTS

2.01 FALL PROTECTION EQUIPMENT – STANDING SEAM ROOF

A. Manufacturers

1. Guardian Fall Protection

B. Models

1. Standing Seam Roof Clamp, Model# 00250

C. Operation

1. Portable and reusable anchor for use on standing seam roofs

2. Seam spacing range: 24” – 36”

3. Retractable Rotation: 360 degrees

4. Self-retracting lifeline adaptable

5. Meets or exceeds all applicable industry standards, including OSHA and ANSI Z359.1.

2.02 FALL PROTECTION EQUIPMENT - THERMOPLASTIC POLYOLEFIN ROOF

A. Manufacturers

1. Guardian Fall Protection

B. Models

1. CB-12 Roof Anchor, Model# 00485

C. Operation

1. Deck mounted anchor post

2. Load rating: 5000 lbs

3. Base and mount plates flashed into TPO membrane per manufacturer specifications.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Prepare substrate by cleaning, removing projections, filling voids, sealing joints, and as otherwise recommended in fall protection and deck eye manufacturer's written instructions.

B. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place, for permanent installation or duration of use.

C. Fasten fall protection securely in place, with provisions for thermal and structural movement.

D. Correct deficiencies in or remove and reinstall fall protection anchors that do not comply with requirements.

E. Repair, refinish, or replace fall protection anchors and deck eyes damaged during installation, as directed by Architect.

END OF SECTION 01 54 23

01 60 00 PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 GENERAL PRODUCT REQUIREMENTS

A. Product shall correspond with European and US norms and requirements.

1.02 SUSTAINABILITY REQUIREMENTS

A. Products with low LCA impacts are preferred.

B. Local products shall be preferred. *(This condition does not apply to competition prototype, as it will be first constructed in the Czech Republic. Czech products will be considered as local during competition in US)*

C. Product selection must minimize the energetic need of the building.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 60 00

01 65 00 PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL DELIVERY REQUIREMENTS

A. Products must be delivered in original undamaged package.

B. Delivery must be received by an authorized person.

C. Deliveries have to be documented in the construction diary. This condition does not apply to free standing furniture and accessories.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 65 00

01 66 00 PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL STORAGE AND HANDLING REQUIREMENTS

A. Follow manufacturers' requirements for handling and storing.

B. Products must be stored in dry, ventilated space, if not specified differently in the product documentation.

C. Product and construction parts must be secured against unauthorized manipulation on the construction site.

1.02 STORAGE AND HANDLING REQUIREMENTS FOR SHIPPING

A. All products and construction parts must be ensured against spontaneous movement and other devaluation in the shipping container.

B. Insurance must be arranged before shipping products or relocating building parts.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 66 00

DIVISION 02 EXISTING CONDITIONS

02 43 00 STRUCTURE MOVING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all information necessary for the transportation of the AIR House from the Czech Republic to the USA and back.

1.02 TRANSPORTATION REQUIREMENTS

A. All building parts are to be fitted into 40´ Container.

1. Interior dimension (mm): L: 12,030, W: 2,350, H: 2,690
2. Door opening (mm): W: 2,340, H: 2,579
3. Cubic capacity: 76.0 cbm. = 2,714 cu. ft.
4. Max Pay Load (kg): 28,570

B. Technological module is to be fitted into 40´Flat Rack Container

1. Interior dimension (mm): L: 12,080, W: 2,420, H: 2,103
2. Max Pay Load (kg): 25,000

C. Containers are designed for train, marine, truck and crane manipulation.

D. The AIR House shall be transported using specified packing and securing methods.

E. All fragile components must be specially protected against devaluation.

F. Insurance must be arranged for all shipment.

1.03 SUBMITTALS

A. Site Operations and Transportation Plan Solar Decathlon 2013 include:

1. Trailer specifications
2. Route information
3. Delivery information and site operations.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01 QUALITY ASSURANCE

A. Intactness of all delivered products must be checked by an authorized person before being taken over.

3.02 DELIVERY, STORAGE & HANDLING

A. The exact time of delivery to Orange County Great Park in Irvine, California shall be coordinated with the team's and the organizer's schedule.

B. All components must be stored according to product specifications.

3.03 INSTALLATION

A. Assembly, disassembly, reassembly, packaging and shipping are carried out by designated individuals from the CTU or qualified contractors in accordance with the specified instructions.

END OF SECTION 02 43 00

DIVISION 05 METALS

05 05 23 METAL FASTENINGS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Construction and Shop Drawings

2. Structural analysis

1.02 MANUFACTURERS

A. Available at national hardware stores.

PART 2 - PRODUCTS

2.01 High-strength bolts, anchors, nuts, and washers.

2.02 Diameter, strength class, length, combination with washers and nuts is described in shop drawings.

PART 3 - PRODUCTS

3.01 Installation shall be done in compliance with related european standards and national codes.

3.02 Prescribed fasteners and their combinations or better have to be used.

END OF SECTION 05 05 23

05 12 00 STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and Shop Drawings
3. Structural analysis
4. European Standards and National Codes

1.02 MANUFACTURERS

A. All steel semi-finished, preprepared and finalized products:
AUGUR-kovo spol. s r.o.
ul. Škroupova 836
266 01 Beroun 3 - Závodí

PART 2 - PRODUCTS

2.01 STRUCTURAL STEEL FRAMING

A. Hot rolled rectangular tubes (in mm):

1. HTR 60/40/4 (RHS 60/40/4) – rectangular hollow section width/height/thickness
2. HTR 60/40/5 (RHS 60/40/5)
3. HTR 60/60/6 (RHS 60/60/6)
4. HTR 70/70/3,2 (RHS 70/70/3,2)

B. Hot rolled shaped profiles:

1. L 180/90/10
2. IPE 140
3. U100
4. U220
5. U 60/40/3
6. RC 88,9/10

7. RC 88,9/6
8. RC 88,9/8

C. Sheet plates

1. Thicknesses: 5, 6, 8, 10, 12, 15, 20, 25mm

D. Threaded rods:

1. M30 – diameter 30mm.
2. M42 – diameter 42mm.
3. M27 – diameter 27mm.

E. Steel bars for tension rod system:

1. Diameter 20mm.

F. High-Strength Bolts, Anchors, Nuts, and Washers.

PART 3 - EXECUTION

3.01 APPLICATION

A. Structural steel is used for substructure, steel canopy columns, 3D steel frame for mechanical engineering and ramps and railings.

B. Threaded rods are fitted with steel plates that create adjustable feet.

C. Three 2D welded frames of hot rolled profiles are used for substructure of timber building.

D. Hot rolled rectangular tubes are used for 3D steel frame for mechanical engineering.

E. Structural steel (plates) is used for detailing of timber frames.

3.02 ERECTION

A. Structural Steel frames are built to be transportable.

B. Heavy parts have to be transported with appropriate crane technology. All parts have to be connected to related structures before unrigging. All parts have to be connected to each other before assembly continuing.

C. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

D. Weld Connections: Comply with European standards for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

END OF SECTION 05 12 00

05 50 00 METAL FABRICATIONS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and Shop Drawings
3. Structural analysis
4. Standards and codes

PART 2 - PRODUCTS

2.01 METALS

A. Hot rolled rectangular tubes (in mm):

1. HTR 60/40/4 (RHS 60/40/4) – rectangular hollow section width/height/thickness
2. HTR 60/40/5 (RHS 60/40/5)
3. HTR 60/60/6 (RHS 60/60/6)
4. HTR 70/70/3,2 (RHS 70/70/3,2)

B. Hot rolled shaped profiles:

1. L 180/90/10
2. IPE 140
3. U100
4. U220
5. U 60/40/3

C. Sheet plates

1. Thicknesses: 5, 6, 8, 10, 12, 15, 20, 25mm

D. Threaded rods:

1. M30 – diameter 30mm.
2. M42 – diameter 42mm.

2.02 FABRICATION

A. All frames have to be fabricated according to shop drawings in greatest extent.

B. Welding: Weld corners and seams continuously. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. At exposed connections, finish welds and surfaces smooth with contour of welded surface matching those adjacent.

C. Fabricate steel girders for wood frame construction from continuous steel shapes of sizes indicated.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack.

B. Fit exposed connections accurately together to form hairline joints.

END OF SECTION 05 50 00

05 52 00 METAL RAILINGS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Product Data

B. Construction and Shop Drawings

C. Structural analysis

D. Standards and codes

PART 2 - PRODUCTS

2.01 RAILING SYSTEMS

A. Provide railings capable of withstanding a uniform load of 200 lbf/ ft. (0.73 kN/m) and a concentrated load of 200 lbf (0.89 kN) applied to handrails and top rails of guards in any direction. Uniform and concentrated loads need not be assumed to act concurrently.

B. Provide railing infill capable of withstanding a concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m). Infill load and other railing loads need not be assumed to act concurrently.

2.02 METALS

A. Products:

1. HTR 60/40/4 (RHS 60/40/4) – rectangular hollow section width/height/thickness

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.03 FABRICATION

A. Assemble railing systems in shop to the greatest extent possible. Use connections that maintain structural value of joined pieces.

B. Form changes in direction of railing members by use of prefabricated fittings.

C. Fabricate railing systems and handrails for connecting members with concealed mechanical fasteners and fittings.

PART 3 - EXECUTION

Not used

END OF SECTION 05 52 00

05 54 00 METAL FLOOR PLATES

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and Shop Drawings
3. Standards and codes

1.02 RELATED SECTIONS

A. 05 12 23 Structural steel for buildings

PART 2 - PRODUCTS

2.01 METALS

A. Zinc plated Steel Plates

2.02 PRODUCTS

A. Steel Plate A:

1. Width: 1430 mm
2. Thickness: 6 mm
3. Length: 820 mm
4. See specification in drawing.

B. Steel Plate B:

1. Width: 1430 mm
2. Thickness: 6 mm
3. Length: 580 mm
4. See specification in drawing.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Fix to the completed ramp by steel screws.

END OF SECTION 05 54 00

05 58 00 FORMED METAL FABRICATIONS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and Shop Drawings
3. Standards and codes

1.02 RELATED SECTIONS

A. 07 71 23 Gutters and downspouts

B. 07 46 00 Siding

PART 2 - PRODUCTS

2.01 METALS

A. Perforated metal sheets

B. Galvanized metal plates

2.02 PRODUCTS

A. Perforated metal sheets

1. Perforated metal sheet A
   a. Profile: L 25 x 145 x 1970 mm
   b. Quantity: 1 piece
   c. See placement in drawing.
2. Perforated metal sheet B
   a. Profile: L 25 x 145 x 1985 mm
   b. Quantity: 2 pieces
   c. See placement in drawing.
3. Perforated metal sheet C
   a. Profile: L 25 x 125 x 1945 mm

b. Quantity: 1 piece

c. See placement in drawing.

4. Perforated metal sheet D

a. Profile: U 18 x 80 x 1730 mm

b. Quantity: 1 piece

c. See placement in drawing.

5. Perforated metal sheet E

a. Profile: L 25 x 150 x 1700 mm

b. Quantity: 1 piece

c. See placement in drawing.

6. Perforated metal sheet F

a. Profile: L 30 x 130 x 1975 mm

b. Quantity: 1 piece

7. See placement in drawing.

8. Perforated metal sheet G

a. Profile: U 18 x 80 x 1730 mm

b. Quantity: 1 piece

c. See placement in drawing.

9. Perforated metal sheet H

a. Profile: U 18 x 80 x 2640 mm

b. Quantity: 1 piece

c. See placement in drawing.

10. Perforated metal sheet I

a. Profile: 120 x 1050 mm

b. Quantity: 1 piece

c. See placement in drawing.

B. Galvanized metal plates

1. Galvanized edging profile – straight profile

   a. Length: 2000 mm

   b. Plate thickness:1.5 mm

   c. Plate profile: see specifications in Drawings - Architecture detailing

2. Galvanized edging profine – corner profile

   a. L shaled: length 600 mm

   b. Plate thickness: 1.5 mm

   c. Plate profile: see specifications in Drawings - Architecture detailing

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perforated metal sheets

1. Fix to the lumber battens with screws according to drawing.

B. Galvanized metal plates

1. Fix to the OSB waterproof insulated roof edging profile.

2. Use screws based on manufacturer recommandation.

END OF SECTION 05 58 00

DIVISION 06 WOOD, PLASTICS, AND COMPOSITES

06 05 23 WOOD, PLASTIC AND COMPOSITE FASTENINGS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and shop drawings
3. Structural calculations

1.02 MANUFACTURERS

1. Screws:
   SFS intec AG
   Rosenbergsaustrasse 10
   CH-9435 Heerbrugg
   Switzerland

   HPM TEC, s.r.o.
   Herbenova 869/42
   693 01 Hustopeče
   The Czech Republic

   Rotho Blaas srl
   Via Dell'Adige N. 2/1
   I-39040, Cortaccia (BZ)
   Italy

2. Steel fittings:
   BOVA nail s.r.o.
   Za Nádražím 472
   262 72 Březnice
   The Czech Republic

PART 2 - PRODUCTS

2.01 SFS SCREWS:

A. fully threaded WR screws in different lengths and diameters

B. special WT-S screws for timber-steel-timber connections

C. double threaded WT –T screws in different lengths and diameters

2.02 HPM TEC SCREWS:

A. Variety of diameters and lengths of screws for timber-timber connections, timber – wood based board's connections, steel-steel conections.

2.03 ROTHOBLAAS SCREWS:

A. Variety of diameters and lengths of screws for steel-timber connections, timber – wood based board's connections.

2.04 BOVA CONNECTORS:

A. Steel angle brackets and perforated steel plates for timber joists and steel feet for terrace supports.

PART 3 - EXECUTION

3.01 INSTALATION, GENERAL

A. Follow general guidelines of manufacturer to place connector right.

B. Use appropriate machines and tools for drilling, hammering or other placement methods.

END OF SECTION 06 05 23

06 10 00 ROUGH CARPENTERY

PART 1 - GENERAL

1.01 SECTION SUMMARY

A. Section includes

1. Framing with lumber
2. Framing with engineered wood products
3. Heavy timber wall panels with engineered wood products
4. Structural substructure insulated panels with timber end engineered wood products
5. Structural floor panels with lumber and engineered wood products
6. Structural facade panels
7. Heavy timber roof panels with engineered wood products
8. Structural roof panels with engineered wood products (non-bearing and insulating function).
9. Wood sheathing

1.02 DEFINITION

A. Exterior framing: All parts of structure not concealed by other construction and those parts, which are partially concealed by upper elements (e.g. photovoltaic panels).

B. Dimension lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.

C. Timber: Lumber of 5 inches nominal (114 mm actual) or greater in least dimension.

D. Engineered wood products: Includes a range of derivative wood products which are manufactured by binding the strands, particles, fibres, planks or veneers of wood, together with adhesives or mechanical fasteners, to form composite materials or structural elements. These products are engineered to precise design specifications which are tested to meet national or international standards.

E. Wall sheathing: Exterior boards and planks placed on structural insulated or uninsulated.

PART 2 - PRODUCTS

2.01 LUMBER FRAMING (SEE 06 11 00)

2.02 GLUED LAMINATED TIMBER (SEE 06 11 13, 06 18 00)

2.03 WOOD I-JOISTS (SEE 06 11 13)

2.04 PREFABRICATED STRUCTURAL INSULATED PANELS (SEE 06 12 00)

2.05 CROSS LAMINATED TIMBER (SEE 06 13 00)

2.06 SOLID WOOD PRODUCTS (SEE 06 16 00)

PART 3 - EXECUTION

3.01 INSTALATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit roughcarpen try to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, and blocking similar supports to comply with requirements for attaching other construction.

B. Framing with Engineered Wood Products: Follow the instructions written in A. Install engineered wood products as written in manufacturer´s guidelines.

C. Structural wood panels: Select an appropriate lifting device for handling the wall, floor and roof panels. Follow the instructions written in A. Do not remove safety catch until the suspension stability of the panel at least temporarily is secured. For temporary stability use those products described in structural design and assembly instruction.

D. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions.

E. Do not splice structural members between supports unless otherwise indicated.

F. Do not cut, bore, notch, replace or remove any part of load-bearing structure without approval.

G. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members, where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

H. Otherwise indicated.

END OF SECTION 06 10 00

06 11 00 WOOD FRAMING

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and shop drawings
3. Structural calculations

B. Section includes:

1. Decking for terrace, ramps and walkways.
2. Battens for wall and roof prefabricated elements (see also 06 12 00).

PART 2 - PRODUCTS

2.01 LUMBER

A. Dimensional lumber:

1. Planed sawn lumber, maximal dimension is 114 mm (5 inches) in least dimension.
2. Maximum moisture content: 20% for exterior elements
   a. 12% for interior elements
3. Visually graded timber in S7 quality or better according to CSN 73 2824 (idt. to DIN 4074-1:2008) or C24 according to EN 338.
4. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics on exposed surfaces and edges that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
5. Materials:
   a. Battens in wall and roof: Northern spruce
   b. Terrace and ramps covering: European Larch
6. Grooved profiles 27/138mm are used for terrace, ramps and walkways decking.
7. Planed profiles 45/75mm for load bearing substructure are used.
8. Profiles for ventilated façade battens: 40/40mm.

9. Profiles for shading planks: 20/200mm.

B. Miscellaneous lumber

1. Used for wood blocking, nailers, gusset plates, temporary supports and similar.

2. Different profiles are used according to situation at site and according to prefabrication failures.

2.02 TIMBER

1. Planed sawn lumber, minimal dimension is 114 mm (5 inches).

2. Maximum moisture content: 20% for exterior elements

a. 12% for interior and built-in elements

3. Visually graded timber in S7 quality or better according to CSN 73 2824 (idt. to DIN 4074-1:2008) or C24 according to EN 338.

4. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics on exposed surfaces and edges that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

5. Materials:

a. Floor supporting battens: Northern spruce

PART 3 - EXECUTION

3.01 INSTALLATION

A. All flush-framed connections shall be made with approved galvanized steel or stainless steel joist or beam hangers, installed according to manufacturer's recommendations and structural calculation.

B. Battens should be connected to substructure according to structural calculations with recommended connectors.

C. Moisture content of lumber and timber has to correspond to its position in structure and should be checked before building-in.

D. No element shall be cut, bored or notched without approval from structural engineer or authorized person.

END OF SECTION 06 11 00

06 11 13 ENGINEERED WOOD PRODUCTS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data

2. Construction and shop drawings

3. Structural calculations

B. Section includes:

1. Framing with engineered wood products

2. Structural roof panels with engineered wood products

1.02 MANUFACTURERS

1. Cross laminated timber – massive timber panels:

STORA ENSO Wood Products Ždírec s.r.o.
Nádražní 66
582 63 Ždírec n.D.
The Czech Republic
Tel: +420 569 776 611

Stora Enso Wood Products Planá s.r.o.
Tachovská 824
348 15 Planá
The Czech Republic
Tel: +420 374 707 700

2. Glued laminated timber, KVH profiles:

HRANEX s.r.o.
Bílčice 105
793 68 Dvorce
The Czech Republic
Tel: +420 554 719 219

PART 2 - EXECUTION

2.01 STRUCTURAL GLUED LAMINATED TIMBER

A. This group contains all glued laminated timber products such KVH profiles, glulam beams.

B. For glued laminated timber - strength class GL24h or higher according to EN 1194 shall be used for load bearing members of canopy and interior beams.

C. For KVH beams - visually graded timber in S7 quality or better according to CSN 73 2824 (idt. to DIN 4074-1:2008) should be used. Final product is in strength class C24 or better according to EN 338.

D. Used Glulam profiles for exterior not concealed canopy frame are 100 x 400 mm and 100 x 420mm for canopy beam foundations.

E. Used profile for interior frame is 220 x 420 mm for a beam.

F. Used KVH profiles for load bearing framings floor panels are (in mm): 60/240.

G. Used KVH profiles for load bearing framings of roof panels are (in mm): 60/240.

H. Used KVH profiles for non-load bearing framings of roof panels are (in mm): 60/60; 60/80; 60/100 and 60/120.

I. Used KVH profiles for load bearing framings of hinged facade panels are (in mm): 40/220; 60/160.

J. Used KVH profiles for non-load bearing framings of hinged facade panels are (in mm): 60/60.

K. Used KVH profiles for load bearing framings of shading panels are (in mm): 60/120; 60/160; 60/240.

L. Used KVH profiles for non-load bearing framings of shading panels are (in mm): 40/220; 40/240.

M. Adhesives TYPE 1 according to EN 301 has to be used for glulam used in exterior conditions. For interior framing, adhesives TYPE 2 according to EN 301 are allowed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All flush-framed connections shall be made with approved galvanized steel or stainless steel joist or beam hangers, installed according to manufacturer's recommendations and structural calculation.

B. Canopy will be installed not before whole base structure will be done with all anchoring to ground and whole building will be assembled with full connection. Assembly of canopy will be held according to installation manual.

C. Installation of interior beam will be done by appropriate lifting device, not before supporting walls will be fully anchored to base structure. Interior columns will be placed to their positions at last.

D. No element shall be cut, bored or notched without approval from structural engineer or authorized person.

END OF SECTION 06 11 13

06 12 00 STRUCTURAL PANELS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and shop drawings
3. Structural calculations

B. Section includes:

1. Structural substructure insulated panels with timber and engineered wood products
2. Structural floor panels with lumber and engineered wood products
3. Hinged structural insulated facade panels.
4. Structural roof panels with engineered wood products (non-bearing and insulating function).

1.02 MANUFACTURERS

A. **DŘEVOSTAVBY BISKUP, s.r.o.**
Pražská 1163
252 10 Mníšek pod Brdy
The Czech Republic
Tel: +420 316 695 122
Fax: +420 316 695 177

B. **VESPERFRAMES, s.r.o.**
Julia Fučíka 97/101
795 01 Rýmařov
The Czech Republic
Tel: +420 595 172 552
Fax: +420 554 219 080

PART 2 - PRODUCTS

2.01 STRUCTURAL SUBSTRUCTURE INSULATED PANELS WITH TIMBER AND ENGINEERED WOOD PRODUCTS

A. Prefabricated structural roof panel is a sandwich panel made by manufacturers in conditioned production shops. Peripheral frame is made of glued laminated timber or KVH beams (see 06 11 13). Ribs are made of solid wood planks and battens (see 06 10 00); one-sided sheathing is made of solid wood panels (see 06 16 00). Dimensions of all parts correspond with structural calculation and shop drawings. Space between ribs is fulfilled with flexible wood fibre insulation (see 07 21 13.16). Under the insulated structural panel is bonded special hard board thermal insulation made of wood fibres.

B. Panel resistance will be proven by structural calculation – it is a bearing element loaded by self-weight, impact loads, and lateral forces from wind and seismicity.

C. Ribs are connected to sheathing with mechanical fasteners (screws, nails or staples).

D. Flexible insulation is placed freely between ribs with neither sheathing nor ribs connection.

E. Board insulation is connected to wood elements by mechanical or adhesive connections systems.

2.02 STRUCTURAL FLOOR PANELS WITH LUMBER AND ENGINEERED WOOD PRODUCTS

A. Prefabricated structural roof panel is a sandwich panel made by manufacturers in conditioned production shops. Ribs are made of solid wood planks and battens (see 06 10 00); one-sided sheathing is made of solid wood panels or wood based boards (see 06 16 00). Dimensions of all parts correspond with structural calculation and shop drawings. Space between ribs is fulfilled with flexible wood fibre insulation.

B. Panel resistance will be proven by structural calculation – it is a non-bearing element loaded by self-weight and impact loads.

C. Ribs are connected to sheathing with mechanical fasteners (screws, nails or staples).

2.03 HINGED STRUCTURAL INSULATED FACADE PANELS

A. Prefabricated structural facade panel is a sandwich panel made by manufacturers in conditioned production shops. Ribs are made of KVH profiles (see 06 11 13); one-side sheathing is made of DHF boards (see 06 16 00). Inner sheathing is made of thin OSB board and is used just for insulation covering. Space between webs is fulfilled with flexible wood fibre insulation (see 07 21 13.16).

B. Ribs are locally stiffened with wood fibre board gussets or another KVH profiles where necessary.

C. Panel resistance will be proven by structural calculation – it is a non-bearing element, loaded by self-weight, wind pressure and suction.

D. Ribs are connected to sheathing with mechanical fasteners (screws, nails or staples).

E. Insulation is placed freely between ribs with neither sheathing nor ribs connection.

2.04 STRUCTURAL ROOF PANELS WITH ENGINEERED WOOD PRODUCTS

A. Prefabricated structural roof panel is a sandwich panel made by manufacturers in conditioned production shops. Ribs are made of KVH profiles (see 06 11 13); inside sheathing is made of OSB board and outside sheathing is made of DHF boards (see 06 16 00). Space between ribs is fulfilled with flexible wood fibre insulation (see 07 21 13.16). Ventilated cavity is made of KVH profiles and OSB sheathing.

B. Ribs are locally stiffened with wood fibre board gussets or another KVH profiles where necessary.

C. Panel resistance will be proven by structural calculation – it is a non-bearing element, loaded by self-weight, wind pressure and suction and alternatively by snow loads.

D. Ribs are connected to sheathing with mechanical fasteners (screws, nails or staples).

E. Insulation is placed freely between ribs with neither sheathing nor ribs connection.

F. Sheathing hard wood fibreboard is bearing thermal insulation.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation of roof panels will be done by appropriate lifting devices, not before supporting walls and interior timber frame will be fully anchored to substructure.

B. No element shall be cut, bored, notched or modified without approval from structural engineer or authorized person.

3.02 PROTECTION

A. Protect installed product and finish surfaces from damage during construction.

B. Protect roof panels from weather at all times. Provide temporary protection at the end of the day or when rain or snow is imminent.

C. After installation, cover panels to prevent contact with water on each exposed edges and faces.

END OF SECTION 06 12 00

06 13 00 HEAVY TIMBER CONSTRUCTION

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and shop drawings
3. Structural calculations

B. Section includes:

1. Heavy timber wall panels with engineered wood products

PART 2 - PRODUCTS

2.01 CROSS LAMINATED TIMBER (CLT)

A. Cross-laminated timber (CLT) is produced from spruce planks that are stacked crosswise on top of each other and glued to each other with high pressing power to form large-format solid timber elements. Further product designations for cross-laminated timber are KLH solid timber boards, glued laminated timber, X-Lam, CLT (cross-laminated timber) or glulam. The crossways arrangement of the longitudinal and crosswise laminates reduces the swelling and shrinkage in the board plane to an insignificant minimum and static strength and shape retention increase considerably.

B. In order to rule out any damaging pest, fungus and insect attacks, in compliance with the European Technical Approval, only technically dried wood with a wood moisture of 12 % (+/-2 %) shall be used to produce solid cross-laminated timber boards. Any timber laminates shall be subjected to quality control before their use.

C. Living space quality boards are either glued laminated block-boards at customary widths of 1.25 m or glued finger-jointed laminates of AB quality. As a standard, the face side of this board is in living space quality, where is prescribed.

D. All holes, cuttings, notches, grooves and edge profiles are done by CNC cutting machine according to shop documentation.

E. CLT panels are produced in manufacturer´s factory in large formats appropriate to transport limitations.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation of wall panels will be done by appropriate lifting device, not before installing of all substructure components.

B. No element shall be cut, bored or notched without approval.

3.02 PROTECTION

A. Protect installed product and finish surfaces from damage during construction.

B. Protect floor panels from weather at all times. Provide temporary protection at the end of the day or when rain or snow is imminent.

C. After installation, cover panels to prevent contact with water on each exposed edges and faces.

END OF SECTION 06 13 00

06 16 00 SHEATHING

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and shop drawings
3. Structural calculations

B. Section includes:

1. Sheathing for substructure structural insulating panels – OSB boards
2. Sheathing for roof panels – DHF and OSB boards
3. Sheathing for prefabricated facades (CleverCover®) – DHF and OSB boards

1.02 MANUFACTURERS

A. **EGGER Holzwerkstoffe Wismar GmbH & Co. KG**
Am Haffeld 1
23970 Wismar
Deutschland
Tel: +49 5371 865-0

PART 2 - PRODUCTS

2.01 SHEATHING FOR SUBSTRUCTURE PANELS – OSB BOARDS (SWP)

A. OSB is hardboard with a three-layer structure of oriented distributed strands (micro-veneers) according to DIN EN 300. The special strand geometry (length up to 160 mm) has a high degree of strand orientation in the grain direction of the outer layer which assures outstanding technical characteristics and very good inherent stability. OSB boards for use in humid conditions are made with 100% formaldehyde-free adhesives. Do not use in exterior conditions (short-term outdoor exposure is possible).

B. Two layers of OSB/2 boards are used for inner sheathing of floor panels. Thicknesses are 25mm and 15mm. For outer sheathing, one layer of OSB/4 boards is used in thickness of 18mm.

C. Do not use OSB/2 in exterior conditions (short-term outdoor exposure is possible).

D. Formaldehyde classification: Class E1

E. Reaction to fire: D-s2, D0

2.02 SHEATHING FOR INSULATED PANELS – ORIENTED STRAND BOARDS (OSB)

A. OSB is a fl at hardboard with a three-layer structure of oriented distributed strands (micro-veneers) according to DIN EN 300. The special strand geometry (length up to 160 mm) has a high degree of strand orientation in the grain direction of the outer layer which assures outstanding technical characteristics and very good inherent stability. OSB boards for use in humid conditions are made with 100% formaldehyde-free adhesives. Do not use in exterior conditions (short-term outdoor exposure is possible).

B. OSB boards are used for sheathing of structural insulated floor, roof and hinged façade panels. They are an under layer for wood decking and final flooring materials.

C. Products and thicknesses:

1. OSB/2 25mm

2. OSB/3 6, 15, 18mm

3. OSB/4 18mm

2.03 Two layers of OSB/2 boards are used for inner sheathing of floor panels. Thicknesses are 25mm and 15mm. For outer sheathing, one layer of OSB/4 boards is used in thickness of 18mm. Interior sheathing of roof panels are made of OSB/3 18mm. Under layer for rood covering is made of OSB/4 18mm. Inner sheathing of hinged panels is made of 6mm OSB/3.

A. Do not use OSB/2 in exterior conditions (short-term outdoor exposure is possible).

B. Formaldehyde classification: Class E1

C. Reaction to fire: D-s2, D0

D. Large format boards are used in one piece and cut to requested dimensions where necessary. Boards are mechanically jointed (by self-tapping screws) to ribs of solid woods, KVH profiles and glued laminated timber.

E. Detailed information about material, production, manufacturing etc. is included in processing guidelines and wood construction planning manual.

2.04 SHEATHING FOR ROOF AND FACADE INSULATING PANELS – DHF BOARDS

A. DHF is a vapour-permeable and moisture-resistant glued wood fibreboard for the building trade intended for use as exterior roof and wall sheathing. The boards are fabricated in the drying process on a highly modern ContiRoll line according to building authority approval Z-9.1-454 and EN 622-5:2010. Sawdust and woodchips for fibre generation come from the production of sawn wood. A moisture-resistant, 100% formaldehyde free PU resin is used as the binding agent.

B. DHF boards are used for one-sided sheathing of prefabricated structural insulated panels used for hinged facade system and roof insulating elements where permeability is required.

C. Detailed information about material, production, manufacturing etc. is included in processing guidelines and wood construction planning manual.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation of solid wood panels will be done in manufactory. Those parts, which have to be placed in situ, will be in small size formats.

B. Small holes for e.g. electricity or low voltage wiring are allowed and will be drilled in manufactory according to shop drawings. These holes and openings can be also drilled in situ.

C. Consult hole or opening size and position with authorized person (structural engineer, project engineer or any trained person.

D. Do not remove or replace panels without approval.

E. Never remove mechanical fasteners without approval.

3.02 PROTECTION, TRANSPORT AND STORAGE

A. Protect installed product and finish surfaces from damage during construction.

B. Protect panels from weather at all times. Provide temporary protection at the end of the day or when rain or snow is imminent.

C. OSB boards store in a dry place, lying fl at on several squared timbers of uniform height - the maximum spacing between the squared timbers is 80 cm. The steel bands around the packages must be removed promptly upon reaching the fabricator. The boards should be installed under moisture conditions equivalent to their use. We expressly recommend a 48-hour acclimatisation period. The absorption of additional moisture, e.g. due to weather, is not recommended and must be prevented.

D. OSB boards are covered in cardboard as a package and secured with steel bands. Sanded tongue and groove boards are also packaged in stretch fi lm or with protective edges.

E. DHF boards store in a dry place, lying fl at on several squared timbers of uniform height, maximum distance between the squared timbers 80 cm. The steel bands around the packs should be removed promptly upon reaching the fabricator. The absorption of additional moisture in the packs, e.g. due to weather, should be prevented.

F. DHF boards are protected against transportation and moisture damage as a package with face cardboard and stretch fi lm as well as protective edges and steel bands.

END OF SECTION 06 16 00

06 17 53 SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and shop drawings
3. Structural calculations

B. Section includes:

1. Shop fabricated wood trusses for terrace and walkways load bearing structure.

1.02 MANUFACTURERS

A. **VAZNÍKY D.N.K. s.r.o.**
Komenského náměstí 141
674 01 Třebíč
The Czech Republic
Tel: +420 568 423 350

PART 2 - PRODUCTS

2.01 SHOP FABRICATED WOOD TRUSSES – "NAILPLATE TRUSSES"

A. Shop fabricated wood trusses (nailplate trusses) are used for load bearing structure of terrace and walkway.

B. All parts are made of solid wood planks (see 06 11 00).

C. All parts are connected together with punched metal plate fasteners (nailplates), (see 06 05 23).

D. Nailplates are punched on both sides.

E. Profiles used for trusses:

1. top and bottom chords 50/120mm
2. diagonals: 50/80mm

PART 3 - EXECUTION

3.01 INSTALLATION

A. Nailplate trusses are fully prefabricated in a factory with top chords overlaps.

B. Cut top chord´s overlaps according to in-situ dimensions.

C. All supports and related structures must be placed and fixed in their position before nailplate trusses execution.

D. Place each truss to its correct position.

E. Connect trusses to related structures.

F. No element shall be cut, bored or notched without approval from structural engineer or authorized person.

3.02 PROTECTION

A. Protect installed product and finish surfaces from damage during construction.

B. After installation, no extra protection is required; trusses are designed to external environment.

END OF SECTION 06 17 53

06 18 00 GLUED LAMINATED TIMBER

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals:

1. Product Data
2. Construction and shop drawings
3. Structural calculations

B. Section includes:

1. Framing with engineered wood products
2. Structural roof panels with engineered wood products

1.02 MANUFACTURERS

A. Glued laminated timber, KVH:

1. **STORA ENSO Wood Products Ždírec s.r.o.**

   Nádražní 66
   582 63 Ždírec n.D.
   The Czech Republic
   Tel: +420 569 776 611
   Fax: +420 569 776 690

2. **Stora Enso Wood Products Planá s.r.o.**

   Tachovská 824
   348 15 Planá
   The Czech Republic
   Tel: +420 374 707 700
   Fax: +420 374 707 790

B. Glued laminated timber, KVH profiles:

1. **HRANEX s.r.o.**

   Bílčice 105
   793 68 Dvorce
   The Czech Republic
   TEL: +420 554 719 219

PART 2 - PRODUCTS

2.01 STRUCTURAL GLUED LAMINATED TIMBER

A. This group contains all glued laminated timber products such KVH profiles.

B. For glued laminated timber - strength class GL24h or higher according to EN 1194 shall be used for load bearing members of canopy and interior beams.

C. For KVH beams - visually graded timber in S7 quality or better according to CSN 73 2824 (idt. to DIN 4074-1:2008) should be used. Final product is in strength class C24 or better according to EN 338.

D. Used Glulam profiles for exterior not concealed canopy frame are 100 x 400 mm and 100 x 420mm for canopy beam foundations.

E. Used Glulam profiles for interior frame are 220 x 420 mm for a beam.

F. Used profile for interior frame is 220 x 420 mm for a beam.

G. Used KVH profiles for load bearing framings floor panels are (in mm): 60/240.

H. Used KVH profiles for load bearing framings of roof panels are (in mm): 60/240.

I. Used KVH profiles for non-load bearing framings of roof panels are (in mm): 60/60; 60/80; 60/100 and 60/120.

J. Used KVH profiles for load bearing framings of hinged facade panels are (in mm): 40/220; 60/160.

K. Used KVH profiles for non-load bearing framings of hinged facade panels are (in mm): 60/60.

L. Used KVH profiles for load bearing framings of shading panels are (in mm): 60/120; 60/160; 60/240.

M. Used KVH profiles for non-load bearing framings of shading panels are (in mm): 40/220; 40/240.

N. Adhesives TYPE 1 according to EN 301 have to be used for glulam used in exterior conditions. For interior framing, adhesives TYPE 2 according to EN 301 are allowed.

PART 3 - PRODUCTS

3.01 INSTALLATION

A. All flush-framed connections shall be made with approved galvanized steel or stainless steel joist or beam hangers, installed according to manufacturer's recommendations and structural calculation.

B. Canopy will be installed not before whole base structure will be done with all anchoring to ground and whole building will be assembled with full connection. Assembly of canopy will be held according to installation manual.

C. Installation of interior beam will be done by appropriate lifting device, not before supporting walls will be fully anchored to base structure. Interior columns will be placed to their positions at last.

D. No element shall be cut, bored or notched without approval from structural engineer or authorized person.

END OF SECTION 06 18 00

DIVISION 6: ATTACHEMENTS

Deutsches Institut für Bautechnik DIBt

Allgemeine bauaufsichtliche Zulassung

Zulassungsstelle für Bauprodukte und Bauarten

Bautechnisches Prüfamt

Eine vom Bund und den Ländern
gemeinsam getragene Anstalt des öffentlichen Rechts

Mitglied der EOTA, der UEAtc und der WFTAO

Datum: 13.01.2012

Geschäftszeichen: I 53-1.9.1-6/11

Zulassungsnummer:
Z-9.1-559

Geltungsdauer
vom: **13. Januar 2012**
bis: **13. Januar 2017**

Antragsteller:
Stora Enso Wood Products Oy Ltd
Lintulahdenkuja 10
00500 HELSINKI
FINNLAND

Zulassungsgegenstand:
CLT - Cross Laminated Timber

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.
Diese allgemeine bauaufsichtliche Zulassung umfasst elf Seiten und eine Anlage.
Diese allgemeine bauaufsichtliche Zulassung ersetzt die allgemeine bauaufsichtliche Zulassung Nr. Z-9.1-559 vom 5. Februar 2008. Der Gegenstand ist erstmals am 19. Februar 2007 allgemein bauaufsichtlich zugelassen worden.

Deutsches Institut für Bautechnik 33

DIBt

DIBt | Kolonnenstraße 30 B | D-10829 Berlin | Tel.: +49 30 78730-0 | Fax: +49 30 78730-320 | E-Mail: dibt@dibt.de | www.dibt.de

Deutsches Institut für Bautechnik DIBt

Allgemeine bauaufsichtliche Zulassung

Zulassungsstelle für Bauprodukte und Bauarten

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I ALLGEMEINE BESTIMMUNGEN

1 Mit der allgemeinen bauaufsichtlichen Zulassung ist die Verwendbarkeit bzw. Anwendbarkeit des Zulassungsgegenstandes im Sinne der Landesbauordnungen nachgewiesen.

2 Sofern in der allgemeinen bauaufsichtlichen Zulassung Anforderungen an die besondere Sachkunde und Erfahrung der mit der Herstellung von Bauprodukten und Bauarten betrauten Personen nach den § 17 Abs. 5 Musterbauordnung entsprechenden Länderregelungen gestellt werden, ist zu beachten, dass diese Sachkunde und Erfahrung auch durch gleichwertige Nachweise anderer Mitgliedstaaten der Europäischen Union belegt werden kann. Dies gilt ggf. auch für im Rahmen des Abkommens über den Europäischen Wirtschaftsraum (EWR) oder anderer bilateraler Abkommen vorgelegte gleichwertige Nachweise.

3 Die allgemeine bauaufsichtliche Zulassung ersetzt nicht die für die Durchführung von Bauvorhaben gesetzlich vorgeschriebenen Genehmigungen, Zustimmungen und Bescheinigungen.

4 Die allgemeine bauaufsichtliche Zulassung wird unbeschadet der Rechte Dritter, insbesondere privater Schutzrechte, erteilt.

5 Hersteller und Vertreiber des Zulassungsgegenstandes haben, unbeschadet weiter gehender Regelungen in den "Besonderen Bestimmungen", dem Verwender bzw. Anwender des Zulassungsgegenstandes Kopien der allgemeinen bauaufsichtlichen Zulassung zur Verfügung zu stellen und darauf hinzuweisen, dass die allgemeine bauaufsichtliche Zulassung an der Verwendungsstelle vorliegen muss. Auf Anforderung sind den beteiligten Behörden Kopien der allgemeinen bauaufsichtlichen Zulassung zur Verfügung zu stellen.

6 Die allgemeine bauaufsichtliche Zulassung darf nur vollständig vervielfältigt werden. Eine auszugsweise Veröffentlichung bedarf der Zustimmung des Deutschen Instituts für Bautechnik. Texte und Zeichnungen von Werbeschriften dürfen der allgemeinen bauaufsichtlichen Zulassung nicht widersprechen. Übersetzungen der allgemeinen bauaufsichtlichen Zulassung müssen den Hinweis "Vom Deutschen Institut für Bautechnik nicht geprüfte Übersetzung der deutschen Originalfassung" enthalten.

7 Die allgemeine bauaufsichtliche Zulassung wird widerruflich erteilt. Die Bestimmungen der allgemeinen bauaufsichtlichen Zulassung können nachträglich ergänzt und geändert werden, insbesondere, wenn neue technische Erkenntnisse dies erfordern.

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II BESONDERE BESTIMMUNGEN

1 Zulassungsgegenstand und Anwendungsbereich

1.1 Zulassungsgegenstand

"CLT - Cross Laminated Timber" sind 42 mm bis 500 mm dicke flächige Holzbauteile, die aus mindestens drei kreuzweise (rechtwinklig) miteinander verklebten Brettlagen hergestellt werden (siehe Anlage 1).

"CLT - Cross Laminated Timber" werden als Wand-, Decken-, Dach- und Sonderbauteile bis zu einer Breite von 3,00 m und einer Länge bis 16,5 m hergestellt.

1.2 Anwendungsbereich

"CLT - Cross Laminated Timber" dürfen als tragende oder aussteifende Bauteile für Holzbauwerke verwendet werden, die nach DIN 1052[1] oder nach DIN EN 1995-1-1[2] in Verbindung mit dem nationalen Anhang[3] bemessen und ausgeführt werden, sofern nachstehend nichts anderes bestimmt ist.

Die Anwendung darf nur in Bauwerken mit vorwiegend ruhenden Verkehrslasten gemäß DIN 1055-3[4] erfolgen.

Die Anwendung ist nur in den Nutzungsklassen 1 und 2 nach DIN 1052[1] zulässig. Bei der Anwendung von "CLT - Cross Laminated Timber" ist die Norm DIN 68800-2[5] zu beachten.

Die Anwendbarkeit der zitierten Normen zur Bemessung richtet sich nach den Technischen Baubestimmungen der Länder.

2 Bestimmungen für "CLT - Cross Laminated Timber"

2.1 Eigenschaften und Zusammensetzung

2.1.1 "CLT - Cross Laminated Timber"

"CLT - Cross Laminated Timber" müssen aus mindestens drei und dürfen aus höchstens 27 flächig miteinander verklebten Lagen aus einzelnen, nebeneinander liegenden Brettern aus Nadelholz gemäß DIN 4074-1[6] hergestellt werden.

Bei einem fünflagigen Aufbau dürfen bis zu zwei benachbarte Lagen, bei einem mehr als fünflagigen Aufbau bis zu drei benachbarte Lagen faserparallel miteinander verklebt werden, sofern ein über die Querschnittshöhe symmetrischer, gesperrter (kreuzweiser) Aufbau erhalten bleibt.

Die einzelnen und die mehrfach verklebten Lagen sind rechtwinklig zueinander bis zur erforderlichen Dicke des Bauteils miteinander zu verkleben.

Zwischen den Einzelbrettern einer Brettlage sind Fugen wie folgt zulässig:

- zwischen 10 % der Einzelbretter Fugen bis höchstens 2 mm,
- zwischen 3 % der Einzelbretter Fugen bis höchstens 4 mm.

1	DIN 1052:2008-12	Entwurf, Berechnung und Bemessung von Holzbauwerken
2	DIN EN 1995-1-1:2010-12	Bemessung und Konstruktion von Holzbauten; Teil 1-1: Allgemeines; Allgemeine Regeln und für den Hochbau
3	DIN EN 1995-1-/NA:2010-12	Nationaler Anhang – National festgelegte Paramater – Eurocode 5: Bemessung und Konstruktion von Holzbauten; Teil 1-1: Allgemeines - Allgemeine Regeln und Regeln für den Hochbau
4	DIN 1055-3:2006-03	Einwirkungen auf Tragwerke - Teil 3: Eigen- und Nutzlasten für Hochbauten
5	DIN 68800-2:1996-05	Holzschutz - Teil 2: Vorbeugende bauliche Maßnahmen im Hochbau
6	DIN 4074-1:2003-06	Sortierung von Holz nach der Tragfähigkeit; Nadelschnittholz

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Einzelne Lagen dürfen durch Furnierschichtholz, Mehrschichtplatten, OSB-Platten oder kunstharzgebundene Spanplatten ersetzt werden, deren Steifigkeits- und Festigkeitswerte in den technischen Regeln bzw. in allgemeinen bauaufsichtlichen Zulassungen geregelt sind. Dabei muss ein über den Querschnitt symmetrischer Aufbau erhalten bleiben.

Der Querschnitt muss symmetrisch aufgebaut sein. Abweichend davon dürfen z. B. bei entsprechenden Anforderungen an das Brandverhalten einseitig zusätzliche Brettlagen aufgebracht werden. Diese zusätzlichen Brettlagen dürfen beim Nachweis der Tragfähigkeit des Bauteils nicht angesetzt werden.

Die Rollschubfestigkeit zwischen den Brettlagen, geprüft nach Abschnitt 2.3.2, muss mindestens 1,25 N/mm² (5 %-Fraktilwert) für "CLT - Cross Laminated Timber" aus Fichte/Tanne und mindestens 1,50 N/mm² (5 %-Fraktilwert) für Elemente aus Kiefer betragen.

2.1.2 Anforderungen an das Holz

Die Einzelbretter der Brettlagen müssen mindestens der Sortier-/Festigkeitsklasse S 7/C16M nach DIN 4074-1[6] entsprechen.

Wird für eine Lage eine höhere Festigkeits-/Sortierklasse in Rechnung gestellt, müssen mindestens 90 % der Bretter dieser Lage der in Rechnung gestellten Festigkeits-/Sortierklasse entsprechen.

Die Einzelbretter der Brettlagen müssen mindestens 14 mm und dürfen höchstens 45 mm dick sein.

Die Breite der Einzelbretter muss zwischen 40 mm und 300 mm betragen. Einzelbretter mit Breiten unter 80 mm müssen an den Schmalseiten miteinander verklebt sein.

Die Einzelbretter der Querlagen müssen die Bedingung Brettbreite : Brettdicke ≥ 4 : 1 erfüllen, sofern sie nicht schmalseitenverklebt sind.

Die Einzelbretter der Lagen dürfen in Längsrichtung durch Keilzinkungen nach DIN 68140-1[7] miteinander verbunden sein. Stumpfstöße sind nicht zulässig.

2.1.3 Anforderungen an die Klebstoffe

Der für die Keilzinkung der Einzelbretter sowie für die Verklebung der Brettlagen zur Anwendung kommende Klebstoff muss die Anforderungen an den Klebstofftyp I nach DIN EN 301[8] basierend auf Prüfungen nach DIN EN 302-1 bis -4[9] nachweislich erfüllt haben und hinsichtlich der Gebrauchseigenschaften nach den in DIN EN 301[8] und DIN 68141[10] geforderten Prüfungen bei einer anerkannten Prüfstelle geprüft worden sein. Alternativ darf ein Klebstofftyp I mit einer allgemeinen bauaufsichtlichen Zulassung für diesen Verwendungszweck eingesetzt werden.

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7	DIN 68140-1:1988-05	Keilzinkenverbindungen von Holz – Teil 1: Keilzinkenverbindungen von Nadelholz für tragende Bauteile i. V. m. DIN 68140-1 Berichtigung 1:1999-10
8	DIN EN 301:2006-09	Klebstoffe für tragende Holzbauteile - Phenoplaste und Aminoplaste - Klassifizierung und Leistungsanforderungen
9	DIN EN 302-1 bis -4	Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 1: Bestimmung der Längszugscherfestigkeit; Ausgabe 2004-10 Teil 2: Bestimmung der Delaminierungsbeständigkeit; Ausgabe 2004-10 Teil 3: Bestimmung des Einflusses von Säureschädigung der Holzfasern durch Temperatur- und Feuchtezyklen auf die Querzugfestigkeit; Ausgabe 2006-02 Teil 4: Bestimmung des Einflusses von Holzschwindung auf die Scherfestigkeit; Ausgabe 2004-10
10	DIN 68141:2008-01	Holzklebstoffe - Prüfung der Gebrauchseigenschaften von Klebstoffen für tragende Holzbauteile

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2.2 Herstellung, Kennzeichnung

2.2.1 Herstellung

Die Herstellung der "CLT - Cross Laminated Timber" muss nach den beim Deutschen Institut für Bautechnik hinterlegten Fertigungsdaten im Werk erfolgen.

Die Herstellwerke müssen im Besitz einer gültigen Bescheinigung über den Nachweis der Eignung zum Kleben dieser Bauart gemäß DIN 1052[1] sein.

2.2.2 Kennzeichnung

"CLT - Cross Laminated Timber" oder deren Lieferscheine müssen vom Hersteller mit dem Übereinstimmungszeichen (Ü-Zeichen) nach den Übereinstimmungszeichen-Verordnungen der Länder gekennzeichnet werden. Die Kennzeichnung darf nur erfolgen, wenn die Voraussetzungen nach Abschnitt 2.3 erfüllt sind.

Darüber hinaus sind "CLT - Cross Laminated Timber" bzw. deren Lieferscheine mit mindestens folgenden Angaben zu kennzeichnen:

- Bezeichnung des Zulassungsgegenstandes
- Nenndicke
- Herstellwerk

2.3 Übereinstimmungsnachweis

2.3.1 Allgemeines

Die Bestätigung der Übereinstimmung der "CLT - Cross Laminated Timber" mit den Bestimmungen dieser allgemeinen bauaufsichtlichen Zulassung muss für jedes Herstellwerk mit einem Übereinstimmungszertifikat auf der Grundlage einer werkseigenen Produktionskontrolle und einer regelmäßigen Fremdüberwachung einschließlich einer Erstprüfung nach Maßgabe der folgenden Bestimmungen erfolgen.

Für die Erteilung des Übereinstimmungszertifikats und die Fremdüberwachung einschließlich der dabei durchzuführenden Produktprüfungen hat der Hersteller eine hierfür anerkannte Zertifizierungsstelle sowie eine hierfür anerkannte Überwachungsstelle einzuschalten.

Die Erklärung, dass ein Übereinstimmungszertifikat erteilt ist, hat der Hersteller durch Kennzeichnung der Bauprodukte mit dem Übereinstimmungszeichen (Ü-Zeichen) unter Hinweis auf den Verwendungszweck abzugeben.

Dem Deutschen Institut für Bautechnik ist von der Zertifizierungsstelle eine Kopie des von ihr erteilten Übereinstimmungszertifikats zur Kenntnis zu geben.

2.3.2 Werkseigene Produktionskontrolle

In jedem Herstellwerk ist eine werkseigene Produktionskontrolle einzurichten und durchzuführen. Unter werkseigener Produktionskontrolle wird die vom Hersteller vorzunehmende kontinuierliche Überwachung der Produktion verstanden, mit der dieser sicherstellt, dass die von ihm hergestellten Bauprodukte den Bestimmungen dieser allgemeinen bauaufsichtlichen Zulassung entsprechen.

Die werkseigene Produktionskontrolle soll mindestens die im Folgenden aufgeführten Maßnahmen einschließen:

- Beschreibung und Überprüfung der Ausgangsmaterialien und der Bestandteile
- Kontrollen und Prüfungen, die während der Herstellung durchzuführen sind
- Nachweise und Prüfungen, die am fertigen Bauprodukt durchzuführen sind

  (1) Ermittlung der Rollschubfestigkeit im Vierpunkt-Biegeversuch an einem Probekörper je Arbeitstag.

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(2) Die Bindefestigkeit der Verklebung ist im Delaminierungsversuch Methode B nach DIN EN 391[11] an je 3 Proben je Arbeitsschicht zu prüfen. Dazu sind an den beiden Außenseiten und in der Mitte der Kante quer zur Längsachse der Platte jeweils 300 mm breite und 75 mm lange Probekörper zu entnehmen. Im Ergebnis der Prüfung sind maximal 10 % Delaminierungen je Probekörper und maximal 40 % innerhalb einer Fuge zulässig. Werden mehr als 10 % Delaminierungen festgestellt, ist die Platte nochmals zu prüfen. Im zweiten Zyklus sind maximal 15 % Delaminierungen je Probekörper zulässig.
Alternativ zur Delaminierungsprüfung kann die Bindefestigkeit der Verklebung durch einen Aufstechversuch nach DIN 53255[12] nach einer Vorbehandlung der Proben gemäß DIN 68705-4[13] für den Plattentyp BST 100 erfolgen. Es sind je 3 Proben je Arbeitsschicht zu prüfen.
Alternativ kann die Scherfestigkeit an täglich mindestens 10 Scherproben im Blockscherversuch in Anlehnung an DIN 52187[14] geprüft werden. Der Mittelwert der Scherfestigkeit muss für 10 Proben mindestens 1,5 N/mm² betragen. Die charakteristische Scherfestigkeit, ermittelt aus den letzten 100 Scherwerten muss mindestens 1,25 N/mm² betragen. Kein Einzelwert darf den Wert 1,0 N/mm² unterschreiten.

(3) Die Qualität der Keilzinkenverbindung ist in Anlehnung an DIN 1052[1] an mindestens zwei Proben je Arbeitsschicht zu prüfen. Dabei müssen die Mindestanforderungen an die charakteristische Biegefestigkeit der Keilzinkenverbindung für Lamellen von BS-Holz nach DIN 1052[1], Anhang H, Tabelle H.1, eingehalten werden.
Alternativ kann die Qualität der Keilzinkenverbindungen durch die charakteristische Zugfestigkeit der Lamellenstöße nach DIN EN 408[15] (ermittelt in voller Breite mit einer astfreien Länge von 200 mm) nachgewiesen werden. Als Mindestanforderungen an die Keilzinkenfestigkeit gelten dabei die 70 % der Werte nach DIN 1052[1], Anhang H, Tabelle H.1.

Weitere Einzelheiten der Durchführung der werkseigenen Produktionskontrolle sind im Überwachungsvertrag zu regeln.

Die Ergebnisse der werkseigenen Produktionskontrolle sind aufzuzeichnen und auszuwerten. Die Aufzeichnungen müssen mindestens folgende Angaben enthalten:

- Bezeichnung des Bauprodukts bzw. des Ausgangsmaterials
- Art der Kontrolle oder Prüfung
- Datum der Herstellung und der Prüfung des Bauprodukts
- Ergebnis der Kontrollen und Prüfungen
- Unterschrift des für die werkseigene Produktionskontrolle Verantwortlichen

Die Aufzeichnungen sind mindestens fünf Jahre aufzubewahren und der für die Fremdüberwachung eingeschalteten Überwachungsstelle vorzulegen. Sie sind dem Deutschen Institut für Bautechnik und der zuständigen obersten Bauaufsichtsbehörde auf Verlangen vorzulegen.

Bei ungenügendem Prüfergebnis sind vom Hersteller unverzüglich die erforderlichen Maßnahmen zur Abstellung des Mangels zu treffen. Bauprodukte, die den Anforderungen nicht entsprechen, sind so zu handhaben, dass Verwechslungen mit übereinstimmenden ausgeschlossen werden. Nach Abstellung des Mangels ist - soweit technisch möglich und zum Nachweis der Mängelbeseitigung erforderlich - die betreffende Prüfung unverzüglich zu wiederholen.

Deutsches Institut für Bautechnik

11 DIN EN 391:2002-04 Brettschichtholz - Delaminierungsprüfung von Klebstofffugen
12 DIN 53255:1964-06 Prüfung von Holzleimen und Holzverleimungen; Bestimmung der Bindefestigkeit von Sperrholzleimungen (Furnier- und Tischlerplatten) im Zugversuch und im Aufstechversuch
13 DIN 68705-4:1981-12 Sperrholz; Bau-Stabsperrholz, Bau-Stäbchensperrholz
14 DIN 52187:1979:05 Prüfung von Holz; Bestimmung der Scherfestigkeit in Faserrichtung
15 DIN EN 408:2004-08 Holzbauwerke - Bauholz für tragende Zwecke und Brettschichtholz - Bestimmung einiger physikalischer und mechanischer Eigenschaften

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2.3.3 Fremdüberwachung

In jedem Herstellwerk ist die werkseigene Produktionskontrolle durch eine Fremdüberwachung regelmäßig zu überprüfen, mindestens jedoch zweimal jährlich.

Im Rahmen der Fremdüberwachung ist eine Erstprüfung durchzuführen, und es können auch Proben für Stichprobenprüfungen entnommen werden. Die Probenahme und Prüfungen obliegen jeweils der anerkannten Überwachungsstelle.

Bei der Fremdüberwachung ist die Verklebung entsprechend den Angaben im Abschnitt 2.3.2 sowie die Rollschubfestigkeit im Schubversuch an jeweils 6 Biegeproben zu prüfen.

Die Ergebnisse der Zertifizierung und Fremdüberwachung sind mindestens fünf Jahre aufzubewahren. Sie sind von der Zertifizierungsstelle bzw. der Überwachungsstelle dem Deutschen Institut für Bautechnik und der zuständigen obersten Bauaufsichtsbehörde auf Verlangen vorzulegen.

3 Bestimmungen für Entwurf und Bemessung

3.1 Allgemeines

Entwurf, Bemessung und Ausführung von Bauteilen aus "CLT - Cross Laminated Timber" muss nach DIN 1052[1] oder nach DIN EN 1995-1-1[2] in Verbindung mit dem Nationalen Anhang[3] erfolgen, soweit in dieser allgemeinen bauaufsichtlichen Zulassung nichts anderes bestimmt ist.

Diese allgemeine bauaufsichtliche Zulassung ersetzt nicht den statischen Nachweis in der jeweiligen Verwendung.

Die zur Verbesserung des Brandverhaltens der Bauteile einseitig zusätzlich zum symmetrischen Aufbau aufgebrachten Brettlagen (siehe Abschnitt 2.1.1.3) dürfen rechnerisch nicht angesetzt werden.

3.2 Bemessung

3.2.1 Beanspruchung rechtwinklig zur Bauteilebene (Plattenbeanspruchung)

Die Ermittlung der Spannungsverteilung und der Schnittgrößen eines "CLT - Cross Laminated Timber" rechtwinklig zur Bauteilebene hat nach der Verbundtheorie unter Berücksichtigung von Schubverformungen[16] zu erfolgen.

Beim Biegespannungsnachweis darf vereinfachend nur die Normalspannung der Bretter am Querschnittsrand nachgewiesen werden, der Nachweis der Schwerpunktspannung im Brett darf unberücksichtigt bleiben.

Beim Biegespannungsnachweis einer Lage aus Brettern darf die zulässige Biegespannung bzw. der Bemessungswert der Biegefestigkeit mit einem Systembeiwert k_ℓ multipliziert werden:

$$k_\ell = \min \begin{cases} 1 + 0,025 \cdot n \\ 1,1 \end{cases}$$

mit n = Anzahl der nebeneinander liegenden Bretter.

Die Erhöhung gilt nicht für Lagen aus Holzwerkstoffplatten.

16 siehe DIN 1052:2008-12, Anhang D

Bei der Bemessung nach DIN 1052[1] oder DIN EN 1995-1-1[2] mit NA[3] sind für die Einzelschichten die charakteristischen Festigkeits- und Steifigkeitskennwerte für Brettschichtholz aus Brettern der verwendeten Sortier-/Festigkeitsklasse anzusetzen. In Bezug auf den Querzugnachweis für in die Schmalseiten des "CLT - Cross Laminated Timber" eingedrehte Schrauben ist die charakteristische Querzugfestigkeit $f_{t,90,k}$ von Nadelvollholz anzusetzen. Bei Ermittlung der Festigkeiten und Steifigkeiten darf ein Anteil von bis zu 10 % Bretter der nächst niedrigeren Sortier-/Festigkeitsklasse unberücksichtigt bleiben (siehe Abschnitt 2.1.2.1).

Für die Querlagen aus Fichte/Tanne ist der charakteristische Wert der Rollschubfestigkeit $f_{v,k}$ = 1,25 N/mm² und ein Rollschubmodul von 50 N/mm² zu Grunde zu legen, für die Querlagen aus Kiefer beträgt der charakteristische Wert der Rollschubfestigkeit $f_{v,k}$ = 1,50 N/mm², der Rollschubmodul 60 N/mm².

Werden Brettlagen durch Mehrschichtplatten nach allgemeinen bauaufsichtlichen Zulassungen ersetzt, sind die einzelnen Lagen der Mehrschichtplatten wie Brettlagen zu behandeln und bei der Berechung der Spannungsverteilung und der Schnittgrößen entsprechend zu berücksichtigen. Dabei ist ein Rechenwert des Elastizitätsmoduls von 11.000 N/mm² anzunehmen. Der Spannungsnachweis in den einzelnen Lagen der Mehrschichtplatten ist am jeweiligen Querschnittsrand (Biegespannung) zu führen. Die charakteristische Biegefestigkeit ist mit 26 N/mm² anzunehmen.

Für Lagen, die aus Furnierschichtholz, OSB- oder kunstharzgebundenen Spanplatten bestehen, sind bei der Ermittlung der Spannungsverteilung und der Schnittgrößen die Rechenwerte der Elastizitätsmoduln bei Scheibenbeanspruchung (Zugbeanspruchung) nach DIN 1052[1] bzw. den allgemeinen bauaufsichtlichen Zulassungen zu verwenden. Der Spannungsnachweis ist sowohl am Querschnittsrand (Biegespannung bei Plattenbeanspruchung) als auch im Schwerpunkt (Zug/Druckspannung in Plattenebene) zu führen. Die charakteristischen Festigkeitswerte sind den allgemeinen bauaufsichtlichen Zulassungen bzw. DIN 1052[1] zu entnehmen.

3.2.2 Beanspruchung in Bauteilebene (Scheibenbeanspruchung)

Bei Beanspruchung in Bauteilebene dürfen nur diejenigen Lagen in Rechnung gestellt werden, deren Faserrichtung parallel zur betrachteten Kraftkomponente verläuft.

Werden Kräfte zwischen benachbarten Brettern einer Brettlage ausschließlich über die rechtwinklig dazu verklebten Bretter der benachbarten Brettlage übertragen, sind die in den Kreuzungsflächen entstehenden Torsionsschubspannungen wie folgt nachzuweisen:

$$\tau_{T,d} = \frac{F_d \cdot h}{\sum I_p} \cdot \frac{a}{2} \le f_{v,d}$$

mit

F_d = Bemessungswert der äußeren Horizontallast auf ein Wandelement (N)

h = Wandhöhe (mm)

a = größte Seitenlänge der Kreuzungsfläche (mm)

I_p = polares Flächenträgheitsmoment einer betrachteten Kreuzungsfläche i (mm⁴)

$\sum I_p$ = Summe der polaren Flächenträgheitsmomente aller Kreuzungsflächen eines Elementes

$f_{v,d}$ = Bemessungswert der Torsionsschubfestigkeit; als charakteristischer Wert zur Ermittlung des Bemessungswertes ist anzusetzen: fv,k = 2,5 N/mm² für Fichte/Tanne bzw. 3,0 N/mm² für Kiefer

Zusätzlich ist für diese Elemente nachzuweisen, dass die auf die einzelnen Bretter der Längs- und Querlagen entfallenden Schubkräfte aufgenommen werden können.

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Ein Zusammenwirken von Lagen aus "CLT - Cross Laminated Timber" und Ersatz-Lagen nach Abschnitt 2.1.1.2 darf bei Beanspruchung in Bauteilebene nicht in Rechnung gestellt werden. Die gesamte Beanspruchung muss entweder durch die Lagen nach Abschnitt 2.1.1.2 oder durch die Lagen aus "CLT - Cross Laminated Timber" aufgenommen werden können.

3.2.3 Verbindungsmittel

Die charakteristische Tragfähigkeit von Verbindungen mit mechanischen Verbindungsmitteln in "CLT - Cross Laminated Timber" ist nach DIN 1052[1] oder DIN EN 1995-1-1[2] mit NA[3] bzw. nach der für das jeweilige Verbindungsmittel erteilten allgemeinen bauaufsichtlichen Zulassung wie für Nadelholz bzw. für Brettschichtholz zu ermitteln.

Im Einzelnen gilt Folgendes:

1. Nagelverbindungen
   Der charakteristische Wert der Tragfähigkeit von Nägeln in den Flächen der Decklagen ist nach DIN 1052[1], Abschnitt 12.5, oder den entsprechenden Abschnitten von DIN EN 1995-1-1[2] in Verbindung mit dem NA[3] zu bestimmen.

   Die charakteristische Lochleibungsfestigkeit des nicht vorgebohrten "CLT - Cross Laminated Timber" mit Querlagen aus Fichte/Tanne darf dabei berechnet werden zu:

   $$f_{h,k} = 60 \cdot d^{-0,5} \text{ in N/mm}^2$$

   mit

   d = Nageldurchmesser in mm.

   Für "CLT - Cross Laminated Timber" mit Querlagen aus Kiefer beträgt der entsprechende Wert der Lochleibungsfestigkeit:

   $$f_{h,k} = 76 \cdot d^{-0,5} \text{ in N/mm}^2$$

   Die charakteristische Tragfähigkeit auf Herausziehen beanspruchter Nägel der Tragfähigkeitsklasse 3 in den Flächen der Decklagen ist nach DIN 1052[1], oder den entsprechenden Abschnitten von DIN EN 1995-1-1[2] in Verbindung mit dem NA[3] zu bestimmen.

   Maßgebend für die Mindestabstände der Nägel ist die Faserrichtung der Decklagen.

   Nägel in den Schmalflächen von "CLT - Cross Laminated Timber" mit Querlagen dürfen nicht als tragend in Rechnung gestellt werden.

2. Schraubverbindungen
   Der charakteristische Wert der Tragfähigkeit von Schrauben in den Flächen der Decklagen ist nach DIN 1052[1], Abschnitt 12.6, oder den entsprechenden Abschnitten von DIN EN 1995-1-1[2] in Verbindung mit dem NA[3] zu bestimmen.

   Die charakteristische Lochleibungsfestigkeit des nicht vorgebohrten "CLT - Cross Laminated Timber" mit Querlagen aus Fichte/Tanne darf dabei berechnet werden zu:

   $$f_{h,k} = 60 \cdot d^{-0,5} \text{ in N/mm}^2$$

   mit

   d = Gewindeaußendurchmesser in mm.

   Für "CLT - Cross Laminated Timber" aus Kiefer beträgt der entsprechende Wert der Lochleibungsfestigkeit:

   $$f_{h,k} = 76 \cdot d^{-0,5} \text{ in N/mm}^2$$

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Bei einer Bemessung von Schraubenverbindungen im Hirnholz der Schmalflächen beträgt die charakteristische Lochleibungsfestigkeit des nicht vorgebohrten "CLT - Cross Laminated Timber" aus Fichte/Tanne:

$$f_{h,k} = \frac{32 \cdot d^{-0,3}}{2,5 \cdot \cos^2 \varepsilon + \sin^2 \varepsilon} \text{ in N/mm}^2$$

mit

d = Gewindeaußendurchmesser in mm und

ε = Winkel zwischen Faserrichtung und Schraubenachse.

Für "CLT - Cross Laminated Timber" aus Kiefer beträgt der entsprechende Wert der Lochleibungsfestigkeit:

$$f_{h,k} = \frac{42 \cdot d^{-0,3}}{2,5 \cdot \cos^2 \varepsilon + \sin^2 \varepsilon} \text{ in N/mm}^2$$

Die charakteristische Tragfähigkeit auf Herausziehen beanspruchter Schrauben in den Flächen der Decklagen ist nach DIN 1052[1], Abschnitt 12.8.2, oder den entsprechenden Abschnitten von DIN EN 1995-1-1[2] in Verbindung mit dem NA[3] zu bestimmen.

Bei auf Herausziehen beanspruchten Schauben im Hirnholz der Schmalflächen ist bei der Bemessung der zugehörige Ausziehparameter $f_{1,k}$ um 25 % abzumindern.

Maßgebend für die Mindestabstände der Schrauben ist die Faserrichtung der Decklagen.

Ist die Lage von Schrauben in den Schmalflächen nicht eindeutig festgelegt (Fuge, Hirnholz, ..), so ist der ungünstigste Fall anzunehmen.

3. Einlassdübel
Der charakteristische Wert der Tragfähigkeit von Einlassdübeln ist nach DIN 1052[1] oder den entsprechenden Abschnitten von DIN EN 1995-1-1[2] in Verbindung mit dem NA[3] zu bestimmen und zwar:

- in den Flächen der Decklagen nach DIN 1052[1], Abschnitt 13.3.2, für $\alpha = 0°$ unabhängig vom Winkel zwischen Kraft- und Faserrichtung der Decklagen,
- in den Schmalflächen nach DIN 1052[1], Abschnitt 13.3.4 wie für Hirnholzdübelverbindungen.

4. Einpressdübel
Der charakteristische Wert der Tragfähigkeit von Einpressdübeln in den Flächen der Decklagen ist nach DIN 1052[1], Abschnitt 13.3.3, oder den entsprechenden Abschnitten von DIN EN 1995-1-1[2] in Verbindung mit dem NA[3] zu bestimmen.

Einpressdübel in den Schmalflächen von "CLT - Cross Laminated Timber" mit Querlagen dürfen nicht als tragend in Rechnung gestellt werden.

5. Stabdübel- oder Bolzenverbindungen
Der charakteristische Wert der Tragfähigkeit von Stabdübel- oder Bolzenverbindungen in den Flächen der Decklagen ist nach DIN 1052[1], Abschnitt 12.3, oder den entsprechenden Abschnitten von DIN EN 1995-1-1[2] in Verbindung mit dem NA[3] zu bestimmen. Maßgebend für die Berechnung der Lochleibungsfestigkeit ist die Faserrichtung der Decklagen. Die charakteristische Lochleibungsfestigkeit der "CLT - Cross Laminated Timber" mit Querlagen aus Fichte/ Tanne darf dabei berechnet werden zu:

$$f_{h,\alpha,k} = \frac{32 \cdot (1 - 0,015 \cdot d)}{1,1 \cdot \sin^2 \alpha + \cos^2 \alpha} \text{ in N/mm}^2$$

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mit

d = Verbindungsmitteldurchmesser in mm

α = Winkel zwischen Kraftrichtung und Faserrichtung der Decklagen.

Für "CLT - Cross Laminated Timber" mit Querlagen aus Kiefer beträgt der entsprechende Wert der Lochleibungsfestigkeit:

$$f_{h,\alpha,k} = \frac{42 \cdot (1 - 0{,}015 \cdot d)}{1{,}1 \cdot \sin^2 \alpha + \cos^2 \alpha} \text{ in N/mm}^2$$

Stabdübel und Bolzen in den Schmalflächen von "CLT - Cross Laminated Timber" mit Querlagen dürfen nicht als tragend in Rechnung gestellt werden.

3.3 Brand-, Feuchte-, Schall- und Wärmeschutz

Für die erforderlichen Nachweise zum Wärme-, Feuchte-, Schall- und Brandschutz gelten die für Vollholz hierfür erlassenen Vorschriften, Normen und Richtlinien.

Das Feuerwiderstandsverhalten von Bauteilen ist im Einzelfall gesondert nachzuweisen.

4 Bestimmungen für die Ausführung

Es gelten die Bestimmungen der DIN 1052[1] sofern im Folgenden nichts anderes bestimmt ist.

Als Verbindungsmittel dürfen nur Nägel, Holzschrauben, Bolzen, Stabdübel und Dübel besonderer Bauart gemäß DIN 1052[1] bzw. allgemeiner bauaufsichtlicher Zulassung unter Beachtung folgender Bedingungen verwendet werden.

- Die Nägel müssen einen Durchmesser von mindestens 4 mm haben. Auf Herausziehen beanspruchte Nägel (Sondernägel) müssen die Anforderungen der Tragfähigkeitsklasse III erfüllen.
- Auf Abscheren oder auf Herausziehen beanspruchte Holzschrauben in den Flächen der Decklagen müssen einen Nenndurchmesser von mindestens 6 mm, in den Schmalflächen von "CLT - Cross Laminated Timber" mit Querlagen von mindestens 8 mm haben.
- Die Mindestabstände für Stabdübel und Bolzen müssen vom beanspruchten Rand und untereinander jeweils 5 · d und vom unbeanspruchten Rand jeweils 3 · d betragen. Dies gilt unabhängig vom Winkel zwischen Kraft- und Faserrichtung.
- Einlassdübel gemäß DIN 1052[1] in den Schmalflächen sind zulässig.

Reiner Schäpel
Referatsleiter

Beglaubigt

Deutsches Institut für Bautechnik
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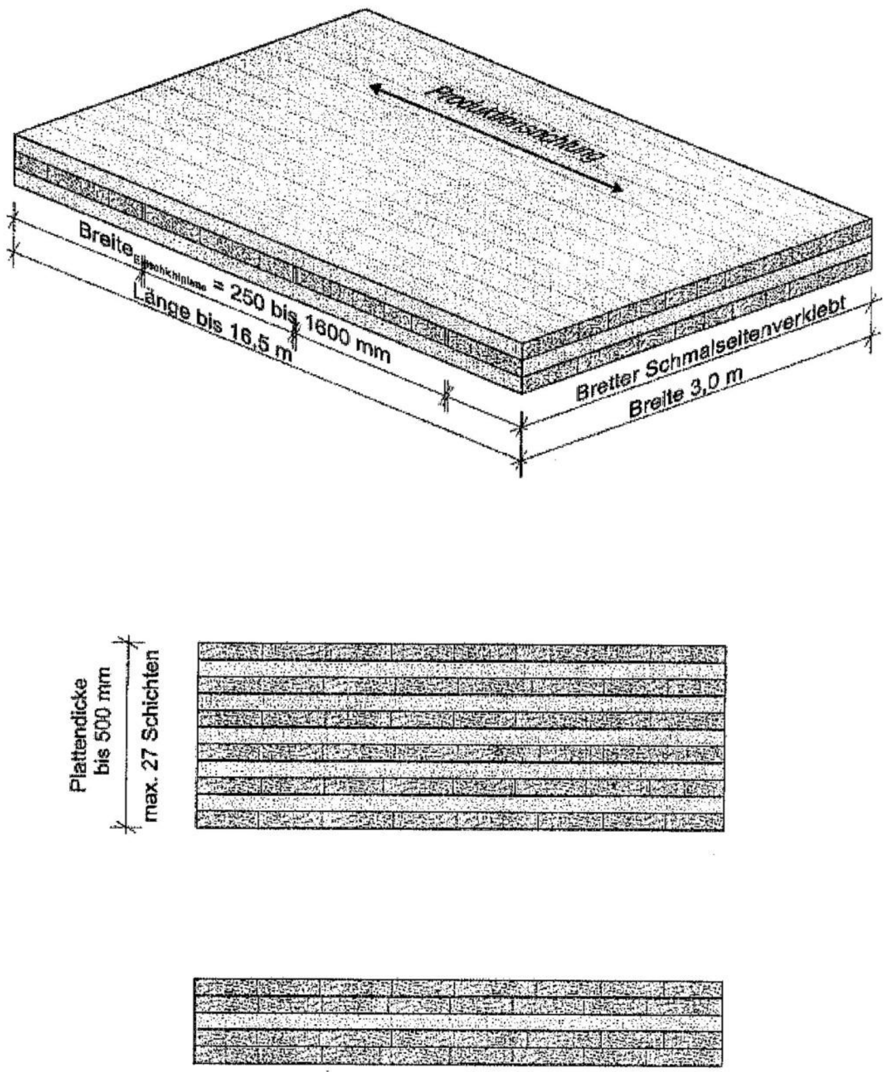
Allgemeine bauaufsichtliche Zulassung
Nr. Z-9.1-559 vom 13. Januar 2012

Deutsches Institut für Bautechnik DIBt



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CLT - Cross Laminated Timber

Aufbau des Elements

Anlage 1

Z70907.11 1.9.1-6/11

BUREAU VERITAS
Certification

BUREAU VERITAS 1828

Certification

Awarded to

Stora Enso Wood Products Planá s.r.o.

Head office and site: Planá, Tachovská 824, PSČ 34815
Czech Republic

Bureau Veritas certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of management system standard detailed below:

Standard

ISO 14001:2004

Scope of supply

PURCHASING OF RAW MATERIAL, PRODUCTION AND SALE OF LUMBER AND BY-PRODUCTS.

Original Approval Date: 7th FEBRUARY 2006

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: 21st DECEMBER 2014

To check this certificate validity please call: +420 210 088 215

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

Date: 24th OCTOBER 2011

Certificate Number: 11000410

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HOLZ CERT AUSTRIA

CERTIFICATE

Number: HCA-CoC-0031
Multi-Site

This certificate confirms that the procedure for the production or the trade of

Roundwood – Sawnwood – Profiled timber – Posts –
Finger jointed structural timber (KVH) – Duo and trio laminated beams –
Glulam – Cross laminated timber (CLT) – Scaffold boards – Battens –
Sawmill by products

produced or traded by

Stora Enso Wood Products Central European Unit

Central Office Stora Enso Wood Products GmbH, AT-3531 Brand 44

on sites in

Austria, Germany, Czech Republic

(Details to the locations are listed on the back side of the certificate)

has undergone an initial inspection, is subject to a continuous surveillance and complies with the requirements of the normative document

PEFC
PEFC/06-44-01

Chain of Custody

of Forest Based Products – Requirements in the relevant version
Annex 4 of the Technical Document of the PEFC Council

as long as the preconditions are fulfilled.

Applied method: Percentage based method

This certificate is valid until: 31.12.2013
Date of first issuance: 12.07.2002

Vienna, 21.09.2012

HOLZCERT AUSTRIA Akkreditierte Zertifizierungsstelle Produkte der Ö.G.H.

Dr. Michael Golser
Authorised Signatory

Dr. Manfred Brandstätter
Head of Certification Body

Akkreditierte Zertifizierungsstelle der Österreichischen Gesellschaft für Holzforschung
HOLZCERT AUSTRIA, A-1030 Wien, Franz Grill-Straße 7
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Sites of Stora Enso Wood Products Central European Unit
Multi-Site-Certificate HCA-CoC-0031 of 21.09.2012

Austria	**Zentrale Brand:**	**Stora Enso Wood Products GmbH** 3531 Brand 44
	Ybbs:	Stora Enso Wood Products GmbH Bahnhofstraße 31 3370 Ybbs
	Sollenau:	Stora Enso Wood Products GmbH Industriestraße 260 2601 Sollenau
	Bad St. Leonhard:	Stora Enso WP Bad St. Leonhard GmbH Wisperndorf 4 9462 Bad St. Leonhard
Germany	**Pfarrkirchen:**	Stora Enso Timber Deutschland GmbH Max Breiherr Straße 20 84347 Pfarrkirchen
Czech Republic	**Zdirec:**	Stora Enso WP HV s.r.o. Nadranzni 66 58263 Zdirec nad Doubravou

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website: www.bbacerts.co.uk

Authorised and notified according to Article 10 of the Council Directive (89/106/EEC) of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products.

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Designated by Government to issue European Technical Approvals

Member of EOTA

European Technical Approval ETA-06/0238

*Third issue**

Trade name:	STEICOjoist and STEICOwall
Holder of approval:	STEICO Aktiengesellschaft Hans-Riedl-Straße 21 85622 Feldkirchen Germany Tel: + 49 (0)89 99 1551-0 Fax: + 49 (0)89 99 1551-99 e-mail: info@steico.com website: www.steico.com
Generic type and use of construction product:	Light composite wood-based beams and columns for structural use
Valid from: to:	27 October 2011 27 October 2016
This version replaces:	ETA-06/0238 valid from 23 July 2010 to 31 October 2011
Manufacturing plant:	STEICO S.A. ul. Przemyslowa 2 64-700 Czarnkow Poland
This European Technical Approval contains:	Twelve pages including four Annexes which form an integral part of the document

EOTA

European Organisation for Technical Approvals

I LEGAL BASES AND GENERAL CONDITIONS

1 This European Technical Approval is issued by the British Board of Agrément in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 [Construction Products Directive (CPD)] on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by the Council Directive 93/68/EEC of 22 July 1993[2].
- UK implementation of CPD Statutory Instruments 1991, No 1620. The Building and Building Construction Products Regulations 1991 — made 15 July 1991, laid before Parliament 22 July 1991, coming into force 27 December 1991, and amended by the Construction Products (Amendment) Regulations 1994 (Statutory Instruments 1994, No 3051)
- Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC[3]
- EOTA Guideline for European Technical Approval ETAG 011 *Light Composite Wood-based Beams and Columns*, January 2002.

2 The British Board of Agrément is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3 This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European Technical Approval.

4 This European Technical Approval may be withdrawn by the British Board of Agrément, in particular after information by the Commission on the basis of Article 5(1) of Council Directive 89/106/EEC.

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6 The European Technical Approval is issued by the approval body in its official language. This version should correspond to the version circulated within EOTA. Translations into other languages have to be designated as such.

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(1) Official Journal of the European Communities No L40, 11.2.1989, p12.

(2) Official Journal of the European Communities No L220, 30.8.1993, p1.

(3) Official Journal of the European Communities No L17, 20.1.1994, p34.

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

Definition of product

STEICOjoist and STEICOwall are I-joists of composite construction with solid timber or LVL flanges and hardboard webs and are available in a range of sizes (see Annex 1, Figure 1 and Tables 1 and 2).

The solid timber flanges are one of strength class L17 or L36 to EN 14081-4 : 2009 and finger jointed to length, in accordance with EN 385 : 2001. The LVL flanges are of class 1.6E or class 2.0E comprising laminated veneers bonded with phenol-formaldehyde adhesive, laid with the grain running parallel. The veneers are oriented perpendicular to the web.

The hardboard web is in accordance with EN 622-2 : 2004, type HB.HLA1, and is placed in the beams in sections 1200 mm to 1900 mm long. Web-to-web connections consist of a tongue-and-groove joint.

The web-to-flange connection is made by glueing the web into a groove in the centre of the wide face of the flange. Adhesive in accordance with EN 301 : 2006, type1, is used in the web-to-web and the web-to-flange joint.

The components are machine-assembled in one pass.

Intended use

The product is intended for use as a loadbearing component in building structures, eg construction members or frame elements for walls, roofs, floors and trusses where Essential Requirements 1, 2, 3 and 6 *Mechanical resistance and stability*, *Safety in case of fire*, *Hygiene, health and environment* and *Energy economy* and *heat retention* respectively (CPD, Annex 1), apply.

The product is for use in timber structures subject to the dry, internal conditions defined by service classes 1 and 2 of EN 1995-1-1 : 2004 (Eurocode 5) and for members subject to static or quasi-static loading.

The provisions made in this ETA are based on an assumed intended working life for the joist of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

2 Characteristics of product and methods of verification

The assessment of fitness for the intended use (see part II, section 1) has been made in accordance with ETAG 011.

The product is available in the range given in part II, section 1, and has the characteristics listed in Tables 1, 5 and 6 in Annex 2.

ER1 Mechanical resistance and stability

The mechanical properties, characteristic load-carrying capacities and modification factors for the products are given in Annex 2 which have been derived in accordance with ETAG 011. Details for incorporation of holes in the web and axial loading respectively are given in Annexes 3 and 4. They should be used for designs in accordance with EN 1995-1-1 : 2004 (Eurocode 5). The load-carrying capacities have been derived by calculation and calculation assisted by test.

The performance of the product in seismic zones has not been assessed and is outside the scope of this ETA and, therefore, No Performance Determined (NPD). Where cyclic design of the structure is required, the product must be considered as part of the overall structure when designing in accordance with the relevant design codes.

ER2 Safety in case of fire

In relation to reaction to fire, the joist materials are classified as D-s2, d0, in accordance with EN 13501-1 : 2007 by reference to EC Decisions 2000/147/EC and 2003/43/EC.

Performance in relation to fire resistance would be determined for the complete structural element with any associated finishes, hence, for this Essential Requirement there are no aspects of performance relevant to a joist and, therefore NPD.

ER3 Hygiene, health and environment

According to the manufacturer's declaration, the product specification has been compared with the dangerous substances detailed in Council Directive 76/769/EEC (as amended) and listed on the database established on the EC construction website to verify that it does not contain such substances above the acceptable limits.

The hardboard web and LVL flange are classified as E1 in accordance with EN 13986 : 2004 and EN 14374 : 2004 respectively with regard to extractable formaldehyde content.

The joists are not preservative-treated nor do they contain pentachlorophenol.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (eg transposed European legislation and national laws, regulations and administrative provisions). To meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

ER4 Safety in use

Not relevant to this product.

ER5 Protection against noise

Not relevant to this product.

ER6 Energy economy and heat retention

Hygrothermal properties in accordance with EN 12524 : 2000, are given in Annex 2, Table 5. The natural variation of the materials has been accounted for in these values.

Aspects of durability, serviceability and identification

Untreated joists can be used in service classes 1 and 2 as explained in Eurocode 5 and in Hazard Classes 1 and 2 as specified in EN 335-1 : 2006. The products may be exposed directly to the weather for a short time during installation.

Attack from insects such as house longhorn beetle, dry wood termites and woodworm may reduce the durability of the product.

The ability of the product to resist loads without undue deflection (serviceability) is dealt with in the section headed *ER1 Mechanical resistance and stability*.

The product bears the manufacturer's identification mark, the product type and the CE marking as described in section 3.3.

3 Evaluation of Conformity and CE Marking

3.1 Attestation of Conformity system

The system of attestation of conformity applied to this product shall be that laid down in the CPD, Annex III, 2(i) (referred to as System 1).

3.2 Responsibilities

3.2.1 Tasks for the manufacturer, factory production control

The manufacturer continues to operate a factory production control system. All elements, requirements and provisions adopted by the manufacturer are documented to ensure that the product conforms with this ETA.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the prescribed test plan[4]. The raw materials shall be subject to controls and tests by the manufacturer before acceptance. Checks on incoming materials, shall include control of the certificates of conformity presented by suppliers (comparison with nominal values) by verifying dimensions and determining material properties.

The manufactured joists are checked for:

- flange and web material
- dimensional accuracy
- visual quality
- glue spread
- fit of component parts
- strength of completed joist.

The frequency of controls and tests conducted during production and on the assembled joist is laid down in the prescribed test plan, taking account of the manufacturing process of the joist.

The results of factory production control are recorded and evaluated. The records include at least:

- designation of the product, basic material and components
- type of control or testing
- date of manufacture of the product and date of testing of the product or basic material and components
- result of control and testing and, if appropriate, comparison with requirements
- signature of person responsible for factory production control.

The records shall be presented to the inspection body involved in the continuous surveillance.

Details of the extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to the prescribed test plan included in the technical documentation of this European Technical Approval.

(4) The prescribed test plan has been deposited with the British Board of Agrément and is only made available to the approved bodies involved in the conformity attestion procedure.

3.2.2 Declaration of conformity

The manufacturer shall make a declaration in accordance with the requirements of this European Technical Approval.

3.2.3 Tasks for approved bodies

3.2.3.1 Initial type-testing of the product

The mechanical resistance and stiffness properties have been determined by design assisted by testing on pre-production joists. The Notified Body, therefore, will need to carry out initial type-tests on joists from normal production for the purposes of certification of conformity.

For initial type-testing (ITT) for other aspects of performance, the results of the tests performed as part of the assessment for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases the necessary type-testing has to be agreed between the British Board of Agrément and the approved body involved.

3.2.3.2 Initial inspection of factory and of factory production control

The approved body shall ascertain that, in accordance with the prescribed test plan, the factory, in particular the staff and equipment, and the factory production control, are suitable to ensure a continuous and orderly manufacturing of the joist with the specifications given in part II, section 2.

3.2.3.3 Continuous surveillance

The approved body shall visit the factory at least twice per year for routine inspections. It shall be verified that the system of factory production control and the specified manufacturing processes are maintained, taking account of the prescribed test plan.

The results of product certification and continuous surveillance shall be made available on demand by the certification body to the British Board of Agrément. Where the provisions of the European Technical Approval and the prescribed test plan are no longer fulfilled, the certificate of conformity shall be withdrawn by the certification body.

3.3 CE Marking

The CE marking[5] shall be affixed to each joist and/or the accompanying documentation. The CE symbol shall be accompanied by the following information:

- identification number of the certification body
- identification of the product
- name or identification mark of producer and the registered address of the producer
- the last two digits of the year in which the CE marking was affixed (ITT)
- number of the EC certificate of conformity
- number of the European Technical Approval.

(5) See EU Commission Guidance Paper D *CE Marking under the Construction Products Directive.*

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The product is manufactured in accordance with the provisions of the European Technical Approval using the manufacturing processes as identified in the inspection of the plant by the British Board of Agrément and the approved body and laid down in the technical documentation.

4.2 Installation

A joist is deemed fit for its intended use provided:

- it is designed in accordance with Eurocode 5 or an appropriate national code using the design data given in Annex 2, Tables 1 to 5 and 7. Design and detailing of structures should be carried out by a suitably experienced person in accordance with the manufacturer's instructions and the requirements of this ETA
- verifiable calculation, notes and drawings are prepared taking account of the loads to be resisted
- the minimum end bearing length shall be 45 mm and the minimum intermediate bearing length shall be 90 mm.

4.3 Criteria

The fitness for use of the joist can be assumed if it is installed correctly in accordance with the following requirements:

- installation is carried out by personnel under the direction of supervisors, all of whom are appropriately qualified for this work
- installation is in accordance with the manufacturer's specifications and drawings prepared for that purpose, and the appropriate tools are used
- the flanges must not be drilled, notched or otherwise altered on site
- the joists should be handled and installed in a similar manner to solid timber beams. However, the strength and stiffness of joists about their minor axis is less than that of corresponding solid timber sections. Therefore, care must be exercised to ensure that joists are not damaged during handling due to bending about their minor axis. In accordance with normal good practice for timber they should be protected from wetting during installation
- the characteristic bending moments given in Annex 2, Table 1, are based on the assumption that lateral bracing to the compression flange (at a spacing not exceeding ten times the flange width) is in place. Alternative bracing will require separate analysis
- the joists should have a moisture content at the time of installation close to that attained in service
- temporary bracing should be provided to keep the joists in a straight and plumb position during installation
- rigid service pipes can be incorporated within the floor or roof void by passing through site-cut holes in accordance with the manufacturer's literature or software as detailed in Annex 3.

5 Recommendations

5.1 Recommendations on packaging, transport and storage

Delivery and site storage must be carried out in accordance with the manufacturer's instructions.

During transportation the joists must be protected from adverse weather.

The joists should be stored clear of the ground and stacked vertically (within the plane of the spans). Precautions should be taken to minimise changes in moisture content due to the weather. Full cover should be provided but permit free passage of air.

5.2 Recommendations on use, maintenance and repair

The assessment of the fitness for use is based on the assumption that maintenance is not required during the assumed intended working life.

Should repair prove necessary, an assessment must be made in each case.

It is the responsibility of the manufacturer to ensure that the information on the specific conditions given in part II, sections 1, 2, 4.2 and 4.3, is given to those concerned. This information may be made by replicating the respective parts of the European Technical Approval. In addition, all installation data shall be shown clearly on the package and/or on an enclosed instruction sheet, preferably using illustration(s).

On behalf of the British Board of Agrément

Date of Third issue: 27 October 2011

Brian Chamberlain
Head of Approvals — Engineering

Greg Cooper
Chief Executive

* ETA originally issued on 2 October 2006. This revised version extends validity for a further five years.

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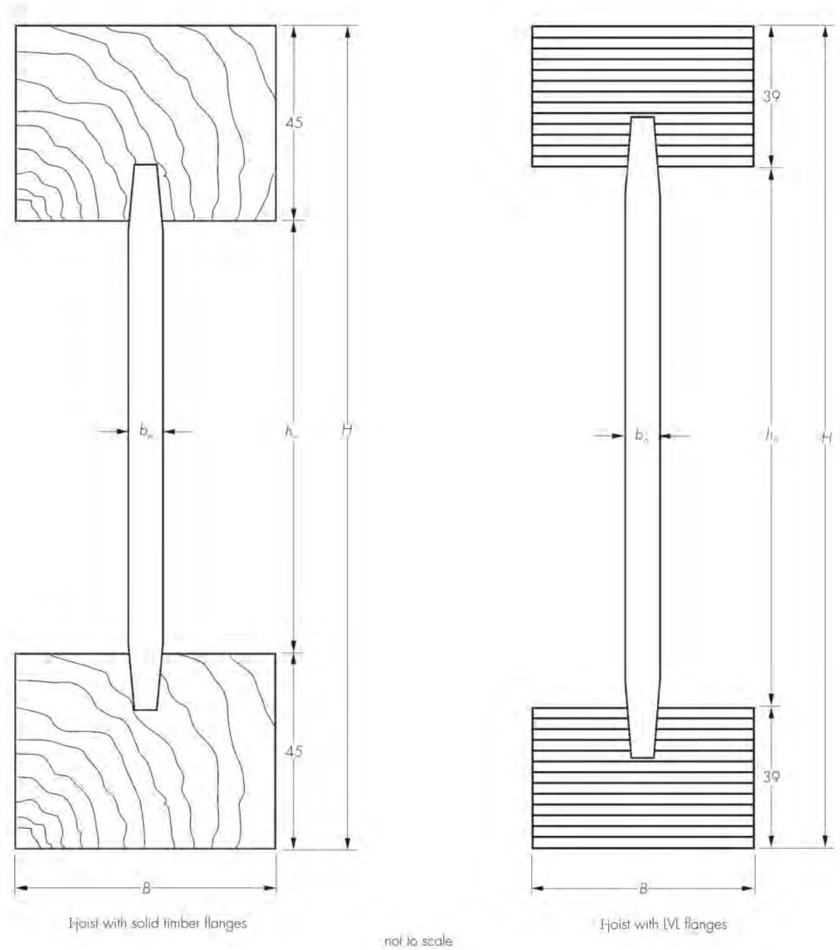
ANNEX 1 PRODUCT DETAILS

Figure 1 Sections (dimensions in mm)



ANNEX 1 PRODUCT DETAILS (continued)

Table 1 Dimensions and information for STEICO I-joist products with solid timber flanges[1]

Type	Joist depth	Flange width	Web thickness	Flange grade
	H (mm)	B (mm)	b_w (mm)	–
SJ 45	200	45	8,0	L 36
	220	45	8,0	L 36
	240	45	8,0	L 36
	300	45	8,0	L 36
	350	45	8,0	L 36
	360	45	8,0	L 36
SJ 60	200	60	8,0	L 36
	220	60	8,0	L 36
	240	60	8,0	L 36
	300	60	8,0	L 36
	350	60	8,0	L 36
	360	60	8,0	L 36
	400	60	8,0	L 36
SJ 90	200	90	8,0	L 36
	220	90	8,0	L 36
	240	90	8,0	L 36
	300	90	8,0	L 36
	350	90	8,0	L 36
	360	90	8,0	L 36
	400	90	8,0	L 36
SW 45	160	45	6,7 or 8,0	L 17
	200	45	6,7 or 8,0	L 17
	220	45	6,7 or 8,0	L 17
	240	45	6,7 or 8,0	L 17
	300	45	6,7 or 8,0	L 17
	350	45	6,7 or 8,0	L 17
	360	45	6,7 or 8,0	L 17
SW 60	160	60	6,7 or 8,0	L 17
	200	60	6,7 or 8,0	L 17
	220	60	6,7 or 8,0	L 17
	240	60	6,7 or 8,0	L 17
	300	60	6,7 or 8,0	L 17
	350	60	6,7 or 8,0	L 17
	360	60	6,7 or 8,0	L 17
	400	60	6,7 or 8,0	L 17
SW 90	220	90	6,7 or 8,0	L 17
	240	90	6,7 or 8,0	L 17
	300	90	6,7 or 8,0	L 17
	350	90	6,7 or 8,0	L 17
	360	90	6,7 or 8,0	L 17
	400	90	6,7 or 8,0	L 17

(1) Flange depth 45 mm.

Table 2 Dimensions and information for STEICO I-joist products with LVL flanges[1]

Series	Joist depth	Flange width	Web thickness	Flange grade
	H (mm)	B (mm)	b_w (mm)	–
SJ_L 45	200	45	8,0	2.0E LVL
	220	45	8,0	2.0E LVL
	240	45	8,0	2.0E LVL
	300	45	8,0	2.0E LVL
	350	45	8,0	2.0E LVL
	360	45	8,0	2.0E LVL
SJ_L 60	200	60	8,0	2.0E LVL
	220	60	8,0	2.0E LVL
	240	60	8,0	2.0E LVL
	300	60	8,0	2.0E LVL
	350	60	8,0	2.0E LVL
	360	60	8,0	2.0E LVL
	400	60	8,0	2.0E LVL
SJ_L 90	200	90	8,0	2.0E LVL
	220	90	8,0	2.0E LVL
	240	90	8,0	2.0E LVL
	300	90	8,0	2.0E LVL
	350	90	8,0	2.0E LVL
	360	90	8,0	2.0E LVL
	400	90	8,0	2.0E LVL
SW_L 45	160	45	6,7 or 8,0	1.6E LVL
	200	45	6,7 or 8,0	1.6E LVL
	220	45	6,7 or 8,0	1.6E LVL
	240	45	6,7 or 8,0	1.6E LVL
	300	45	6,7 or 8,0	1.6E LVL
	350	45	6,7 or 8,0	1.6E LVL
	360	45	6,7 or 8,0	1.6E LVL
SW_L 60	160	60	6,7 or 8,0	1.6E LVL
	200	60	6,7 or 8,0	1.6E LVL
	220	60	6,7 or 8,0	1.6E LVL
	240	60	6,7 or 8,0	1.6E LVL
	300	60	6,7 or 8,0	1.6E LVL
	350	60	6,7 or 8,0	1.6E LVL
	360	60	6,7 or 8,0	1.6E LVL
	400	60	6,7 or 8,0	1.6E LVL
SW_L 90	220	90	6,7 or 8,0	1.6E LVL
	240	90	6,7 or 8,0	1.6E LVL
	300	90	6,7 or 8,0	1.6E LVL
	350	90	6,7 or 8,0	1.6E LVL
	360	90	6,7 or 8,0	1.6E LVL
	400	90	6,7 or 8,0	1.6E LVL

(1) Flange depth 39 mm.

ANNEX 2 PRODUCT CHARACTERISTICS

Table 1 Characteristic design properties

Type	Depth (mm)	Characteristic bending moment (kN·m)	Characteristic vertical shear (kN)	EI_{joist} (N·mm² x 10⁹)	GA_{joist} (MN)
SJ 45/ SJ_L 45	200	7,09	10,92	327	2,09
	220	8,00	11,85	416	2,42
	240	8,92	12,75	516	2,76
	300	11,74	15,36	888	3,77
	350	13,64	17,43	1281	4,61
	360	14,01	17,84	1369	4,78
SJ 60/ SJ_L 60	200	9,45	10,84	436	2,09
	220	10,66	11,75	554	2,42
	240	11,87	12,64	687	2,76
	300	15,57	15,17	1177	3,77
	350	18,03	17,16	1693	4,61
	360	18,52	17,55	1808	4,78
	400	20,45	19,07	2310	5,45
SJ 90/ SJ_L 90	200	14,13	10,76	651	2,09
	220	15,96	11,65	827	2,42
	240	17,75	12,51	1025	2,76
	300	23,21	14,97	1752	3,77
	350	26,80	16,88	2513	4,61
	360	27,51	17,25	2683	4,78
	400	30,30	18,71	3419	5,45
SW 45/ SW_L 45	160	2,49	4,50	127	1,12
	200	3,56	5,47	227	1,63
	220	4,01	5,94	289	1,88
	240	4,48	6,40	359	2,13
	300	5,90	7,72	618	2,89
	350	6,86	8,77	893	3,52
	360	7,05	8,98	954	3,64
SW 60/ SW_L 60	160	3,32	4,48	169	1,12
	200	4,74	5,43	302	1,63
	220	5,34	5,89	384	1,88
	240	5,95	6,34	477	2,13
	300	7,82	7,61	818	2,89
	350	9,06	8,62	1178	3,52
	360	9,30	8,75	1258	3,64
	400	10,28	8,23	1608	4,15
SW 90/ SW_L 90	220	7,99	5,83	574	1,88
	240	8,89	6,27	711	2,13
	300	11,64	7,50	1216	2,89
	350	13,44	8,47	1746	3,52
	360	13,80	8,66	1863	3,64
	400	15,21	8,23	2376	4,15

Table 2 Values of k_{mod} to be used with Eurocode 5 when designing STEICO I-joist products

Duration of load	Bending and axial resistance		Shear resistance		Bearing resistance	
	Service class 1	Service class 2	Service class 1	Service class 2	Service class 1	Service class 2
Permanent	0,60	0,60	0,42	0,34	0,60	0,60
Long term	0,70	0,70	0,56	0,45	0,70	0,70
Medium term	0,80	0,80	0,72	0,60	0,80	0,80
Short term	0,90	0,90	0,87	0,73	0,90	0,90
Instantaneous	1,10	1,10	1,10	0,93	1,10	1,10

Table 3 Values of k_{def} to be used with Eurocode 5 when designing STEICO I-joist products

Duration of load	Bending and axial deformation		Shear deformation	
	Service class 1	Service class 2	Service class 1	Service class 2
Permanent	0,60	0,80	2,25	3,00
Long term	0,50	0,50	1,50	2,00
Medium term	0,25	0,25	0,75	1,00
Short term	0,00	0,00	0,30	0,40

Table 4 Recommended values of γ_m to be used with Eurocode 5 when designing STEICO I-joist products in absence of nationally determined parameters

Combination	STEICOjoist	STEICOwall
Fundamental	1,3	1,3
Accidental	1,0	1,0

Table 5 Hygrothermal properties

Material	Density[(1)] (mean) ρ_m (kg·m⁻³)	Design thermal conductivity λ (W·m⁻¹·K⁻¹)	Specific heat capacity c_p (J·kg⁻¹·K⁻¹)	Water vapour resistance factor[(2)] μ dry	wet
LVL flanges	500	0,13	1600	50	20
Solid timber flanges	500	0,13	1600	50	20
Hardboard webs	900	0,18	1700	10	20

(1) The density for timber- and wood-based products is the density in equilibrium with 20°C and 65% relative humidity.

(2) Water vapour resistance factors are given as dry cup and wet cup values (see EN ISO 12572 : 2001).

Table 6 Manufacturing tolerances (mm)

Description[(1)]	Tolerances (mm)
Joist depth – H	−2 to + 1
Joist width – B	−2 to + 2
Flange depth – h_f	−2 to + 2
Web thickness – b_w	−0,7 + 0,7
Joist length – L	−0

(1) See Figure 1 of Annex 1.

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ANNEX 2 PRODUCT CHARACTERISTICS (continued)

Table 7 Characteristic bearing resistance

Type (mm)	Joist depth (mm)	End bearing capacity (kN)				Intermediate bearing capacity (kN)	
		45 mm		90 mm		90 mm	
		stiffeners		stiffeners		stiffeners	
		without	with	without	with	without	with
SJ 45/SJ$_l$ 45	200	8,1	9,7	8,7	10,7	16,0	16,1
	220	8,1	10,0	8,7	11,0	16,0	16,4
	240	8,1	10,3	8,7	11,3	16,0	16,7
	300	8,1	11,2	8,7	12,2	16,0	17,6
	350	8,1	11,9	8,7	13,0	16,0	18,3
	360	8,1	12,1	8,7	13,1	16,0	18,5
SJ 60/SJ$_l$ 60	200	12,0	12,7	12,6	14,2	21,6	23,0
	220	12,0	13,0	12,6	14,5	21,6	23,3
	240	12,0	13,3	12,6	14,8	21,6	23,6
	300	12,0	14,2	12,6	15,7	21,6	24,5
	350	12,0	15,0	12,6	16,4	21,6	25,2
	360	12,0	15,1	12,6	16,6	21,6	25,4
	400	12,0	15,7	12,6	17,2	21,6	26,0
SJ 90/SJ$_l$ 90	200	12,9	13,8	15,3	15,4	29,3	35,9
	220	12,9	14,1	15,3	15,7	29,3	36,2
	240	12,9	14,4	15,3	16,0	29,3	36,5
	300	12,9	15,3	15,3	16,9	29,3	37,4
	350	12,9	16,0	15,3	17,7	29,3	38,2
	360	12,9	16,2	15,3	17,8	29,3	38,3
	400	12,9	16,8	15,3	18,4	29,3	38,9

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ANNEX 3 DESIGN RECOMMENDATIONS FOR HOLES CUT IN WEB

The characteristic shear capacity for STEICO I-joist products with round holes in the web can be calculated as follows:

$V_{hole,k} = V_k \bullet k_{hole}$

where:

V_k is the characteristic shear capacity for STEICO I-joist products without holes in the web.

$$k_{hole} = \frac{H - h_f - 0{,}9 \bullet D}{H - h_f}$$

where:

H depth of the joist

h_f depth of the flange

D diameter of the hole

where:

$D < H - 2{,}2 \bullet h_f < 200$ mm

All holes have to be located in the centre of the web. Holes up to a maximum diameter of 20 mm can be positioned anywhere in the beam web if the distance between the holes edge is minimum 40 mm. Maximal three holes with a diameter of 20 mm in one row are permitted.

ANNEX 4 AXIALLY LOADED MEMBERS

The axial load-carrying capacity of STEICOwall should be calculated in accordance with the procedures given in Eurocode 5. Axial forces are to be resisted by the flanges only. The capacity should be derived from the flange cross-section and the characteristic values given in Annex 1. Lateral restraint to prevent buckling must be provided at the spacing assumed in the design.

In the case of combined actions, eg compression and bending, the relevant interaction equations given in Eurocode 5 should be used.

MPA STUTTGART
Otto-Graf-Institut

Materialprüfungsanstalt • Universität Stuttgart

Notifizierte Stelle 0672

EG-Konformitätszertifikat

0672

Hiermit wird gemäß § 10 des deutschen Bauproduktengesetzes zur Umsetzung der EU-Bauproduktenrichtlinie (89/106/EWG) bestätigt, dass

das Bauprodukt:	**Leichte Holzbauträger und –stützen (Handelsnamen : STEICOjoist und STEICOwall)**
des Herstellwerks:	**STEICO S.A., 64-700 Czarnkow, POLEN**
der Firma:	**STEICO Aktiengesellschaft Hans-Riedl-Straße 21 85622 Feldkirchen DEUTSCHLAND**

einer werkseigenen Produktionskontrolle und einer Fremdüberwachung unterliegt und die anerkannte

Zertifizierungsstelle:	**Materialprüfungsanstalt der Universität Stuttgart MPA-Stuttgart – Otto-Graf-Institut (FMPA) Pfaffenwaldring 4 D-70569 Stuttgart**

die nach der Europäischen Technischen Zulassung ETA-06/0238 geforderten Prüfungen, Überwachungen und Beurteilungen durchgeführt hat.

Das Zertifikat mit der

Nummer: **0672 – CPD – I 14.23.2**

bescheinigt, dass das genannte Bauprodukt den Bestimmungen der Europäischen Technischen Zulassung

ETA-06/0238

des British Board of Agrement, Garston/Großbritannien, entspricht.

Die Firma ist somit berechtigt, für das Herstellwerk STEICO S.A., Czarnkow/Polen, das Bauprodukt mit dem **Konformitätszeichen** (CE-Zeichen) zu kennzeichnen.

Das Zertifikat behält seine Gültigkeit solange, bis sich die oben genannte Europäische Technische Zulassung oder die Bedingungen der Herstellung des Bauprodukts ändern.

Stuttgart, 31.01.2007

Materialprüfungsanstalt
Universität Stuttgart
Abteilung Holzbau
Zertifizierungsstelle

UNIVERSITÄT STUTTGART
MATERIALPRÜFUNGSANSTALT

Aicher

(Dr. S. Aicher)
Leiter der Zertifizierungsstelle

Dřevařský ústav
Timber Institute

IAF

V 3075

Výzkumný a vývojový ústav dřevařský, Praha, s. p.
Na Florenci 7-9, 111 71 Praha 1
Certifikační orgán na výrobky
akreditovaný Českým institutem pro akreditaci, o.p.s., reg. č. 3075

vydává žadateli:

VESPER FRAMES s.r.o.
Julia Fučíka 97/101
795 01 Rýmařov
IČ: 27 83 29 02

CERTIFIKÁT
č. 2400/12

na sériově vyráběný výrobek

MONTOVANÉ DOMY NA BÁZI DŘEVA

Výrobce (výrobna): VESPER FRAMES s.r.o., Malá Štáhle 58, 795 01 Rýmařov

Norma (normativní dokument): „Dokument národní kvality ADMD", určený k ověřování kvality členské základny Asociace dodavatelů montovaných domů.

Certifikační schéma: Pokyn ISO/IEC 67, systém 3

Tento certifikát je vystaven na základě protokolu o hodnocení výrobku a rozhodnutí o certifikaci č.: PHV- 2400/12 ze dne 2.11.2012 a je vydán v rozsahu akreditace Certifikačního orgánu.

Platnost tohoto certifikátu je podmíněna prováděním pravidelného dozoru s kladným výsledkem. Tento certifikát dále ztrácí svou platnost, pokud by podmínky vzniklé změnami neodpovídaly těm, při kterých byl udělen.

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Dřevařský ústav
Timber Institute

Ing. Ludmila Kotenová
zástupce vedoucí Certifikačního orgánu č. 3075

V Praze dne 2. listopadu 2012

VÝZKUMNÝ A VÝVOJOVÝ ÚSTAV DŘEVAŘSKÝ, PRAHA, S.P.
CERTIFIKAČNÍ ORGÁN Č. 3075

Deutsches Institut für Bautechnik
Zulassungsstelle für Bauprodukte und Bauarten
Bautechnisches Prüfamt
Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts

Kolonnenstraße 30 B
D-10829 Berlin
Tel.: +49 30 78730-0
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E-Mail: dibt@dibt.de
www.dibt.de

Ermächtigt und notifiziert gemäß Artikel 10 der Richtlinie des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte (89/106/EWG)

Deutsches Institut für Bautechnik DIBt

Mitglied der EOTA
Member of EOTA

Europäische Technische Zulassung ETA-11/0500

Handelsbezeichnung *Trade name*	Haas BSP Brettsperrholz *Haas CLT Cross Laminated Timber*
Zulassungsinhaber *Holder of approval*	Haas Holzprodukte GmbH Industriestraße 8 84326 Falkenberg DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Massives plattenförmiges Holzbauelement zur Verwendung als tragendes Bauteil in Bauwerken *Solid wood slab element to be used as a structural element in buildings*
Geltungsdauer: *Validity:* vom *from*	10. November 2011
bis *to*	10. März 2014
Herstellwerk *Manufacturing plant*	Holzindustrie Chanovice s.r.o. Chanovice 102 CZ-34 101 Horazdovice TSCHECHISCHE REPUBLIK

Diese Zulassung umfasst *This Approval contains*	18 Seiten einschließlich 5 Anhänge *18 pages including 5 annexes*

EOTA

Europäische Organisation für Technische Zulassungen
European Organisation for Technical Approvals

Z41051.11 8.03.04-30/11

MPA MPA STUTTGART
Otto-Graf-Institut

Materialprüfungsanstalt · Universität Stuttgart

Notifizierte Stelle 0672

EG-Konformitätszertifikat

0672

Hiermit wird gemäß § 10 des deutschen Bauproduktengesetzes zur Umsetzung der EU-Bauproduktenrichtlinie (89/106/EWG) bestätigt, dass

das Bauprodukt:	**Drei- und fünflagige Massivholzplatten nach Anlagen 1 und 2 vom 20.01.2006**
des Herstellwerks:	**34152 Chanovice, Tschechien**
der Firma:	**HAAS Fertigbau GmbH** **Industriestraße 8** **84326 Falkenberg**

einer werkseigenen Produktionskontrolle und einer Fremdüberwachung unterliegt und die anerkannte

Zertifizierungsstelle:	**Materialprüfungsanstalt der Universität Stuttgart** **MPA-Stuttgart – Otto-Graf-Institut (FMPA)** **Pfaffenwaldring 4** **D-70569 Stuttgart**

die nach EN 13986 geforderten Prüfungen, Überwachungen und Beurteilungen durchgeführt hat.

Das Zertifikat mit der

Nummer: **0672 – CPD – I 14.05.3**

bescheinigt, dass das genannte Bauprodukt den Bestimmungen des Anhangs ZA.3.4 der harmonisierten

EN 13986

entspricht.

Die Firma ist somit berechtigt, für das Herstellwerk Chanovice das Bauprodukt mit dem **Konformitätszeichen** (CE-Zeichen) zu kennzeichnen.

Das Zertifikat behält seine Gültigkeit solange, bis sich die oben genannte harmonisierte Norm oder die Bedingungen der Herstellung des Bauprodukts ändern.

Stuttgart, 20.01.2006

Materialprüfungsanstalt
Universität Stuttgart
Abteilung Holzbau
Zertifizierungsstelle

UNIVERSITÄT STUTTGART · MATERIALPRÜFUNGSANSTALT

Aicher
(Dr. S. Aicher)
Leiter der Zertifizierungsstelle

CERTIFIKAČNÍ ORGÁN CSQ-CERT
PŘI ČESKÉ SPOLEČNOSTI PRO JAKOST

Die Zertifizierungsbehörde CSQ-CERT der Tschechischen Gesellschaft für Qualität

erteilt

ZERTIFIKAT

Übereinstimmung der Forstprodukt-Verbraucherkette (Chain of Custody) PEFC mit den Anforderungen des Standards PEFC Tschechische Republik

CFCS 2002:2011

d.h. mit den Anforderungen der Anlage 4 des Technischen Dokuments des PEFC-Rates

an die Organisation

Holzindustrie Chanovice s.r.o.

Chanovice 102, 341 01 Horažďovice, Tschechische Republik
Ident.-Nr.: 45349711

Zertifizierungsbereich:

Einkauf von Holzrohstoff, Herstellung und Verkauf von Schnittholz, geleimten Produkten und Pellets
(Standardproduktklassifikation - SKP 20.10, 20.20, 20.30)

Angewandte Methode der Herkunftsverfolgung: Methode des prozentuellen Anteils
Registrierungsnummer des Zertifikats: 251N/C-o-C/2011
Datum der Erstzertifizierung: 30.06.2004
Gültig seit: 01.11.2011
Gültig bis: 31.10.2016
Leiter des Zertifizierungszentrums: Dipl.-Ing. Eliška Michálková

ČESKÁ SPOLEČNOST
PRO JAKOST, o. s.
CSQ-CERT
116 68 PRAHA 1
Novotného lávka 5
- 100 -

Die zertifizierte Organisation unterliegt der Aufsicht des Zertifizierungsorgans CSQ-CERT. Im Falle der Feststellung einer ernsthaften Unkonformität gegenüber den Anforderungen des normativen Dokuments „Chain-of-Custody (des Holzverbraucherflusses) des Waldproduktes - Regeln" (CFCS 1004:2006, Revision 3") kann die Gültigkeit des Zertifikats eingestellt oder aufgelöst werden. Das Ergebnis der Zertifizierung betrifft nur den Beurteilungsgegenstand. Dieses Dokument kann nur als ein Ganzes reproduziert werden. Es handelt sich um eine Übersetzung. Im Falle eines Streites bezüglich der Auslegung ist die Originalfassung des Zertifikats in tschechischer Sprache maßgeblich.
Ort der Ausstellung: CSQ-CERT Novotného lávka 5, 116 68 Prag 1

ČSJ

PEFC™
PEFC/08-44-01

Deutsches Institut für Bautechnik DIBt

Zulassungsstelle für Bauprodukte und Bauarten

Bautechnisches Prüfamt

Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts

Mitglied der EOTA, der UEAtc und der WFTAO

Allgemeine bauaufsichtliche Zulassung

Datum:	Geschäftszeichen:
29.11.2012	I 55-1.9.1-454/12

Zulassungsnummer:
Z-9.1-454

Geltungsdauer
vom: **29. November 2012**
bis: **13. Dezember 2014**

Antragsteller:
EGGER Holzwerkstoffe
Wismar GmbH & Co. KG
Am Haffeld
23970 Wismar

Zulassungsgegenstand:
EGGER DHF - Platten

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfasst acht Seiten. Diese allgemeine bauaufsichtliche Zulassung ersetzt die allgemeine bauaufsichtliche Zulassung Nr. Z-9.1-454 vom 14. Dezember 2009. Der Gegenstand ist erstmals am 30. November 1999 allgemein bauaufsichtlich zugelassen worden.

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DIBt | Kolonnenstraße 30 B | D-10829 Berlin | Tel.: +49 30 78730-0 | Fax: +49 30 78730-320 | E-Mail: dibt@dibt.de | www.dibt.de

I ALLGEMEINE BESTIMMUNGEN

1 Mit der allgemeinen bauaufsichtlichen Zulassung ist die Verwendbarkeit bzw. Anwendbarkeit des Zulassungsgegenstandes im Sinne der Landesbauordnungen nachgewiesen.

2 Sofern in der allgemeinen bauaufsichtlichen Zulassung Anforderungen an die besondere Sachkunde und Erfahrung der mit der Herstellung von Bauprodukten und Bauarten betrauten Personen nach den § 17 Abs. 5 Musterbauordnung entsprechenden Länderregelungen gestellt werden, ist zu beachten, dass diese Sachkunde und Erfahrung auch durch gleichwertige Nachweise anderer Mitgliedstaaten der Europäischen Union belegt werden kann. Dies gilt ggf. auch für im Rahmen des Abkommens über den Europäischen Wirtschaftsraum (EWR) oder anderer bilateraler Abkommen vorgelegte gleichwertige Nachweise.

3 Die allgemeine bauaufsichtliche Zulassung ersetzt nicht die für die Durchführung von Bauvorhaben gesetzlich vorgeschriebenen Genehmigungen, Zustimmungen und Bescheinigungen.

4 Die allgemeine bauaufsichtliche Zulassung wird unbeschadet der Rechte Dritter, insbesondere privater Schutzrechte, erteilt.

5 Hersteller und Vertreiber des Zulassungsgegenstandes haben, unbeschadet weiter gehender Regelungen in den "Besonderen Bestimmungen", dem Verwender bzw. Anwender des Zulassungsgegenstandes Kopien der allgemeinen bauaufsichtlichen Zulassung zur Verfügung zu stellen und darauf hinzuweisen, dass die allgemeine bauaufsichtliche Zulassung an der Verwendungsstelle vorliegen muss. Auf Anforderung sind den beteiligten Behörden Kopien der allgemeinen bauaufsichtlichen Zulassung zur Verfügung zu stellen.

6 Die allgemeine bauaufsichtliche Zulassung darf nur vollständig vervielfältigt werden. Eine auszugsweise Veröffentlichung bedarf der Zustimmung des Deutschen Instituts für Bautechnik. Texte und Zeichnungen von Werbeschriften dürfen der allgemeinen bauaufsichtlichen Zulassung nicht widersprechen. Übersetzungen der allgemeinen bauaufsichtlichen Zulassung müssen den Hinweis "Vom Deutschen Institut für Bautechnik nicht geprüfte Übersetzung der deutschen Originalfassung" enthalten.

7 Die allgemeine bauaufsichtliche Zulassung wird widerruflich erteilt. Die Bestimmungen der allgemeinen bauaufsichtlichen Zulassung können nachträglich ergänzt und geändert werden, insbesondere, wenn neue technische Erkenntnisse dies erfordern.

Deutsches Institut für Bautechnik
33

II BESONDERE BESTIMMUNGEN

1 Zulassungsgegenstand und Anwendungsbereich

1.1 Zulassungsgegenstand

Die Holzwerkstoffplatten "EGGER DHF - Platten" sind 12 mm bis 20 mm dicke spezielle Holzfaserplatten mittlerer Dichte, die aus Nadelholzfasern und einem PMDI - Klebstoff im Trockenverfahren hergestellt werden. Sie werden gemäß DIN EN 13986[1] mit dem CE - Kennzeichen gekennzeichnet und entsprechen dem Typ "MDF.RWH" nach DIN EN 622-5[2].

1.2 Anwendungsbereich

EGGER-DHF – Platten dürfen als Beplankung von Wänden und Dächern in Holztafelbauart für die Anwendungen eingesetzt werden, für die ein rechnerischer Nachweis nach DIN EN 1995-1-1[3] in Verbindung mit dem Nationalen Anhang[4] sowie mit Hilfe der Tabelle 2 und der Bestimmungen zu den Verbindungsmitteln in dieser allgemeinen bauaufsichtlichen Zulassung geführt werden kann.

Bei der Verwendung der Holzfaserplatten "EGGER DHF" ist DIN 68800-2[5] zu beachten. Die Platten dürfen in den Nutzungsklassen 1 und 2 nach DIN EN 1995-1-1[3] eingesetzt werden, sofern in dieser allgemeinen bauaufsichtlichen Zulassung nichts anderes bestimmt ist.

Beanspruchungen auf Biegung mit einer Lasteinwirkungsdauer länger als "kurz" gemäß DIN EN 1995-1-1[3] in Verbindung mit dem Nationalen Anhang[4] sind nicht durch diese allgemeine bauaufsichtliche Zulassung abgedeckt.

Im Anwendungsbereich "Feuchtbereich" darf abweichend von der Norm DIN 68800-2[5] die Feuchte der Platten u = 15 % auf Dauer nicht übersteigen.

Die Bauteile dürfen für statische und quasi-statische Einwirkungen" gemäß DIN EN 1990:2010[6] verwendet werden.

Die Anwendbarkeit der zitierten Normen richtet sich nach den Bauordnungen und den Technischen Baubestimmungen der Länder.

2 Bestimmungen für das Bauprodukt

2.1 Eigenschaften und Zusammensetzung

2.1.1 Material

Die Platten müssen aus Fasern aus chemisch unbehandeltem Nadelholz nach dem beim Deutschen Institut für Bautechnik hinterlegten Fertigungsverfahren hergestellt sein.

Für die Herstellung der Platten ist ein PMDI - Klebstoff zu verwenden, dessen Zusammensetzung mit der beim Deutschen Institut für Bautechnik hinterlegten Rezeptur übereinstimmen muss.

Die Verwendung anderer als der beim DIBt hinterlegten Klebstoffe bedarf der vorherigen Zustimmung des DIBt.

1 DIN EN 13986:2005-03 Holzwerkstoffe zur Verwendung im Bauwesen - Eigenschaften, Bewertung der Konformität und Kennzeichnung
2 DIN EN 622-5:2006-09 Faserplatten – Anforderungen – Teil 5: Anforderungen an Platten nach dem Trockenverfahren (MDF)
3 DIN EN 1995-1-1:2010-12 Eurocode 5: Bemessung und Konstruktion von Holzbauten – Teil 1-1: Allgemeines Allgemeine Regeln und Regeln für den Hochbau
4 DIN EN 1995-1-1/NA:2010-12 Nationaler Anhang – National festgelegte Parameter – Eurocode 5: Bemessung und Konstruktion von Holzbauten – Teil 1-1: Allgemeines – Allgemeine Regeln und Regeln für den Hochbau
5 DIN 68800-2:2012-02 Holzschutz - Teil 2: Vorbeugende bauliche Maßnahmen im Hochbau
6 DIN EN 1990:2002-10 Grundlagen der Tragwerksplanung

2.1.2 Abmessungen, Aufbau, Rohdichte

Länge und Breite der Platten richten sich nach den statischen Erfordernissen. Die Dicke der Platten beträgt 12 bis 20 mm. Bei der Herstellung der Platten darf eine Dickentoleranz von ± 3% nicht überschritten werden.

Die Rohdichte der Platten muss in klimatisiertem Zustand (Normalklima 20°C/65 % r. F. nach DIN 50014[7]) die in Tabelle 1 angegebenen Mindestwerte einhalten.

2.1.3 Festigkeitseigenschaften

Die Biegefestigkeit und der Biege-Elastizitätsmodul rechtwinklig zur Plattenebene sowie die Querzugfestigkeit müssen die in nachstehender Tabelle 1 angegebenen Mindestwerte einhalten; für die Dickenquellung gelten die angegebenen Höchstwerte.

Tabelle 1: Mindestwerte der Rohdichte, der Biege- und Querzugfestigkeit sowie des Biege-Elastizitätsmoduls, Höchstwerte der Dickenquellung

Dicken-bereich	**Rohdichte**[1] kg/m³	**Biege-festigkeit**[2] N/mm²	**Elastizitäts-modul Biegung**[2] N/mm²	**Querzug-festigkeit**[3] N/mm²	**Dicken-quellung**[4]
t	ρ	$f_{m\parallel}$ | $f_{m\perp}$	$E_{m\parallel}$ | $E_{m\perp}$	f_t	%
12 mm bis 20 mm	**$600 \le \rho \le 650$**	**17,0**	**2000**	**0,30**	**6,5**

[1] geprüft nach DIN EN 323[8]
[2] geprüft nach DIN EN 310[9]
[3] geprüft nach DIN EN 319[10]
[4] geprüft nach DIN EN 317[11]

Die Werte der Tabelle 1 dürfen bei Prüfungen von keinem Plattenmittelwert unterschritten bzw. für die Dickenquellung überschritten werden.

2.1.4 Weitere Eigenschaften

Die Platten müssen die Anforderungen der "Richtlinie über die Klassifizierung und Überwachung von Holzwerkstoffplatten bezüglich der Formaldehydabgabe"[12] erfüllen.

Der Messwert der Wärmeleitfähigkeit der Platten, ermittelt nach DIN EN 12667[13], darf den Wert $\lambda_{10,tr}$ = 0,082 W/(m · K) nicht überschreiten.

2.2 Herstellung, Verpackung, Transport, Lagerung und Kennzeichnung

2.2.1 Herstellung, Verpackung, Transport, Lagerung

Für das In Verkehr Bringen der Holzfaserplatten gilt die Richtlinie über die Klassifizierung und Überwachung von Holzwerkstoffplatten bezüglich der Formaldehydabgabe[12] in Verbindung mit der "Verordnung über Verbote und Beschränkungen des In Verkehr Bringens

7 DIN 50014:1985-07 Klimate und ihre technische Anwendung; Normalklimate
8 DIN EN 323:1993-08 Holzwerkstoffe; Bestimmung der Rohdichte
9 DIN EN 310:1993-08 Holzwerkstoffe; Bestimmung des Biege-Elastizitätsmoduls und der Biegefestigkeit
10 DIN EN 319:1993-02 Spanplatten und Faserplatten; Bestimmung der Zugfestigkeit senkrecht zur Plattenebene
11 DIN EN 317:1993-08 Spanplatten und Faserplatten; Bestimmung der Dickenquellung nach Wasserlagerung
12 "Richtlinie über die Klassifizierung und Überwachung von Holzwerkstoffplatten bezüglich der Formaldehydabgabe", veröffentlicht in den "Mitteilungen" des DIBt 06/1994
13 DIN EN 12667:2001-05 Wärmetechnisches Verhalten von Baustoffen und Bauprodukten - Bestimmung des Wärmedurchlasswiderstandes nach dem Verfahren mit dem Plattengerät und dem Wärmestrommessplatten-Gerät - Produkte mit hohem und mittlerem Wärmedurchlasswiderstand

gefährlicher Stoffe, Zubereitungen und Erzeugnisse nach dem Chemikaliengesetz" (Chemikalien-Verbotsverordnung)[14]

2.2.2 Kennzeichnung

Die Holzfaserplatten sowie deren Lieferscheine müssen vom Hersteller mit dem Übereinstimmungszeichen (Ü-Zeichen) nach den Übereinstimmungszeichen-Verordnungen der Länder gekennzeichnet werden. Die Kennzeichnung darf nur erfolgen, wenn die Voraussetzungen nach Abschnitt 2.3 erfüllt sind.

Darüber hinaus sind die Platten an geeigneter Stelle dauerhaft wie folgt zu kennzeichnen:

Herstellwerk (gegebenenfalls verschlüsselt)

Plattentyp

Nenndicke

Bezüglich der Formaldehydabgabe sind die Platten gemäß "Richtlinie über Klassifizierung und Überwachung von Holzwerkstoffplatten bezüglich der Formaldehydabgabe[12]" zu kennzeichnen.

2.3 Übereinstimmungsnachweis

2.3.1 Allgemeines

Die Bestätigung der Übereinstimmung der Holzfaserplatten mit den Bestimmungen dieser allgemeinen bauaufsichtlichen Zulassung muss für jedes Herstellwerk mit einem Übereinstimmungszertifikat auf der Grundlage einer werkseigenen Produktionskontrolle und einer regelmäßigen Fremdüberwachung einschließlich einer Erstprüfung nach Maßgabe der folgenden Bestimmungen erfolgen.

Für die Erteilung des Übereinstimmungszertifikats und die Fremdüberwachung einschließlich der dabei durchzuführenden Produktprüfungen hat der Hersteller eine hierfür anerkannte Zertifizierungsstelle sowie eine hierfür anerkannte Überwachungsstelle einzuschalten.

Die Erklärung, dass ein Übereinstimmungszertifikat erteilt ist, hat der Hersteller durch Kennzeichnung der Bauprodukte mit dem Übereinstimmungszeichen (Ü-Zeichen) unter Hinweis auf den Verwendungszweck abzugeben.

Dem Deutschen Institut für Bautechnik ist von der Zertifizierungsstelle eine Kopie des von ihr erteilten Übereinstimmungszertifikats zur Kenntnis zu geben.

Dem Deutschen Institut für Bautechnik ist zusätzlich eine Kopie des Erstprüfberichts zur Kenntnis zu geben.

2.3.2 Werkseigene Produktionskontrolle

In jedem Herstellwerk ist eine werkseigene Produktionskontrolle einzurichten und durchzuführen. Unter werkseigener Produktionskontrolle wird die vom Hersteller vorzunehmende kontinuierliche Überwachung der Produktion verstanden, mit der dieser sicherstellt, dass die von ihm hergestellten Bauprodukte den Bestimmungen dieser allgemeinen bauaufsichtlichen Zulassung entsprechen.

Die werkseigene Produktionskontrolle soll mindestens die im Folgenden aufgeführten Maßnahmen einschließen.

- Beschreibung und Überprüfung des Ausgangsmaterials
- Kontrolle und Prüfungen, die während der Herstellung durchzuführen sind
- Nachweise und Prüfungen, die am fertigen Bauprodukt durchzuführen sind:

  Im Rahmen der werkseigenen Produktionskontrolle sind mindestens die Anforderungen an die Platten gemäß Tabelle 1 zu prüfen sowie die Prüfungen nach der "Richtlinie über die Klassifizierung und Überwachung von Holzwerkstoffplatten bezüglich der Formaldehydabgabe"[12] durchzuführen.

Deutsches Institut für Bautechnik 33

14 Chemikalien-Verbotsverordnung in der Fassung der Bekanntmachung vom 13. Juni 2003 (BGBl. I S. 867), zuletzt geändert durch Verordnung vom 21. Juli 2008 (BGBl. I S. 1328)

Deutsches Institut für Bautechnik DIBt

Dabei sind arbeitstäglich mindestens die Biegefestigkeit und die Querzugfestigkeit zu bestimmen.

Der Elastizitätsmodul, die Dickenquellung und die Rohdichte sind mindestens einmal je Produktionszyklus zu prüfen.

Die Ergebnisse der werkseigenen Produktionskontrolle sind aufzuzeichnen und auszuwerten. Die Aufzeichnungen müssen mindestens folgende Angaben enthalten:

– Bezeichnung des Bauprodukts bzw. des Ausgangsmaterials
– Art der Kontrolle oder Prüfung
– Datum der Herstellung und der Prüfung des Bauprodukts
– Ergebnis der Kontrollen und Prüfungen
– Unterschrift des für die werkseigene Produktionskontrolle Verantwortlichen

Die Aufzeichnungen sind mindestens fünf Jahre aufzubewahren und der für die Fremdüberwachung eingeschalteten Überwachungsstelle vorzulegen. Sie sind dem Deutschen Institut für Bautechnik und der zuständigen obersten Bauaufsichtsbehörde auf Verlangen vorzulegen.

Bei ungenügendem Prüfergebnis sind vom Hersteller unverzüglich die erforderlichen Maßnahmen zur Abstellung des Mangels zu treffen. Bauprodukte, die den Anforderungen nicht entsprechen, sind so zu handhaben, dass Verwechslungen mit übereinstimmenden ausgeschlossen werden. Nach Abstellung des Mangels ist - soweit technisch möglich und zum Nachweis der Mängelbeseitigung erforderlich - die betreffende Prüfung unverzüglich zu wiederholen.

2.3.3 Fremdüberwachung

In jedem Herstellwerk ist die werkseigene Produktionskontrolle durch eine Fremdüberwachung regelmäßig zu überprüfen, mindestens jedoch zweimal jährlich.

Im Rahmen der Fremdüberwachung ist eine Erstprüfung durchzuführen und können auch Proben für Stichprobenprüfungen entnommen werden. Die Probenahme und Prüfungen obliegen jeweils der anerkannten Überwachungsstelle.

Der Messwert der Wärmeleitfähigkeit ist einmal jährlich zu prüfen.

Die Ergebnisse der Zertifizierung und Fremdüberwachung sind mindestens fünf Jahre aufzubewahren. Sie sind von der Zertifizierungsstelle bzw. der Überwachungsstelle dem Deutschen Institut für Bautechnik und auf Verlangen der zuständigen obersten Bauaufsichtsbehörde vorzulegen.

3 Bestimmungen für Entwurf und Bemessung

3.1 Allgemeines

Für den Entwurf und die Bemessung von unter Verwendung der Holzfaserplatten "EGGER DHF - Platten" hergestellten Holzbauteilen gelten die Bestimmungen der Norm DIN EN 1995-1-1[3] in Verbindung mit dem Nationalen Anhang[4] unter Beachtung der Norm DIN 68800-2[5], soweit in dieser allgemeinen bauaufsichtlichen Zulassung nichts anderes bestimmt ist.

Die Platten dürfen zur Knick- oder Kippaussteifung der Rippen von Holztafelelementen sowie als aussteifende und mitragende Beplankung von scheibenartig beanspruchten Tafeln gemäß DIN EN 1995-1-1[4] in Verbindung mit dem Nationalen Anhang[4] verwendet werden. Des Weiteren dürfen sie für die Lasteinwirkungsdauern "kurz" und "sehr kurz" gemäß DIN EN 1995-1-1[4] in Verbindung mit dem Nationalen Anhang[4] durch Belastungen senkrecht zur Elementebene beansprucht werden.

Die Platten dürfen nicht zur Aufnahme und Weiterleitung anderer Lasten in Rechnung gestellt werden.

Deutsches Institut für Bautechnik DIBt

3.2 Bemessung

Für die Bemessung der Holzbauteile gelten die in Tabelle 2 aufgeführten charakteristischen Festigkeitswerte und Rechenwerte der Steifigkeiten.

Als Modifikationsbeiwerte k_{mod} und Verformungsbeiwerte k_{def} sind die Rechenwerte gemäß, DIN EN 1995-1-1[4], Tabellen 3.1 und 3.2 Plattentyp "Faserplatten MBH.LA2", zu verwenden.

Als Verbindungsmittel sind stiftförmige Verbindungsmittel zu verwenden, für die eine allgemeine bauaufsichtliche Zulassung für die Verwendung mit den Holzfaserplatten "EGGER DHF - Platten" erteilt worden ist. Alternativ sind Nägel, Klammern oder Schrauben mit einem Durchmesser von bis zu 8 mm verwendbar, die für die Verbindung von Holzwerkstoffen geeignet sind. Für diese Verbindungsmittel darf unabhängig der Plattendicke der Wert der Lochleibungsfestigkeit wie folgt angenommen werden:

Verbindungsmitteldurchmesser d ≤ 3,0 mm $f_{h,k}$ = 37,4 N/mm²

Verbindungsmitteldurchmesser d > 3,0 ≤ 8,0 mm $f_{h,k}$ = 18,0 N/mm²

Der Verschiebungsmodul K_{ser} ist mit Hilfe der Tabelle 7.1 der DIN EN 1995-1-1[3] zu ermitteln. Hierbei ist die Rohdichte des Werkstoffs mit ρ_m = 625 kg/m³ anzunehmen.

Für Holzwerkstoff – Holz – Nagelverbindungen darf nach Bemessung nach DIN EN 1995-1-1[3] in Verbindung mit dem Nationalen Anhang[4] für den Faktor β der Wert β = 1,0 angesetzt werden, sofern die erforderliche Dicke t_{req} gemäß Tabelle 3 aus dieser Zulassung eingehalten ist.

Verbindungsmittel in der Beplankung dürfen nicht auf Herausziehen bzw. auf Durchzug des Kopfes beansprucht werden.

Tabelle 2: Charakteristische Festigkeitswerte und Rechenwerte der Steifigkeiten für die Holzfaserplatten "EGGER DHF - Platten" in N/mm²

Holzfaserplatten "EGGER DHF - Platten"		Nenndicke der Platten 12 mm bis 20 mm
Scheibenbeanspruchung		
Biegung	$f_{m,k}$	**11**
Zug	$f_{t,0,k}$	**11,7**
	$f_{t,90,k}$	
Druck	$f_{c,0,k}$	**9,6**
	$f_{c,90,k}$	
Abscheren	$f_{v,k}$	**3,4**
Elastizitätsmodul Biegung	$E_{m,mean}$	**2000**
Elastizitätsmodul Zug	$E_{0,mean}$	**2100**
Elastizitätsmodul Druck	$E_{90,mean}$	**2000**
Schubmodul	G_{mean}	**600**
Plattenbeanspruchung		
Biegung	$f_{m,k}$	**19**
Schub	$f_{v,k}$	**1,1**
Elastizitätsmodul Biegung	$E_{m,mean}$	**3000**
Schubmodul	G_{mean}	**100**

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Tabelle 3: Wert des Faktors β und der Wert der erforderlichen Holzwerkstoffdicken für die Holzfaserplatten "Egger DHF -Platten"

Faktor β	Erforderliche Dicke t_{req} für außen liegende Platten (einschnittige Verbindung)	Erforderliche Dicke t_{req} für innen liegende Platten (zweischnittige Verbindung)
1,0	6 x d	4 x d
d = Durchmesser des Verbindungsmittels		

3.3 Brand- und Wärmeschutz

Für das Brandverhalten der Holzfaserplatten gelten die Angaben in der CE- Kennzeichnung auf Grundlage der DIN EN 13986[1], Tabelle 8, und die damit verbundenen Anwendungsbedingungen sowie die Anforderungen der DIN V 20000-1[15].

Darüber hinaus sind die Holzfaserplatten ein normalentflammbarer Baustoff (Baustoffklasse DIN 4102-B2 gemäß DIN 4102-4[16], Abs. 2.3.2).

Beim rechnerischen Nachweis des Wärmedurchlasswiderstandes gilt für die Holzfaserplatten "EGGER DHF - Platten" folgender Bemessungswert der Wärmeleitfähigkeit:

$\lambda = 0{,}10\ W/(m \cdot K)$

Die Wasserdampf-Diffusionswiderstandszahl ist mit $\mu = 11$ anzunehmen.

4 Bestimmungen für die Ausführung

Bei der Ausführung von Wand- und Dachtafeln unter Verwendung von Holzfaserplatten "EGGER DHF - Platten" sind die Normen DIN EN 1995-1-1 in Verbindung mit dem Nationalen Anhang[4] und DIN 68800-2[5] zu beachten.

Die Verbindung der Holzfaserplatten an Vollholz, Brettschichtholz, Brettsperrholz, Balkenschichtholz und Furnierschichtholz darf nur mit den in Abschnitt 3.2 genannten Verbindungsmitteln erfolgen.

Beim Transport, bei der Lagerung, bei der Montage von Bauteilen und bei Rohbauten unter Verwendung dieser Holzfaserplatten ist durch geeignete Maßnahmen sicherzustellen, dass sich der Feuchtgehalt der Platten durch nachteilige Einflüsse, z. B. aus Bodenfeuchte, Niederschlägen sowie infolge Austrocknung, nicht unzuträglich verändert.

Während der Bauphase sind als tragend nach dieser allgemeinen bauaufsichtlichen Zulassung verwendete DHF - Platten unverzüglich vor Niederschlag zu schützen.

Reiner Schäpel
Referatsleiter

Beglaubigt
Deutsches Institut für Bautechnik
33

15 DIN V 20000-1:2005-12 Anwendung von Bauprodukten in Bauwerken - Teil 1: Holzwerkstoffe
16 DIN 4102-4:1994-03 Brandverhalten von Baustoffen und Bauteilen; Zusammenstellung und Anwendung klassifizierter Baustoffe, Bauteile und Sonderbauteile

Muster einer Verordnung über das Übereinstimmungszeichen
(Muster-Übereinstimmungszeichen-Verordnung - MÜZVO)
(Stand Oktober 1997)

Aufgrund des § 81 Abs. 6 Nr. 1 MBO wird verordnet:

§ 1

(1) Das Übereinstimmungszeichen (Ü-Zeichen) nach § 24 Abs. 4 MBO besteht aus dem Buchstaben "Ü" und hat folgende Angaben zu enthalten:

1. Name des Herstellers; zusätzlich das Herstellwerk, wenn der Name des Herstellers eine eindeutige Zuordnung des Bauprodukts zu dem Herstellwerk nicht ermöglicht; anstelle des Namens des Herstellers genügt der Name des Vertreibers des Bauprodukts mit der Angabe des Herstellwerks; die Angabe des Herstellwerks darf verschlüsselt erfolgen, wenn sich beim Hersteller oder Vertreiber und, wenn ein Übereinstimmungszertifikat erforderlich ist, bei der Zertifizierungsstelle und Überwachungsstelle das Herstellwerk jederzeit eindeutig ermitteln läßt.

2. Grundlage der Übereinstimmungsbestätigung

   a) Kurzbezeichnung der für das geregelte Bauprodukt im wesentlichen maßgebenden technischen Regel,

   b) die Bezeichnung für eine allgemeine bauaufsichtliche Zulassung als "Z" und deren Nummer,

   c) die Bezeichnung für ein allgemeines bauaufsichtliches Prüfzeugnis als "P", dessen Nummer und die Bezeichnung der Prüfstelle oder

   d) die Bezeichnung für eine Zustimmung im Einzelfall als "ZiE" und die Behörde.

3. Die für den Verwendungszweck wesentlichen Merkmale des Bauprodukts, soweit sie nicht durch die Angabe der Kurzbezeichnung der technischen Regel nach Nummer 2 Buchstabe a abschließend bestimmt sind.

4. Die Bezeichnung oder das Bildzeichen der Zertifizierungsstelle, wenn die Einschaltung einer Zertifizierungsstelle vorgeschrieben ist.

Stand: August 2012

Rechtsgrundlagen für die Erteilung
allgemeiner bauaufsichtlicher (baurechtlicher) Zulassungen
nach den <u>Landesbauordnungen</u>

Baden-Württemberg:	§ 18 und § 21 der Landesbauordnung für Baden-Württemberg (LBO) in der Fassung vom 5. März 2010 (GBl. S. 357), zuletzt geändert durch Art. 70 der Verordnung vom 25. Januar 2012 (GBl. S. 65)
Bayern:	Art. 16 und Art. 19 der Bayerischen Bauordnung (BayBO) in der Fassung der Bekanntmachung vom 14. August 2007 (GVBl. S. 588), zuletzt geändert durch § 36 des Gesetzes vom 20. Dezember 2011 (GVBl. S. 689)
Berlin:	§ 18 und § 21 der Bauordnung für Berlin (BauO Bln) vom 29. September 2005 (GVBl. S. 495), zuletzt geändert durch Art. I des Gesetzes vom 29. Juni 2011 (GVBl. S. 315)
Brandenburg:	§ 15 und § 18 der Brandenburgischen Bauordnung (BbgBO) in der Fassung der Bekanntmachung vom 17. September 2008 (GVBl. I S. 226), zuletzt geändert durch Art. 2 des Gesetzes zur Änderung des Brandenburgischen Gesetz über die Umweltverträglichkeitsprüfung vom 29. November 2010 (GVBl. I Nr. 39 S. 1)
Bremen:	§ 18 und § 21 der Bremischen Landesbauordnung (BremLBO) vom 6. Oktober 2009 (Brem.GBl. S. 401), zuletzt geändert durch Art. 1 des Gesetzes vom 15. November 2011 (Brem.GBl. S. 435)
Hamburg:	§ 20a und § 21 der Hamburgischen Bauordnung (HBauO) vom 14. Dezember 2005 (HmbGVBl. S. 525), zuletzt geändert durch § 1 des Gesetzes vom 20. Dezember 2011 (HmbGVBl. S. 554)
Hessen:	§ 17 und § 20 Hessische Bauordnung (HBO) in der Fassung vom 15. Januar 2011 (GVBl. I S. 46)
Mecklenburg-Vorpommern:	§ 18 und § 21 der Landesbauordnung Mecklenburg-Vorpommern (LBauO M-V) vom 18. April 2006 (GVOBl. M-V S. 102), zuletzt geändert durch Art. 2 des Gesetzes vom 20. Mai 2011 (GVOBl. M-V S. 323)
Niedersachsen:	§ 18 und § 21 der Niedersächsischen Bauordnung (NBauO) vom 3. April 2012 (Nds. GVBl. S. 46)
Nordrhein-Westfalen:	§ 21 und § 24 der Bauordnung für das Land Nordrhein-Westfalen - Landesbauordnung (BauO NRW) vom 1. März 2000 (GV. NRW. S. 256), zuletzt geändert durch das Änderungsgesetz vom 22. Dezember 2011 (GV. NRW. S. 729)
Rheinland-Pfalz:	§ 19 und § 22 der Landesbauordnung Rheinland-Pfalz (LBauO) vom 24. November 1998 (GVBl. S. 365), zuletzt geändert durch § 47 des Gesetzes vom 9. März 2011 (GVBl. S. 47)
Saarland:	§ 19 und § 22 der Landesbauordnung für das Saarland (LBO) vom 18. Februar 2004 (Amtsbl. S. 822), zuletzt geändert durch Art. 1 AnpassungsG zur Richtlinie 2006/123/EG vom 16. Juni 2010 (Amtsbl. S. 1312)
Sachsen:	§ 18 und § 21 der Sächsischen Bauordnung (SächsBO) vom 28. Mai 2004 (SächsGVBl. S. 200), zuletzt geändert durch Art. 23 des Gesetzes vom 27. Januar 2012 (SächsGVBl. S. 130)
Sachsen-Anhalt:	§ 18 und § 21 der Bauordnung des Landes Sachsen-Anhalt (BauO LSA) vom 20. Dezember 2005 (GVBl. LSA S. 769), zuletzt geändert durch § 38 Abs. 2 Naturschutzgesetz Sachsen-Anhalt vom 10. Dezember 2010 (GVBl. LSA S. 569)
Schleswig-Holstein:	§ 19 und § 22 der Landesbauordnung für das Land Schleswig-Holstein (LBO) vom 22. Januar 2009 (GVOBl. Schl.-H. S. 6), zuletzt geändert durch Art. 4 MarktüberwachungsG Bauprodukte vom 17. Januar 2011 (GVOBl. Schl.-H. S. 3)
Thüringen:	§ 21 und § 23 der Thüringer Bauordnung (ThürBO) vom 16. März 2004 (GVBl. S. 349), zuletzt geändert durch Art. 1 des Gesetzes vom 23. Mai 2011 (GVBl. S. 85)

Fraunhofer
WKI

CE-Attestation

WKI-306-1/2009

In compliance with the Directive 89/106/EEC of the Council of European Communities of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products (Construction Products Directive – CPD), amended by the Directive 93/68/EEC of the Council of European Communities of 22 July 1993,

Fraunhofer-Institut für Holzforschung

Wilhelm-Klauditz-Institut (WKI)

Bienroder Weg 54 E, D-38108 Braunschweig

has performed the continuous surveillance, assessment and approval of the factory production control according to EN 13986 and EN 326-2 as a CE notified body 0765 based on supervision contract No. 493 in the first half-year of 2009 at:

Egger Holzwerstoffe Wismar GmbH & Co. KG
Am Haffeld 1
23670 Wismar

product:

MDF, recipe: 506, unfaced

technical class: Z-9.1-454, DIBt 100, E1

in the thickness range: > 12 mm ≤ 19 mm

product name: **EGGER DHF Unterdeckplatte**

This attestation confirms the validity of CE-Certification No. CPD-0765-306 and is effective until 15th January 2010, subject to the positive evaluation of the audit in the following half-year. The continuous external supervision of factory production control shall take place twice a year.

Dipl.-Ing. Harald Schwab
Head of the Testing, Supervision
and Certifying Body
Braunschweig, 15th of June 2009

durch die oberste Bauaufsichtsbehörde anerkannte Überwachungs- und Zertifizierungsstelle
ÜZ
Wilhelm-Klauditz-Institut
WKI
Braunschweig

CARB notified TPC 4 EC notified 0765	Durch die oberste Bauaufsichtsbehörde anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle und akkreditierte Prüf- und Inspektionsstelle		Vorstand der Fraunhofer-Gesellschaft Univ.-Prof. Dr.-Ing. habil. Prof. e.h. mult. Dr. h.c. mult. Hans-Jörg Bullinger, Präsident Prof. Dr. rer. nat. Ulrich Buller Dr. rer. pol. Alfred Gossner Prof. Dr. phil. Marion Schick Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e. V., München WKI ist eine eingetragene Marke der Fraunhofer-Gesellschaft
Deutscher Akkreditierungs Rat DAR DAP-PL-2071.00	ilac-MRA	Deutscher Akkreditierungs Rat DAR DAC-IS-0009-08	

MORE FROM WOOD.

EGGER

PROHLÁŠENÍ VÝROBCE O SHODĚ

Dle směrnice Rady Evropského společenství z 21. prosince 1988 k harmonizaci právních a správních předpisů členů pro stavební výrobky – 89/106/EHS - (směrnice pro stavební výrobky - BPR), změněna směrnicí Rady Evropského společenství z 22. července 1993-93/68/EHS-, uvedena do praxe v Německu zákonem o stavebních výrobcích– BauPG z 28. dubna 1998, tímto potvrzujeme, že pro stavební výrobek

DIFÚZNĚ OTEVŘENÁ DŘEVOVLÁKNITÁ DESKA (OZNAČENÍ VÝROBCE: EGGER DHF)

technická třída: MDF.RWH

Vláknité desky vyráběné suchým procesem (MDF) jak je popsáno v EN 622-5 pro vnitřní užití jako nenosný stavební prvek v podhledech střech a stěnových konstrukcích ve vlhkém prostředí,

s odpovídajícími vlastnostmi dle EN 13986:2004,

jakož i zvláštnímu určení použití:

Eurotřída D-s2, d0, (>9mm, ρ ≥ 600 kg/m³)
vodní pára – koeficient difúzního odporu [μ]: 11 (EN ISO 12572)
tepelná vodivost [W/mK]: 0,10 (EN 12664)

vyráběné výrobcem

EGGER Holzwerkstoffe Wismar GmbH & Co. KG
Am Haffeld 1
D-23970 Wismar
Německo

ve výrobním závodě viz výše,

byly provedeny pro důkaz shody předepsané postupy dle systému 4, ze kterých vyplynula shoda stavebního výrobku. Prvotní zkouška byla provedene uznaným zkušebním místem

Fraunhofer-Institut für Holzforschung
Wilhelm-Klauditz-Institut (WKI)
Bienroder Weg 54 E
D-38108 Braunschweig, Německo

Toto prohlášení bylo vystaveno dne **9.10.2006** a platí do té doby, dokud se ustanovení ve výše uvedené harmonizující normě nezmění a pokud se výrobní podmínky v závodě nebo ve vlastní závodní výrobní kontrole podstatně nezměnily.

Wismar, 09.10.2006

Paul Stöckl
technický ředitel

Dipl. Ing.(FH) Stefan Jacobs
obchodní ředitel

DR. RALPH DERRA
Öffentlich bestellter und vereidigter Sachverständiger für Verpackungsmaterialien, Boden- und Luftanalysen

Akkreditiert gemäß DIN EN ISO / IEC 17025 DIN EN 45011
DACH
DAC-PL-0035-97-20
DAC-ZE-002-08

ISEGA – Forschungs- und Untersuchungs-Gesellschaft mbH Aschaffenburg

EGGER Holzwerkstoffe Wismar
09. DEZ. 2011
Eingegangen

63704 Aschaffenburg, Postfach 100565
63741 Aschaffenburg, Zeppelinstr. 3-5
Germany
Telefon +49 (0) 60 21 / 49 89-0
Telefax +49 (0) 60 21 / 49 89-30
Email info@isega.de
http://www.isega.de

7 December 2011
Dr. Dr/be-hoe

UNBEDENKLICHKEITSERKLÄRUNG
CERTIFICATE OF COMPLIANCE
CERTIFICAT DE CONFORMITE

eingetragen registered no. registré	32768 U 11
für Firma for Messrs pour MM	EGGER Holzwerkstoffe Wismar GmbH & Co. KG Am Haffeld 1 23970 Wismar Germany
Produkt Product Produit	EUROSTRAND OSB 4 TOP EUROSTRAND OSB 3 E0

The products manufactured by the company mentioned above are used for keeping and transporting foodstuffs which are washed or peeled before the consumption according to experience.

They were examined by us according to the

Methoden zur Untersuchung von Kunststoffen, soweit sie als Bedarfsgegenstände im Sinne des Lebensmittel- und Bedarfsgegenständegesetzes verwendet werden, einschließlich der 62. Mitteilung des BfR zur Untersuchung von Hochpolymeren, Bundesgesundheitsblatt 50, 524 (2007), Stand vom April 2007,

(Methods for testing plastics as far as they are used as consumer goods as defined by the Foodstuffs and Consumer Goods Act, including the 62nd memorandum of the BfR on the examination of high polymers, Bundesgesundheitsblatt 50, 524 (2007), state of April 2007), for the composition as well as for the release of substances which might endanger health and to the

"Methoden zur Untersuchung von Bedarfsgegenständen, Grundregeln für die Ermittlung der Migration in Prüflebensmittel", entsprechend der Vorschrift Nr. 80.30, 1 - 3 (EG) in der Amtlichen Sammlung von Untersuchungsverfahren nach § 64 des Lebensmittel- und Futtermittelgesetzbuchs - LFGB, Stand vom Juni 2004,

("Methods for the examination of consumer goods, basic rules for the determination of the migration into food simulants", according to the standard no. 80.30, 1 - 3 (EC) within the Official Collection of Testing Methods according to § 64 of the Foodstuffs and Animal Feed Code - LFGB, state of June 2004),

as well as to the

Series of standards EN 1186, EN 13130 and CEN/TS 14234 „Materials and Articles in Contact with Foodstuffs - Plastics", current state,

for the migration behaviour.

The products are in compliance with the rules of the

Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC, Official Journal of the European Union L 338/4 of 13.11.2004, modified by app. no. 5.17 of the regulation (EC) No 596/2009 of 18 June 2009, Official Journal of the European Union L 188 of 18 July 2009, article 3,

as well as of the

Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch (Lebensmittel- und Futtermittelgesetzbuch - LFGB) in der Fassung der Bekanntmachung vom 22. August 2011 (BGBl. I S. 1770), §§ 30 und 31,

(Foodstuffs, Consumer Goods and Animal Feed Code (Foodstuffs and Animal Feed Code - LFGB) in the version of the notification of 22 August 2011 (BGBl. I p. 1770), §§ 30 and 31).

Limit values of the

Commission Regulation (EU) No 10/2011 of the Commission of 14 January 2011 on materials and articles made of plastic which are intended to come into contact with food, Official Journal of the European Union L 12/1 of 15 January 2011, last amendment by Commission Implementing Regulation (EU) No 321/2011 of 1 April 2011, Official Journal of the European Union L 87/1 of 2 April 2011,

as well as of the

Bedarfsgegenständeverordnung in der Fassung der Bekanntmachung vom 23. Dezember 1997 (BGBl. 1998 I S. 5), zuletzt geändert durch Artikel 1 der Verordnung vom 7. Februar 2011 (BGBl. I S. 226),

(Decree on Consumer Goods in the version of the communication of 23 December 1997 (BGBl. 1998 I p. 5), last modification by Article 1 of the Decree of 7 February 2011 (BGBl. I p. 226)),

- 3 -

are kept by the products regarding the intended use.

Thus, the products EUROSTRAND OSB 4 TOP and EUROSTRAND OSB 3 E0 according to the sample material submitted may be used safely for keeping and transporting foodstuffs which are washed and peeled before the consumption according to experience and may stand in direct contact with them.

This certificate of compliance has a validity of 2 years. It consists of 4 pages.

Staatlich anerkannter Sachverständiger zur Untersuchung der Gegenproben von Verpackungsmitteln aus Papier, Pappe, Kunststoffen, Glas, Weißblech und sonstigen Metallverpackungen auf ihre lebensmittelrechtliche Unbedenklichkeit

(Behrendt)
Officially certified
and authorized food
chemist

Von der Industrie- und Handelskammer Aschaffenburg öffentlich bestellt und vereidigt
Dr. rer. nat. Ralph Derra
Sachverständiger für Verpackungsmaterialien

Bundesverband öffentlich bestellter und vereidigter Sachverständiger e.V.
Mitglied des BVS
Landesverband Bayern e.V.

The translation of the above stamps is given on page 4.
La traduction des estampilles est donnée en page 4.

Page 4 of the document of 7 December 2011 ISEGA Forschungs- und Untersuchungs-Gesellschaft mbH Aschaffenburg

32768 U 11

Staatlich anerkannter Sachverständiger zur Untersuchung der Gegenproben von Verpackungsmitteln aus Papier, Pappe, Kunststoffen, Glas, Weißblech und sonstigen Metallverpackungen auf ihre lebensmittelrechtliche Unbedenklichkeit

Dr. Ralph Derra

Authorized expert for the analyses of packaging materials, attested by the Aschaffenburg Chamber of Industry and Commerce.

Expert autorisé pour l'analyse des matériaux d'emballage, assermenté par la Chambre d'Industrie et de Commerce d'Aschaffenburg.

State registered expert for the analysis of contrasting samples of packaging materials of paper, board, plastics, glass, tin plate and other metallic packaging materials as to their suitability for use with foodstuffs.

Expert public pour l'étude du control des contre-échantillons d'emballages de papier, cartons, plastiques, verre, fer-blanc et d'autres emballages métalliques concernant leur conformité alimentaire.

Dr. Ralph Derra

Authorized expert for the analyses of soil and air, attested by the Aschaffenburg Chamber of Industry and Commerce.

Expert autorisé pour l'analyse du sol et de l'air, assermenté par la Chambre d'Industrie et de Commerce d'Aschaffenburg.

Die Rücklagen des untersuchten Materials werden bei der Gutachterstelle verwahrt.
A file sample of the tested material is kept at the expert's office.
Réserve du matérial analysé est gardée au bureau de l'expert.

MEHR AUS HOLZ.

EGGER

EC KONFORMITÄTSERKLÄRUNG DES HERSTELLERS

Gemäß der Richtlinie des Rates der Europäischen Gemeinschaft vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitglieder über Bauprodukte - 89/106/EWG - (Bauproduktenrichtlinie - BPR), geändert durch die Richtlinie des Rates der Europäischen Gemeinschaft vom 22. Juli 1993-93/68/EWG-, umgesetzt in Deutschland durch das Bauproduktengesetz – BauPG vom 28. April 1998, wird hiermit bestätigt, dass für das Bauprodukt

OSB - Platte
HERSTELLERBEZEICHNUNG: „EUROSTRAND® OSB 3 E0"
TECHNISCHE KLASSE: OSB/3

Platten aus langen, schlanken, ausgerichteten Spänen (OSB) wie in EN 300 definiert, für die Innen- und Außenverwendung als tragendes Bauteil im Feuchtbereich, mit entsprechenden Leistungseigenschaften nach EN 13986:2004,

Dicke	Rohdichte	Brandklasse	Klassifizierung gemäß
≤ 12 mm	≥ 580 kg/m³	E	MA 39 – VFA 2004-0568.01 des Magistrats der Stadt Wien;
≥ 6 mm ‹9 mm	≥ 630 kg/m³	E	MA 39 – VFA 2004-0567.01 des Magistrats der Stadt Wien;
≥ 9 mm	≥ 600 kg/m³	D-s2, d0	EN 13986:2004, Tabelle 8 (CWFT)

hergestellt durch den Hersteller

EGGER Holzwerkstoffe Wismar
GmbH & Co. KG
Am Haffeld 1
23970 Wismar
Deutschland

im Herstellerwerk

EGGER Holzwerkstoffe Wismar
GmbH & Co. KG
Am Haffeld 1
23970 Wismar
Deutschland

die zum Nachweis der Konformität vorgeschriebenen Verfahren durchgeführt worden sind und die Konformität des Bauprodukts ergeben haben. Die Erstinspektion des Werkes und der werkseigenen Produktionskontrolle sowie die laufende Überwachung, Beurteilung und Anerkennung wurde durch die anerkannte Stelle

Frauenhofer-Institut für Holzforschung
Wilhelm-Klauditz-Institut (WKI)
Bienroder Weg 54 E
38108 Braunschweig
Deutschland

aufgrund des Überwachungsvertrages Nr. 353 durchgeführt

Diese Erklärung wurde am 21.12.2011 ausgestellt und gilt solange, wie sich die Festlegungen in der oben angeführten harmonisierten Norm nicht ändern und die Herstellbedingungen im Werk oder in der werkseigenen Produktionskontrolle sich nicht wesentlich verändert haben.

Wismar, den 21.12.2012

Erich Macala
Geschäftsführer Technik

Stefan Jacobs
Geschäftsführer Verkauf

Fraunhofer
WKI

CE-Attestation

WKI-353-1/2009

In compliance with the Directive 89/106/EEC of the Council of European Communities of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products (Construction Products Directive – CPD), amended by the Directive 93/68/EEC of the Council of European Communities of 22 July 1993,

Fraunhofer-Institut für Holzforschung

Wilhelm-Klauditz-Institut (WKI)
Bienroder Weg 54 E, D-38108 Braunschweig

has performed the continuous surveillance, assessment and approval of the factory production control according to EN 13986 and EN 326-2 as a CE notified body 0765 based on supervision contract No. 493 in the first half-year of 2009 at:

Egger Holzwerstoffe Wismar GmbH & Co. KG
Am Haffeld 1
23670 Wismar

product:

OSB, recipe: 730, unfaced

technical class: EN 300, OSB/3; DIBt 100, E1

in the thickness range: > 10 mm ≤ 40 mm

product name: **EUROSTRAND OSB/3**

This attestation confirms the validity of CE-Certification No. CPD-0765-353 and is effective until 15th January 2010, subject to the positive evaluation of the audit in the following half-year. The continuous external supervision of factory production control shall take place twice a year.

Dipl.-Ing. Harald Schwab
Head of the Testing, Supervision
and Certifying Body
Braunschweig, 7th of July 2009

Durch die oberste Bauaufsichtsbehörde anerkannte Überwachungs- und Zertifizierungsstelle
ÜZ
Wilhelm-Klauditz-Institut WKI Braunschweig

CARB notified TPC 4 EC notified 0765	Durch die oberste Bauaufsichtsbehörde anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle und akkreditierte Prüf- und Inspektionsstelle		Vorstand der Fraunhofer-Gesellschaft Univ.-Prof. Dr.-Ing. habil. Prof. e.h. mult. Dr. h.c. mult. Hans-Jörg Bullinger, Präsident Prof. Dr. rer. nat. Ulrich Buller Dr. rer. pol. Alfred Gossner Prof. Dr. phil. Marion Schick Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e. V., München WKI ist eine eingetragene Marke der Fraunhofer-Gesellschaft
Deutscher Akkreditierungs Rat DAR DAP-PL-2071.00	ilac-MRA	Deutscher Akkreditierungs Rat DAR DAC-IS-0009-08	

MORE FROM WOOD.

EGGER

Confirmation for the compliance of REACH order 1907/ 2006/EC (SVHC List)

REACH means **R**egistration, **E**valuation and **A**uthorisation of **Ch**emicals.

It is a European Regulation (1907/2006/EC) and became operative on 1 June 2007. REACH will harmonize the current chemical rights for registration, assessment and permission of chemical substances, in which the onus on responsibility of the industry has become important. The implementation of REACH will occur in 3 levels in the next 10 years.

The first level is concerned with materials and preparations which are produced in quantities more than 1 tonne per year or are imported by the EU countries. To place these substances on the market will be permitted only after previous registration.

EGGER are aware of their responsibilities according to the Regulation. There is an internal group of specialists that supervises and controls the implementation of REACH.

Our products

- Raw chipboards (trade name EUROSPAN®),
- Melamine faced boards (trade name EURODEKOR®),
- Medium (MDF) and high density fibreboards (HDF) and prefabricated furniture components,
- Lightweight boards (trade name EUROLIGHT®)

are 'Articles' according to REACH, for which EGGER has to fulfil their duties and provide relevant information to their customers (downstream users). REACH does not intend a registration or pre registration for any of our products.
EGGER stays in regular contact with our suppliers. The manufacturers of materials, as well as the importers have insured us to carry out the necessary registrations or pre registration where applicable.
Therefore, it can be confirmed from today's view that, no restrictions have arisen for the production of our products.

Information about SVHC (Substances of Very High Concern)

REACH intends a special licensing procedure for the substances of Very High Concern (SVHC).
According to the article 33 of the REACH order the supplier of a product which contains a material from the candidate's list in a concentration of more than 0.1% (w/w) is obliged to inform his customer accordingly.

We would like to confirm, that because of the amount of materials from the first candidate's list (last updated 18.06.2012) used for our products there is no further obligation to report.

For further questions please contact:

Manfred Riepertinger
Product management Environment & Core Products

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Tel: +43 (**0**) 50600-10026
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Internet: http://www.egger.com

He will immediately answer your questions under direction from our expert team.

Manfred Riepertinger
Product management group
Environment & Core Products
16.07.2012, St. Johann/Tyrol

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07 14 16 COLD FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.01 SUBMITTALS

A. Product Data.

1.02 SECTION INCLUDES

A. SikaRoof MTC Systems including:

1. Sikalastic 601 BC
2. Sikalastic 621 TC
3. Sika Reemat Premium
4. Sika Flexitape Heavy

1.03 MANUFACTURERS

A. For Czech Republic

1. Sika CZ, s.r.o.

Bystrcka 1132/36, 624 00 Brno
Tel.: +420 546 422 464, fax: +420 546 422 400
sika@cz.sika.com, www.sika.cz

B. For USA market

1. Sika Corporation

201 Polito Avenue
Lyndhurst NJ 07071
United States of America
phone+1 201 933 8800
fax+1 201 804 1076

PART 2 - PRODUCTS

2.01 SIKALASTIC 601 BC

A. Base coat

B. A cold applied, highly elastic, aliphatic, single component, moisture-triggered polyurethane base coat designed for easy application as part of Sikalastic RoofPro roofing and waterproofing systems.

C. Color: Oxide red

D. Base: OSB

1. Timber based panel roof decks must be in good condition, firmly adhered and mechanically fixed. Suitable edge support to prevent differential deflection between panels should be provided. Panel edges should be tongue and groove or supported on solid blocking. Space panels 1/8 to 3/16 inch at panel ends, and fill joints flush with Sikaflex sealant.

E. web sites: http://usa.sika.com/dms/getdocument.get/4ff354cb-6f2b-3f21-a515-765c7c878e3b/

2.02 SIKALASTIC 621 TC

A. Top coat

B. Sikalastic 621 TC (US) is a cold applied, highly elastic, aliphatic, single component, moisture-triggered polyurethane base and top coat designed for easy application as part of Sikalastic RoofPro roofing and waterproofing systems.

C. Color: Steel gray

D. web site: http://usa.sika.com/dms/getdocument.get/8b15d63c-9ce0-3a3d-86a8-03fa74679a8d/tds-cpd-Sikalastic%20621%20TC-us.pdf

2.03 SIKA FLEXITAPE HEAVY

A. Polyamide knitted reinforcement for use with Sikalastic RoofPro and Sikagard wall coating systems.

B. To be used to rainforce all joints

C. web site: http://usa.sika.com/dms/getdocument.get/2e2ce20f-49ee-3544-bf2c-54285c7f93fa/pds-cpd-Sika-Flexitape-us.pdf

2.04 SIKA REEMAT PREMIUM

A. Fibre glass rainforcement fabric

B. To be used for rainforcement in all surface

C. web site: http://usa.sika.com/dms/getredirect.get/us01.webdms.sika.com/830

PART 3 - EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

A. Keep away from heat, sparks, sunlight, electrical equipment or flame. Vapors may ignite and **explode. Do not smoke.** Open doors and windows during use. Use adequate local and mechanical ventilation. Wear protective equipment (chemically resistant gloves/goggles/clothing) to prevent direct contact with skin and eyes. Use properly fitted niosh vapor cartridge respirator if ventilation is poor. Wash thoroughly with soap and water after use. Remove contaminated clothing after use. Store product in tightly sealed containers in a cool, dry well ventilated area at temperatures between 40° f and 85°f away from ignition sources.use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Installation

3.02 INSTALATION

A. Sikalastic 601 BC

1. Mixing not required.

2. Apply either Sikalastic 601 BC or Sikalastic 621 TC per RoofPro System Guide at 45 mils with a 1/2 inch nap phenolic resin core roller. Material can also be squeegee or spray applied, in which case it should be backrolled prior to embedding Sika Reemat. Place Sika Reemat in wet base coat overlapping seams a minimum of 2 inches (place frayed edge over cut edge of roll) and apply wet roller to topside to saturate completely.

3. After approximately 5 minutes the binder will begin to dissolve allowing the fiber strands to conform to irregular surfaces. Do not over work once the fibers have conformed to the substrate.

4. Allow to cure 12 hours at 70 degrees F and 50 % RH or until tack free before top coating.

5. Keep clean and dry and apply top coat within 7 days. If window exceeded clean with non-sudsing detergent and clean water rinse and allow to dry prior to application of Sika Reactivation Primer.

B. Sika Flexitape Heavy

1. Use to raiforce all joints

2. When necessary, pre-cut lengths with knife or scissors.

3. Apply a full embedment coat as required approximately 33% wider than the tape (40-45 mils for Flexitape Heavy and 20 mils for Flexitape Light) and insert tape into wet coating by gentle pressure with a loaded brush, thus applying additional material until tape is obliterated.

4. Be sure to apply Sika Flexitape without tension or stretching of the tape. Lay the tape naturally as possible, direct from the roll, inner face upwards in order to avoid edge curl.

C. Sikalastic 621 TC

1. Mixing not required.

2. Apply Sikalastic 621 TC at the coverage rate in the RoofPro Systems Guide with a 1/2 inch nap phenolic resin core roller. Material can also be squeegee or spray applied, in which case it should also be backrolled.

3. Keep clean and dry and apply top coat within 7 days. If window exceeded clean with non-sudsing detergent and clean water rinse and allow to dry prior to application of Sika Reactivation Primer.

3.03 LIMITATIONS

A. To avoid dew point conditions during application, relative humidity must be no more than 95% and sub-strate temperature must be at least 5 degrees F (3 degrees C) above measured dew point temperatures.

B. Minimum ambient temperature during application and curing of material is 40 degrees F (5 degrees C); maximum is 95 degrees F (35 degrees C). Sufaces temperatures must be no higher than 140 degrees F (60 degrees C).

C. Do not apply on substrates with moisture content greater than 4% by weight.

D. Substrate must be dry prior to application. Do not apply to a frosted, wet or damp surface. Allow sufficient time for the substrate to dry after rain or inclement weather, as there is the potential for bonding prolems.

E. Any repairs required to achieve a level surface must be performed prior to application (consult a Sika representative for guidance on various product solutions). Surface irregularities may reflect through the cured system.

END OF SECTION 07 14 16

07 21 13 BOARD INSULATION

PART 1 - GENERAL

1.01 SUBMITTALS

A. Product Data.

B. Construction and shop drawings.

1.02 SECTION INCLUDES

A. Flexible wood fiber insulation for substructure, wall and roof structural insulated panels.

B. Hard board fibrous insulation for wall and substructure structural insulated panels.

1.03 MANUFACTURERS

A. STEICO CEE Sp. z o.o.

ul. Przemysłowa 2
64-700 Czarnków
Poland
Tel: +48 67 35 66 201
Fax: +48 67 35 60 901

PART 2 - PRODUCTS

2.01 FLEXIBLE INSULATION - STEICO FLEX

A. Description: wood fiber flexible insulation, sustainable and FSC® certified, good fire resistance (according to EN 13501-1),

B. Material properties:

1. Board dimensions: 1220/575 mm

    a. Thicknesses: hinged SIP– 160 mm and 100 + 120 mm

    b. substructure SIP– 120+120 mm

    c. roof SIP– 160+ 100 + 120 mm

2. weight: 10,0 kg/m2, 6 kg/m2, 9 kg/m2, 10+8 kg/m2

3. λ value (declared thermal conductivity) = 0,038 W/(mK)

4. μ value (water vapor diffusion resistance factor) = 1/2

5. specific heat capacity c = 2100 J/(kgK)

C. web sites: http://www.steico.com/en/products/wood-fibre-insulation/steicoflex.html

2.02 BOARD INSULATION – STEICO PROTECT

A. Description: wood fiber flexible insulation, sustainable and FSC® certified, good fire resistance (according to EN 13501-1), boards tongue and grooved on all four sides for better airtightness.

B. Material properties:

1. Board dimensions: 1300/590 mm

   a. Thicknesses: substructure SIP – 60 mm

2. weight: 15,0 kg/m2

3. λ value (declared thermal conductivity) = 0,048 W/(mK)

4. μ value (water vapour diffusion resistance factor) = 5

5. specific heat capacity c = 2100 J/(kgK)

6. minimum compression strength = 180 kPa

C. web sites: http://www.steico.com/en/products/wood-fibre-insulation/steicoprotect/overview.html

2.03 PRODUCT NAME – STEICO THERM

A. Description: wood fibre rigid insulation, good fire resistance (according to EN 13501-1), high compression strength.

1. dimensions: 1350/600

   a. Thicknesses: floor panels – 4x 15mm

2. weight: 3,2 kg/m2

3. λ value (declared thermal conductivity) = 0,039 W/(mK)

4. μ value (water vapor diffusion resistance factor) = 5

5. specific heat capacity c = 2100 J/(kgK)

6. minimum compression strength = 50 kPa

B. web sites: http://www.steico.com/en/products/wood-fibre-insulation/steicotherm/overview.html

PART 3 - EXECUTION

3.01 ENVIRONMENTAL REQUIREMENTS

A. No special environmental requirements.

3.02 DELIVERY, STORAGE AND HANDLING

A. Store product in protected area and protect it from moisture and damage. In case of moisture ingress please dry immediately and prevent further moisture uptake

B. Insulation boards should be stored flat on a level surface.

C. Protect edges against damage.

D. Remove foil packing only when the board is ready to be installed.

E. Transport packaging should only be removed once the pallet is on a safe and level surface.

3.03 INSTALLATION

A. Before cutting the product, determine the width of the compartment to be filled and add an additional 10 to 20 mm to this measurement.

B. Install in accordance with the manufacturer's recommendations.

C. Don´t walk on the uncovered insulation boards.

D. In order to make simple and uncomplicated cuts, it is best to use a special STEICO insulation knife or an electric all-purpose saw (recommendation: Bosch GFZ A 14-35).

E. STEICOflex is installed into voids using minimum pressure (cut the board 10 mm oversize to assist friction fitting).

END OF SECTION 07 21 13

07 26 13 VAPOR RETARDERS

PART 1 - GENERAL

1.01 SUBMITTALS

A. Product Data

B. Construction and shop drawings.

1.02 SUMMARY

A. This section includes the vapor retarder for the AIR house in the ventilated cavity in roof.

PART 2 - PRODUCTS

2.01 ISOCELL OMEGA 140G

A. Manufacturer:
ISOCELL GMBH
Bahnhofstraße 36
A-5202 Neumarkt am Wallersee

B. Description: water-resistive barrier with extreme UV resistance, suitable for use in open joint cladding systems (open joints of up to 2” / 50 mm), vapor permeable, tear resistant, acts as a durable drainage plane, channeling bulk (liquid) water from wind-driven rain and snow to the outside of the structure, class A fire-rated

1. dimensions of roll: 1 500/50 000 mm

2. weight: 140 g/m2

3. material: polyester substrate with a special, highly UV-stabilized acrylic coating

4. water vapor transmission = 516,6 g/m2/24 h

5. min. tensile strength: 370/270 N/50 mm (MD = 47,4 lbs/in, CD = 28,7 lbs/in)

C. web sites: http://www.isocell.at/en/main-menu/products/airtight/roof-construction-outside.html

D. location in the house: roof ventilated cavity (top layer above OSB board)

E. No accessories are needed.

PART 3 - EXECUTION

3.01 ENVIRONMENTAL REQUIREMENTS

A. Application of sealing or flexx-band at temperatures above 5 °C.

3.02 DELIVERY, STORAGE AND HANDLING

A. Store product in protected area and protect it from damage and pollution.

B. The product should be stored in the temperatures between -5 and 30 °C.

3.03 INSTALLATION

A. Install in accordance with the manufacturer's recommendations.

B. Prior to beginning the installation of the DELTA® FASSADE S, step flashings and kick-out flashings should be installed. The foil can be interconnected by hot air welding or heating wedge (single-track weld).

C. Depending on detail element, only partially remove backing cover of the flexx-band. When terminating vapor barriers, fix with nails to the base structure and plaster over (dampen fabric first).

D. Open time of sealant Delta-than is max. 10 mins.

E. More at: http://www.isocell.at/uploads/media/VAR_Omega_Dachbahnen_8sprachig_farbe_02.pdf

END OF SECTION 07 26 13

07 27 00 AIR BARRIERS

PART 1 - GENERAL

1.01 SUBMITTALS

A. Product Data

1.02 SUMMARY

A. This section includes the AIRSTOP adhesive tape.

PART 2 - PRODUCTS

2.01 AIRSTOP FLEX ADHESIVE TAPE

A. Manufacturer:

ISOCELL GMBH
Bahnhofstraße 36
A-5202 Neumarkt am Wallersee

B. Description:

1. Tear-resistant adhesive tape system with pure acrylate adhesive.
2. Temperature resistance: - 40 °c to +100 °c
3. Web sites: http://www.isocell.at/uploads/media/pdbl_airstop_flex_klebeband_en.pdf
4. Location in the house: all connections inside the prefabricated panels, all connections between the prefabricated peaces
5. No accessories are needed.

PART 3 - EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

A. Adhesion technique:

1. The tape must be applied firmly to the entire surface of the substrate. The greater the pressure applied, the better the performance of the adhesive tape (use a roller to apply pressure).Tape can be applied to tape without any problem, and/or tape can be applied transversely (an exception is:Airstop quick tape). We recommend that airstop sealant sprint is used for plastered surfaces or very rough

B. Bonding time:

1. After application of the AIRSTOP adhesive tape a so-called ‘welding process’ takes place. Depending on the temperature this can take 6 – 24 hours. There is maximum adhesion only after this process is completed.

C. Removal of the adhesive tape:

1. Slightly heat the adhesive tape using a hairdryer until the adhesive becomes very soft, then slowly pull the tape. When the correct temperature is reached usually the tape will come off complete withall the adhesive. Any adhesive residue can be removed with AIRSTOP Cleaning Agent for Adhesives. Care should be taken on sensitive substrates not to rub any particular spot for too long. Preferably wait 5 – 15 mins., then spray on AIRSTOP Cleaning Agent again and wipe off.

D. Storage:

1. Cool and dry in a sealed carton; do not stack rolls on top of each other without placing paper in between to separate them.

END OF SECTION 07 27 00

07 46 00 SIDING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes information about plywood and MDF.

1.02 RELATED SECTIONS

A. 09 91 13: Exterior painting

B. 09 93 13 Exterio Staining and Finishes

1.03 SYSTEM DESCRIPTION

A. Plywood: Water resistant plywood is large surface plywood material composed of odd number of plies, glued to each other perpendicularly to fiber direction by a phenol-formaldehyde adhesive. It is produced of inland needle wood species, mainly of spruce and pine. The quality of glued bond fulfils the demands of glued class 3 according to the norm ČSN EN 314-2 (EW 100). The plywood is determined for outside use like a carrier element (EN 636-3). The product can be used in dry (EN 636-1) as well as in humid environment (EN 636-2). The plates are in the class A of escape of free formaldehyde according to the norm ČSN EN 1084, this determination corresponds to emission class E1. Fire reaction: class D-S2, d0.

B. MDF: MDF is produced from wood fiber (especially spruce), bonded together by a synthetic glue, using temperature and pressure. It is intended for non-load-bearing purposes in furniture-making, cabinet-making, milling workshops and other use in interiors. The structure of the boards allows quality finishing of the surface using milling and lacquering. The smooth surface (finished by grinding), solid edges, homogeneity and excellent workability belong among the great characteristics of this product. They comply in all parameters with the EN 622-1 and EN 622-5 standards.

1.04 SUBMITTALS

A. Manufacturer's data sheets on each product must be submitted, including:

1. Preparation instructions and recommendations.

2. Storage and handling instructions.

3. Installation methods.

4. Certified test reports.

PART 2 - PRODUCTS

2.01 WATERPROOF PLYWOOD

A. THICKNESS: 12 MM

B. Moisture: max. 12%

C. Properties: high stability and elasticity owing to the volume weight steady dimension

D. Use: exterior façade

2.02 MDF

A. Thickness: 18 mm,22 mm

B. Basic format: 2750 x 1840 mm

C. Density: 770 kg/m3

D. Quality: suitable for lacquering, lamination, milling edges and surfaces (board surface without stains, no traces of grinding, no defects on the surface, no defects on the edges or sides)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Plywood

1. Install plywood in compliance with the manufacturer's recommendations.
2. Use proper size screws to mount on the wooden grid.
3. Clean plywood before painting.

END OF SECTION 07 46 00

07 71 23 MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes manufactured galvanized steel gutters.

B. Related Sections:
   1. Section 07 90 00 - Joint Protection.

1.02 DESIGN REQUIREMENTS

A. Conform to applicable code for size and method of rain water discharge.

1.03 SUBMITTALS

A. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

B. Product Data: Submit data on manufactured components, materials, and finishes.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope to drain.

B. Prevent contact with materials during storage capable of causing discoloration, staining, or damage.

PART 2 - PRODUCTS

2.01 COMPONENTS

A. Pre-Finished Galvanized Steel Sheet: shop pre-galvanized

2.02 ACCESSORIES

A. Anchors and Supports: Profiled to suit gutters.

B. Fasteners: Same material and finish as gutters and downspouts, with soft neoprene washers.

2.03 FABRICATION

A. Form gutters of profiles and sizes indicated.

B. Fabricate with required connection pieces.

C. Form sections to shape indicated on Drawings, square, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate gutter accessories; solder/seal watertight.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify surfaces are ready to receive gutters and downspouts.

3.02 INSTALLATION

A. Sheet metal: join lengths with formed seams soldered watertight. Flash and solder gutters to downspouts and accessories.

END OF SECTION 07 71 13

DIVISION 7: ATTACHEMENTS

natureplus®

natureplus
Internationaler Verein für zukunftsfähiges
Bauen und Wohnen e.V.

ZERTIFIKAT
über die Vergabe des Qualitätszeichens

CERTIFICATE
for the award of the quality label

CERTIFICAT
pour l'attribution du label de qualité

Geprüfte Produkte Tested products Produits testés	**STEICO flex** **STEICO flex Keil**
Hersteller/Vertreiber Manufacturer/Distributer Producteur/Distributeur	**Steico AG** **D-85622 Feldkirchen** **Deutschland**
Produktart Type of product Nature du produit	Holzfaserdämmplatten Insulating wood-fiber-board Panneaux isolante thermique en fibre de bois
Zertifikatsnummer Number of certificate Numéro de certificat	0104-0307-003-1
Prüfumfang Test program Étendue du test	**Umwelt – Gesundheit – Funktion** Produktlebenslinie Laborprüfung (Inhaltsstoffe und Emissionen) Gebrauchstauglichkeit **Environment – Health – Function** Life cycle evaluation Laboratory test (content and emissions) Fitness for use **Environnement – Santé – Fonction** Cycle de vie du produit Test en laboratoire (composants et émissions) Aptitude à l'usage
Prüfergebnis Test result Résultat du test	Das Produkt/die Produkte erfüllt/erfüllen die strengen Anforderungen der natureplus-Vergaberichtlinie RL0104 Holzfaserdämmplatten The product/the products fulfills/fulfill the stringent requirements of the natureplus award guidelines RL0104 Insulating wood-fiber-boards Le(s) produit(s) mentionné(s) ci-dessus remplit/remplissent les exigences strictes des directives pour l'attribution de contrats de natureplus RL0104 Panneaux isolante thermique en fibre de bois
Gültigkeit des Zertifikats Validity of certificate Validité du certificat	**Juli / July / Juillet 2012**

Neckargemünd, 2009-8-27

natureplus

U. Roth
Prüfinstitut/Test Institute/Institute de Contrôle
ECO-Institut, Köln

natureplus International Association for Sustainable Building and Living natureplus Association internationale pour construction et habitation durable de l'avenir

www.natureplus.org

EC Konformitätserklärung
EC declaration of conformity
EC déclaration de conformité

STEICO
AKTIENGESELLSCHAFT

gemäß Richtlinie 89/106/EWG, Anhang III.2.(ii), Möglichkeit 2
according to guideline 89/106/EWG, appendix III.2.(ii), possibility 2
selon la directive 89/106/EWG, appendice III.2.(ii), possibilité 2

Hersteller: *manufacturer* *fabricant*	**STEICO AG** Hans-Riedl-Straße 21 DE – 85622 Feldkirchen
Herstellwerk: *place of production* *usine de production*	**STEICO S.A.** ul. Przemysłowa 2 PL – 64-700 Czarnków
Produktbezeichnung: *product identification* *indication de produit*	**STEICO flex** **STEICO flex Keil** Holzfaserdämmplatte *woodfibre insulationboard* *panneaux d´isolants en fibres de bois* WF – EN 13171 – T3 – TR1 – AF5 λ_D = 38 mW/(m*K) Euroklasse E – DIN EN 13501-1
Produktnorm: *product standard* *norme*	**DIN EN 13171** Wärmedämmstoffe für Gebäude Werksmäßig hergestellte Produkte aus Holzfasern (WF) Spezifikation Deutsche Fassung EN 13171:2001
Prüfstelle: *notified laboratory* *laboratoire notifié*	**MPA NRW** Marsbruchstraße 186 DE – 44287 Dortmund
Jahr der Erstdeklaration: *year of the first declaration* *l´année de la 1ere déclaration*	**2004**

Der Hersteller erklärt, dass das genannte Produkt den Bestimmungen der oben gekennzeichneten Richtlinie – einschließlich deren zum Zeitpunkt der Erklärung geltenden Änderungen – entspricht.
The manufactorer declares, that the above named product meets the regulations of the above marked guideline, includingly the valid changes at time of declaration.
Le fabricant déclare que le produit mentionné ci-dessus correspond aux dispositions indiquées, y compris les changements valides au moment de la déclaration.

Der Hersteller ist somit berechtigt, das Bauprodukt mit dem CE-Kennzeichen entsprechend § 12 BauPG zu kennzeichnen.
Therefore the manufacturer is allowed to sign the product with the CE mark, as shown in § 12 BauPG.
Le fabricant est ainsi autorisé de marquer le produit avec le signe CE selon la loi de construction allemande § 12 BauPG.

Feldkirchen, den 13. Januar 2006

(Udo Schramek)
Vorstandsvorsitzender
chairman of the board
président du directoire

EC Konformitätserklärung
EC declaration of conformity
EC déclaration de conformité

gemäß Richtlinie 89/106/EWG, Anhang III.2.(ii), Möglichkeit 2
according to guideline 89/106/EWG, appendix III.2.(ii), possibility 2
selon la directive 89/106/EWG, appendice III.2.(ii), possibilité 2

Hersteller: *manufacturer* *fabricant*	**STEICO AG** Hans-Riedl-Straße 21 DE – 85622 Feldkirchen
Herstellwerk: *place of production* *usine de production*	**STEICO S.A.** ul. Przemysłowa 2 PL – 64-700 Czarnków
Produktbezeichnung: *product identification* *indication de produit*	**STEICO therm** Holzfaserdämmplatte *woodfibre insulationboard* *panneaux d´isolants en fibres de bois* WF – EN 13171 – T3 – CS(10\Y)40 – TR2,5 – AF100 λ_D = 39 mW/(m*K) Euroklasse E – DIN EN 13501-1
Produktnorm: *product standard* *norme*	**DIN EN 13171** Wärmedämmstoffe für Gebäude Werksmäßig hergestellte Produkte aus Holzfasern (WF) Spezifikation Deutsche Fassung EN 13171:2001
Prüfstelle: *notified laboratory* *laboratoire notifié*	**MPA NRW** Marsbruchstraße 186 DE – 44287 Dortmund
Jahr der Erstdeklaration: *year of the first declaration* *l´année de la 1ere déclaration*	**2004**

Der Hersteller erklärt, dass das genannte Produkt den Bestimmungen der oben gekennzeichneten Richtlinie – einschließlich deren zum Zeitpunkt der Erklärung geltenden Änderungen – entspricht.
The manufactorer declares, that the above named product meets the regulations of the above marked guideline, includingly the valid changes at time of declaration.
Le fabricant déclare que le produit mentionné ci-dessus correspond aux dispositions indiquées, y compris les changements valides au moment de la déclaration.

Der Hersteller ist somit berechtigt, das Bauprodukt mit dem CE-Kennzeichen entsprechend § 12 BauPG zu kennzeichnen.
Therefore the manufacturer is allowed to sign the product with the CE mark, as shown in § 12 BauPG.
Le fabricant est ainsi autorisé de marquer le produit avec le signe CE selon la loi de construction allemande § 12 BauPG.

Feldkirchen, den 02. März 2009

(Udo Schramek)
Vorstandsvorsitzender
chairman of the board
président du directoire

DIVISION 08 OPENINGS

08 14 29 PREFINISHED WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes one insulated wood door with plywood finish (A) and two pcs. of uninsulated wood doors with plywood finish (B).

1.02 RELATED SECTIONS

A. 06 11 00 Wood framing

B. 07 46 00 Siding

C. 09 93 13 Exterior Staining and Transparent Finishing

D. 08 70 00 Hardware

1.03 DESCRIPTION

A. The load bearing construction of the exterior wood door is composed of lumber profiles. Space between them is filled with flexible wood fibre insulation. Exterior side is covered with varnish or blackboard paint treated plywood boards, interior side with untreated plywood.

B. The load bearing construction of the exterior wood door is composed of lumber profiles. Exterior side is covered with varnish or blackboard paint treated plywood boards, interior side with untreated plywood.

PART 2 - PRODUCTS

2.01 PRODUCTS

A. Wood door leaf, plywood finish: 1 pc.

B. Wood door leaf, insulated, plywood finish: 2 pcs.

C. Stainless Steel Hinges: 9 pcs. total

D. Stainless Steel Handles: 3 pcs. total

1. Door leaf dimensions (all 3 doors): 875 x 2285 mm (34.453 x 89.953 in)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Clean plywood before painting.

B. Paint only one side (exterior) of each door in accordance with manufacturer's recommendations.

C. Fix door hinges to lumber battens with screws in accordance with drawing, 3pcs. per door.

D. Install door leaf and adjust on hinges

E. Install door handles.

END OF SECTION 08 14 29

08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes the aluminum-framed all-glass entrance door.

1.02 RELATED SECTIONS

A. 08 70 00 Hardware

B. 08 51 13 Aluminium Windows – bathroom ventilation window casement

1.03 SYSTEM DESCRIPTION

A. The Schüco Door ADS 70.HI (High Insulation) has outstanding thermal insulation quality. The basic depth of 70 mm ensures a high degree of stability. The product will serve as the main entrance door. The clear, timeless design is to be combined with the certified Schüco window systems.

B. The entrance door is combined into one product with bathroom window casement Schüco Window AWS 70.HI – described separately in Section 08 51 13.

C. The sliding door is composed of 4 sections moving on a double rail. The profiles used are Schüco Sliding System ASS 70.HI Type 2A

1.04 SUBMITTALS

A. Manufacturer's data sheets on each product must be submitted, including:

1. Preparation instructions and recommendations.
2. Storage and handling instructions.
3. Installation methods.
4. Certified test reports.

B. Shop Drawings include the following:

1. Plans, elevations, and detail sections.
2. Materials, methods, finishes, and types of joinery, fasteners, anchorages, and accessory items.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Products are to be stored in manufacturer's unopened packaging until ready for installation.

B. Make special safety arrangements for shipping.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Schüco International KG

Karolinská 650/1
186 00 Prague 8
Czech Republic
tel.: +4 20 / 2 33 08 14 11
fax: +4 20 / 2 33 32 63 94
e-mail: info@schueco.cz

B. Substitutions: Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

1. Recommended manufacturer for US market: Schüco USA L.P.

32920 Alvarado-Niles Rd.
Union City, CA 94587
Toll Free: 877 472 4826
Phone: 510 477 0500
Fax: 510-477-0550
e-mail: info@schuco-usa.com

2.02 PRODUCTS

A. Schüco Door ADS 70.HI and Schüco Window AWS 70.HI

1. Size:

a. Total product size: 1750 x 2395 mm (68.897 x 94.291 in)

b. Door leaf dimension: 1067 x 2250 mm (42.008 x 88.583 in)

2. U value

a. Frame Uf 1.89 W/m2K

b. Glazing Ug 1.0 W/m2k

3. Glazing: double glazing, tempered safety glazing, interior surface treated with matt foil

4. Frame finish color: black, RAL 9004

5. Burglar resistance in accordance with DIN V ENV 1627 to 1630:

a. WK2

B. Schüco Window ASS 70.HI, type 2A

1. Size:
   a. Total size: 8010 x 2400 mm (315.354 x 94.489 in)
   b. Net leaf size: 2040 x 2250 mm (80.314 x 88.583 in)
2. U value
   a. Frame Uf 2.8 W/m2K
   b. Glazing Ug 1.0 W/m2k
3. Glazing: double glazing, tempered safety glazing
4. System: double rail
5. Frame paint color: black, RAL 9004
6. Burglar resistance in accordance with DIN V ENV 1627 to 1630:
   a. WK 2
7. Further tests
   a. Air permeability DIN EN 12207 - Class 4
   b. Weather tightness DIN EN 12208 - 9A
   c. Wind load resistance DIN EN 12210 - B5 C5
   d. Thermal transmittance DIN EN 12412-2Uf =1.5 – 1.9W/(m2K)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install doors and storefront in compliance with the manufacturer's recommendations.

B. Clean glass and frame surfaces promptly after installation, exercise care to avoid damage to coatings.

C. Protect installed products until the building is fully completed.

3.02 ACCESSORIES

A. Connection profile, Schüco (connection of door and window profiles for the entrance door)

END OF SECTION 08 41 13

08 41 26 ALL-GLASS ENTRANCE

PART 1 – GENERAL

1.01 SUMMARY

A. This section includes information about glazing of interior bathroom access and living space doors.

1.02 RELATED SECTIONS

A. 08 70 00 Hardware

1.03 SUBMITTALS

A. Manufacturer's data sheets on each product must be submitted, including:

1. Preparation instructions and recommendations.
2. Storage and handling instructions.
3. Installation methods.
4. Certified test reports.
5. Shop Drawings

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in special packaging until ready for installation.

B. Make special safety arrangements for shipping. Protect against damage if transported as an installed part of the unit.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Glass available from local manufacturers.

B. Substitutions: Requests for substitutions will be considered in accordance with the provisions of Section 01 25 00.

2.02 PRODUCTS

A. Bathroom entrance

1. Glass wall total dimension: 1275 x 2300 mm (50.197 x 90.551 in)
2. Glass entrance leaf size: 800 x 2300 mm (31.496 x 90.551 in)

3. Glass type: safety glass, matt foil applied

B. Hallway entrance

1. Glass wall (=door leaf size): 1200 x 2300 mm (47.244 x 90.551 in)

2. Glass type: safety glass, clear

PART 3 - EXECUTION

3.01 INSTALLATION

A. Clean door and frame surfaces promptly after installation, exercise care to avoid damage to coatings.

B. Protect installed products until the building is fully completed.

END OF SECTION 08 41 26

08 51 13 ALUMINUM WINDOWS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes ventilation bathroom window.

1.02 RELATED SECTIONS

A. 08 70 00 Hardware

B. 08 41 13 Aluminum-framed Entrances and Storefronts – see for the frame and installation of the bathroom ventilation window casement (product A. below).

1.03 SYSTEM DESCRIPTION

A. The Schüco ventilation window casement is made of window profile AWS 70.HI.

B. The Schüco south window is made using window profile AWS 70.HI. The window casement is motorized and automatically operable.

1.04 SUBMITTALS

A. Manufacturer's data sheets on each product must be submitted, including:

1. Preparation instructions and recommendations.
2. Storage and handling instructions.
3. Installation methods.
4. Certified test reports.

B. Shop Drawings include the following:

1. Plans, elevations, and detail sections.
2. Materials, methods, finishes, and types of joinery, fasteners, anchorages, and accessory items.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Products are to be stored in manufacturer's unopened packaging until ready for installation.

B. Make special safety arrangements for shipping.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Schüco International KG

Karolinská 650/1
186 00 Prague 8
Czech Republic
tel.: +4 20 / 2 33 08 14 11
fax: +4 20 / 2 33 32 63 94
e-mail: info@schueco.cz

B. Substitutions: Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

1. Recommended manufacturer for US market: Schüco USA L.P.

32920 Alvarado-Niles Rd.
Union City, CA 94587
Toll Free: 877 472 4826
Phone: 510 477 0500
Fax: 510-477-0550
e-mail: info@schuco-usa.com

2.02 PRODUCTS

A. Schüco Window AWS 70.HI

1. Size:

a. Bathroom Window casement dimension: 486 x 2260 mm (19.134 x 88.976 in)

b. South window total dimensions: 2010 x 1930 mm (79.134 x 75.984 in)

c. South window operable casement dimension: 1952 x 605 mm (76.850 x 23.819 in)

2. U value

a. Frame Uf 1.6 W/m2K

b. Glazing Ug 1.0 W/m2k

3. Glazing: double glazing, tempered safety glazing

4. Frame paint color: black, RAL 9004

5. Barrel hinge, freely adjustable in three dimensions

6. Burglar resistance in accordance with DIN V ENV 1627 to 1630:

a. WK2

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install window in compliance with the manufacturer's recommendations.

B. Clean glass and frame surfaces promptly after installation, exercise care to avoid damage to coatings.

C. Protect installed products until the building is fully completed.

3.02 ACCESSORIES

A. Connection profile, Schüco

END OF SECTION 08 51 13

08 70 00 HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes information about hinges, doorknobs, locks and other door hardware, all window hardware and other glass anchoring.

1.02 SUBMITTALS

A. Manufacturer's data sheets on each product must be submitted, including:

1. Preparation instructions and recommendations.
2. Storage and handling instructions.
3. Installation methods.
4. Certified test reports.
5. Shop Drawings

1.03 RELATED SECTIONS

A. 08 14 29 Prefinished wood doors

B. 08 41 13 Aluminum framed doors and storefronts

C. 08 41 26 All-glass entrances

D. 08 51 00 Metal windows

E. 08 81 00 Glass glazing

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Make special safety arrangements for shipping. Protect against damage if transported as an installed part of the unit.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. GEZE Česká republika s.r.o.

Suchardova 236
272 01 Kladno

Tel.: +420 312 662 989
e-mail: geze.cz@geze.com

1. Substitutions: Requests for substitutions will be considered in accordance with the provisions of Section 01 25 00.

   a. Recommended substitution on US market:

      United States of America
      GEZE Headquarter
      Reinhold-Vöster-Str. 21-29
      71229 Leonberg, Germany
      Tel.: +49 71 52/20 3-0
      Fax: +49 71 52/20 3-310
      e-Mail: vertrieb.services.de@geze.com
      www.geze.com

B. DORMA - dveřní technika ČR, s.r.o.

Vinohradská 184
130 52 Prague 3
Czech Republic
Tel. +420 267 132 178 (9)
Fax +420 267 132 171
e-mail: dorma@dorma.cz
web: www.dorma.cz/

1. Substitutions: Requests for substitutions will be considered in accordance with the provisions of Section 01 25 00.

   a. Recommended substitution on US market: DORMA Architectural Hardware

      DORMA Drive, Drawer AC
      Reamstown, PA 17567
      USA
      phone: 717-336-3881
      phone: 800-523-8483
      fax: 717-336-2106
      e-mail: archdw@dorma-usa.com
      web: www.dorma-usa.com

C. Schüco International KG

Karolinská 650/1
186 00 Prague 8
Czech Republic
tel.: +4 20 / 2 33 08 14 11
fax: +4 20 / 2 33 32 63 94
e-mail: info@schueco.cz

1. Substitutions: Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

    a. Recommended manufacturer for US market: Schüco USA L.P.

       32920 Alvarado-Niles Rd.
       Union City, CA 94587
       Toll Free: 877 472 4826
       Phone: 510 477 0500
       Fax: 510-477-0550
       e-mail: info@schuco-usa.com

D. SFS intec s.r.o.

   Vesecko 500
   511 01 Turnov
   Czech Republic
   tel.: +4 20 / 7 31 61 22 22
   fax: +4 20 / 4 81 35 44 01
   e-mail: cz.turnov@sfsintec.biz

1. Substitutions: Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

    a. Recommended manufacturer for US market: SFS intec S.p.A.

       2426 Port St
       West Sacramento, CA 95691
       Phone: 916 373 9912
       Fax: 916 373 0176
       e-mail: us.sacramento@sfsintec.biz

2.02 PRODUCTS

A. Floor spring (hinge) Geze – All glass interior door (2 pcs.)

   1. Related section 08 41 26

B. Clamp bearing Geze – Glazed Glass and fixed sections of All glass interior door

   1. Related section 08 81 00

   2. Related section 08 41 26

C. Door pull handle Dorma – All glass interior door (2 pcs.)

   1. Related section 08 41 26

D. Door handle and lock – Schüco – Aluminum framed door (entrance)

1. Related section 08 41 13

E. Door and window barrel hinges – Schüco.

1. Related section 08 14 29
2. Related section 08 41 13

F. Door hinge – SFS intec – Exterior wood doors

1. Type: Just-3D-000 for steel frame application
2. Material: stainless steel
3. Related section 08 14 29

G. Door handle and plate – Exterior wood doors

1. Material: stainless steel
2. Related section 08 14 29

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install products in compliance with the manufacturer's recommendations.

B. Protect installed products until the project is fully completed.

END OF SECTION 08 70 00

08 81 00 GLASS GLAZING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes information about bathroom shower glass screen and shower glazed ceiling.

1.02 SUBMITTALS

A. Shop Drawings include the following:

1. Plans, elevations and product drawing.

2. Materials, methods, finishes, and types of joinery, fasteners, anchorages, and accessory items.

1.03 RELATED SECTIONS

A. 08 70 00 Hardware

1.04 DELIVERY, STORAGE, AND HANDLING

A. Products are to be stored in manufacturer's unopened packaging until ready for installation.

B. Make special safety arrangements for shipping.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Local glazier

2.02 PRODUCTS

A. Shower screen

1. Material: glass, clear float tempered safety type with safety film over coating glass

2. Anchored to construction with clamp bearings (Geze) – see Section 08 70 00

3. Size: 675 x 2300 mm (26.575 x 90.551 in)

4. Thickness: 8 mm (0.315 in)

B. Glazed ceiling in shower

1. Material: glass, safety laminated glass with safety foil on both surfaces. Lower surface of glazing matt.

2. Size: 875 x 1275 mm (34.449 x 50.197 in)

3. Thickness: 20 mm (0.787 in)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install all glazed features in compliance with glazier's recommendations. Glue on the clean wall surface

B. Clean glass promptly after installation, care to avoid damage to coatings.

C. Protect installed products until the project is fully completed.

END OF SECTION 08 81 00

08 83 00 MIRRORS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes information about bathroom and entrance mirrors.

1.02 SUBMITTALS

A. Shop Drawings include the following:

1. Plans, elevations and product drawing.

2. Materials, methods, finishes, and types of joinery, fasteners, anchorages, and accessory items.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Products are to be stored in manufacturer's unopened packaging until ready for installation.

B. Make special safety arrangements for shipping.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Local glazier

2.02 PRODUCTS

A. Bathroom Mirror

1. Material: glass, clear float tempered safety type with copper and silver coating, organic, with safety film over coating glass

2. Size: 1100 x 1800 mm (43.307 x 70.866 in)

3. Thickness: 4 mm (0.157 in)

B. Entrance Mirror

1. Material: glass, clear float tempered safety type with copper and silver coating, organic, with safety film over coating glass

2. Size: 995 x 1500 mm (39.173 x 59.055 in)

3. Thickness: 4 mm (0.157 in)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install doors in compliance with glazier’s recommendations. Glue on the clean wall surface

B. Clean mirror promptly after installation, care to avoid damage to coatings.

C. Protect installed products until the project is fully completed.

END OF SECTION 08 83 00

DIVISION 09 FINISHES

09 21 16 GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all information about gypsum board assemblies in living room.

1.02 SECTION REQUIREMENTS

A. Submittals:

1. Product Data: Submit manufacturer's specifications and installation instructions with project conditions and materials.

B. Section includes

1. 2x layer of gypsum board 15mm

1.03 RELATED SECTIONS

A. 09 22 26 SUSPENSION SYSTEMS

B. 09 93 00 STAINING AND TRANSPARENT FINISHING

C. 23 83 16 RADIANT-HEATING HYDRONIC PIPING

D. 26 51 00 INTERIOR LIGHTING

E. 12 22 16 – DRAPERY TRACK AND ACCESSORIES

F. 21 13 00 - FIRE SUPPRESSION SPRINKLER SYSTEMS

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. KNAUF Praha, spol. s r.o.

Mladoboleslavská 949,

197 00 Kbely

2.02 PRODUCTS

A. Gypsum board

1. Location: living room

2. Size: 165.33ft² of two-layered gypsum board assembly

    a. Thickness: 2x 15mm gypsum board

3. Total gypsum board area: 165.33ft²

PART 3 - EXECUTION

3.01 INSTALATION

A. Install gypsum boards to the suspension system in accordance with manufacturer's recommendations.

1. Position gypsum boards into place without forcing them

2. Match similar edges and ends, i.e.: tapered to tapered, square-cut ends to square ends

3. Fit gypsum boards with proper screws in accordance with manufacturer's recommendations.

END OF SECTION 09 21 16

09 22 16 SUSPENSION SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all information about gypsum board assemblies in living room.

1.02 SECTION REQUIREMENTS

B. Submittals:

1. Product Data: Submit manufacturer's specifications and installation instructions with project conditions and materials.

C. Section includes

1. 2x layer of gypsum board 15mm

1.03 RELATED SECTIONS

A. 09 21 16 GYPSUM BOARD ASSEMBLIES

PART 2 - PRODUCTS

2.01 MANUFACTURER

KNAUF Praha, spol. s r.o.

Mladoboleslavská 949,

197 00 Kbely

2.02 PRODUCTS

STEEL FRAMING

2. Location: living room

3. Type: C shaped and U shaped frames

4. Total length: 300 ft²

5. Hanger anchorage devices

1. Description: Screws, clips, bolts or other devices compatible with indicated structural anchorage for ceiling hangers and whose suitability has been proven through standard construction practices or by certified test data.

PART 3 - EXECUTION

3.01 INSTALATION

1. Provide fasteners appropriate to substrate construction as recommended by manufacturer.

2. Follow manufacturer´s recommendations for installation.

END OF SECTION 09 22 16

09 61 00 FLOOR TREATMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all information about floor treatment used in interior of the AIR House (wood flooring).

1.02 SECTION REQUIREMENTS

A. Submittals:

1. Product Data

1.03 RELATED SECTIONS

A. 09 64 00 Wood flooring

PART 2 - PRODUCTS

2.01 MANUFACTURER:

A. OSMO

Poděbradská 574/40
Vysočany
190 00 Praha 9
Czech Republic
Tel.: +420 283 933 452
Fax: +420 283 933 472
E-mail: info@osmo.cz

2.02 PRODUCTS:

A. OSMO Hard waxy oil (Osmo 3041 Natural Hartwachs-Öl)

1. Location: living room, hallway, bathroom

2. Total treated area: 47.9 m^2

3. Characteristics: antiskid R11

PART 3 - EXECUTION

3.01 APPLICATION

A. Paint in compliance with the manufacturer's recommendations.

B. Carefully sand the wood, which is to be well dried, with 150 grit sandpaper.

C. Apply from 1 to 3 coats, depending on the degrese of exposure, with an interval between coats of 12 hours at a minimum.

D. Some sanding is recommended before each coat and after the last one in order to improve the appearance.

3.02 MAINTENANCE

A. Clean by water or special means. Repeat coating on clean surface if necessary.

END OF SECTION 09 61 00

09 64 29 WOOD STRIP AND PLANK FLOORING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all information about wood flooring in living room, hallway, bathroom and on terrace.

1.02 SECTION REQUIREMENTS

A. Submittals:

1. Product Data

2. Construction and shop drawings

B. Section includes

1. Wooden floor 24 mm (0,955 in) – living room, hallway, bathroom

2. Wooden floor 27 mm (1.063 in) - terrace

3. Wooden grid - bathroom

1.03 Related sections

A. 09 61 00 Floor treatment

B. 09 93 00 Staining and Transparent Finishing

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Local wood supplier

2.02 PRODUCTS

A. Spruce floor 24 mm (0.955 in)

1. Location: living room, hallway, bathroom

2. Size:

a. Thickness: 24 mm (0.955 in)

b. Widths: 146 mm (5.748 in)

3. Total flooring area: 38.1 m2 (410,105 sq. ft.)

4. Finishing: OSMO coating (Osmo 3041 Natural Hartwachs-Öl)

5. Base: OSB (see 06 16 00 Sheathing)

B. Larch floor 27 mm

1. Location: terrace

2. Size:

a. Thickness: 27 mm (1.063 in)

b. Widths: 138 mm (5.433 in)

3. Total flooring area: 94.5m2 (1017 sq. ft.)

4. Finishing: no coating (See 09 61 00 Floor treatment)

5. Base: Larch wooden grid

C. Abachi Grid

1. Location: Bathroom

2. Size:

a. Thickness: 20 mm (3/4 in)

b. Widths: 50 mm (1.969 in)

3. Total flooring area: 1.14 m2 (12.271 sq.ft.)

PART 3 - EXECUTION

3.01 INSTALATION

A. For both interior and exterior connections use steel terrace screws. Make tight connections between members.

B. For exterior connections double threaded screws may be used for securing air gap between planks and bearing grid.

C. Install exterior floor on wooden grid of larch slats.

D. Install interior floor on OSB.

END OF SECTION 09 64 29

09 91 13 EXTERIOR PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all information about exterior black wall painting.

1.02 SUBMITTALS

A. Product Data:

1. Manufacturer's data sheets on each product, including:

a. Preparation instructions and recommendations.

b. Storage and handling requirements and recommendations.

c. Painting methods.

1.03 RELATED SECTIONS

A. 07 46 00 Siding

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. PPG Deco Czech a.s.

Břasy 323
338 24 Břasy
Czech Republic
Tel. +420 532 193 911

2.02 PRODUCTS

A. Chalkboard paint (Balakryl V2045 0199)

1. Color: black

2. Mate, adulterate acrylate latex color

3. Location: part of northern and eastern facade

PART 3 - EXECUTION

3.01 INSTALLATION

A. Paint in compliance with the manufacturer's recommendations.

B. Apply from 1 to 3 coats, depending on the degrese of exposure, with an interval between coats of 4 hours at a minimum.

END OF SECTION 09 91 13

09 93 13 EXTERIOR STAINING AND FINISHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all information about exterior staining and finishing of shading construction and facade.

1.02 SUBMITTALS

A. Product Data:

1. Manufacturer's data sheets on each product, including:

a. Preparation instructions and recommendations.

b. Storage and handling requirements and recommendations.

c. Painting methods.

1.03 RELATED SECTIONS

A. 06 11 13 Engineered Wood Products

B. 07 46 00 Siding

C. 08 14 29 Prefinished Wood Door

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. ICLA

AkzoNobel Wood Finishes and Adhesives
Akzo Nobel Coatings S.p.A. - Divisione Wood
Via Spangaro, 1 - 30030 Peseggia di Scorzè (VE)
Italy

2.02 PRODUCTS

A. ICLA LW 400-00

1. Location: exterior shading

2. Color: transparent

3. Waterborn glaze paint with wax for exteriors

B. ICLA LW 400-01

1. Location: facade

2. Color: white

3. Waterborn glaze paint with wax for exteriors

PART 3 - EXECUTION

3.01 INSTALLATION

A. Paint in compliance with the manufacturer's recommendations.

B. Sand the wood, which is to be well dried.

C. Apply from 1 to 3 coats, depending on the degrese of exposure, with an interval between coats of 6 hours.

END OF SECTION 09 93 13

09 93 23 INTERIOR STAINING AND FINISHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all information about interior staining and finishing.

1.02 SUBMITTALS

A. Product Data:

2. Manufacturer's data sheets on each product, including:

a. Preparation instructions and recommendations.

b. Storage and handling requirements and recommendations.

c. Painting methods.

1.03 RELATED SECTIONS

A. 09 21 16 - GYPSUM BOARD ASSEMBLIES

B. 12 35 30 – RESIDENTIAL CASEWORK

C. 12 36 19 – WOOD COUNTERTOPS

D. 12 58 19 – DINING TABLES AND CHAOS

E. 12 58 26 – ENTERTAINMENT CENTERS

F. 12 58 29 – BEDS

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. SAYERLACK

SHERWIN-WILLIAMS S.r.l.
Via del Fiffo, 12
40065 Pianoro (BO)
Italia - C.P. 18

B. HEIDELBERG COATINGS

Heidelberger Lackfabrik
Rentzsch GmbH & Co KG
69035 Heidelberg
Germany

2.02 PRODUCTS

A. Sayerlack AT 9950/BB

1. Location: interior furniture finishing

2. Color: white

3. Hydro waterborn converter for interior

B. Sayerlack Line BLu HI 2210/00

1. Location: interior plywood

2. Color: clear

3. Wax effect waterbased stain for interior

C. HD – HARTWACHSSIEGEL 8711-0001

1. Location: bathroom

2. Color: transparent

3. High resistance wax for interior treatment

PART 3 - EXECUTION

3.01 INSTALLATION

A. Paint in compliance with the manufacturer's recommendations.

B. Carefully sand the wood, which is to be well dried, with 150 grit sandpaper.

C. Apply from 1 to 3 coats, depending on the degrese of exposure, with an interval between coats of 4 hours max. For longer intervals, sanding of the substrate with 280 grit sandpaper is recommended.

D. Some sanding is recommended on the last but one coat, in order to improve the appearance.

E. The next day, after completion,if increased water - repellence is required, carefully brush the stain, for instance with sorghum. Stains cannot be overcoated.

END OF SECTION 09 93 23

DIVISION 10 SPECIALTIES

10 26 23 PROTECTIVE WALL COVERING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for wall padding which is used in the Living Space of the AIR House.

1.02 DESCRIPTION

A. Some exposed walls in the Living Space of the AIR House are protected by wall padding, therefore these can be used like a part of furniture.

PART 2 - PRODUCTS

2.01 WALL PADDING

A. 10 26 23 A – Living Space Wall Padding

1. Location: Living Space - south wall – seating alcove / east wall – part of the wall behind the bed
2. Dimensions (m^2): 6,86m^2
3. Material: polyurethane foam, woolen felt
4. Color: white

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

END OF SECTION 10 26 23

DIVISION 11 EQUIPMENT

11 31 13 RESIDENTIAL KITCHEN APPLIANCES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all kitchen appliances in the AIR HOUSE that will be used during the competition.

1.02 RELATED SECTIONS

A. 12 35 30 – RESIDENTIAL CASEWORK

B. 12 36 19 – WOOD COUNTERTOPS

1.03 SYSTEM DESCRIPTION

A. These appliances will be used for both the "Appliances" and "Home Entertainment" contest. The refrigerator will need to maintain a temperature within 34.0°F (1.11°C) and 40.0°F (4.44°C). The freezer will need to maintain a temperature within -20.0°F (-28.9°C) and 5.0°F (-15°C). The cooktop, oven, microwave oven and exhaust hood will need to complete part of the "Home Entertainment" contest ("Dinner Party" and "Cooking"), which includes preparing two different meals, snacks for movie night, and evaporating 5.0 lb (2.2685 kg) of water. The dishwasher will need to perform one uninterrupted cycle within a specified period of time and reach a temperature 120°F (48.8°C) during this cycle.

1.04 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. WHIRPOOL CR, spol. s.r.o.
Radlicka 3201/14
150 00 Praha 5
Czech Republic

2.02 REFRIGERATOR/FREEZER

A. 11 31 13 A - Built-in Refrigerator/Freezer

1. Model number: Whirpool ART 480

2. Location: Living Space – Furniture Wall

3. Dimensions H x W x D (mm): 1770 x 540 x 545

4. Weight: 58.0 kg
5. Finish/Color: varnished MDF panel - color white matte (same as built-in furniture)
6. Refrigerator capacity: 199 l
7. Freezer capacity: 72 l
8. Energy class: A++
9. Wattage: 160 W
10. Voltage: 220 - 240 V
11. Frequency: 50 Hz
12. Current: 16 A
13. Alternative product for USA market: Summit FFBF245SS

2.03 COOKTOP

A. 11 31 13 B - Induction Cooktop

1. Model number: Whirpool ACM 847 BA
2. Location: Living Space – Interior Kitchen Unit
3. Dimensions H x W x D (mm): 56 x 580 x 510
4. Weight: 11.5 kg
5. Finish/Color: black
6. Number of Cooktop burners: 4
7. Wattage: 8000 W
8. Voltage: 230 V
9. Frequency: 50 Hz
10. Alternative product for USA market: Summit SINC424220

2.04 OVEN

A. 11 31 13 C - Built-in Multifunctional Oven

1. Model number: Whirpool AKZM 660 IX
2. Location: Living Space – Furniture Wall

3. Dimensions H x W x D (mm): 595 x 595 x 564
4. Weight: 40.0 kg
5. Finish/Color: stainless steel/black
6. Oven capacity: 73 l
7. Energy class: A-20%
8. Wattage: 3650 W
9. Voltage: 230 V
10. Frequency: 50 Hz
11. Current: 16 A
12. Alternative product for USA market: Summit TEM721DK

2.05 MICROWAVE OVEN

A. 11 31 13 D - Built-in Microwave Oven

1. Model number: Whirpool AMW 836 IX
2. Location: Living Space – Furniture Wall
3. Dimensions H x W x D (mm): 455 x 595 x 510
4. Weight: 27.1 kg
5. Finish/Color: stainless steel/black
6. Oven capacity: 40 l
7. Wattage: 2800 W
8. Voltage: 230 - 240 V
9. Frequency: 50 Hz
10. Current: 13 A
11. Alternative product for USA market: Summit SCM852 (shelf above oven)

2.06 EXHAUST HOOD

A. 11 31 13 E - Integrated Telescopic Hood

1. Model number: Whirpool AKR 564 IX

2. Location: Living Space – Interior Kitchen Unit
3. Dimensions H x W x D (mm): 395 x 598 x 280-430
4. Weight: 11.75 kg
5. Finish:/Color: stainless steel
6. Wattage: 300 W
7. Voltage: 230 V
8. Frequency: 50 Hz
9. Current: 1.3 A
10. Alternative product for USA market: Summit ULT2824SS

2.07 DISHWASHER

A. 11 31 13 F - Built-in Dishwasher (fully integrated)

1. Model number: Whirpool ADG 8793 PC TR FD
2. Location: Living Space – Interior Kitchen Unit
3. Dimensions H x W x D (mm): 820 x 597 x 555
4. Weight: 41.0 kg
5. Finish/Color: varnished MDF panel - color white matte (same as built-in furniture)
6. Capacity: 14 place settings
7. Energy class: A++
8. Wattage: 2040 W
9. Voltage: 220 - 230 V
10. Frequency: 50 Hz
11. Current: 10 A
12. Alternative product for USA market: Summit DW2432SS

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Test each product to verify proper operation. Make necessary adjustments.

C. Verify that accessories required have been furnished and installed.

END OF SECTION 11 31 13

11 31 23 RESIDENTIAL LAUNDRY APPLIANCES

PART 1 - GENERAL

1.02 SUMMARY

A. This section includes clothes washer and clothes dryer that will be used during the competition.

1.03 RELATED SECTIONS

B. 12 35 30 – RESIDENTIAL CASEWORK

1.04 SYSTEM DESCRIPTION

C. These appliances will be used for part of the "Appliances" contest. The clothes washer will need to perform one uninterrupted cycle (wash one load of laundry) within a specified period of time. The clothes dryer will be used to dry within a specified period of time a load of laundry to a total weight less than or equal to the load's total weight prior to washing.

1.05 SUBMITTALS

D. Product Data.

PART 2 - PRODUCTS

1.06 MANUFACTURER

A. WHIRPOOL CR, spol. s.r.o.
Radlicka 3201/14
150 00 Praha 5
Czech Republic

2.02 CLOTHES WASHER

A. 11 31 23 A - Freestanding Clothes Washer

1. Model number: Whirpool AWIC 9014
2. Location: Entrance – Entrance Wall
3. Dimensions H x W x D (mm): 850 x 595 x 600
4. Weight: 78.0 kg
5. Finish/Color: white
6. Capacity: 9 kg
7. Energy class: A+++

8. Wattage: 1850 W
9. Voltage: 220 - 230 V
10. Frequency: 50 Hz
11. Current: 10 A
12. Alternative product for USA market: Summit ARWL129NA

2.03 CLOTHES DRYER

A. 11 31 23 B - Freestanding Clothes Dryer

1. Model number: Whirpool AZA 999
2. Location: Entrance – Entrance Wall
3. Dimensions H x W x D (mm): 845 x 596 x 632
4. Weight: 47.0 kg
5. Finish/Color: white
6. Capacity: 9 kg
7. Energy class: A++
8. Wattage: 1050 W
9. Voltage: 230 V
10. Frequency: 50 Hz
11. Current: 10 A
12. Alternative product for USA market: Summit TCL73XNA

PART 3 - EXECUTION

1.07 INSTALLATION

A. Stacked washer and dryer with dryer on top.

B. Install in accordance with manufacturer's recommendations.

C. Test each product to verify proper operation. Make necessary adjustments.

D. Verify that accessories required have been furnished and installed.

END OF SECTION 11 31 23

11 52 00 AUDIO – VISUAL EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all audio-visual equipment in the AIR HOUSE that will be used during the competition.

1.02 RELATED SECTIONS

A. 12 58 26 – ENTERTAINMENT CENTERS

1.03 SYSTEM DESCRIPTION

A. This equipment will need to complete part of the "Home Entertainment" contest (“Home Electronics” and “Movie Night”), which includes operating the television during specified period of time and projection of the selected movie.

1.04 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Samsung Electronics Czech and Slovak, s.r.o.
The Park, V Parku 2323/14
148 00 Praha 4
Czech Republic

B. Klipsch Worldwide Corporate Headquarters
3502 Woodview Trace, Suite 200
IN 46268, Indianapolis
USA

C. ONKYO Europe Electronics GmbH
Liegnitzer Strasse 6
82194 Groebenzell
Germany

2.02 TV

A. 11 52 00 A - LED SMART TV

1. Model number: Samsung UE32F5500AW

2. Location: Living Space – Interior Entertainment Center

3. Display Size: 32” (80 cm)

4. Dimensions H x W x D (mm): 509.6 x 738 x 265

5. Weight: 6.1 kg

6. Finish/Color: black

7. Energy class: A

8. Wattage: 40 W

9. Voltage: 220 - 240 V

10. Frequency: 50/60 Hz

11. Alternative product for USA market: Samsung UN32F5500AFXZA

2.03 AUDIO SYSTEM

A. 11 52 00 B - Audio System HD Theater SB 3

1. Model number: Klipsch HD Theater SB 3 soundbar with wireless subwoofer

2. Location: Living Space – Interior Entertainment Center

3. Soundbar Dimensions H x W x D (mm): 117 x 1117 x 79

4. Soundbar Weight: 5.7 kg

5. Soundbar Finish/Color: satin black

6. Subwoofer Dimensions H x W x D (mm): 368 x 330 x 343

7. Subwoofer Weight: 11.3 kg

8. Subwoofer Finish/Color: matte black vinyl

9. Wattage: 300 W

10. http://mediacdn.shopatron.com/media/mfg/3579/media_document/live_1/HDTheaterSB3SpecSheet.pdf?1346125888

2.04 BLUE-RAY

A. 11 52 00 C - Blue-ray Disc Player

1. Model number: Onkyo BD-SP309

2. Location: Living Space – Interior Entertainment Center

3. Dimensions H x W x D (mm): 57.3 x 435 x 201
4. Weight: 1.7 kg
5. Finish/Color: black
6. Wattage: 16 W
7. Voltage: 100 - 240 V
8. Frequency: 50/60 Hz
9. http://www.eu.onkyo.com/downloads/1/4/7/1/9/ONKYO_BD-SP309_datasheet_EN.pdf

PART 3 - EXECUTION

3.01 INSTALLATION.

A. Install in accordance with manufacturer's recommendations.

B. Test each product to verify proper operation. Make necessary adjustments.

C. Verify that accessories required have been furnished and installed.

END OF SECTION 11 52 00

DIVISION 12 FURNISHINGS

12 22 13 DRAPERIES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for interior draperies used in the AIR House.

1.02 RELATED SECTIONS

A. 12 22 16 – DRAPERY TRACK AND ACCESSORIES

1.03 DESCRIPTION

A. Living Space of the AIR House is equipped with movable drapes, which allows to divide the space into two parts, to optimizme their function for specific scenarios and conditions based on ocupant's needs.

1.04 SUBMITTALSGAR

A. Product Data.

PART 2 - PRODUCTS

2.01 DRAPES

A. 12 22 13 A – Interior Drapes

1. Type:
2. Location: Living Space
3. Dimensions (H x W): 5000x2570
4. Material: Linen 40%, Polyester 60%
5. Colorfasteness: Class 4
6. Shrinkage: 0%

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install drapes to drapery track integrated to the Living Space ceiling with drapery clips provided with the drapery track.

END OF SECTION 12 22 13

12 22 16 DRAPERY TRACK AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for drapery track used for interior drapes in the Living Space of the AIR House.

1.02 RELATED SECTIONS

A. 12 22 13 – DRAPERIES

B. 09 21 16 - GYPSUM BOARD ASSEMBLIES

1.03 DESCRIPTION

A. Living Space of the AIR House is equipped with movable drapes, which allows to divide the space into two parts, to optimizme their function for specific scenarios and conditions based on ocupant's needs. Drapery track is integrated to the Living Space ceiling.

1.04 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 DRAPERY TRACK

A. 12 22 16 A – Interior Drapery Track

1. Location: Living Space
2. Dimensions (L x W x H): 14135 x 40 x 16
3. Material: MDF with plastic cover
4. Color: matte white
5. Drapery clips appropriate for the drapery runner provided within drapery track - see the manufacturer recomandation for closer specification

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install drapery track to the Living Space ceiling. Drapery track is integrated in qypsum board. See the manufacturer recomandation for closer specification.

END OF SECTION 12 22 16

12 35 30 RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for Interior Kitchen Unit, Furniture Wall and Shelf Wall, all placed in the main Living Space of the AIR House. This section also includes specifications for Entrance Wall placed in the Entrance and Exterior Kitchen Unit placed in the Terrace.

1.02 RELATED SECTIONS

A. 11 31 13 – RESIDENTIAL KITCHEN APPLIANCES

B. 11 31 23 – RESIDENTIAL LAUNDRY APPLIANCES

C. 09 93 00 STAINING AND TRANSPARENT FINISHING

1.03 DESCRIPTION

A. Interior and exterior Kitchen Unit, Furniture Wall, Shelf Wall and Entrance Wall are built-in furniture (cabinetry products) which will be made by Solar Decathlon team members with support of specialists. In the Interior Kitchen Unit are integrated appliances like dishwasher, cooktop and exhaust hood, in the Furniture Wall are integrated refrigerator/freezer, oven and microwave oven and in the Entrance Wall are integrated clothes washer and clothes dryer.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Blum s r.o. (Lift, Hinge, Pull-out and Runner, Plastic legs systems)

2.02 Kolbenova 19

2.03 190 00 Praha 9 – Vysočany

2.04 Czech Republic

2.05 KITCHEN UNIT

A. 12 35 30 A – Interior Kitchen Unit

1. Location: Living Space - south wall - 3 modules next to the entrance / west wall - 4 modules next to the entrance

2. Dimension: H x W x D (mm): 2720 x 1800 (3 modules) x 650 / 2720 x 2700 (4 modules) x 600

3. Cabinet Material: varnished MDF panel, thickness 18 mm

4. Cabinet Color: White matte
5. Shelf, Door and Drawer Front Material: varnished MDF panel, thickness 18 mm
6. Shelf, Door and Drawer Front Color: White matte
7. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

B. 12 35 30 B – Exterior Kitchen Unit

1. Location: Terrace
2. Dimension: H x W x D (mm): 2300 x 1800 x 600
3. Shelf and Door Material: varnished MDF, thickness 18 mm
4. Shelf and Door Color: white matte
5. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

2.06 BUILT-IN CABINET

A. 12 35 30 C – Furniture Wall

1. Location: Living Space – south wall - 7 modules
2. Dimension H x W x D (mm): 2720 x 6850 (7 modules) x 650
3. Cabinet Material: cross laminated timber panel, thickness 60, 80 mm
4. Cabinet Color: natural
5. Shelf Material: waxed birch plywood in visible quality, thickness 18 mm
6. Shelf Color: natural
7. Door and Drawer Front Material: birch plywood in visible quality, thickness 18 mm
8. Door and Drawer Front Color: natural
9. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

B. 12 35 30 D – Shelf Wall

1. Location: Living Space – east wall
2. Dimension H x W x D (mm): 2720 x 3920 x 250
3. Cabinet Material: cross laminated timber panel, thickness 60, 80 mm
4. Cabinet Color: natural

5. Shelf Material: waxed birch plywood in visible quality, thickness 18 mm
6. Shelf Color: natural
7. Drawer Front Material: waxed birch plywood in visible quality, thickness 18 mm
8. Drawer Front Color: white matte
9. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

C. 12 35 30 E – Entrance Wall

1. Location: Entrance – south wall
2. Dimension H x W x D (mm): 2300 x 1990 x 650
3. Cabinet Material: cross laminated timber panel, thickness 80 mm
4. Cabinet Color: natural
5. Shelf Material: waxed birch plywood in visible quality, thickness 24 mm
6. Shelf Color: natural
7. Door Front Material: varnished MDF panel
8. Door Front Color: white matte / mirror
9. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

D. 12 35 30 F – Bathroom Wall

1. Location: Bathroom - east wall
2. Dimension H x W x D (mm): 1145 x 320 x 115
3. Shelf and Door Front Material: varnished birch plywood in visible quality, thickness 18 mm
4. Shelf and Door Front Color: natural
5. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

E. 12 35 30 G – Bathroom Casework

1. Location: Bathroom - east wall
2. Dimension H x W x D (mm): 380 x 550 x 465
3. Cabinet and Door Front Material: painted MDF panel, thickness 18 mm
4. Cabinet and Door Front Color: White matte

5. Shelf Material: birch plywood in visible quality, thickness 18 mm
6. Shelf Color: natural
7. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install cabinets with no variations in flushness of adjoining surfaces by using concealed shims. Where casework abuts other finishes work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.

B. Install cabinets without distortion so doors and drawers fit openings properly and are aligned.

C. Install cabinets and countertop level and plumb to a tolerance of 1/8 inch in 8 feet (3.2 mm in 2.4 m).

D. Fasten each cabinet to adjacent unit and to structural members of wall construction.

E. Units to receive appliances:

1. Install necessary supports and additional blocking per applliance manufacturer's written instructions.

END OF SECTION 12 35 30

12 36 19 WOOD COUNTERTOPS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for all wood countertops used in the AIR House, especially in the Interior Kitchen Unit and Exterior Kitchen Unit.

1.02 RELATED SECTIONS

A. 11 31 13 RESIDENTIAL KITCHEN APPLIANCES

B. 22 41 16 RESIDENTIAL LAVATORIES AND SINKS

C. 09 93 00 STAINING AND TRANSPARENT FINISHING

PART 2 - PRODUCTS

2.01 WOOD COUNTERTOPS

A. 12 36 19 A - Wood Countertop Interior Kitchen Unit

1. Location: Living Space – Interior Kitchen Unit
2. Dimensions L x W x D (mm): 2645 x 600 x 40
3. Material: varnished birch plywood panel
4. Color: natural

B. 12 36 19 B - Wood Countertop Exterior Kitchen Unit

1. Location: Terrace
2. Dimensions L x W x D (mm): 1800 x 600 x 40
3. Material: varnished birch plywood panel
4. Color:natural

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install countertop level and plumb to a tolerance of 1/8 inch in 8 feet (3.2 mm in 2.4 m).

END OF SECTION 12 36 19

12 58 19 DINING TABLES AND CHAIRS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for interior and exterior dining tables and chairs used in the AIR House.

1.02 DESCRIPTION

A. Interior dining table, exterior dining table and chairs will be used for „Home Entertainment“ contest ("Dinner Party" and "Movie Night“) and for "Public Exhibit" to demonstrate using of the space.

1.03 RELATED SECTIONS

A. 09 93 00 STAINING AND TRANSPARENT FINISHING

1.04 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. IKEA Česká republika, s.r.o.

Skandinávská 1
155 00 Praha 5-Zličín
Czech Republic
dining tables

B. 12 58 19 A – Interior Dining Table

1. Location: Living Space
2. Dimension H x W x D (mm): 750 x 2100 x 800
3. Material: varnished birch plywood 40mm / painted steel legs
4. Color: natural/white glossy

C. 12 58 19 B – Exterior Dining Table

1. Location: Terrace
2. Dimension H x W x D (mm): 750 x 1200 x 800
3. Material: varnished birch plywood 40mm / painted steel legs

4. Color: natural/white glossy

2.02 DINING CHAIRS

A. 12 58 19 C – Interior and exterior Chair

1. Model number: Terje

2. Location: Living Space/Terrace

3. Dimension H x W x D (mm): total 770 (seat 460) x 440x 510

4. Weight: 3,02kg

5. Material: varnished wood

6. Color: white matte

PART 3 - EXECUTION

3.01 INSTALLATION

A. No special requirements.

END OF SECTION 12 58 19

12 58 26 ENTERTAINMENT CENTERS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for movable entertainment center used in the AIR House.

1.02 RELATED SECTIONS

A. SECTION 11 52 00 - AUDIO – VISUAL EQUIPMENT

B. SECTION 09 93 00 STAINING AND TRANSPARENT FINISHING

1.03 ESCRIPTION

A. Entertainment center will be used for Home Entertainment“ contest ("Movie Night“) and for "Public Exhibit" to demonstrate using of the space. Entertainment centre has built-in Klipsch soundbar.

PART 2 - PRODUCTS

2.01 ENTERTAINMENT CENTER

A. 12 58 26 A – Interior Entertainment Center

1. Location: Living Space
2. Dimension H x W x D (mm): 410 (wheels 80 mm) x 1840 x 400
3. Material: waxed birch plywood 18/40 mm
4. Color: natural

PART 3 - EXECUTION

3.01 INSTALLATION

A. No special requirements.

END OF SECTION 12 58 26

12 58 29 BEDS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for double bed with inside storage used in the AIR House.

1.02 RELATED SECTIONS

A. 06 13 00 – HEAVY TIMBER CONSTRUCTION

B. 09 93 00 STAINING AND TRANSPARENT FINISHING

1.03 DESCRIPTION

A. Double bed will be used for "Public Exhibit" to demonstrate using of the space. Bed is equipped with two drawers.

PART 2 - PRODUCTS

2.01 BED

A. 12 58 29 A – Double Bed

1. Location: Living Space
2. Dimension H x L x W (mm): 400 x 2070 x 1840
3. Bed Frame: cross laminated timber wood 60mm (waste arising from the manufacture of structure)
4. Bed Frame Color: natural
5. Bed Drawers material: birch plywood in visible quality, thickness 18 mm/ cross laminated timber wood 60mm (waste arising from the manufacture of structure)
6. Bed Drawers Color: natural
7. Components: Lamella Slat, Mattress
8. Lift, Hinge, Runner and Pull-out systems: Blum s r.o.

PART 3 - EXECUTION

3.01 INSTALLATION

A. No special requirements.

END OF SECTION 12 58 29

12 58 83 CUSTOM RESIDENTIAL FURNITURE

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes specifications for interior armchairs and garden loungers used in the AIR House.

1.02 DESCRIPTION

A. Garden loungers will be used for "Public Exhibit" to demonstrate using of the interior space and the terrace.

1.03 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Ikea Česká Republika, s.r.o.

Skandinávská 1
155 00 praha 5-Zličín
Czech Republic

2.02 GARDEN FURNITURE

A. 12 58 83 B – Garden Lounger

1. Model: MYSINGSÖ
2. Location: Terrace
3. Dimension H x W x D (mm): 880 x 530 x 990
4. Weight: 4,1 kg
5. Material: wood/100% polyester technical fabric
6. Color: natural wood / fabric blue stripes

PART 3 - EXECUTION

3.01 INSTALLATION

A. No special requirements.

END OF SECTION 12 58 83

DIVISION 14 CONVEYING EQUIPMENT

14 80 00 SCAFFOLDING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes information about :

1. Suspended Scaffolding

1.02 HANDLING

A. Scaffolding must follow normatively specified standards and be used in accordance with Health and safety plan.

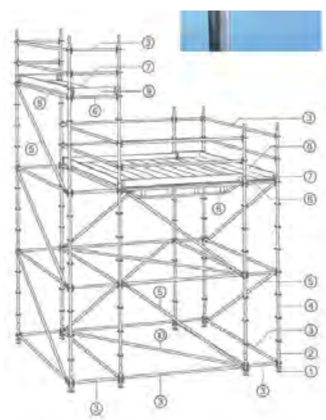
PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Scaffolding

1. Harsco Infrastructure

a) MODEX - Quick Erect System Scaffold

b) 

c) Modular scaffold systems

d)

e) Web: http://www.harsco-i.cz/produkty/Leseni/Modulove_leseni/Modex

PART 3 - EXECUTION

3.01 In usa is posible to use the alternative modular scaffold systems sprint from harsco corporation (http://www.harsco-i.us/products/scaffolding_staircases/sprint_scaffolding).

3.02 All execution will be done according to health and safety plan.

END OF SECTION 14 80 00

DIVISION 21 FIRE SUPPRESSION

21 13 00 FIRE SUPPRESSION SPRINKLER SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies materials, methods and equipment to be used for wet pipe automatic sprinkler system used in The AirHouse.

B. Related sections:

1. Section 21 30 00 Fire Pumps

2. Section 21 40 00 Fire Suppression Water Storage

3. Section 25 53 00 Integrated Automation Control of Fire-Suppression Systems

1.02 SECTION REQUIREMENTS

A. System description: The fire suppression shall be design according to IRC Standards. This project´s a light hazard occupancy. The wet pipe sprinkler system supported by fire pump, fire water stored in fire suppression water storage tanks.

B. Submittals: Layout drawings, Product Data Sheets and manuals for sprinklers and specialties, hydraulic calculation.

C. The licensed fire protection contractor shall be responsible for the design, layout and hydraulic calculations for wet sprinkler.

D. Design and Installation Approval: Acceptable to authorities having jurisdiction.

E. Select, install and test special sprinkler system materials and products in compliance with NFPA 13D, NFPA 70, IRC 2013 Section P2904 and the requirements of all authorities having jurisdiction.

F. UL listed and –labeled and FM-approved - special sprinkler system components.

1.03 GENERAL REQUIREMENTS

A. The house to be protected shall have sprinklers fitted in every room except in the areas listed below for which protection is optimal: voids below floors, toilets and bathrooms not more than 55 square feet (5,1m^2) in area, exterior porches, unheated entry areas and similar areas.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tyco Fire Protection Products, www.tyco-fsbp.com

B. Aquatherm GmbH, www.aquatherm-pipesystems.com

C. Potter Electronic Signal Co., www.pottersignal.com

2.02 PRODUCTS

A. Pipe and fittings

1. Product:

a. Aquatherm Firestop sprinkler pipesystem made of fusiolen PP-R FS

2. CPVC Plastic pipe and Fittings, International approvals for the application as sprinkler lines certificated by local national fire protection authorities (ZÚS - Czech republic, VdS – Germany, IBS – Austria, AON – New Zealand, VeriFire – New Zealand, LPCB Great Bratain, FNH – Norway and others…). Material PP-R FS, pipe series: SDR 7,4, FS40-FS 50. The quality management system is certified according to DIN EN ISO 9001-2008.

3. CPVC branch pipe shall be protected from exposure to the living room according to IRC Section P2904.

B. Fire Protection Service Valves: Ball valve, Quantity: 1

C. Automatic Sprinklers:

1. Product:

a. Tyco Rapid Response Series LFII Residential Sprinklers 4.2 K-factor Flush Pendent

2. Total number of sprinkler heads: 3. Max spacing 12'x12', minimum flow 13 GMP (49,2 LPM) and residual pressure 9,6 psi (0,66 bar) or maximum spacing 16'x16', minimum flow 14 GMP (53 LPM) and residual pressure 11,1 psi (0,77 bar). Max working pressure 175 psi (12,1 bar), discharge coefficient K=4,2 GPM/psi$^{1/2}$ (60,5 LPM/bar$^{1/2}$), vertical adjustment: 3/8 inch (9,5mm).

3. Quick response residential sprinklers. Heat-responsive element for residential applications, UL Listed for use with wet pipe systems. All sprinkler heads shall be of type and operating temperature as required by specific location of installation.

D. Piping specialities and alarm devices:

1. Pressure Switch

a. Potter Pressure switch Model FF4-2; Size 1/2"; Max Pressure 20,0 Bar, IP rating IP54; VDS and CE approved , service use NFPA 13D.

b. Allow sprinkler to be interfaced with electronic alarm systems, so that upon activates an audible or visible alarm computerized notification device. Related Section 25 53 00 Integrated Automation Control of Fire-Suppression Systems

E. Material: The piping systems (pipe and fittings) shall be constructed from materials extruded/molded by manufacturers using the same compound manufacturer. All materials shall meet current applicable ANSI and ASTM standards.

F. System design: System design shall be in accordance with standard industry practice for fire sprinkler systems and the manufacturer's instructions. The design shall take into consideration such factors as pressure and flow requirements, friction loss, operating temperatures, support spacing joining methods and thermal expansion and contraction.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation practices such as pipe support spacing, bracing, allowance for thermal expansion/contraction, solvent cementing and handling and storage shall be in accordance with the manufacturer's.

3.02 TESTING

A. Flush, test and inspect sprinkler piping system according to NFPA 13D.

END OF THE SECTION 21 13 00

21 24 00 DRY-CHEMICAL FIRE-EXTINGUISHING SYSTEMS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals: Product Data

B. Qualification: The product exceeds the minimum UL rating of 2A-10BC.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Kidde, www.kidde.com

2.02 PRODUCTS

A. Portable Fire Extinguishers and brackets: NFPA 10 listed and labeled for the type, rating and classification of extinguisher.

1. Product:

a. Kiddie full Home Fire Extinguisher: multipurpose Dry-Chemical Type: UL-rated 3-A; 40-B:C; Net agent weight: 5,5lb., operating pressure: 195psi., classification: A,B and C fires., wall hanger: UL Listed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide fire extinguishers where indicated.

END OF THE SECTION 21 24 00

21 30 00 FIRE PUMPS

“Temporary for competition purpose”

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes pump serving the sprinkler system.

B. Related sections:

1. Division 21 13 00 Fire Suppression Sprinkler Systems

1.02 SECTION REQUIREMENTS

A. System description: Electric-Drive, Centrifugal Fire Pump shall to be use with Fire Suppression system to regulate and provide water pressure to Fire Sprinkler heads to work properly. Temporary for competition purpose.

B. Submittals: Product data sheet and specification.

C. Design and Installation Approval: Acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Wilo, www.wilo.com

2.02 PRODUCT

A. Electric-Drive, Centrifugal Fire Pump

1. Product:

a. Centrifugal Pump Wilo- Economy Model MHIL 903

B. Multistage, non-self-priming, horizontal high-pressure centrifugal pump in block design with horizontal suction and vertical pressure port. Stage chambers, impellers and diffusers made of chrome nickel steel. With continuous motor pump shaft and bidirectional mechanical shaft seal. Operating pressure 10 bar, Max. inlet pressure: 6 bar; Nominal speed 2900 rpm. Motor: Insulation class: F, Protection class: IP X4, Nominal motor power: 1,1 kW. Weight approx.: 17 kg.

C. The product complies with following relevant provisions: EC –Machinery directive 98/37/EG, Electromagnetic compatibility – directive 89/336/EWG as amended 91/263/EWG, 92/31/EWG, 93/68/EWG, applied harmonized standards, in particular EN 809, EN 60034-1.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install according to manufacturer’s instructions.

B. Comply with requirements in Division 26 Section "Electrical".

C. Install pumps with access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.

D. Install electrical connections for power, controls, and devices.

E. Connect piping with valves that are at least the same size as piping connecting to pumps.

F. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.

END OF THE SECTION 2130 00

21 40 00 FIRE SUPPRESSION WATER STORAGE

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes Water Storage Tank for use with Fire Suppression system to store Fire Suppression water.

B. Related sections:

1. Division 21 13 00 Fire Suppression Sprinkler Systems

1.02 SECTION REQUIREMENTS

A. System description: Tank capacity: According to IRC, Section N2904 the water supply shall have the capacity to provide the required design flow rate for sprinklers for seven minutes. The worst case three head sprinkler flow requires 345 gallons of storage. The fire suppression water storage tank is designed for 264 gallons (1000 l) of storage, for fire protection purposes are designed two tanks of total capacity 2x264 = 528 gallons (2000 l). Temporary for competition purpose.

B. Submittals: Product Data Sheets and specifications.

C. Design and Installation Approval: Acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. OBAL CENTRUM, www.obal-centrum.com

2.02 PRODUCTS

A. Fire suppression water storage tanks

1. Product:

a. 2 Refurbished IBC containers, 264 Gallon Storage Tanks, dimensions: length 3,94 ft (1200 mm), width 3,28 ft (1000 mm), height 3,76 ft (1146 mm), weight: 60 kg.

b. IBC container intact be chemically cleaned and flushed with hot water, repeated use in various industrial sectors – cannot be used in food and pharmaceutical. Protection of the environment are put back into circulation IBC.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install according to manufacturer's instructions.

B. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

C. Fasten securely in place, with provisions for thermal and structural movement.

D. Correct deficiencies in or remove and reinstall products that do not comply with requirements.

E. Repair, refinish, or replace products damaged during installation, as directed by Architect.

END OF THE SECTION 2141 00

tyco

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RAPID RESPONSE Series LFII Residential Sprinklers 4.2 K-factor Flush Pendent Wet Pipe and Dry Pipe Systems

General Description

The TYCO RAPID RESPONSE Series LFII Residential Flush Pendent Sprinklers (TY2284) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels. When aesthetics is the major consideration, the Series LFII Residential Sprinklers (TY2284) should be the first choice.

The Series LFII Residential Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

The flush design of the Series LFII Residential Sprinklers features a separable escutcheon providing 3/8 inch (9,5 mm) vertical adjustment. This adjustment reduces the accuracy to which the pipe drops to the sprinklers must be cut.

The Series LFII Residential Sprinklers have been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

Dry Pipe System Application

The Series LFII Residential Flush Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing and as referenced in U.S. Patent 7,712,543, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Sprinklers (TY2284) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is customary for density/area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Sprinklers (TY2284) offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R. Non-water filled pipe will permit options for areas sensitive to freezing.

NOTICE

The Series LFII Residential Flush Pendent Sprinklers (TY2284) described herein must be installed and maintained in compliance with this document and the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Sprinkler Identification Number (SIN)

TY2284

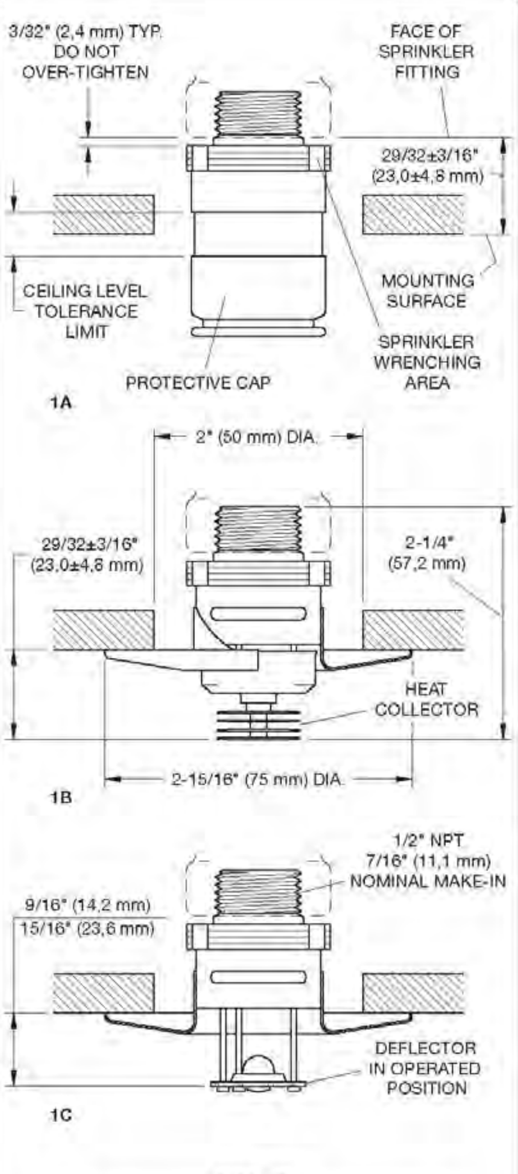


FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL FLUSH PENDENT SPRINKLER (TY2284)

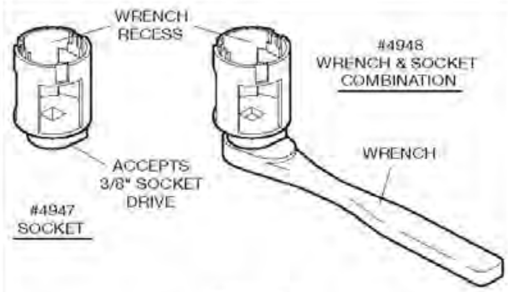


FIGURE 2
SPRINKLER SOCKET WRENCH & SOCKET COMBINATION

FIGURE 3
PROTECTIVE CAP REMOVAL TOOL

Technical Data

Approvals
UL Listed for use with wet pipe and dry pipe systems

C-UL Listed for use only with wet pipe systems

For details on approvals, refer to the Design Criteria section.

Maximum Working Pressure
175 psi (12,1 bar)

Discharge Coefficient
K= 4.2 GPM/psi$^{1/2}$ (60,5 LPM/bar$^{1/2}$)

Temperature Rating
162°F (72°C)

Vertical Adjustment
3/8 inch (9,5 mm)

Finishes
White
Chrome
Black
Antique Brass

Physical Characteristics
Body . . . . Copper Alloy
Deflector. . . . . Copper
Valve Cap . . . . Copper Alloy
Orifice Seal. . . . . PTFE
Heat Collectors . . . . Copper

Operation

The sprinkler assembly contains a small fusible solder element. When exposed to sufficient heat from a fire, the solder melts and enables the internal components of the sprinkler to fall away. At this point the sprinkler activates with the deflector dropping into its operated position (Figure 1C), permitting water to flow.

Design Criteria

The TYCO RAPID RESPONSE Series LFII Residential Flush Pendent Sprinklers (TY2284) are UL and C-UL Listed for installation in accordance with this section:

Residential Sprinkler Design Guide
When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to any local authority having jurisdiction.

System Types
Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Hydraulic Design (NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rate are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in Tables A and B as a function of temperature rating and the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/ft^2 over the "design area" comprised of the four most hydraulically demanding sprinklers for the actual coverage areas being protected by the four sprinklers.

The number of "design sprinklers" specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery
When using the Series LFII Residential Pendent Sprinklers (TY2284) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity
The sprinklers are to be installed in the flush position per Figure 1 with the provided escutcheon.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

Precautionary Warnings for Corrosive Environments
The Series LFII Residential Flush Sprinkler (TY2284) must be installed in a non-corrosive environment. The improper use of corrosive agents such as flux, or other products that contain chloride ions, whether applied internally or externally to the sprinkler system, may result in corrosion of the sprinkler heads, or stress corrosion cracking, which in turn may cause the sprinkler heads to develop leaks, operate unexpectedly or improperly.

Accordingly, it is essential that the Series LFII Residential Flush Sprinkler (TY2284) be installed only by experienced fire sprinkler engineers, who comply fully with NFPA 13, 13D, 13R and 25, ASTM B 813, ASTM B 828 and Copper Development Association (CDA).

Copper Sprinkler System Piping
Any time copper piping is used in any part of a fire sprinkler system, the copper piping must be installed in conformance with all applicable standards and requirements for copper piping, including: NFPA 13, 13D, 13R and 25, ASTM B 813, ASTM B 828, and Copper Development Association (CDA). Any soldering in any part of a sprinkler system, either internally or externally, must be done with use of only an ASTM B 813 approved flux. Residual flux must be thoroughly removed from both the interior and exterior surfaces of the piping before installing the sprinkler heads. The use of improper flux, or the failure to thoroughly remove proper flux, may result in corrosion of the sprinkler heads or stress corrosion cracking, which in turn may cause the sprinkler heads to develop leaks, operate unexpectedly or improperly.

Maximum Coverage Area (a) Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	WET PIPE SYSTEM Minimum Flow and Residual Pressure (b)		
		For Horizontal Ceiling (c, d, e) (Maximum 2 Inch Rise for 12 Inch Run)	For Sloped Ceiling (c, d, e) (Maximum 8 Inch Rise for 12 Inch Run)	For Sloped Ceiling (c, d, e) (Maximum 8 Inch Rise for 12 Inch Run) 3 Sprinkler Design When There are More Than 2 Sprinklers in a Compartment
		162°F (72°C)	162°F (72°C)	162°F (72°C)
12 x 12 (3,7 x 3,7)	12 (3,7)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)	17 GPM (64,3 LPM) 16.4 psi (1,13 bar)	14 GPM (53,0 LPM) 11.1 psi (0,77 bar)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)	17 GPM (64,3 LPM) 16.4 psi (1,13 bar)	14 GPM (53,0 LPM) 11.1 psi (0,77 bar)
16 x 16 (4,9 x 4,9)	16 (4,9)	14 GPM (53,0 LPM) 11.1 psi (0,77 bar)	17 GPM (64,3 LPM) 16.4 psi (1,13 bar)	14 GPM (53,0 LPM) 11.1 psi (0,77 bar)
18 x 18 (5,5 x 5,5)	18 (5,5)	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)	19 GPM (71,9 LPM) 20.5 psi (1,41 bar)	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)
20 x 20 (6,1 x 6,1)	20 (6,1)	22 GPM (83,3 LPM) 27.4 psi (1,89 bar)	24 GPM (90,8 LPM) 32.7 psi (2,25 bar)	N/A

(a) For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

(b) The Minimum Flow requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.

(c) For NFPA 13D 2010 applications, Horizontal Ceiling criteria shall be used for certain sloped ceiling configurations up to 8:12 pitch. Refer to TIA 1028R for allowed sloped ceiling limitations when using horizontal ceiling criteria.

(d) For NFPA 13R applications, Horizontal Ceiling criteria may be used for sloped ceiling configurations up to 8:12 pitch when acceptable to the local authority having jurisdiction.

(e) For NFPA 13 residential applications, the greater of 0.1 gpm/ft.² over the design area or the flow in accordance with the criteria in this table must be used.

TABLE A
SERIES LFII RESIDENTIAL 4.2 K-FACTOR FLUSH PENDENT SPRINKLERS (TY2284)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA
WET PIPE SYSTEMS

Maximum Coverage Area (a) Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	DRY PIPE SYSTEM Minimum Flow and Residual Pressure (b) For Horizontal Ceiling (Maximum 2 Inch Rise for 12 Inch Run)
		162°F (72°C)
12 x 12 (3,7 x 3,7)	12 (3,7)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)
16 x 16 (4,9 x 4,9)	16 (4,9)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)
18 x 18 (5,5 x 5,5)	18 (5,5)	17 GPM (64,4 LPM) 16.4 psi (1,13 bar)
20 x 20 (6,1 x 6,1)	20 (6,1)	20 GPM (75,7 LPM) 22.7 psi (1,56 bar)

(a) For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

(b) The Minimum Flow requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.

TABLE B
SERIES LFII RESIDENTIAL 4.2 K-FACTOR FLUSH PENDENT SPRINKLERS (TY2284)
NFPA 13D HYDRAULIC DESIGN CRITERIA
DRY PIPE SYSTEMS

Beam Ceiling Design Criteria

The TYCO RAPID RESPONSE Series LFII Residential Flush Pendent Sprinklers (TY2284) are UL and C-UL Listed for installation in only wet pipe systems for residential occupancies with horizontal ceilings (that is, slopes up to a 2 inch rise over a 12 inch run) with beams when installed in accordance with this section:

General Information
The basic concept of this protection scheme is to locate the sprinklers on the underside of the beams, refer to Figure 4, (not in the beam pockets); to identify the main beams that principally run in one direction as "primary beams"; and, to identify the beams that run principally perpendicular to the main beams, as may be present (or in some cases may be necessary for proper sprinkler protection), as "secondary beams".

Primary and Secondary Beam Types
Solid surface, solid or hollow core, combustible or non-combustible.

Primary and Secondary Beam Positioning
Directly attached to the underside of a combustible or non-combustible smooth ceiling at any elevation.

Primary Beam Cross-Section
Maximum depth of 14 inches and the maximum width is unlimited. The cross-sectional shape of the primary beam may be rectangular to circular.

Secondary Beam Cross-Section
Maximum depth to be no greater than the primary beam and the maximum width is unlimited. The cross-sectional shape of the secondary beam may be rectangular to circular.

Primary Beam Spacing
The primary beams (Figure 5A) are to be 3 ft. - 4 in. to 6 ft. from the compartment wall to center of the nearest beam and from center to center between beams.

Secondary Beam Spacing
The secondary beams principally run perpendicular to the primary beams. Secondary beams of a depth equal to the primary beam must be placed so that the beam pockets created by the primary beams do not exceed 20 feet in length (Figure 5B).

When the beam pockets created by the primary beams exceed 20 feet in length, the installation will require the use of secondary beams as described above. Otherwise, secondary beams need not be present.

Secondary beams of a cross-sectional depth greater than one-quarter the depth of the primary beams are to be a minimum of 3 ft.-4 in. from the compartment wall to center of the nearest beam and from center to center between beams (Figure 5C).

Secondary beams of a cross-sectional depth no greater than one-quarter the depth of the primary beams may be placed at any compartment wall to center of the nearest beam distance and from any center to center distance between beams (Figure 5C).

Lintels
Lintels over doorways exiting the compartment must be present. The minimum height for the lintels is 8 inches or no less than the depth of the Primary Beams, whichever is greater.

Sprinkler Types
Series LFII Residential Flush Pendent Sprinklers (TY2284), 162°F (72°C).

Sprinkler Coverage Area and Hydraulic Design
The sprinkler coverage areas and hydraulic design criteria as presented in the Table A for "Horizontal Ceilings" are to be applied.

Sprinkler Position
The bottom of heat collector to bottom of primary beams for the Series LFII (TY2284) Flush Pendent Sprinklers is to be 23/32 to 1-3/32 inches (Figure 4A). The vertical centerline of the Series LFII Flush Pendent Sprinklers (TY2284) is to be no greater than half the primary beam cross-sectional width plus 2 inches from the centerline of the primary beam (Figure 4B).

NOTICE

Core drilling of beams to allow the installation of sprinkler drops requires consulting with a structural engineer.

Where core drilling is not permitted, the previously stated sprinkler position criteria for the Series LFII Residential Flush Pendent Sprinklers (TY2284) allows for the sprinkler drop to be placed adjacent to the primary beam.

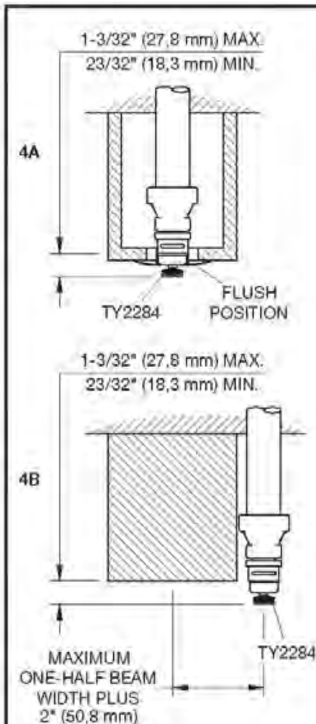


FIGURE 4
SPRINKLER POSITIONING UNDER PRIMARY BEAMS WET PIPE SYSTEMS ONLY
(Refer to the "Beam Ceiling Design Criteria" section.)

Beam and Soffit Arrangements
A soffit is permitted to be placed around the perimeter of a compartment with the beam arrangement within the soffit area (Figure 6).

The cross-section of the soffit may be any size as long as it does not create an obstruction to water distribution per the obstruction rules of NFPA 13 for residential sprinklers.

When soffits are present, the previously provided 3 ft.-4 in. to 6 ft. "compartment wall to adjacent beam" distance for the primary and secondary beams is to be measured from the face of the soffit as opposed to the compartment wall.

Although the distance to the beams is measured from the face of the soffit, the sprinkler coverage area is to be measured from the compartment wall.

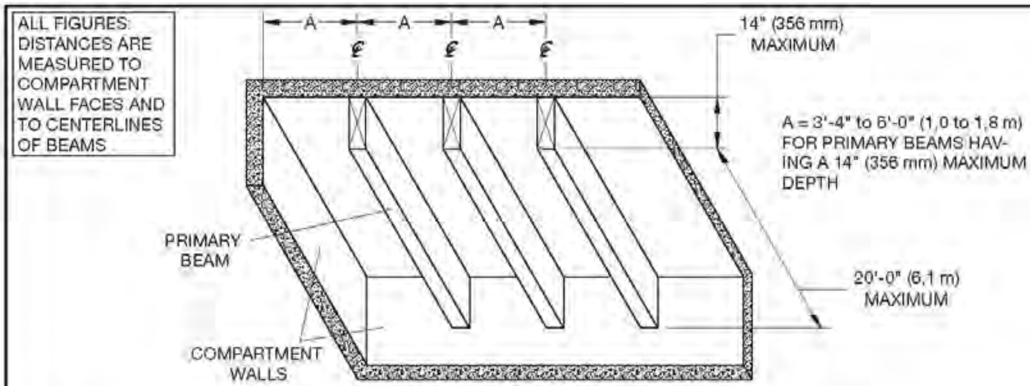


FIGURE 5A
PRIMARY BEAM SPANS UP TO 20'-0" (6,1 m)

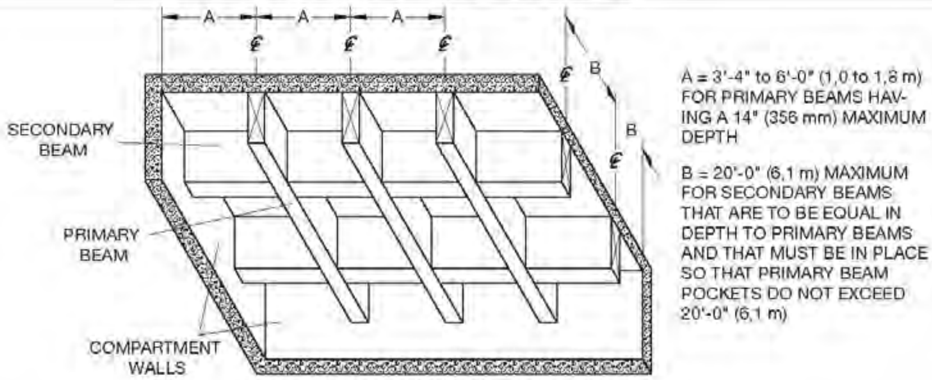


FIGURE 5B
PRIMARY BEAM SPANS GREATER THAN 20'-0" (6,1 m)

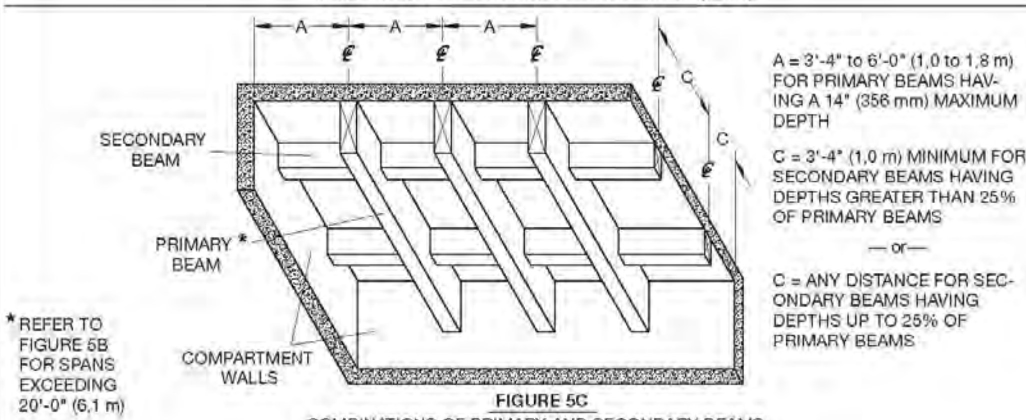


FIGURE 5C
COMBINATIONS OF PRIMARY AND SECONDARY BEAMS

FIGURE 5
BEAM ARRANGEMENTS
WET PIPE SYSTEMS ONLY
(Refer to the "Beam Ceiling Design Criteria" section.)

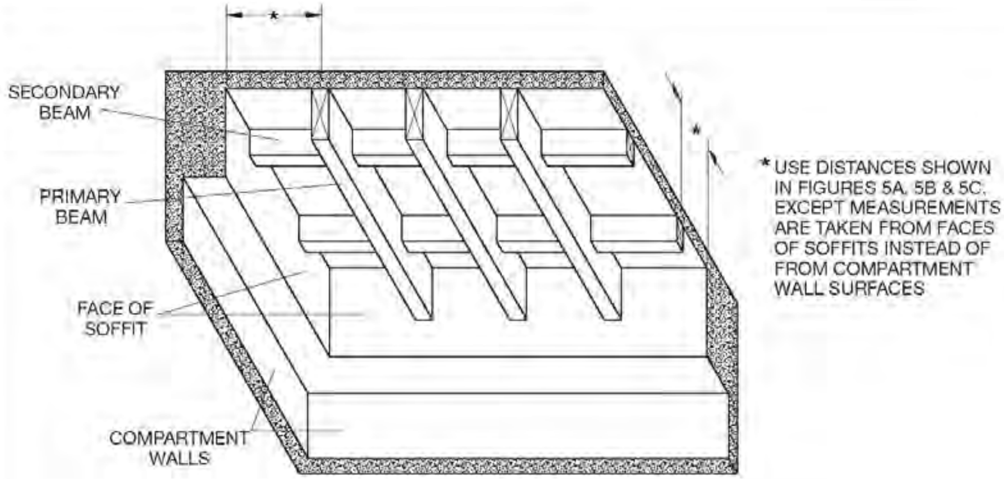


FIGURE 6
BEAM AND SOFFIT ARRANGEMENTS
WET PIPE SYSTEMS ONLY
(Refer to the "Beam Ceiling Design Criteria" section.)

Installation

The TYCO RAPID RESPONSE Series LFII Residential Flush Pendent Sprinklers (TY2284) must be installed in accordance with this section:

General Instructions
The Protective Cap is to remain on the sprinkler during installation until the ceiling installation is complete. The Protective Cap must be removed to place the sprinkler in service.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the sprinkler by under- or over-tightening the Sprinkler/Support Cup Assembly. Re-adjust the position of the sprinkler fitting to suit.

Each sprinkler must be inspected before installation. Do not use any sprinkler that exhibits any deformations or cracks, including cracks on the protective cap.

Step 1. The sprinkler must be installed only in the pendent position and with the sprinkler waterway centerline perpendicular to the mounting surface.

Step 2. Install the sprinkler fitting so that the distance from the face of the fitting to the mounting surface will be nominally 29/32 inches (23,0 mm) as shown in Figure 1A.

Step 3. With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 4. Tighten the sprinkler using only the Sprinkler Socket or Wrench & Socket Combination (Figure 2). The wrench recess of the socket is to be applied to the sprinkler wrenching area (Figure 1A).

Step 5. Use the "ceiling level tolerance limit" indicator on the Protective Cap to check for proper installation height. Relocate the sprinkler fitting as necessary. If desired, the Protective Cap may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Cap.

Step 6. After the ceiling has been completed with the 2 inch (50 mm diameter clearance hole, use the Protective Cap Removal Tool (Figure 3) to remove the Protective Cap and then push on the Escutcheon until its flange just comes in contact with the ceiling. Do not continue to push the Escutcheon such that it lifts a ceiling panel out of its normal position. If the Escutcheon cannot be engaged with the sprinkler, or the Escutcheon cannot be engaged sufficiently to contact the ceiling, relocate the sprinkler fitting as necessary.

Care and Maintenance

The TYCO RAPID RESPONSE Series LFII Residential Flush Pendent Sprinklers (TY2284) must be maintained and serviced in accordance with this section:

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or overheated sprinklers must be replaced.

Care must be exercised to avoid damage to the sprinklers - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

Products manufactured by Tyco Fire Protection Products (TFPP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFPP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFPP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any authorities having jurisdiction. Materials found by TFPP to be defective shall be either repaired or replaced, at TFPP's sole option. TFPP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFPP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFPP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFPP was informed about the possibility of such damages, and in no event shall TFPP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assembly
Specify: Series LFII (TY2284), K=4.2, Residential Flush Pendent Sprinkler without Escutcheon and having a (specify) finish, P/N (specify).

Chrome Plated . . . . P/N 51-123-9-162
Signal White (a) (RAL 9003) . . . . P/N 51-123-4-162
Black . . . . P/N 51-123-6-162
Antique Brass . . . . P/N 51-123-1-162

(a) Previously known as Bright White

Escutcheon
Specify: Escutcheon for Series LFII (TY2284), K=4.2, Residential Flush Pendent Sprinkler with (specify) finish, P/N (specify).

Chrome . . . . P/N 56-123-9-001
Signal White (a) (RAL 9003) . . . . P/N 56-123-4-001
Black . . . . P/N 56-123-6-001
Antique Brass . . . . P/N 56-123-1-001

Accessories
Specify: Wrench and Socket for Series LFII (TY2284) Residential Flush Pendent Sprinkler, P/N 56-000-4-948.

Specify: Socket for Series LFII (TY2284) Residential Flush Pendent Sprinkler, P/N 56-000-4-947.

Specify: Protective Cap Removal Tool for Series LFII Residential Flush Pendent Sprinkler (TY2284), P/N 56-000-4-300.

tyco

21 24 00 DRY-CHEMICAL FIRE-EXTINGUISHING SYSTEMS

Full Home Fire Extinguisher

Part number 21006704 | Full Home use | Single use

UL Rated 3-A, 40-B:C

Meets NFPA recommendations for the home, garage and workshop

For use on the following types of fire:

Description

The Full Home extinguisher offers exceptional fire fighting protection and value. The multipurpose unit meets NFPA requirements for living areas, as well as the garage and workshop.

The Full Home unit is the #1 choice for all round home protection and came top in a recent consumer survey.

Fights fires common to the home, garage and workshop such as textiles, paint, wood, gasoline & energized electrical equipment. This unit is easy to use and has a 10 year warranty.

Features bilingual nameplate and carton

At a Glance

- Model FX340GW
- Multipurpose Dry Chemical
- UL listed
- UL rated 3-A, 40-B:C
- Supplied with wall hanger
- Monoammonium Phosphate
- 10 year limited warranty

Features

- Pressure gauge allows for immediate pressure status check
- Easy-to-pull safety pin
- Rust and impact resistant nylon handle
- 5.5 lb. of fire extinguishing agent (Average)
- 10 year limited warranty
- UL approved wall hanger
- Powder coated cylinder for corrosion protection

Product Specification

Net agent weight (Average)	5.5 lb.
Unit weight (Average)	8.25 lb.
Diameter	4.5 inches
Height	16.07 inches
Discharge time	13-15 seconds
Discharge range	12-18 feet
Operating pressure	195 psi
Cylinder	Seamless aluminum
Valve, handle, lever	Nylon
Wall hanger	UL Listed

Kidde Residential and Commercial Division
1016 Corporate Park Drive, Mebane, NC 27302 • Tel. 919.563.2711 • www.kidde.com

Kidde

DIVISION 22 PLUMBING

22 07 19 PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes plumbing piping insulation for domestic water.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 PIPING INSULATION

A. MIRELON PRO thermal insulated tube - Thermal insulation tube made of polyethylene foam with a closed cell structure.

1. Insulation cold water pipes: MIRELON PRO in gray-black color with wall thickness 1/4”

2. Insulation hot water pipes: MIRELON PRO in gray-black color with wall thickness 3/8”

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Install thermal insulated piping on distribution piping for cold water.

C. Install thermal insulated piping on distribution piping for hot water.

D. More information on installation: http://www.mirelon.com/c3/docs/montazni-brozura-d00000021.pdf

E. Certificate of conformity: http://www.mirelon.com/c3/docs/certificate-brc-d00000026.pdf

END OF SECTION 22 07 19

22 11 16 DOMESTIC WATER PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes distribution piping for domestic water.

1.02 RELATED SECTIONS

A. 22 07 19 Plumbing piping insulation

B. 22 11 19 Domestic water piping specialties

C. 22 11 23 Domestic water pumps

D. 22 12 19 Facility potable-water storage tank

E. 22 13 29 Sanitary sewerage pumps

F. 22 13 43 Facility packaged sewage pumping stations

G. 22 13 53 Facility septic tank

H. 23 71 13 Thermal heat storage

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. REHAU – PIPE – RAUTITAN pipes are made from high density cross-linked polyethylene (PE-Xa) according to DIN 16892. Protective coat against diffusive oxygen DIN 4726. Color: silver RAL 9006 (white aluminum). Class construction material: B2.

1. 1-1/2" PLASTIC PIPE (RAU-PE-Xa)

a. RAUTITAN flex 130420

2. 1" PLASTIC PIPE (RAU-PE-Xa)

a. RAUTITAN flex 130400

3. 3/4" PLASTIC PIPE (RAU-PE-Xa)

a. RAUTITAN flex 130390

4. 1/2" PLASTIC PIPE (RAU-PE-Xa)

    a. RAUTITAN flex 130370

B. REHAU – FITTINGS – RAUTITAN

1. PX fittings are made from robust polymer material PVDF.
2. LX fittings are made from standard brass.
3. RX fittings are made from gunmetal.
4. Fittings: Manufactured piping coupling or specified piping system fitting. Same size as pipes to be joined and pressure rating at least equal to pipes to be joined.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Comply with requirements in Division 22 Section "Common Work Results for Plumbing" for basic piping installation requirements.

C. Install valves, inside the building at each domestic water service entrance. Comply with requirements in Division 22 Section "Common Work Results for Plumbing" for pressure gages and Division 22 Section "Domestic Water Piping Specialties" for drain valves.

D. Install domestic water piping without pitch for horizontal piping and plumb for vertical piping.

E. Rough-in domestic water piping for water-meter installation according to utility companies' requirements.

F. Comply with requirements in Division 22 Section "Common Work Results for Plumbing" for basic piping joint construction (for pressed joints).

G. Comply with requirements in Division 22 Section "Common Work Results for Plumbing" for pipe hanger and support devices.

H. More information on installation:

I. http://www.rehau.com/linkableblob/CZ_cs/912600/data/AnyBinary_PYZLFASfCsRy7U5viOqC5A__-data.pdf

3.02 INSPECTING AND CLEANING

A. Inspect and test piping systems as follows:

1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.

2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired by visual inspection of all joints.

B. Clean potable domestic water piping by filling system with water. Flush system with clean, potable water until from system after the standing time by flushing out a volume equal to the system volume, then stopping the flow of water for one hour, and then flushing the system.

C. More information on inspecting and cleaning:
http://www.rehau.com/linkableblob/CZ_cs/912600/data/AnyBinary_PYZLFASfCsRy7U5viOqC5A__-data.pdf

END OF SECTION 22 11 16

22 11 19 DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes distribution piping specialties for domestic water.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

B. 22 12 19 Facility potable-water storage tank

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 BALL VALVES

A. GIACOMINI

1. 1” Ball Valve, Bronze construction, Manually adjustable.

   a. GIACOMINI R251X055

2. 3/4” Ball Valve, Bronze construction, Manually adjustable.

   a. GIACOMINI GZ651Y004

3. 1/2” Ball Valve, Bronze construction, Manually adjustable.

   a. GIACOMINI GZ651Y003

2.02 DRAIN VALVES

A. GIACOMINI

1. 1” Drain Valve, Bronze construction, Manually adjustable.

   a. GIACOMINI R251SX005

2. 1/2” Drain Valve, Bronze construction, Manually adjustable.

   a. GIACOMINI R248Y004

2.03 CHECK-VALVE

A. GIACOMINI

1. 1” Check-Valve, Bronze construction, Manually adjustable.

a. GIACOMINI R623Y005

2.04 THERMOSTATIC MIXING VALVE

A. REGULUS

1. 3/4” Thermostatic Mixing Valve, Bronze construction, Manually adjustable, Temperature range mixing 86 °F – 149 °F.

a. REGULUS Wmix-K S20.

2.05 SAFETY VALVE

A. MEIBES

1. 1/2” Safety Valve, Bronze construction, Manually adjustable, Operation pressure 87 psi.

a. MEIBES DUCO 1/2” x 3/4”

2.06 FLOWMETER

A. SENSUS

1. 1/2” Flowmeter, Nominal flow 0.883 cfm. Max. operation pressure PN10 .

a. SENSUS ResidiaJet

2.07 FILTER

A. HONEYWELL

1. 3/4” Filter.

a. HONEYWELL FF06-AAM

2.08 EXPANSION VESSELS

A. REGULUS

1. Expansion vessels 1.32 gal. Max. operation pressure PN10 .

a. REGULUS HYB 5

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Drawings indicate valve types to be used.

C. Install ball valves on inlet to each plumbing equipment item, on each supply to each plumbing fixture not having stops on supplies, and elsewhere as indicated.

D. Install drain valve at base of each riser, at low points of horizontal runs, and where required to drain water distribution piping system.

E. Install check valve on discharge side of each pump and elsewhere as indicated.

F. Install safety valve on storage water heaters.

G. Install flowmeter on distribution piping for cold water.

H. Install filter on distribution piping for cold water.

I. Install expansion vessels on distribution piping for cold water.

END OF SECTION 22 11 19

22 11 23 DOMESTIC WATER PUMPS

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes water pumps for domestic water.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

B. 22 12 19 Facility potable-water storage tank

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - products

2.01 DOMESTIC WATER PUMPS

A. WILO

1. Automatic booster is designed for pumping clean water from wells, reservoirs and tanks with self-priming pump wherever there is total suction head of the pump, including losses greater than 23 ft water column.

2. Thanks to the special control box offers many benefits that will be especially useful if you use it as a home station with continuous regulation.

3. WILO COR-1 WJ 401 EM

4. http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&ved=0CFoQFjAF&url=http%3A%2F%2Fwww.wilo.cz%2Fhome%2Fwilo-ceska-republika%2Fakce%2Fakce-wilo-2013%2F%3Fno_cache%3D1%26cid%3D64533%26did%3D6294%26sechash%3D150bf5cd&ei=QBIKUs_dEYSg4gSF2YG4Dg&usg=AFQjCNFMrlq7wK8fmsu7RtUy_EYBflxN1A&sig2=cqtltKDtn4dPzx6W3n7N9Q&bvm=bv.50500085,d.bGE

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

C. Install pumps with access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.

D. Install electrical connections for power, controls, and devices.

E. Connect piping with valves that are at least the same size as piping connecting to pumps.

F. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.

END OF SECTION 22 11 23

22 12 19 FACILITY POTABLE-WATER STORAGE TANK

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes facility potable-water storage tank for domestic water.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

B. 22 11 19 Domestic water piping specialties

C. 22 11 23 Domestic water pumps

D. 22 13 63 Facility gray water tanks

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 POTABLE-WATER SUPPLY TANK

A. OBAL CENTRUM

1. Stackable containers with inner bottle made of UV stabilized high-molecular polyethylene HDPE resistant to most aggressive chemicals. IBCs also consist from a galvaniséd steel frame and PE plastic palet (alternatively metal or wooden palet), resistant to mechanical and corrosive influences. the advantage of plastic palets are particularly evident in the handling of concentrated inorganic acids and organic chemical products.

2. All parts of the IBC are recyclable and replaceable, remanufacturing is performed right in our area. handling by forklift truck forklift. the relatively large variability of accessories allows the use IBC under various operating conditions.

3. There are all spare parts for mauser IBC containers on stock (they are recyclable and replaceable). the IBC containers are supplied on wooden, metal, plastic or hybride palet. material of inner container is made of hdpe with sanitary certificate.

4. Our company also supplies stainless steel IBC containers UCON brand for the extremely aggressive chemicals or for the food, pharmaceutic and cosmetic industry.

5. UN certification for almost all liquids. Protective outer skeleton IBC is made of galvanized steel. 100% recyclable.

6. Potable Drinking Water Tanks, Horizontal tank, 6'' filling connection, 2'' male threaded offset filling connection (on the top of the tank). All connections are polyethylen ensuring long life and durability, Ball valve (supplied separately for self-assembly on the bottom outlet).
7. Volume: 264 galDiameter: 3,94 feet Height: 3,28 feet Mass: 139 lb
8. Standard IBC containers 1000, UN code, 264 gal
9. http://www.obal-centrum.com/IBC_containers/standard_ibc_containers.php#parametry

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

C. Fasten securely in place, with provisions for thermal and structural movement.

D. Correct deficiencies in or remove and reinstall products that do not comply with requirements.

E. Repair, refinish, or replace products damaged during installation, as directed by Architect.

END OF SECTION 22 12 19

22 13 16 SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes sanitary waste and vent piping for waste water.

1.02 RELATED SECTIONS

A. 22 13 29 Sanitary sewerage pumps

B. 22 13 43 Facility packaged sewage pumping stations

C. 22 13 53 Facility septic tank

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. REHAU – PIPE - RAUPIANO PLUS is a universal sound-insulating sewer pipe system for non-pressurised domestic drainage in accordance with DIN EN 12056 and DIN 1986-100. A comprehensive fitting and attachment line rounds out the system. Material: RAU-PP (mineral reinforcement). Color: white (similar to RAL 9003).

1. 4" PLASTIC PIPE (PP)

   a. RAUPIANO Plus 120294-200

2. 3" PLASTIC PIPE (PP)

   a. RAUPIANO Plus 120214-200

3. 2" PLASTIC PIPE (PP)

   a. RAUPIANO Plus 120134-200

B. REHAU – FITTINGS - RAUPIANO PLUS is a universal sound-insulating sewer pipe system for non-pressurised domestic drainage in accordance with DIN EN 12056 and DIN 1986-100. A comprehensive fitting and attachment line rounds out the system. Material: RAU-PP (mineral reinforcement). Color: white (similar to RAL 9003).

1. Fittings: Manufactured piping coupling or specified piping system fitting. Same size as pipes to be joined and pressure rating at least equal to pipes to be joined.

PART 3 - EXECUTION

3.01 PIPING INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install wall penetration system at each pipe penetration through foundation wall. Make installation watertight.

C. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Use proper size of standard increasers and reducers if pipes of different sizes are connected.

D. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated.

E. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

F. More information on installation: http://www.rehau.com/linkableblob/CZ_cs/894750/data/Technicka_informace_Raupiano_plus-data.pdf

END OF SECTION 22 13 16

22 13 29 SANITARY SEWERAGE PUMPS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes sewage pumping for waste water.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

B. 22 13 16 Sanitary waste and vent piping

C. 22 13 53 Facility septic tank

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 SANITARY SEWERAGE PUMPS

A. WILO

1. Submersible sewage pump as submersible monobloc unit for stationary and portable wet well installation.

2. Hydraulics

a. The outlet on the pressure side is designed as vertical threaded connection Rp 1½. Vortex impeller is used as the impeller shapes.

3. Motor

a. The oil-filled motors give off heat directly to the pumped fluid via an integrated heat exchanger. As a result, these motors can be used in immersed state for permanent and intermittent operation. In non-immersed state, these motors can be used for intermittent operation.

b. A sealing chamber protects the motor from fluid ingress. The filling fluid used is potentially biodegradable and environmentally safe.

c. The motor cable and float switch can be detached and replaced.

4. Sealing

a. Sealing on the fluid side is achieved by a bidirectional mechanical seal, while sealing on the motor side is achieved by a rotary shaft seal.

5. Wilo-Drain TMW 32/8

6. http://productfinder.wilo.com/en/COM/productrange/0000001100023fdb00020023/fc_range_description

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

C. Install pumps with access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.

D. Install electrical connections for power, controls, and devices.

E. Connect piping with valves that are at least the same size as piping connecting to pumps.

F. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.

END OF SECTION 22 13 29

22 13 43 FACILITY PACKAGED SEWAGE PUMPING STATIONS

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes packaged sewage pumping stations for waste water.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

B. 22 13 16 Sanitary waste and vent piping

C. 22 13 53 Facility septic tank

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 FACILITY PACKAGED SEWAGE PUMPING STATIONS

A. WILO

1. Pumped sewage, completely ready for connection, for the specified use to drain water from the sink, washing machine, dishwasher, shower and bidet, all of which can waste water and sewage discharged into sewers or natural gradient which are situated below the backflow level.

2. Automatic pumped sewage, equipped with all necessary switches and control devices mounted check valve, activated charcoal filter, for two drainage fittings and flues.

3. Pumped sewage TMP 32 is connected directly. Pipe to connect the drainage fittings for pressure pipes are located on the back of the device and the connected pipes can be led left or right. Despite the charcoal filter is an odorless vent into the room where the equipment is installed, or vent pipe through the roof.

4. WILO Opti-Box KH 32–0,4

5. http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC4QFjAA&url=http%3A%2F%2Fwww.wilo.cz%2Fhome%2Fwilo-ceska-republika%2Fakce%2Fakce-wilo-2013%2F%3Fno_cache%3D1%26cid%3D64533%26did%3D6310%26sechash%3D8c851de1&ei=LR0KUs_cI_CN4gTO8ICIDg&usg=AFQjCNFz3p-g0USYiWCMtb5EiEJCFWfrkg&sig2=TxZkIxUG_j9mQvvZVAtpXA&bvm=bv.50500085,d.bGE

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

C. Install pumps with access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.

D. Install electrical connections for power, controls, and devices.

E. Connect piping with valves that are at least the same size as piping connecting to pumps.

F. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.

END OF SECTION 22 13 43

22 13 53 FACILITY SEPTIC TANK

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes facility septic tank for waste water.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

B. 22 13 16 Sanitary waste and vent piping

C. 22 13 29 Sanitary sewerage pumps

D. 22 13 43 Facility packaged sewage pumping stations

E. 22 13 73 Facility planter

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 SEPTIC TANK

A. REALPLAST, ČESKÝ BROD

1. Septic system consists of a compact-plastic container made of polypropylene. Rectangular tank is manufactured from welded polypropylene plates (thickness: 0,2 in) divided by partition into two chamber.

2. Technology: sedimentation and anaerobic digestion values of inlet water: sewage waste water from human habitation; guaranteed values of output water: pre-treated water, additional treatment stage is root domestic wastewater treatment plants.

3. Dimensions (width x height x lenght): 1,8 feet x 3,45 feet x 2,73 feet, volume: 106 gal, mass: 112 lb

4. Septic tanks, removable top part with revision cover, 2'' male threaded offset filling connection (on the side of the tank).

5. http://www.azrealplast.cz/dnes_stranky/4_septiky.htm

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Set septic tanks level, plumb, and true to line and anchor securely in place according to manufacturer's specifications.

C. Fasten securely in place, with provisions for thermal and structural movement.

D. Correct deficiencies in or remove and reinstall products that do not comply with requirements.

E. Repair, refinish, or replace products damaged during installation, as directed by Architect.

END OF SECTION 22 13 53

22 13 63 FACILITY GRAY WATER TANKS

"Temporary for competition purpose"

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes facility gray water tanks for waste water.

1.02 RELATED SECTIONS

A. 22 13 16 Sanitary waste and vent piping

B. 22 13 73 Facility planter

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 GRAY WATER TANKS

A. REALPLAST, ČESKÝ BROD

1. Gray water tank consists of a compact-plastic container made of polypropylene. Rectangular tank is manufactured from welded polypropylene plates – thickness 0,2 in.

2. Dimensions (width x height x lenght): 3,3 feet x 3,45 feet x 4,92 feet, volume: 396 gal, mass: 145 lb

3. Tanks, Horizontal tank, 10'' filling connection, 2'' male threaded offset filling connection for drain valve (on the side of the tank).

4. http://www.azrealplast.cz/index.htm

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Set septic tanks level, plumb, and true to line and anchor securely in place according to manufacturer's specifications.

C. Fasten securely in place, with provisions for thermal and structural movement.

D. Correct deficiencies in or remove and reinstall products that do not comply with requirements.

E. Repair, refinish, or replace products damaged during installation, as directed by Architect.

END OF SECTION 22 13 63

22 13 73 FACILITY PLANTER

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes facility planter for waste water.

1.02 RELATED SECTIONS

A. 22 13 53 Facility septic tank

B. 22 13 63 Facility gray water tanks

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 FACILITY PLANTER

A. REALPLAST, ČESKÝ BROD

1. Planter system consists of a compact-plastic container made of polypropylene. Rectangular tank is manufactured from welded polypropylene plates – thickness 0,2 in, UV protected.

2. Dimensions (width x height x lenght): 3,6 feet x 0,4 feet x 27,6 feet, mass: 236 lb

3. Tanks, Horizontal tank – open top, 2'' male threaded offset filling connection (on the side of the tank), 6,3'' male threaded offset filling connection (on the bottom of the tank), 4 revision covers for IBC containers - diameter – 6,3 in, one revision cover for septic tank – diameter 11, 81 in

4. http://www.azrealplast.cz/index.htm

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Set septic tanks level, plumb, and true to line and anchor securely in place according to manufacturer's specifications.

C. Fasten securely in place, with provisions for thermal and structural movement.

D. Correct deficiencies in or remove and reinstall products that do not comply with requirements.

E. Repair, refinish, or replace products damaged during installation, as directed by Architect.

END OF SECTION 22 13 73

22 41 13 RESIDENTIAL WATER CLOSETS, URINALS, AND BIDETS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes water closets, urinals, and bidets.

1.02 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 WALL MOUNTED CERAMIC TOILET

A. DURAVIT

1. Darling New Toilet wall mounted Compact washdown model. Durafix for invisible fixation is included in delivery. Color: White Alpin.
2. Darling New Toilets 254909
3. http://www.duravit.com/website/homepage/products/product_overview/series/darling_new.com-en.html/p-702169#
4. Hansgrohe Corner Valves 13903000

2.02 IN-WALL TANK SYSTEM

A. ALCA PLAST

1. Pre-wall installation system for dry build up (plasterboard and Slimbox).
2. ALCA PLAST A1101/1200 Sádromodul Slim
3. http://www.alcaplast.com/products/products/pre-wall-installation-systems/wc-modules-slim/a1101-sadromodul-slim/

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

C. Fasten securely in place, with provisions for thermal and structural movement. Install with concealed fasteners, unless otherwise indicated.

D. Repair, refinish, or replace products damaged during installation, as directed by Architect.

END OF SECTION 22 41 13

22 41 16 RESIDENTIAL LAVATORIES AND SINKS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes lavatories and sinks.

1.02 RELATED SECTIONS

A. 12 36 19 Wood countertops

B. 22 41 39 Residential faucets, supplies, and trim

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 WALL MOUNTED CERAMIC SINK

A. DURAVIT

1. Vanity Basins Vanity basin countertop basin, with overflow, with tap platform. Color: White Alpin.
2. Vanity Basins Washbasins 031555
3. http://www.duravit.com/website/homepage/products/product_overview/series/vanity_basins.com-en.html/p-114853
4. INTERCEPTING TRAP for sink, space-saving wash-basin trap with coupling nut 5/4".
   a. ALCA PLAST A434

2.02 KITCHEN SINK

A. DURAVIT

1. Vero Undercounter kitchen sink Vero 50 with overflow, without tap platform, fixings and outlet connectors included. Color: White Alpin.
2. Vero Kitchen Sinks 751445
3. http://www.duravit.com/website/homepage/products/product_overview/series/vero.com-en.html/p-677403
4. INTERCEPTING TRAP for sink, sink waste and trap with stainless steel grid Ø115, flexi overflow and connector.
   a. ALCA PLAST A447P Ø50/40

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Set units level, plumb, and true to line, and anchor securely in place.

C. Fasten securely in place, with provisions for thermal and structural movement. Install with concealed fasteners, unless otherwise indicated.

D. Repair, refinish, or replace products damaged during installation, as directed by Architect.

END OF SECTION 22 41 16

22 41 23 RESIDENTIAL SHOWER

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes shower.

1.02 RELATED SECTIONS

A. 22 41 39 Residential faucets, supplies, and trim

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 SHOWER DRAIN CHANNELS

A. ALCA PLAST

1. Shower waste set chrome
2. Reduced height shower waste set
3. Elbow included
4. Self-cleaning waste design
5. Tool for tightening the shower waste outlet and trap after assembly is included
6. ALCA PLAST A471CR
7. http://www.alcaplast.com/products/products/wastes-and-traps/shower-wastes-and-traps/o-60/a471cr-o60/

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Prepare substrate by cleaning, removing projections, filling voids, sealing joints and as otherwise recommended in manufacturer's written instructions.

C. The substrate must be clean, even, and load bearing. Any leveling must be done prior to placing the drain channels.

D. Correct deficiencies in or remove and reinstall that does not comply with requirements.

E. Repair, refinish, or replace damaged during installation, as directed by Architect.

END OF SECTION 22 41 23

22 41 39 RESIDENTIAL FAUCETS, SUPPLIES, AND TRIM

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes faucets, supplies, and trim.

1.02 RELATED SECTIONS

A. 11 31 13 Residential kitchen appliances

B. 11 31 23 Residential laundry appliances

C. 22 41 16 Residential lavatories and sinks

D. 22 41 23 Residential shower

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 BATHROOM FAUCET

A. HANSGROHE

1. Finish: Chrome
2. Ceramic cartridge
3. Boltic lever lock
4. adjustable temperature restriction
5. Axor Starck Organic 2-Handle Basin Mixer 280, DN15

   http://www.hansgroheint.com/productdetail.html?category=C0000000012055&model=12011XXX&lang=en_ang=en_GB

7. Hansgrohe Corner Valves 13903000

2.02 KITCHEN FAUCET

A. HANSGROHE

1. Finish: Chrome
2. Ceramic cartridge

3. Boltic lever lock

4. Swivel spout 150°

5. Axor Single Lever Kitchen Mixer with pull-out spray DN15

6. http://www.hansgrohe-int.com/productdetail.html?category=C0000000000635&model=10821XXX&lang=en_GB

7. Hansgrohe Corner Valves 13903000

2.03 SHOWER FAUCET

A. HANSGROHE

1. Finish: Chrome

2. Ceramic valve

3. Thermostat with safety stop at 104°F

4. Axor Thermostatic Shower Mixer for exposed fitting, DN15

5. http://www.hansgrohe-int.com/productdetail.html?category=C0000000012061&model=12602XXX&lang=en_GB

2.04 SHOWER SET

A. HANSGROHE

1. Finish: Chrome

2. Axor Starck hand shower with Normal and Soft spray

3. Continuously height adjustable

4. Horizontal swivel range of hand shower 180°

5. Cylindrical nut on both ends

6. Axor Shower Set DN15

7. http://www.hansgrohe-int.com/productdetail.html?category=C0000000012045&model=27980XXX&lang=en_GB

2.05 KITCHEN APPLIANCES SUPPLIES

A. DISHWASHER

1. IVAR Corner Valves with check-valve 08101013

2.06 TECHNICAL ROOM

A. FLOOR DRAIN

1. Floor drain straight outlet, stainless steel grid, stainless steel flange and collar-2nd level insulation, combined odour trap SMART.

2. ALCA PLAST APV2324

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Install showerhead using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

C. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items. Remove temporary labels and protective coatings.

END OF SECTION 22 41 39

DIVISION 23 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

23 07 19 HVAC PIPING INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes piping insulation for HVAC.

1.02 RELATED SECTIONS

A. 23 21 13 Hydronic piping

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 PIPING INSULATION

A. ARMACELL AC/Armaflex thermal insulated piping - Armaflex AC is a material based on synthetic rubber with closed cells. It is highly flexible and durable. The material properties of a system consisting of closed cells ensure high thermal efficiency and protection against condensation.

1. Insulation water inlet pipes: ARMACELL AC/Armaflex in black color with wall thickness 1/2"

2. Insulation water return pipes: ARMACELL AC/Armaflex in black color with wall thickness 3/8"

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install thermal insulated piping on inlet pipes.

C. Install thermal insulated piping on return pipes.

D. More information on installation: http://www.azflex.cz/en/technical-insulation/armacell.html

END OF SECTION 23 07 19

23 21 13 HYDRONIC PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes distribution hydronic piping for HVAC.

1.02 RELATED SECTIONS

A. 23 07 19 HVAC piping insulation

B. 23 21 23 Hydronic pumps

C. 23 71 13 Thermal heat storage

D. 23 72 00 Air-to-air energy recovery equipment

E. 23 82 42 Air-to-water heat pumps

F. 23 83 16 Radiant-heating hydronic piping

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. REHAU – PIPE – RAUTHERM S pipes to install heating and cooling. Material: Cross-linked polyethylene, complies with DIN 16892. The protective layer against oxygen diffusion in the sense of DIN 4726. Certificates: registration number DIN-Certco: 3V226 PE-Xa or 3V227 PE-Xa. Color: red.

1. 1/2" PLASTIC PIPE (PE-Xa)

a. RAUTHERM S 136140-005

B. VIEGA – PIPE – A1 Profipress s SC-Contur pipes to install heating and cooling. Copper pipes according to DIN EN 1057.

1. 1" COPPER PIPE (Cu)

a. A1 Profipress s SC-Contur

2. 3/4" COPPER PIPE (Cu)

a. A1 Profipress s SC-Contur

C. FITTINGS

1. REHAU RAUTHERM S fittings are made from plated brass.

2. VIEGA A1 Profipress s SC-Contur fittings are made from copper. All sizes with SC-Contur that the implementation of the device is clearly visible by mistake not stamping connection.

3. Fittings: Manufactured piping coupling or specified piping system fitting. Same size as pipes to be joined and pressure rating at least equal to pipes to be joined.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Comply with requirements in Division 23 Section "Common Work Results for HVAC" for basic piping installation requirements.

C. Install valves, inside the building at each hydronic service entrance. Comply with requirements in Division 23 Section "Common Work Results for HVAC" for pressure gages and Division 23 Section "Hydronic Piping Specialties" for drain valves.

D. Install hydronic piping without pitch for horizontal piping and plumb for vertical piping.

E. Comply with requirements in Division 23 Section "Common Work Results for HVAC" for basic piping joint construction (for pressed joints).

F. Comply with requirements in Division 23 Section "Common Work Results for HVAC" for pipe hanger and support devices.

G. More information on installation:

H. http://www.rehau.com/linkableblob/CZ_cs/1213158/data/cenik_podlahove_vytapeni_chlazeni_rehau-data.pdf

I. http://www.viega.cz/cps/rde/xbcr/cs-cz/644710_Brochure_Presssysteme_CZ_net.pdf

3.02 INSPECTING AND TESTING

A. Inspect and test piping systems as follows:

1. Fill hydronic piping. Check components to determine that they are not air bound and that piping is full of water.

2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired by visual inspection of all joints.

B. More information on inspecting and testing:

3.03 http://www.rehau.com/linkableblob/CZ_cs/1213158/data/cenik_podlahove_vytapeni_chlazeni_rehau-data.pdf

3.04 http://www.viega.cz/cps/rde/xbcr/cs-cz/644710_Brochure_Presssysteme_CZ_net.pdf

END OF SECTION 23 21 13

23 21 16 HYDRONIC PIPING SPECIALTIES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes distribution piping specialties for HVAC.

1.02 RELATED SECTIONS

A. 23 21 13 Hydronic piping

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 BALL VALVES

A. GIACOMINI

1. 1" Ball Valve, Bronze construction, Manually adjustable.

a. Giacomini GZ651Y005

2. 3/4" Ball Valve, Bronze construction, Manually adjustable.

a. Giacomini GZ651Y004

2.02 DRAIN VALVES

A. GIACOMINI

1. 1/2" Drain Valve, Bronze construction, Manually adjustable.

a. Giacomini R248Y004

2.03 CHECK-VALVE

A. GIACOMINI

1. 3/4" Check-Valve, Bronze construction, Manually adjustable.

a. Giacomini R60Y005

2.04 T- VALVE

A. ESBE

1. T- Valve, Bronze construction, Automatically adjustable.

   a. ESBE VRG231. DN 20. Kvs 6,5.

   b. ESBE ARA600 actuator.

   c. http://www.esbe.cz/download/catalogue_2012_2013/ESBE_Katalog_2012_13_CZ.pdf

B. SAUTER

1. T- Valve, Bronze construction, Automatically adjustable.

   a. SAUTER BKR015F340. DN 15. Kvs 1,6.

   b. SAUTER AKM115F122 actuator.

   c. http://www.sauter.cz/fileadmin/sac/katalog/pdf/56091.pdf

   d. http://www.sauter.cz/fileadmin/sac/katalog/pdf/51363.pdf

2.05 MIXING VALVE

A. SAUTER

1. Mixing Valve, Bronze construction, Automatically adjustable.

   a. SAUTER BUN015F320. DN 15. Kvs 1,6.

   b. SAUTER BUN015F310. DN 15. Kvs 2,5.

   c. SAUTER AVM105F122 actuator.

   d. http://www.sauter.cz/fileadmin/sac/katalog/pdf/56101.pdf

   e. http://www.sauter.cz/fileadmin/sac/katalog/pdf/51361.pdf

2.06 FILTER

A. GIACOMINI

1. 3/4” Filter, Bronze construction, Manually adjustable.

   a. Giacomini R74AY005

2.07 AUTOMATIC AIR VENT VALVE

A. GIACOMINI

1. 1/2” Automatic Air Vent Valve, Bronze construction, Automatically adjustable.

   a. Giacomini R99IY003

2.08 THERMOMANOMETER

A. GIACOMINI

1. 1/2” Thermomanometer, Bronze construction, Manually adjustable. Temperature 32 – 248 °F. Pressure 0 – 6 bar.

a. Giacomini R226Y002

2.09 EXPANSION VESSELS

A. REFLEX

1. Expansion Vessels, Manually adjustable. Max. pressure 3 bar. Volume 9 gal.

a. Reflex N 35/3

2.10 THERMOSTATIC MIXING VALVE

A. ESBE

1. 1” Thermostatic Mixing Valve, Bronze construction, Manually adjustable, Temperature range mixing 68 °F – 110 °F.

a. ESBE VTA552. DN 25. Kvs 3,2.

b. http://www.esbe.cz/download/catalogue_2012_2013/ESBE_Katalog_2012_13_CZ.pdf

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Drawings indicate valve types to be used.

C. Install ball valves on inlet to each hydronic equipment item, on each supply to each hydronic fixture not having stops on supplies, and elsewhere as indicated.

D. Install drain valve at base of each riser, at low points of horizontal runs, and where required to drain water distribution piping system.

E. Install check valve on discharge side of each pump and elsewhere as indicated.

F. Install automatic air vent valve on the highest place in the hydronic system.

G. Install T- valve and mixing valve in accordance with manufacturer’s recommendations.

END OF SECTION 23 21 16

23 21 23 HYDRONIC PUMPS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes hydronic pumps for HVAC.

1.02 RELATED SECTIONS

A. 23 21 13 Hydronic piping

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 HYDRONIC PUMPS

A. WILO

1. High-efficiency pump WILO-Yonos PICO, electronically controlled. Maintenance-free glandless circulation pump with screwed connection, blocking-current proof synchronous motor according to ECM technology and built-in electronic power control for variable differential pressure control. Can be used for all heating and air-conditioning applications. Control mode can be selected in accordance with the radiator/underfloor heating application.

2. WILO Yonos PICO 15/1-4 130

3. http://productfinder.wilo.com/en/COM/productrange/0000002d0000270200030023/fc_range_description

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

C. Drawings indicate local of pump.

D. Install pumps with access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.

E. Install electrical connections for power, controls, and devices.

END OF SECTION 23 21 23

23 23 00 REFRIGERANT PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes refrigerant piping for HVAC.

1.02 RELATED SECTIONS

A. 23 23 23 Refrigerants

B. 23 82 42 Air-to-water heat pumps

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 TUBES AND FITTINGS

A. Copper Tube: MICROWELL 2010 DUO 6-16 (1/4"x 1/2") with insulation.

B. Copper Fittings: Coupling fittings:

1. MICROWELL 9801 6 (1/4").

2. MICROWELL 9802 16 (1/2").

2.02 REFRIGERANT PIPING SPECIALTIES

A. Refrigerant: R-410A.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install wall penetration system at each pipe penetration through foundation wall. Make installation watertight.

C. Install refrigerant piping and charge with refrigerant according to ASHRAE.

D. Belowground, install copper tubing in PVC conduit. Vent conduit outdoors.

E. Slope refrigerant piping as follows:

1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.

2. Install horizontal suction lines with a uniform slope downward to compressor.

3. Install traps and double risers to entrain oil in vertical runs.

F. Install piping as short and direct as possible, with a minimum number of joints, elbows and fittings.

3.02 PIPING APPLICATIONS FOR REFRIGERANT R-410A

A. Suction Lines: Copper, Type 9801 6 (1/4"), annealed or drawn-temper tubing and copper fittings.

B. Hot-Gas and Liquid Lines: Copper, Type 9802 16 (1/2"), annealed or drawn-temper tubing and copper fittings.

END OF SECTION 23 23 00

23 23 23 REFRIGERANTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes refrigerants for HVAC.

1.02 RELATED SECTIONS

A. 23 23 00 Refrigerant piping

B. 23 82 42 Air-to-water heat pumps

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 REFRIGERANT

A. R-410A.

1. Non-ozone depleting refrigerant.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install refrigerant piping and charge with refrigerant according to ASHRAE.

C. Certification: www.daikin.com/chm/products/pdfDown.php?url=pdf/msds/msds_r410a_e.pdf

www.daikin.com/chm/products/pdfDown.php?url=pdf/tds/tds_r410a_e.pdf

END OF SECTION 23 23 23

23 31 13 METAL DUCTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes distribution metal ducts for HVAC.

1.02 RELATED SECTIONS

A. 23 31 16 Nonmetal ducts

B. 23 34 13 Axial HVAC fans

C. 23 34 16 Centrifugal HVAC fans

D. 23 37 13 Diffusers, registers, and grilles

E. 23 72 00 Air-to-air energy recovery equipment

F. 23 84 16 Mechanical dehumidification units

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 METAL DUCTS

A. Round Spiral Ducts. Ducts with thermal and noise insulation:

1. MULTIVAC SONOVAC 25 DS (8”)
2. MULTIVAC SONOVAC 25 DS (6”)
3. MULTIVAC SONOVAC 25 DS (5”)
4. MULTIVAC SONOVAC 25 DS (4”)

2.02 METAL DUCT FITTINGS

A. Round duct fittings: MULTIVAC

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Install ducts according to "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Seal ducts to the following seal classes according to "HVAC Duct Construction Standards - Metal and Flexible".

D. Conceal ducts from view in finished and occupied spaces.

E. Avoid passing through electrical equipment spaces and enclosures.

F. Install duct accessories according to applicable details in "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts.

G. Install volume and control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.

H. Clean new duct system(s) before testing, adjusting, and balancing.

3.02 TESTING, ADJUSTING, AND BALANCING

A. Balance airflow within distribution systems, including submains, branches, and terminals to indicated quantities.

END OF SECTION 23 31 13

23 31 16 NONMETAL DUCTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes distribution nonmetal ducts for HVAC.

1.02 RELATED SECTIONS

A. 23 31 13 Metal ducts

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 NONMETAL DUCTS

A. Rectangular plastic ducts:

1. MULTIVAC MULTI-PLAST (9"x4")

2. MULTIVAC MULTI-PLAST (8"x2")

2.02 NONMETAL DUCT FITTINGS

A. Rectangular plastic ducts fittings: MULTIVAC

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install ducts according to "HVAC Duct Construction Standards - Nonmetal and Flexible" unless otherwise indicated.

C. Seal ducts to the following seal classes according to "HVAC Duct Construction Standards - Nonmetal and Flexible".

D. Conceal ducts from view in finished and occupied spaces.

E. Avoid passing through electrical equipment spaces and enclosures.

F. Install duct accessories according to applicable details in "HVAC Duct Construction Standards - Nonmetal and Flexible" for nonmetal ducts.

G. Install volume and control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.

H. Clean new duct system(s) before testing, adjusting, and balancing.

3.02 TESTING, ADJUSTING, AND BALANCING

A. Balance airflow within distribution systems, including submains, branches, and terminals to indicated quantities.

END OF SECTION 23 31 16

23 34 13 AXIAL HVAC FANS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes axial HVAC fans.

1.02 RELATED SECTIONS

A. 23 31 13 Metal ducts

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 AXIAL HVAC FANS

A. MULTIVAC

1. Wall fan is designed for shorter ductwork with low pressure loss, IPX4, part of the non-return valve.
2. MULTIVAC E-Style 120 pro
3. http://www.multivac.cz/produkty/e-style

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

END OF SECTION 23 34 13

23 34 16 CENTRIFUGAL HVAC FANS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes centrifugal HVAC fans.

1.02 RELATED SECTIONS

A. 23 31 13 Metal ducts

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 CENTRIFUGAL HVAC FANS

A. MULTIVAC

1. Pipe diagonal plastic fan ACM suitable for circular air distribution greater lengths, extraction from multiple locations, IP44. Installation in any position. Two speed fan. Quiet operation. Possibility of dismantling the engine without dismantling piping. Suitable for toilets, bathrooms, commercial applications.

2. MULTIVAC ACM 125

3. http://www.multivac.cz/produkty/acm

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

END OF SECTION 23 34 16

23 37 13 DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes distribution diffusers, registers, and grilles for HVAC.

1.02 RELATED SECTIONS

A. 23 31 13 Metal ducts

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 DIFFUSERS

A. TROX

1. Material: Steel.
2. TROX VSD35
3. http://www.trox.cz/cz/service/download_center/structure/technical_documents/diffusers/leaflets/2_2_6_vsd351.pdf

B. MULTIVAC

1. Material: Steel.
2. MULTIVAC RT350
3. http://www.multivac.cz/produkty/rt350

2.02 GRILLES

A. MULTIVAC

1. Material: Plastic.
2. MULTIVAC C-UM-S-S Round Plastic Grilles
3. http://www.multivac.cz/produkty/c-um-s-s

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install diffusers, registers, and grilles level and plumb.

C. Wall-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Make final locations where indicated, as much as practical. For units installed in wall panels, locate units in the center of panel unless otherwise indicated. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

D. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION 23 37 13

23 56 13.13 HEATING SOLAR FLAT-PLATE COLLECTORS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes heating solar flat-plate collectors.

1.02 RELATED SECTIONS

A. 23 71 13 Thermal heat storage

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 FLAT-PLATE SOLAR PANELS

A. REGULUS

1. Two flat-plate solar panels.
2. Supply / return Compression fitting: Cu ¾", max pressure: 87 psi.
3. REGULUS KPG1
4. http://www.regulus.eu/en/kpg1-alc-flat-plate-solar-collector-117x215-cm

2.02 SOLAR PUMP

A. REGULUS

1. Solar pump stations, max pressure: 87 psi.
2. REGULUS S2 Solar 3
3. http://www.regulus.eu/en/cerpadlova-sk-s2-solar-3-st25-6-2-12-l-min-3-4-en

2.03 MATERIALS

A. REGULUS

1. Solar expansion vessels 5 gal, max pressure: 87 psi.
2. REGULUS R8 018 IN LINE
3. http://www.regulus.eu/en/r8-018-expansion-vessel-18-l-6-bar-for-solar-systems

B. REGULUS

1. Mount and interconnection kit for 2 KPG1 collectors.
2. REGULUS REG-10539
3. http://www.regulus.eu/en/mount-and-interconnection-kit-for-2-kpg1-collectors

C. REGULUS

1. Automatic air vent valve, G3/8“, bottom connection, up to 320°F, stainless steel float.
2. REGULUS OV-3/8 SS NP

2.04 PIPE AND FITTINGS

A. REGULUS

1. Pre-insulated flexible pipes. Insulation thickness: ½”, DN: ¾”.
2. REGULUS 22.920.410
3. http://www.regulus.eu/en/twin-dn-20-stainless-steel-tube-10-m-incl-4-nuts-with-crescents-and-rim-nipple

B. REGULUS

1. Connection kit for 1 KPG1.
2. REGULUS REG-7710
3. http://www.regulus.eu/en/connection-kit-for-1-kpc1-kpa1-kps11-kpg1-and-kph1-collector-array

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

C. Install unit Prepare substrate by cleaning, removing projections, filling voids, sealing joints and as otherwise recommended in REGULUS KPG1 manufacturer's written instructions.

D. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place, according to manufacturer’s instructions & shop drawings.

E. Fasten REGULUS KPG1 securely in place as outlined in manufacturer’s instructions, with provisions for thermal and structural movement. Install with concealed fasteners, unless otherwise indicated.

F. Separate dissimilar metals and metal products from contact with wood or cementations materials, by painting each metal surface in area of contact with a bituminous coating or by other permanent separation.

G. Correct deficiencies in or remove and reinstall REGULUS KPG1 that does not comply with requirements.

H. Repair, refinish, or replace REGULUS KPG1 damaged during installation, as directed by Project Architect.

3.02 LEAK TEST

A. Examine the whole system at 72.5 psi pressure (all connections, solar collectors, valves etc.), no visible leaks are allowed. Leave the system under pressure for at least 2 hours, then examine the system once again.

B. Consider the test result successful if no leaks appear and/or no noticeable pressure drop appears in the system.

END OF SECTION 23 56 13.13

23 71 13 THERMAL HEAT STORAGE

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes thermal heat storage for HVAC.

1.02 RELATED SECTIONS

A. 22 11 16 Domestic water piping

B. 23 21 13 Hydronic piping

C. 23 56 13.13 Heating solar flat-plate collectors

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 26 GALLON THERMAL HEAT STORAGE

A. DRAZICE

1. UKV can be used with external control of the heating system. The heat pump then charges UKV with floating or fixed condensing. The external control function con- trols the heat distribution from UKV to the consumer.

2. If the flow to the heating system can be throttled with radiator thermostats for example, install a UKV as an intermediate tank. This ensures a secure flow for the heat pump. UKV also allows a greater flow to the heating system than across the heat pump.

3. In some installations, so-called heat spikes occur as a result of movements during temperature changes. To eliminate temporary temperature changes, and thereby prevent heat spikes, install a UKV after the heating installation. UKV can also be used to increase the system volume and prevent malfunctions.

4. DRAZICE UKV 102, 26 GALLON

5. http://www.dzd.cz/images/download/dzd-cs-ukv.pdf

2.02 92 GALLON THERMAL HEAT STORAGE

A. ATREA

1. IZT silos are integrated storage and multivalent heat storage with optional heat flow for hot water or solar system. They are suitable for all types of heating systems. The basic function of storage IZT is alignment

between gains and heat extraction from various sources and equipment and the highly economical use of these resources.

2. High version storage is available and equipped with three built-in heat exchangers in the "TTS". Over "TS" is equipped with a heat exchanger for preheating the bottom of the tray. Doubling HW exchanger ensures greater heating capacity HW, lower the temperature gradient between water storage and flow temperature and circulation allows connection of the HW building on top of heat. Thanks to the intensive energy consumption preheating at the bottom of the tray is a better use of solar systems and heat pumps. IZT-U-TTS are suitable for objects that combine a heat source solar system and heat pump.

3. ATREA IZT-U-TTS 350, 92 GALLON

4. http://www.atrea.cz/img/obytne/izt/

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

C. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

D. Correct deficiencies in or remove and reinstall products that do not comply with requirements.

E. Repair, refinish, or replace products damaged during installation, as directed by Architect.

F. More information on installation:

G. http://www.dzd.cz/images/download/NIBE_UKV_CZ_SK_EN_DE_RU.pdf

H. http://www.atrea.cz/cz/integrovane-zasobniky-tepla-d6

END OF SECTION 23 71 13

23 72 00 AIR-TO-AIR ENERGY RECOVERY EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes air-to-air energy recovery equipment.

1.02 RELATED SECTIONS

A. 23 21 13 Hydronic piping

B. 23 31 13 Metal ducts

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 ENERGY RECOVERY UNIT

A. ATREA

1. Air heating/cooling and ventilation energy recovery units also equipped with energy-saving EC fans, characterized by compactness - normally contain shutoff valve supply air automatic by-pass, 92 % turbulent heat recovery exchanger, hot water heater and space for additional installation of coolers. Standard regulation allows the use of a wide range of inputs and outputs - IAQ, control of bathrooms and kitchens, heating control systems and heat sources. Units are available for installation on the ceiling. They can be used in many applications.

2. ATREA DUPLEX RB4-EC

3. http://www.atrea.cz/img/obytne/duplex_r4/

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install unit per Manufacturer's instructions under supervision of HVAC contractor.

B. Comply with requirements in Division 26 Section "Electrical".

C. More information on installation: http://www.atrea.cz/cz/d3_duplex_rb

END OF SECTION 23 72 00

23 82 42 AIR-TO-WATER HEAT PUMPS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes air-to-water heat pumps.

1.02 RELATED SECTIONS

A. 23 21 13 Hydronic piping

B. 23 23 00 Refrigerant piping

C. 23 23 23 Refrigerants

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 OUTDOOR COMPRESSOR UNIT

A. Daikin ERLQ004CV3 CONDENSING

1. Variable speed compressor (inverter) that support 1 (one) indoor unit.

2. http://www.daikin.cz/docs/ECPEN12-722_P.pdf

2.02 INDOOR HEAT PUMP UNIT

A. Daikin EHBX04C3V HEAT PUMP UNIT

1. 6,100-24,000 BTU capacity, EER / COP 3,21 / 4,72.

2. http://www.daikin.cz/docs/ECPEN12-002_FTXR-E_RXR-E.pdf

2.03 INSTALLATION MATERIALS

A. EKRTR1 unit comes with wall-mount installation plates, remote control holder, hardware and wireless room thermostat.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturer.

B. Comply with requirements in Division 26 Section "Electrical".

C. Set units level, plumb, and true to line, without warp or rack of products and anchor securely in place as described in manufacturer's specifications.

D. Correct deficiencies in or remove and reinstall units that do not comply with requirements.

E. Repair, refinish, or replace products or finishes damaged during installation or transit, as directed by Architect.

F. More information on installation: http://www.daikin.cz/docs/4PEN313778-1B_2012_11.pdf

END OF SECTION 23 82 42

23 83 16 RADIANT-HEATING HYDRONIC PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes radiant-heating hydronic piping.

1.02 RELATED SECTIONS

A. 23 21 13 Hydronic piping

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 CHILLED CEILING

A. REHAU – CHILLED CEILING

1. Chilled Ceiling systems offer the opportunity to cool offices or other occupied spaces efficiently and effectively.

2. REHAU chilled ceilings consist of a double thickness gypsum board with routed grooves to carry 3/8" RAUTHERM S Pe-Xa pipe work. The panels are supplied pre-assembled with the pipe along with an extensive range of fittings to secure the boards to the suspended ceiling hardware.

3. Pipe tails from the boards are connected into a manifold system to the supply of the chilled water. The complete system can be supplied using high quality RAUTHERM S Pe-Xa pipework and EVERLOC fittings, ensuring no leaks. Ever.

4. High cooling performance up to 76 W/m2.

5. Ceiling desk 60" x 50"

6. http://www.rehau.com/linkableblob/GB_en/1027614/data/AnyBinary_dGUNSXMiar3jm67FmiCIkw__-data.pdf

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Drawings indicate local of ceiling desks.

C. More information on installation:
http://www.rehau.com/linkableblob/CZ_cs/894784/data/AnyBinary_2fB7HWMcf8QyUUFp1fwyXQ__-data.pdf

END OF SECTION 23 83 16

23 84 16 MECHANICAL DEHUMIDIFICATION UNITS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes radiant-heating hydronic piping.

1.02 RELATED SECTIONS

A. 23 31 13 Metal ducts

1.03 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 - PRODUCTS

2.01 MECHANICAL DEHUMIDIFICATION UNITS

A. HONEYWELL

1. Honeywell TrueDRY™ Dehumidification systems are a more effective and energy-efficient way to remove humidity. And all Honeywell TrueDRY Dehumidifiers are ENERGY STAR® Rated. They can be installed "out of sight, out of mind" in the central heating and cooling system - or as standalone to remove moisture from specific problem areas. And with several sizes available, TrueDRY Dehumidification Systems, Honeywell gives you one brand for every application.

2. HONEYWELL TrueDRY DR65

3. http://www.forwardthinking.honeywell.com/related_links/dehumidification/50-1015.pdf

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Comply with requirements in Division 26 Section "Electrical".

C. More information on installation:

https://customer.honeywell.com/resources/techlit/TechLitDocuments/69-0000s/69-2089EFS.pdf

END OF SECTION 23 84 16

DIVISION 25 INTEGRATED AUTOMATION

25 00 00 BUILDING AUTOMATION

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes description of measurement and control for HVAC, plumbing and lighting.

1.02 DESCRIPTION

A. Management and monitoring of all technical equipment of the house is designed freely programmable control system Sauter. Measurement and control system allows the HVAC control to the high level of quality. The role of the proposed control system is to provide the required indoor climate (temperature, relative humidity, fresh air) and safety operation of process technical equipment and plumbing, to minimize energy consumption by optimizing HVAC operation with minimal permanent operation and maintenance.

B. The control system will provide monitoring and control of heat recovery units and windows, controlling the heat pump heating and cooling with radiant panels, water heating using solar collectors and water service. It Is used of distributed modular control stations series modulo5, communicating on globally standardized protocol BACnet / IP. The station works completely autonomously. Software of station does all the technological operations, enabling the desired operation of the device according to user requirements.

Main functions are:

- Direct control of HVAC with digital and analog input / output signals
- Communication with third-party systems via Modbus RTU (circuit breakers in Team Panel Board, weather station, power metering) and analog input / output signals.
- Evaluation of produced and consumed energy of house
- Optimization of operation (based on user requirements for internal comfort)
- Remote building management via internet (visualization of a house using webserver)

Measurement and control is equipped with an unusually high standard sensors, like is CO2, VOC sensors for air quality controling. In economic mode, the control system can automatically optimize the operation of the house according to the results of energy management.

Smart wiring is designed components from Schneider Electrics. The lighting system and lighting scenes are controlled with programmable switches. Interior lighting can be switched to a savings mode that is controlled by motions and brightness sensor. Light system is designed partly dimmable DALI light sources that working on the communication bus and partly by non-dimmable light sources that are controlled by relay unit. The advantage of smart wiring is the possibility to change switch functions or assign relation to the control system, such as control windows or turn on ventilation in the bathroom.

SECTION REQUIREMENTS

C. Submittals: Drawings of technology, Production Documentation

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Sauter Automation spol. s r.o.

Pod Čimickým hájem 13 a 15
181 00 Praha 8
Czech Republic

B. Schneider Electric CZ, s.r.o.

Thámova 13
186 00, Praha 8 – Karlín
Czech Republic

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with products installation manuals and related ČSN codes.

B. Install control systems according to requirements specified in Division 11 Sections, Division 14 Sections, Division 21 Sections, Division 22 Sections, Division 23 Sections, Division 26 Sections, Division 27 Sections and Division 28 Sections.

C. Installation shall be executed as per installation manuals provided by the Manufacturers.

D. Manufacturer's Recommendations

END OF SECTION 25 00 00

25 05 00 COMMON WORK RESULTS FOR INTEGRATED AUTOMATION

PART 1 - GENERAL

1.01 SUMMARY

This section includes common equipment of electrical switchgears.

1.02 BASIC TECHNICAL DATA

Supply grid :	1+PE+N, 230V, 50Hz, TN-S
Control power :	1+PE+N, 230V, 50Hz
Low voltage power :	24V DC and 24V, 50Hz
Energy balance:	installed power : 9 kW
Protection against electric shock :	by ČSN 33 2000-4-41, second edition

- automatic disconnection of power supply
- by low voltage

To protect the main grounding connection object (HPO) are all connected electrical engineering design (cable trays, enclosures), metal pipes air, water, heating, cooling and metal fittings in the bathroom etc.

PART 2 - PRODUCTS

2.01 ENCLOSURE

A. FLOOR STANDING STEEL ENCLOSURE WITH MOUNTING PLATE, 2000X800X300

B. PRODUCT NUMBER : NSYSM20830P

C. HTTP://WWW.SCHNEIDER-ELECTRIC.COM/PRODUCTS/US/EN/53800-UNIVERSAL-ENCLOSURES/53830-STEEL-FLOOR-STANDING-ENCLOSURES/2523-SPACIAL-SM/

2.02 ENCLOSURE ACCESSORIES

A. Spacial SF/SM front plinth, 100x800

1. PRODUCT NUMBER : NSYSPF8100

B. Spacial SM plain cable gland plate - 800x300

1. PRODUCT NUMBER : NSYSMEC83

C. Spacial SM brush flexible cable entry gaskets - 34 mm - 800 mm enclosure

1. PRODUCT NUMBER : NSYSMBCE8

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturers.

B. Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

C. Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 05 00

25 05 13 CONDUCTORS AND CABLES FOR INTEGRATED AUTOMATION

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals : PRODUCT DATA

B. MARKING OF CABLES : COMPLY WITH ČSN 33 0166 SECOND EDITION
http://www.prakab.cz/fileadmin/content/prakab/Service/Technicke_informace/04_1.pdf

PART 2 - PRODUCTS

2.01 CABLE CYKY-J 3X1,5

A. Metal type : single phase 450V, copper core, round single wire, diameter 8,6 mm

B. Operational temperature : –50 °C to +70 °C

C. Current carrying capacity in the air : 18 A

2.02 CABLE CYKY-J 3X2,5

A. Metal type : single phase 450V, copper core, round single wire, diameter 9,5 mm

B. Operational temperature : –50 °C to +70 °C

C. Current carrying capacity in the air : 25 A

2.03 CABLE JYTY-O 2X1

A. Metal type : single phase 250V, copper core, round single wire, diameter 6,5 mm

B. Operational temperature : –30 °C to +85 °C

C. Cable shielded by aluminium foil with copper wire.

2.04 CABLE JYTY-O 4X1

A. Metal type : single phase 250V, copper core, round single wire, diameter 7,4 mm

B. Operational temperature : –30 °C to +85 °C

C. Cable shielded by aluminium foil with copper wire.

2.05 CABLE JYTY-O 7X1

A. Metal type : single phase 250V, copper core, round single wire, diameter 8,7 mm

B. Operational temperature : –30 °C to +85 °C

C. Cable shielded by aluminium foil with copper wire.

2.06 CABLE JYTY-O 14X1

A. Metal type : single phase 250V, copper core, round single wire, diameter 12,3 mm

B. Operational temperature : –30 °C to +85 °C

C. Cable shielded by aluminium foil with copper wire.

2.07 STP cat.5e

A. Cable: 4-pair, 24 AWG STP, 350Mhz, Cat 5 E

B. Connectors: 2 x RJ45 Male

C. Stranded Copper

D. Colour: Grey

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturers.

B. Construction team will have to respect bending radius of cable in folds. Ethernet cables and RJ-45 connectors will put together by crimper.

C. Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

D. Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 05 13

25 05 26 GROUNDING AND BOUDING FOR INTEGRETED AUTOMATION

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals : PRODUCT DATA

B. Protective bonding: COMPLY WITH ČSN ČSN332000-5-54, section 543.1.2

PART 2 - PRODUCTS

2.01 GROUNDING CABLE 1-YY

A. Metal type : 600V, copper core, round , diameter 10 mm

B. Operational temperature : –40 °C to +70 °C

Total length installed : 35 m

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturers.

B. Should be connected both ends of the cable tray at zero potential, see ČSN ČSN332000-5-54

C. Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

D. Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 05 26

25 05 28 PATHWAYS FOR INTEGRETED AUTOMATION

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals : PRODUCT DATA

B. Protective bonding: COMPLY WITH ČSN ČSN332000-5-54, section 543.1.2

PART 2 - PRODUCTS

2.01 CABLE TRAY

A. Product number : Cablofil CF-54

B. Material : Wire cable tray, hot-dip galvanized

C. Size : 200x50, 150x50 and 50x50

D. Total length installed : 10 m, 2m, 4m

E. http://www.cablofil.cz/product/standard-cable-trays/cf-54

2.02 WALL MOUNTING

A. Product number : Cablofil CSNC, medium duty fast system

B. Material : hot-dip galvanized

C. Width: 200 mm

D. Quantity : 8

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturers.

B. Should be connected both ends of the cable tray at zero potential, see ČSN ČSN332000-5-54, section 543.1.2, appendix: table no. 7.

C. Cable trays is connected with grounding cable by fast fix connectors.

D. Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

E. Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 05 28

25 05 53 IDENTIFICATION FOR INTEGRETED AUTOMATION

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals : PRODUCT DATA

B. Comply with : ČSN ČSN332000-5-54

C. Marking wires in the enclosure

D. Marking cables at both ends

1.02 MARKING

A. Groups of cables labels :

1. WD – xxx : data and control cables, low voltage

2. WL – xxx : Power supply cables

B. Groups of label terminals of enclosure :

1. X1 – xx : Terminals for power supply cables

2. X2 – xx : Terminals for cables with control signals

3. X4 – xxx : Terminals for cables with control signals, low voltage

4. X7 – xx : Terminals for cables with system bus

PART 2 - PRODUCTS

2.01 LABELS FOR CABLES

A. Product number : ELDING: T401601

B. Material : Plastic labels, size 60x24

C. http://www.elding.cz/stitky.htm

2.02 INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturers.

B. The each end of the cable will have to be marked by unique number.

C. Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

D. Repair, refinish, or replace substrate damaged during installation or transit

PART 3 - EXECUTION

Not used

END OF SECTION 25 05 53

25 10 00 INTEGRATED AUTIMATION NETWORK EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes hardware and software for building automation network.

B. Basic description : The automation system has areas of application in regulation, control, monitoring and optimisation of technical installations, e.g. HVAC.

C. Submittals : PRODUCT DATA

PART 2 - PRODUCTS

2.01 DDC AUTOMATION STATION AS525

A. The modu525 automation station (AS) is a modular unit in the EY-modulo 5 system family. It is designed to control and regulate building automation systems. It is structured as a native BACnet device. The modu525 makes use of high-performance processor technology and all the functions are based on a Linux operating system. Short cycle times also make it possible to carry out complex control and regulation tasks.

B. The basic modu525 device contains the processor, power supply, communication and other central functions. It has 16 inputs (including 8 universal inputs) and 10 outputs. The universal inputs (UI) can be freely configured for temperature, voltage or current measurement, or as binary inputs.

C. Overview of data points :

1. 8 digital inputs (alarm/status)

2. 8 universal inputs (Ni/Pt1000, U/I/R, DI)

3. 4 analogue outputs (0...10 V)

4. 6 digital outputs (relays, 24...250 V~, 2 A)

D. As a BACnet server, the AS makes all its objects available externally, together with the associated properties and the required services. Typical users (BACnet clients) of this information include open management systems, bus-wide operating units and other BACnet-compatible controllers. In its function as a BACnet client, the AS supports peer-to-peer transmission.

E. The plug-in modu 530 to 572 I/O modules can be used to increase the number of inputs and outputs (16/10) available in the basic device as required, up to a total of 154 inputs and outputs (max. 8 modules). The modu731 is communication interface for connection of foreign automation systems or technical equipments. It can be used for Modbus RTU and M-Bus communication protocols.

F. Power supply : 230VAC, 50Hz

G. Fuse protection : 2A

H. Size : 160 x 170 x 115 mm, mounted in enclosure RMR-1 at top-hat rail.

I. It is connected to the Ethernet via a standard RJ45 socket and a patch cable (Cat 5e).

J. http://www.sauter-controls.com/pdm/docs/en_ds_en690613.pdf

2.02 INDIVIDUAL ROOM CONTROLER ECOS500

A. The Ecos5xx room automation stations are a range of stations in the EYmodulo 5 family that are specially designed to meet the requirements of comprehensive room automation. They are structured according to the same technology as the SAUTER modu 5 automation stations, which means they are also native BACnet stations with communication via Ethernet/IP.

B. The Ecos500 room automation station is designed for temperature regulation and for controlling lighting and window blinds in individually regulated rooms.

C. On the station, 8 of the 12 inputs are universal inputs (UI), which can be freely configured as temperature, voltage, current measurement or binary inputs. This facilitates optimum exploitation of the I/O mix of the station.

D. Room operating unit ecoUnit346 enable individual recording of the room temperature and adjustment of the room climate according to the users' wishes.

E. Power supply : 230VAC, 50Hz

F. Fuse protection : 2A

G. Size : 299 x 120 x 73mm, mounted in enclosure RMR-1 at top-hat rail.

H. It is connected to the Ethernet via a standard RJ45 socket and a patch cable (Cat 5e).

I. http://www.sauter-controls.com/pdm/docs/en_ds_en706658.pdf

PART 3 INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.03 Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 10 00

25 11 16 INTEGRATED AUTOMATION NETWORK ROUTERS, BRIDGES, SWITCHES, HUBS, AND MODEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes hardware and software equipment of the network

B. General description: The modem connects automation system with internet for the needs of remote management and computer connections over the internet. The wifi router distributes data communication between the computer, smart phones, automation stations, webserver and modem.

C. Submittals : PRODUCT DATA

PART 2 - PRODUCTS

2.01 MODEM

NEXPRING NP10M - GSM/GPRS IP Modem

Size : 127x100x24 mm, Wall Mounting

Technology : WCDMA 2100 MHz, 900/1800 MHz, GPRS, EDGE, UMTS, 3G, HSDPA, Wifi

RJ45 / RJ45 CABEL 1,2 m, GSM and Wifi antenna

2.02 WIFI ROUTER

TP-LINK TL-WR1043ND

Supported Wireless Standards : IEEE 802.11n, IEEE 802.11g, IEEE 802.11b

Interface : 4x RJ-45 (LAN, 10/100/1000 Mbit/s), 1x RJ-45 (WAN, 10/100/1000 Mbit/s), 1x USB 2.0

Frequency band : 2,4 – 2,4835 GHz

PART 3 INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.03 Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 11 16

25 12 00 INTEGRATED AUTOMATION NETWORK GATEWAYS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes hardware and software equipment of the gateways.

B. KNX/DALI gateway connects sensors motion and brightness with dimmable DALI ballast of the Zumtobel lighting. BACnet IP / KNX gateway connects DDC stations of measurement and control with KNX components. It´s due to vizualization lighting on the webserver pages and for controling of HVAC by switches.

C. Submittals : PRODUCT DATA

PART 2 - PRODUCTS

2.01 KNX / DALI GATEWAY

A. KNX DALI gateway REG-K/1/16(64)/64
SIZE : 106mm x 55mm x 86mm, mounted in enclosure RMR-1 at DIN rail
DATA POINTS : 16x groups, 64x ballast
http://www.merten.com/uploads/tx_seqdownload/A7307_1_0_DALI_Control_IP1_58x_en_02.pdf

2.02 BACNET IP / KNX GATEWAY

A. INTESIS KNX to BACnet/IP Gateway
SIZE: 107mm x 105mm x 58mm, mounted in enclosure RMR-1 at DIN rail
DATA POINTS : Server with 100 points
BACnet interface behaves as a BACnet/IP server allowing other BACnet/IP devices to read and write its variables. Reads can be done either by continuous polling or using subscription (COV).
http://www.intesis.com/eng/intesisbox_bacnet_ip_server_knx_frame_eng.htm

PART 3 - INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.03 Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 12 10

25 14 00 INTEGRATED AUTOMATION LOCAL CONTROL UNITS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes hardware and software equipment of the gateways.

B. LCD panel for indoor climate control in the room is located on the left side next cooking area on the front panel. The second control panel is situated in the bicycle storage room on the enclosure´s door. With the control units, the user can set set-points and operating parameters of control system of technical building equipment.

C. Submittals : PRODUCT DATA

PART 2 PRODUCTS

2.01 ECOUNIT 346

A. EcoUnit is the room operating units for the Ecos5xx room automation stations. It record the temperature in the room and has various operating options and a display containing information on the state of the room. Room unit has following functions:

- temperature measurement
- set-point correction of temperature, rel. humidity, fresh air etc.
- fan control, occupancy button
- control of lights and/or window blinds

B. Room unit is installed in standardised mounting frames with a cut-out measuring 55x55mm. It´s installed to multi-frames of manufacturer Schneider.

C. Size : 59,5 x 59,5 x 25 mm

D. Cable: 4 twisted pair, STP cat.5e, connector RJ-45

E. http://www.sauter-controls.com/pdm/docs/en_ds_en673136.pdf

2.02 MODUOP840 LOCAL OPERATION UNIT

A. The modu840 LOP (local operating panel) is clicked directly into a recess in the front of the automation station, or it can be installed remotely in the cabinet door with the aid of a mounting frame.

B. It allows direct, comprehensive operation of the corresponding modu525. Data points can be visualised in plain text and operated by turning and pushing the button.

C. The operating unit does not need any configuration. All necessary data specific to the project is stored in the automation station.

D. The connection is directly in the front of the station, which means simultaneous operation with override and indication units inside the base station is not possible.

E. Size : 186 x 120 x 73 mm

F. Cable: 4 twisted pair, STP cat.5e, connector RJ-45

G. http://www.sauter-controls.com/pdm/docs/en_ds_en539876.pdf

PART 3 INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.03 Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 14 00

25 15 16 INTEGRATED AUTOMATION SOFTWARE FOR CONTROL AND MONITORING NETWORKS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes software and hardware for control and monitoring networks with automation stations.

B. Submittals : PRODUCT DATA

PART 2 PRODUCTS

2.01 CASE SUN

A. CASE Sun is the configuration tool for the automation and ecos stations in the SAUTER EY-modulo 5 range. CASE Sun can be used to configure the Ethernet network, perform the 1:1 test during commissioning and update the firmware in the stations when necessary.

B. CASE Sun is licenced software. The software is only available for engineers of service company or designers measurement and control.

C. http://www.sauter-controls.com/pdm/docs/en_ds_en640745.pdf

2.02 WEBSERVER WS500

A. The webserver is tool visualising and operating building management systems. It is stand-alone webserver unit. Operation via web browser is available for every automation station. This interface can be integrated perfectly into the modern IT infrastructures of a building or those belonging to the users via smart phones.

B. Communication with web client using standard HTTP protocol

C. Communication with mail server and SMS gateway using standard SMTP

D. Communication with automation stations using BACnet/IP and BACnet web services (EN ISO 16484-5)

E. Integrated firewall

F. Functions of webserver:

1. Data point list
2. Dynamic plant images
3. Export of recorded data as a file or via e-mail
4. Direct configuration option for control parameters (Xp, Tn, Set etc.)
5. Operation of time programmes (schedule/calendar)
6. Alarm notification

7. Use of BACnet Intrinsic Reporting

8. Current alarms shown in sortable list

9. Acknowledgeable alarm messages

G. Power supply : 24V AC, 50Hz

H. Size : 133 x 170 x 61

I. Installation : to top-hat rail

J. http://www.sauter-controls.com/pdm/docs/en_ds_en719116.pdf

PART 3 INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.03 Repair, refinish, or replace substrate damaged during installation or transit.

END OF SECTION 25 15 16

25 30 13 INTEGRATED AUTOMATION ACTUATORS AND OPERATORS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes actuators and operators for HVAC.

B. Submittals : PRODUCT DATA

C. Related sections:

1. See section 23 21 16

PART 2 PRODUCTS

2.01 DAMPER ACTUATORS

A. BELIMO CM-24-SR

1. Modulating damper actuator for operating air control dampers in ventilation and air-conditioning systems in buildings. Damper is part of the recovery units Atrea – recovery damper.

2. Power supply : 24VAC, 50Hz

3. Fuse protection : 1A

4. Control voltage : 0-10VDC, position of damper : 2-10VDC

5. http://belimo.com/pdf/e/CM24-SR-F-.._1_1_en.pdf

B. GRUNER 225-CS024-T05

1. Modulating damper actuator for operating air control dampers in ventilation and air-conditioning systems in buildings. Damper is part of the recovery units Atrea – damper mixing air.

2. Power supply : 24VAC, 50Hz

3. Fuse protection : 1A

4. Control voltage : 0-10VDC, position of damper : 2-10VDC

5. http://belimo.com/pdf/e/CM24-SR-F-.._1_1_en.pdf

2.02 VALVE ACTUATORS

A. Sauter AVM105SF132

1. Actuation of through and three-way valves of the VUN/BUN, VUD/BUD and VUE/BUE series (DN15 to DN50). For controllers with continuous output (0…10 V) or switching output (2-point or 3-point control). Pushing force is 250N.

2. Power supply : 24VAC, 50Hz
3. Fuse protection : 2A
4. Control voltage : 0-10VDC
5. Running time : 35 / 60 / 120 seconds
6. http://www.sauter-controls.com/pdm/docs/en_ds_en561760.pdf

B. Sauter AKM115F122

1. For actuating 2-way and 3-way ball valves in the VKR and BKR series. For controllers with a switching output (2/3-point control). Synchronous motor is equipped with control and electronic cut-off and with electronic detection end position and motor cut-off with time switch in the device.
2. Power supply : 24VAC, 50Hz
3. Fuse protection : 2A
4. Control : Switched by relay
5. Running time : Rotary angle 90 degree per 30 seconds
6. http://www.sauter-controls.com/pdm/docs/en_ds_en539295.pdf

C. ESBE ARA643

1. The ESBE series ARA600 is a compact actuator designed for operating rotary mixing valves DN 15-50. The actuators have an operating range of 90° and can easily be manually operated.
2. Power supply : 24VAC, 50Hz
3. Fuse protection : 2A
4. Control : Switched by relay
5. Running time : Rotary angle 90 degree per 30 seconds
6. http://www.esbe.eu/at/en/~/media/ESBE%20PIM_ESBE%20sync%20BR/Documents/Data%20sheets/GB/ARA600%203p_GB_99501362_A_LR.ashx

PART 3 INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.03 Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 25 30 13

25 30 16 INTEGRATED AUTOMATION SENSORS AND TRANSMITTERS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes sensors and transmitters for HVAC.

B. Submittals : PRODUCT DATA

PART 2 PRODUCTS

2.01 TEMPERATURE

A. Sauter EGT311F101

1. Clamp-on temperature sensor. Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption. The temperature sensor is based on Nickel thin-film.

2. Areas of application : temperature measurement on pipelines. Passive measured value acquisition.

3. Measurement range : –30 ... 130 degrees Celsius with accuracy ± 0,4 Kelvin

4. http://www.sauter-controls.com/en/36021-egt-311-clamp-on-temperature-sensor.html

B. Sauter EGT346F101

1. Stemp-type temperature sensor. Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption. The temperature sensor is based on Nickel thin-film.

2. Areas of application : Temperature measurement of liquids and gases in ventilation systems, water networks and air ducting. Passive measured value acquisition. Can be used in pipes and tanks with optional protective tubes.

3. Measurement range : –30 ... 130 degrees Celsius with accuracy ± 0,4 Kelvin

4. http://www.sauter-controls.com/en/36036-egt-346348-stem-type-temperature-sensor.html

C. Sauter EGT354F101

1. Cable-type temperature sensor. Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption. The temperature sensor is based on Nickel thin-film.

2. Areas of application : Temperature measurement in rooms, air ducting, on surfaces, in pipelines and tanks. Passive measured value acquisition. Can be used in pipes and tanks with optional protective tubes.

3. Measurement range : –20 ... 100 degrees Celsius with accuracy ± 0,4 Kelvin

4. Version 356 : higher measurement range - 40 … 180 degrees Celsius

5. http://www.sauter-controls.com/en/36044-egt-354-356-cable-type-temperature-sensor.html

2.02 RELATIVE HUMIDITY

A. Sauter EGH111F001

1. It´s active measuring transducer for relative humidity and temperature.
2. Areas of application : in air ducting.
3. Properties : fast capacitive sensor, insensitive to flow speeds and normal contamination.
4. Power supply : 24VAC, 50Hz
5. Fuse protection : 1A
6. Measuring voltage : 0-10VDC
7. http://www.sauter-controls.com/pdm/docs/en_ds_en689083.pdf

B. Sauter EGH130F001

1. It´s active measuring transducer for relative humidity and temperature.
2. Areas of application : in a room, suitable for wall mounting
3. Properties : fast capacitive sensor, insensitive to flow speeds and normal contamination.
4. Power supply : 24VAC, 50Hz
5. Fuse protection : 1A
6. Measuring voltage : 0-10VDC
7. http://www.sauter-controls.com/pdm/docs/en_ds_en520699.pdf

2.03 AIR VELOCITY

A. E+E Elekctronic EE66-VB5 and EE65-VB5

1. EE66 air velocity transmitter series are designed for high accuracy measurement of lowest air velocities. It is the ideal solution for laminar flow control and special ventilation applications. The E+E thin film sensor is operating on an innovative hot film anemometer principle. This guarantees excellent accuracy for air velocity down to almost 0 m/s, which is not possible for conventional anemometers with commercial temperature sensors or NTC bead thermistors.
2. The sensors are much more insensitive to pollution than all other anemometer principles.
3. EE66 series are available with current or voltage output, the measuring range and the response time can be selected with jumpers by the user.

4. Two sensors EE66-VB5 are set to measuring range to 0 ... 2 m/s (0 ... 390 ft/min) with accuracy ± (0.06 m/s (12 ft/min) + 2 % of measuring value. The third sensor EE65-VB5 is set to measuring range to 0 ... 10 m/s ± (0.3 m/s + 3 % of measuring value).

5. Areas of application : in air ducting

6. Power supply : 24VAC, 50Hz

7. Fuse protection : 1A

8. Measuring voltage : 0-10VDC

9. http://www.che.utah.edu/department_equipment/Projects_Lab/M_Gas_Absorber/MAN_EE66_Spec_Sheet.pdf

10. http://www.yuden-tech.com.cn/catalog/epluse/ee65.pdf

2.04 AIR QUALITY

A. Sauter ECQ120F001

1. VOC sensor for indoor air quality enables the demand-led control of ventilation systems and reduces energy consumption. Measurement of relative mixed-gas concentration (organic compounds in the room air), e.g. tobacco smoke, kitchen smells or body odour. It´s active sensor.

2. Areas of application : suitable for wall mounting or in air ducting

3. Power supply : 24VAC, 50Hz

4. Fuse protection : 1A

5. Measuring voltage : 0-10VDC

6. http://www.sauter-controls.com/pdm/docs/en_ds_en667448.pdf

B. Sauter EGQ222F002

1. Sensor enables the demand-led control of ventilation systems and reduces energy consumption. It has a dual-beam reference measuring method, which is both non-drifting and long-term stable, thereby providing accurate measurement. It´s active device for measured value acquisition. Selective measurement of dioxide concentration and room air temperature.

2. Measurement range is 0 ... 2000 ppm and 0 … 50 degrees Celsius.

3. Areas of application : suitable for wall mounting

4. Power supply : 24VAC, 50Hz

5. Fuse protection : 1A

6. Measuring voltage : 0-10VDC

7. http://www.sauter-controls.com/pdm/docs/en_ds_en667536.pdf

2.05 WATER LEVEL

A. Dinel CLM36N-11

1. Capacitive sensor for continuous level measurement and liquids and solids. Wide range of applications, direct mounting to tanks, silos, septics, etc. It consists of a casing with removable electronics and measuring electrodes. Coated rod electrode (PFA), suitable for measuring water levels and other electrically conductive liquids.

2. Suitable for dirty liquids in metal tanks, concrete septic tanks, etc

3. Electronic module converts the size capacity of the current signal (4 .. 20 mA) or voltage (0 .. 10 V).

4. Power supply : 24VDC

5. Fuse protection : 1A

6. Range measured height water level : 1 m

7. http://www.dinel.cz/uploads/pdf/080901024831-clm-36-dat-cz.pdf

2.06 METEOSTATION

A. WSC-11 ThiesClima

1. The weather station compact WSC11 was designed for the varied requirements of the building control technology.

2. Comprises sensors :

a. Wind velocity

b. Wind direction

c. Brightness

d. Twilight

e. Global radiation

f. Precipitation

g. Temperature

h. Relative humidity

i. Air pressure

j. GPS receiver.

3. Communication with automation system via Modbus RTU via RS-485 bus.

4. Power supply : 24V AC, 50Hz

5. Dimension : Ø 130 mm x 67,5 mm

6. Mounted to the tube holder

7. http://www.thiesclima.com/WSC11_e.html

2.07 ON/OFF CONTROLLERS

A. Sauter DDL103

1. Small differential pressure regulator. To control the air flow in ventilation ducts, eg for monitoring fouling filters.

2. Adjustable range differential pressure 0,2 – 3 bar

3. Gold-plated contacts for 24 V ~ / = and 250 V ~

4. http://www.sauter.cz/fileadmin/sac/katalog/pdf/ps2391cz.pdf

B. Sauter RAK582.4/3728

1. Universial thermostat. Demand-led controlling, monitoring and limiting, without auxiliary energy. Can be used as controller, monitor, limiter or safety limiter.

2. Areas of application : for controlling and monitoring the temperature of liquids in baths, tanks, pipelines and ducts.

3. Range of temperature : 50...130 degrees Celsius

4. Control temperature of hot water, upper limit value is 80 degrees Celsius.

5. http://www.sauter-controls.com/pdm/docs/en_ds_en728438.pdf

C. Sauter TFL201F601

1. Frost-protection monitor/limiter with capillary-tube sensor. Demand-led, large-scale monitoring of installation parts as required, without auxiliary energy.

2. Areas of application : Temperature monitoring in air heaters, water pipes and air ducting. Especially suitable for compact applications.

3. Setting range of temperature : -5 to 15 degrees Celsius.

4. http://www.sauter-controls.com/pdm/docs/en_ds_en718102.pdf

D. ENEC 250.05301.10A

1. Pressure switches. Demand-led controlling and monitoring, without auxiliary energy.

2. Areas of application : for controlling and monitoring pressures in liquids, gases and vapours. Especially suitable for applications in compact installations, for pipe or wall mounting.

3. Pressure range : 0.5 to 3 bar

4. Gold-plated silver contacts
5. http://www.sauter-controls.com/pdm/docs/en_ds_en663524.pdf

PART 3 INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Mount all ambient sensors on junction boxes on walls and connect to cables.

3.03 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.04 Repair, refinish, or replace substrate damaged during installation or transit.

END OF SECTION 25 30 13

25 36 13 INTEGRATED AUTOMATION POWER METERS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes a power metering.

B. Submittals : PRODUCT DATA

C. General description:

1. The energy management automation system consists of measuring electric energy.

2. The automation system has two ways of measurement:

a. The first power meters are integrated in the smartlink in Team Panel Board. Those counters have impulse outputs. The smartlink collects information from TPB and communicates with the automation system via protocol Modbus RTU.

b. The second power meters are situated in switchboard RMR-1 and one in the RAC panel board. They communicate with the automation system via protocol Modbus RTU directly.

3. Automation system evaluates the measured data. If the energy balance requires, reduces the temperature and relative humidity in the conditioned space. Users can set his priority of energy consumption and its influence to conditioned space.

PART 2 - PRODUCTS

2.01 IEM3150 ELECTRICITY METER

A. The energy meters are used to measure the amount of active energy consumed by an installation or a part of an installation. Functions of energy meters provide the essential measurement capabilities required to monitor an electrical installation such as current, voltage, and energy.

B. It´s possible installed to single-phase, two-phase or three-phase connection to power net.

C. Voltage range: 3x100/173 V AC...3x277/480 V AC (±20% 50/60Hz)

D. Current maximum: 63 A

E. Communication via Modbus RTU via RS-485 bus.

F. Size: 5 modules in the top-hat rail.

G. http://www.alo.home.pl/pub/FTP-SE/02%20Aparaty%20nn/Mierniki%20Analizatory%20sieci%20Bramki%20ethernetowe%20Systemy%20nadzoru%20Powerlogic/iEM3100%20iEM3200%20User%20Manual%20-%202012EN.pdf

2.02 IEM3110 ELECTRICITY METER

A. The energy meters are used to measure the amount of active energy consumed by an installation or a part of an installation. Functions of energy meters provide the essential measurement capabilities required to monitor an electrical installation such as current, voltage, and energy.

B. It´s possible installed to single-phase, two-phase or three-phase connection to power net.

C. Voltage range: 3x100/173 V AC...3x277/480 V AC (±20% 50/60Hz)

D. Current maximum: 63 A

E. Communication via impulse to Smartlink.

F. Size: 5 modules in the hot-top rail.

G. http://www.alo.home.pl/pub/FTP-SE/02%20Aparaty%20nn/Mierniki%20Analizatory%20sieci%20Bramki%20ethernetowe%20Systemy%20nadzoru%20Powerlogic/iEM3100%20iEM3200%20User%20Manual%20-%202012EN.pdf

PART 3 INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.03 Repair, refinish, or replace substrate damaged during installation or transit.

END OF SECTION 25 36 13

25 53 00 INTEGRATED AUTOMATION CONTROL OF FIRE-SUPPRESSION SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes connection automation control system and fire suppression system.

B. Submittals : PRODUCT DATA

C. Related sections:

1. See division 21 13 00 and 28 31 00

D. Supply of fire-suppression system

1. The enclosure of sprinkler system is supplied from enclosure RMR-1. The fire sprinkler enclosure is fused by single-phase circuit breaker 16A.

E. Collection of information from the fire enclosure

1. The measurement and control enclosure RMR-1 has 2 potencial-free contacts links to fire enclosure. Automation system collects information about alarm sprinkler pump and state of running sprinkler pump.

2. If circuit breaker of sprinkler system is shut down, this information is recorded to automation station.

3. In both cases, the user or service sprinkler company are informed immediately about alarms or activated fire alarm.

F. Signaling of fire alarm

1. The fire alarm is signaled acustic horn and optical lamp.

2. The Fire alarm is controlled by automation station.

3. The alarm horn and lamp is used for other signaling alarms of automation building.

PART 2 - PRODUCTS

2.01 SLAM_NB – SIGNALING OF ALARMS

A. Signalization of alarms of system building automation, smoke and fire.

B. Can be divided into separate signaling the optical and acoustic.

C. Supply 230V, 50Hz, cover IP43

D. Situated in bicycle´s storage room.

E. http://www.krprotect.cz/detail.asp?id=133

2.02 SYSTEM RELAY OF SMOKE DETECTOR

A. The free-potencial contact relay distributes a alarm signal from the smoke detector to the automation system. The flush-mounted relay is accessories of Argus smoke detector.

B. The relay is situated in the living room.

C. http://www.schneider-electric.com/products/ww/en/4900-sensors-rfid-system/4935-smoke-detectors/1532-argus-smoke-detectors/

PART 3 - INSTALLATION

3.01 Installation shall be executed as per installation manuals provided by the manufacturers.

3.02 Mount all ambient equipment to cables.

3.03 Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

3.04 Repair, refinish, or replace substrate damaged during installation or transit.

END OF SECTION 25 30 13

DIVISION 26 ELECTRICAL

26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all the wiring and wiring devices used in AIR House.

1.02 SECTION REQUIREMENTS

A. See section 25 05 13, There is the first part of the cables that are used to install measurement and control

B. Product data

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. NKT cables s.r.o.

Průmyslová 1130
272 01 Kladno
Česká republika
tel.:+420 312 607 111
info.cz@nktcables.com

2.02 PRODUCTS

A. WIRE RUN 1: PV PANELS TO WEATHERHEAD

1. Wire: NKT cables
2. Wire type: 3x 2x PV1-F 6
3. Current carrying capacity in the air (A): 70
4. Operating temperature: –40 °C to +90 °C
5. Conductor temperature: max. +200 °C
6. Metal type: Copper

B. WIRE RUN 2: WEATHERHEAD TO INVERTER BOX

1. Wire: NKT cables
2. Wire type: 3x 2x PV1-F 6

3. Current carrying capacity in the air (A): 70
4. Operating temperature: –40 °C to +90 °C
5. Conductor temperature: max. +200 °C
6. Metal type: Copper

C. WIRE RUN 3: INVERTER BOX TO SUB SERVICE PANEL

1. Wire 1
   a. Wire: NKT cables
   b. Wire type: CYSY-J 3x1,5
   c. Current carrying capacity in the air (A): 24
   d. Operating temperature: –25 °C to +70 °C
   e. Conductor temperature: max. +70 °C
   f. Metal type: Copper
2. Wire 2
   a. Wire: NKT cables
   b. Wire type: CYSY-J 3x1,5
   c. Current carrying capacity in the air (A):24
   d. Operating temperature: –25 °C to +70 °C
   e. Conductor temperature: max. +70 °C
   f. Metal type: Copper

D. WIRE RUN 4: INVERTER BOX TO MAIN SERVICE PANEL

1. Wire: NKT cables
2. Wire type: CYKYLS-J 5x6
3. Current carrying capacity in the air (A): 45
4. Operating temperature: –25 °C to +70 °C
5. Conductor temperature: max. +70 °C
6. Metal type: Copper

E. WIRE RUN 5: MAIN SERVICE PANEL TO UTILITY METER 1

1. Wire: NKT cables
2. Wire type: 3x CYA 70 / AWG 2/0
3. Current carrying capacity in the air (A): 220
4. Operating temperature: –40 °C to +70 °C
5. Conductor temperature: max. +70 °C
6. Metal type: Copper

F. WIRE RUN 6: UTILITY METER 1 TO ORGANIZER UTILITY PANEL - 60Hz

1. Wire: NKT cables
2. Wire type: 3x CYA 70
3. Current carrying capacity in the air (A): 220
4. Operating temperature: –40 °C to +70 °C
5. Conductor temperature: max. +70 °C
6. Metal type: Copper

G. CABLE CYKY-J 3X6 (INTERCONNECTION ECLOSURES)

1. Metal type : single phase 450V, copper core, round single wire, diameter 12,3 mm
2. Operational temperature : –50 °C to +70 °C
3. Current carrying capacity in the air : 43 A
4. Total length installed : 6 m

H. CABLE CYKY-J 3X4

1. Metal type : single phase 450V, copper core, round single wire, diameter 11,2 mm
2. Operational temperature : –50 °C to +70 °C
3. Current carrying capacity in the air : 34 A
4. Total length installed : 10 m

I. CABLE CYKY-J 5X2,5

1. Metal type : single phase 450V, copper core, round single wire, diameter 11,2 mm

2. Operational temperature : –50 °C to +70 °C
3. Current carrying capacity in the air : 25 A
4. Total length installed : 20 m

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install according to manufacturer's specification.

B. Cables that are stored in the building container will be loaded into routes according to the drawings and connected by Wago terminals.

END OF SECTION 26 05 19

26 05 26 GROUNDING and bounding for electrical systems

PART 1 - GENERAL

1.01 SUMMARY

A. This section is linked with section of integrated automation where is the same content in the same structured section.

PART 2 - PRODUCTS

2.01 SEE SECTION 25 05 26.

PART 3 - INSTALLATION

3.01 SEE SECTION 25 05 26

END OF SECTION 26 05 26

26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes raceways and boxes installed at Air House.

B. General description :

1. Connecting system WAGO speeds up the installation of cables during the construction of Air House.

2. The ambient cables are stored at entry hall during the transportation.

3. Cables are routed in their planned raceways and connected to the terminals at prearranged locations. Cables are routed in plasterboard ceilings, walls and floor grooves. In technical rooms and from them to interior are cables routed in wire trays.

4. Each terminal and end of cable is numbered and labeled.

C. The number of terminals and connectors are specified in the part of table quantity takeoff.

PART 2 - PRODUCTS

2.01 CONNECTING TERMINALS

A. Wago 222-412, 222-413, 222-415

1. Terminals for DALI bus and low voltage signals.

2. 2, 3, 5 positions

3. Wire size AWG 12 – 28

4. http://www.wagocatalog.com/okv3/index.asp?lid=5&cid=51&strBestNrID=2220412

B. Wago Winsta Midi

1. Connectors (sockets and plugs) for connecting cables of sockets circuits.

2. 3 to 5 wires, average 2 x 0.5 — 4 mm², wire size AWG 12 – 20

3. Dimensioned to 250 V / 4 kV / 3, 25 A

4. Types of used connectors and accessories :

a. Wago Winsta Midi 770-103

b. Wago Winsta Midi 770-113

c. Wago Winsta Midi 770-101

d. Wago Winsta Midi 770-503

e. Wago Winsta Midi 770-203

f. Wago Winsta Midi 770-213

g. Wago Winsta Midi 770-105

h. Wago Winsta Midi 770-115

i. Wago Winsta Midi 770-104

j. Wago Winsta Midi 770-114

5. http://www.wago.com/infomaterial/pdf/51208697.pdf

2.02 JUNCTION BOXES

A. Junction boxes OBO

1. Insulation to 690V

2. Cover IP54 and IP67

3. Size 75x75x37 mm

4. http://www.meteorelectrical.com/boxes-enclosures_junction-boxes_2-5ml-obo-junction-box-c-w-terms-ip54-65mmx65mmx30mm.html

2.03 WIRING BOXES

A. Wiring boxes KOPOS

1. Single, Double, Three, Four and Five Gang Non Metallic junction box for residential and light commercial use

2. Dimension ø x D (mm), W x H x D (mm): 68 x 45 (Single), 142 x 70 x 45 (Double), 213 x 70 x 45 (Three Gang), 285 x 70 x 45 (Four Gang), 354 x 70 x 45 (Five Gang)

3. http://www.kopos.com/soubory/katalogy/eum_en_1_krabice.pdf

B. Wiring boxes SCHNEIDER ELECTRIC

1. Single and Double junction box for Merten System M M-Plan for residential and light commercial use (MTN510560 – Single, MTN510660 – Double)

2. Color: aluminium

C. Wiring boxes SCHNEIDER ELECTRIC

1. Surface mounting box for KNX multi-sensor ARGUS (MTN550619)

2. Color: polar white

2.04 FIRE PROTECTION MATERIAL

A. Cetris desk - BASIC

1. CETRIS® BASIC is a cement-bonded particleboard with smooth naturally cement-grey surface.

2. Used thicknesses : 8 and 12 mm

3. Bulk density : 1 150 - 1 450 kg/m3

4. Fire protection properties: CETRIS® cement-bonded particleboard is classified, as per its response to fire, as class A2, with additional classification s1 (production of smoke) and d0 (particles burning with flame), with an overall classification A2-s1,d0, i.e. non-flammable material. Thanks to this property the CETRIS® board is an excellent material to be used in protecting the building structures against fire and in construction of structures with specified fire resistance.

5. Situated under each panel board, switchgear, junction box which is powered by a low voltage greater than 50V (AC, DC).

6. http://www.cetris.cz/en/systems/fire-protection-systems/cetris-basic-board/

PART 3 - INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturers.

B. Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

C. Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 26 05 33

26 09 23 LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes buttons, actuators, and light-leveling control devices for lighting.

B. General description :

1. Lighting control is based on KNX bus. The lighting system is divided in two groups. The first group consists of five main dimming lights. The second group consists of others non-dimmable lights. Non-dimmable light is LED strip, stand-alone, wall mounted and floor lamp.

2. Lighting control is addressable. For dimming lights is used DALI / KNX gateway, which connects wall switches and dimmable ballasts of lights. The ballast gives a feedback value about state of light.

3. Dimmable are :

   a. Indoor light sources:

      1) SLOLIGHT II Single Luminaire (26 51 00 A1, 26 51 00 A2, 26 51 00 A3)

4. Non-dimmable are:

   a. Indoor light sources:

      1) PERLUCE Luminaire (26 51 00 B1, 26 51 00 B2)

      2) LED Strip WW (26 51 00 C)

      3) Tolomeo Aluminium (26 51 00 D1, 26 51 00 D2)

   b. Outdoor light sources:

      1) LED Strip WW (26 56 00 A)

      2) LEDOS III Luminaire (26 56 00 B)

      3) LED Wall Luminaire (26 56 00 C)

5. Controlled lighting and programmable switches give the possibility of creating lighting scenes.

6. Distributed motion and brightness sensors can automatically control light level. This function of lighting system is optional. The user has fully control system with multi-fold button. Sensors are supply via KNX bus.

7. Outdoor switches are realized by free-potencial button control mechanism with higher covering IP44. The inputs KNX unit records signals form free-potencial control mechanism and functions of these buttons are the same as for KNX buttons.

1.02 SUBMITTALS : PRODUCT DATA

A. Related sections :

1. For details about KNX buttons and multi-fold button see division 26 27 26

PART 2 - PRODUCTS

2.01 SENSORS

A. MTN632819 - KNX ARGUS, Polar

1. Motion and brightness sensor. It communicates with light switch actuators and DALI gateway via KNX bus. All parameters are settable as are timer value, level light and address of lighting. When the lighting is controlled by brightness-dependent movement detection, the device constantly monitors the brightness in the room. If sufficient natural light is at hand, the device switches the artificial light off even if a person is present.

2. Supply : 24V DC via KNX,

3. Sensors are situated in the living room and in the entry hall.

4. http://myknxstore.co.uk/pdf/mtn630819.pdf

B. MTN630519 - KNX ARGUS 220, Polar

1. Motion sensor. Presence detects smaller movements in the room, data telegrams are transmitted via KNX to control the lighting.

2. Supply : 24V DC via KNX

3. Sensor is situated outdoor at the start of entrance ramp.

4. http://myknxstore.co.uk/pdf/h505934.pdf

2.02 ACTUATORS

A. REG-K/12x230/10 - KNX relay actuator

1. The switch actuator with manual mode can switch KNX loads via separate, floating make contacts.

2. Max. 15x per minute at nominal load.

3. Fuse: connected upstream in each channel, a 10 A circuit breaker.

4. http://www.merten.com/uploads/tx_seqdownload/p649212_581_01_1_1_gb_web.pdf

B. REG-K/4x10 - KNX binary inputs

1. The binary input has four inputs and is used for connecting four conventional push-buttons or floating contacts.

2. http://descargas.futurasmus-knxgroup.org/doc/gb/merten/9028/p644490_gb.pdf

PART 3 - INSTALLATION

A. Installation shall be executed as per installation manuals provided by the Manufacturers.

B. Correct deficiencies in or remove and reinstall materials that do not comply with requirements.

C. Repair, refinish, or replace substrate damaged during installation or transit

END OF SECTION 26 09 23

26 24 16 PANEL BOARDS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals: Product Data.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in qualified testing agency, and marked for intended location and application.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Enclosures: Flush and Surface-mounted cabinets; NEMA 250, Type 1.

1. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

B. Incoming Mains Location: Side

C. Phase, Neutral, and Ground Buses: Tin-plated aluminum.

D. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Tin-plated copper.
2. Main and Neutral Lugs: Mechanical type.
3. Ground Lugs and Bus Configured Terminators: Mechanical type.

E. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream over current protective devices. Include size and type of allowable upstream and branch devices.

F. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short circuit current available at terminals.

2.02 DISTRIBUTION PANELBOARDS

A. TPB - Team Panel Board:

1. Wall mounted metallic board, width=600mm, high=1200mm, depth=300mm
2. Voltage system L+N+PE, 230V/50Hz
3. Main Circuit Breaker 125A/B/1P/230V
4. Branch Circuit Breakers up to 40A/B/1P/230V
5. Maximum main busbar operating current 150A

6. Maximum sub busbar operating current 63A

7. Maximum short-circuit current Ik``=10kA

8. Schneider Electric products, system Acti 9

9. http://www.schneider-electric.com/download/ww/en/details/2590419-Acti-9-Panelbuilder-Brochure/?reference=998_2915_GMA-GB_v3

B. RAC - AC PV Panel Board

1. Wall mounted plastic board, width=400mm, high=400mm, depth=150mm

2. Service panel for connecting 60Hz grid with inverter

3. Voltage system L1+L2+N+PE, 2x120V/60Hz

4. Main circuit breaker 32/B/2 – ABB S202U-K32A (UL), interrupting cap. 10kA

   http://www.galco.com/techdoc/abbg/s202u-k15_ts.pdf

5. Surge breaker DEHN 240 3W+G (UL)

C. RDC - DC PV Panel Board

1. Wall mounted plastic board, width=400mm, high=400mm, depth=150mm

2. Service panel for connecting PV array with inverter

3. Circuit breaker ABB DC 25/C/2 S502UC-B25 (UL)

4. Surge breaker DEHN DG MYPV SCI 600 (UL)

D. RLED - LED Drivers

1. Wall mounted metallic board, width=400mm, high=600mm, depth=210mm

2. Voltage system 1+N+PE, 230V/50Hz

3. Driver LED IP20 75W (Electronic transformer with rectifier), Constant Voltage: DC 12V / 75 W for voltage parallel connection LED, Quantity: 2 (for Exterior)

   http://eng.greenlux.cz/?cls=stoitem&stiid=666

4. Driver LED IP67 30W (Electronic transformer with rectifier), Constant Voltage: DC 12V / 30 W for voltage parallel connection LED, Quantity: 3 (for Interior)

   http://eng.greenlux.cz/?cls=stoitem&stiid=669

E. RMR-1 Panel Board of Measurement and Control

1. Floor-standing metallic board, width=800mm, high=2000mm, depth=300mm
http://www.todaycomponents.com/media/datasheet/NSYSM20830P.pdf
2. Voltage system L1+N+PE, 230V/50Hz
3. Main Circuit Breaker 40/B/1P/230V
4. Branch Circuit Breakers up to 20B/1P/230V
5. Maximum main busbar operating current 40A
6. Maximum short-circuit current Ik``=10kA

F. FP - Fire Protection Panel Board

1. Wall mounted metallic board, width=400mm, high=400mm, depth=200
2. Voltage system L+N+PE, 230V/50Hz
3. Main Circuit Breaker Moëller 20A/1P/230V
4. Branch Circuit Breakers up to Moëller 6A/1P/230V
5. Max. Power up to 1,2 kW
6. Time Relay Elko
7. Electrical Bell Fire Eater

PART 3 - EXECUTION

3.01 INSTALLATION

A. Receive, inspect, handle, store and install panel boards and accessories.

B. Mount bottom of trim 55 inches above finished floor unless otherwise indicated.

C. Arrange conductors into groups; bundle and wrap with wire ties.

D. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing.

END OF SECTION 26 24 16

26 27 26 WIRING DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes Electrical components, Devices, and Accessories suitable for intended location and application.

1.02 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Schneider Electric CZ, s.r.o.
Thamova 13
186 00, Praha 8
Czech Republic

B. Stakohome Network s.r.o.
Podnikatelska 565
190 11, Praha 9
Czech Republic

2.02 DEVICES

A. 26 27 26 A1 - Push-button (KNX Push-button 4-gang plus)

1. Model: Schneider Electric Merten System M MTN617425
2. Location: Interior
3. Color: white Active
4. More information page 90: http://download.schneider-electric.com/files?L=en&p=&p_docId=&p_docId=&p_Reference=ISC02052EN_2010&p_EnDocType=Catalog%20Page&p_File_Id=138128436&p_File_Name=ISC02052EN_2010.pdf

B. 26 27 26 A2 - Push-button (KNX Push-button module 1-gang + Rocker)

1. Model: Schneider Electric Merten System M MTN625199 (KNX Push-button module 1-gang), MTN619125 (Rocker)
2. Location: Interior
3. Color: white Active

4. More information page 90: http://download.schneider-electric.com/files?L=en&p=&p_docId=&p_docId=&p_Reference=ISC02052EN_2010&p_EnDocType=Catalog%20Page&p_File_Id=138128436&p_File_Name=ISC02052EN_2010.pdf

C. 26 27 26 B1 - Switch (Rocker switch 1-gang)

1. Model: Schneider Electric Merten System M MTN3150-0000 (Switch 1-gang), MTN432125 (Rocker)

2. Location: Interior

3. Color: white Active

4. More information page 4: http://download.schneider-electric.com/files?L=en&p=&p_docId=&p_docId=&p_Reference=ISC02052EN_2010&p_EnDocType=Catalog%20Page&p_File_Id=138128436&p_File_Name=ISC02052EN_2010.pdf

D. 26 27 26 B2 - Switch (Rocker switch 1-gang)

1. Model: Schneider Electric Merten System M MTN3150-0000 (Switch 1-gang), MTN432025 (Rocker)

2. Location: Exterior

3. Color: white Active

4. Protection: IP44

5. More information page 4: http://download.schneider-electric.com/files?L=en&p=&p_docId=&p_docId=&p_Reference=ISC02052EN_2010&p_EnDocType=Catalog%20Page&p_File_Id=138128436&p_File_Name=ISC02052EN_2010.pdf

E. 26 27 26 C1 - Socket (SCHUKO Socket outlet)

1. Model: Schneider Electric Merten System M MTN2600-0325

2. Location: Interior

3. Color: white Active

4. Rated voltage: 250 V

5. Rated current: 16 A

6. More information page 8: http://download.schneider-electric.com/files?L=en&p=&p_docId=&p_docId=&p_Reference=ISC02052EN_2010&p_EnDocType=Catalog%20Page&p_File_Id=138128436&p_File_Name=ISC02052EN_2010.pdf

F. 26 27 26 C2 - Socket (SCHUKO Socket outlet with hinged lid)

1. Model: Schneider Electric Merten System M MTN2610-0325

2. Location: Interior
3. Color: white Active
4. Rated voltage: 250 V
5. Rated current: 16 A
6. More information page 8: http://download.schneider-electric.com/files?L=en&p=&p_docId=&p_docId=&p_Reference=ISC02052EN_2010&p_EnDocType=Catalog%20Page&p_File_Id=138128436&p_File_Name=ISC02052EN_2010.pdf

G. 26 27 26 C3 - Socket (SCHUKO Socket outlet with hinged lid)

1. Model: Schneider Electric Merten System M MTN2614-0325
2. Location: Exterior
3. Color: white Active
4. Protection: IP44
5. Rated voltage: 250 V
6. Rated current: 16 A
7. More information page 8: http://download.schneider-electric.com/files?L=en&p=&p_docId=&p_docId=&p_Reference=ISC02052EN_2010&p_EnDocType=Catalog%20Page&p_File_Id=138128436&p_File_Name=ISC02052EN_2010.pdf

H. 26 27 26 C4 - Socket (Double floor socket)

1. Model: Stakohome Network Stakohome 8802 E
2. Location: Interior
3. Color: stainless steel
4. Rated voltage: 230 V
5. http://www.podlahove-zasuvky.cz/products/Produktovy-list-STAKOHOME-8802-E.pdf

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

END OF SECTION 26 27 26

26 31 00 PHOTOVOLTAIC COLLECTORS

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals: Product Data.

B. Comply with NFPA 70, "National Electrical Code."

C. Related sections: 48 19 16 Electrical Power Generation Inverters

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Manufacturer: Aide Solar

Pantaoshan Road, Xuzhou
Jiangsu, 221004 China,
Tel.+86-0516-87980800
Fax.+86-0516-85583909
http://www.aidesolar.com
email: sales@aidesolar.com

1.01 PRODUCT

A. XZST-185W/24V

1. Mono-crystalline photovoltaic module for electricity generation

2. http://www.solarblitz.ch/datenblaetter/AIDE_XZST_155-185W_mono.pdf

1.02 ACCESSORIES

A. ROOF MOUNTING CLIPS

1. Designed based on PV producers' recommendation.

B. PERGOLA MOUNTING

1. Designed based on PV producers' recommendation.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Prepare substrate by cleaning, removing projections, filling voids, sealing joints, and as otherwise recommended in photovoltaic mounting clip manufacturer's written instructions.

B. Set load bearing construction based on manufacturers' recommendation.

C. Set PV panels based on manufacturers' recommendation.

D. Test stability of all panels.

E. Repair, refinish, or replace mountings and modules damaged during installation or transit, as directed by Architect.

F. Connect PV panels to house electrical system. Connection must be carried out by authorized person.

G. Test the proper function of the connections.

END OF SECTION 26 31 00

26 51 00 INTERIOR LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes interior luminaires used in the AIR House.

1.02 SECTION REQUIREMENTS

A. Fixtures, Emergency Lighting Units, Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Coordinate ceiling-mounted luminaires with ceiling construction, mechanical work, and security and fireprevention features mounted in ceiling space and on ceiling.

1.03 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 LIGHTING FIXTURES AND COMPONENTS, GENERAL REQUIREMENTS

A. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

2.02 MANUFACTURER

A. Zumtobel Lighting, s.r.o.
Jankovcova 2
170 00 Praha 7
Czech Republic

B. GREENLUX s.r.o.
Zeleznicni II/174
738 01 Stare Mesto u Frydku - Mistku
Czech Republic

C. Artemide S.p.A.
Via Bergamo 18
200 10 Pregnana Milanese
Italy

2.03 PRODUCTS

A. 26 51 00 A1 - SLOTLIGHT II Single Luminaire

1. Model: Zumtobel SLOT2 2x1/49W PM F LDE IP40

2. Location: Living Space

3. Dimensions: L x W x H (mm): 2855 x 72 x 100

4. Mounting: ceiling recessed

5. Wattage: 2 x T16 / 49W

6. http://www.zumtobel.com/com-en/products/1338.html?42177849

B. 26 51 00 A2 - SLOTLIGHT II Single Luminaire

1. Model: Zumtobel SLOT2 1x1/49W PM F LDE IP40

2. Location: Bathroom

3. Dimensions: L x W x H (mm): 1485 x 72 x 100

4. Mounting: ceiling recessed

5. Wattage: 1 x T16 / 49W

6. http://www.zumtobel.com/com-en/products/1338.html?42177841

C. 26 51 00 A3 - SLOTLIGHT II Single Luminaire

1. Model: Zumtobel SLOT2 1x1/54W PM F LDE IP40

2. Location: Entrance

3. Dimensions: L x W x H (mm): 1185 x 72 x 100

4. Mounting: ceiling recessed

5. Wattage: 1 x T16 / 54W

6. http://www.zumtobel.com/com-en/products/1338.html?42177843

D. 26 51 00 B1 - PERLUCE Luminaire

1. Model: Zumtobel PERLUCE O 1/35W T16 PM IP50

2. Location: Outdoor Storage

3. Dimensions: L x W x H (mm): 1520 x 120 x 91

4. Mounting: ceiling mounted

5. Wattage: 1 x T16 / 35W

6. http://www.zumtobel.com/com-en/products/1338.html?42159040

E. 26 51 00 B2 - PERLUCE Luminaire

1. Model: Zumtobel PERLUCE O 1/28W T16 PM IP50
2. Location: Mechanical Closet
3. Dimensions: L x W x H (mm): 1220 x 120 x 91
4. Mounting: ceiling mounted
5. Wattage: 1 x T16 / 28W
6. http://www.zumtobel.com/com-en/products/1338.html?42159037

F. 26 51 00 C - LED Strip WW

1. Model: Greenlux LED Strip IP65 WW 5 m GXLS017
2. Location: Living Space, Bathroom
3. Dimensions: L (mm): 2645 (Living Space) + 4310 (Bathroom)
4. Color: hot white
5. Mounting: under cabinet recessed, ceiling recessed
6. Protection: IP 65
7. Wattage: 2 x 30 W
8. Voltage: 12 V
9. http://www.greenlux.cz/img.asp?attid=982

G. 26 51 00 D1 - Tolomeo parete Aluminium

1. Model: Artemide Tolomeo parete Aluminium 001000 A + R301887
2. Location: Living Space
3. Dimensions: L, H (mm): 810 (max 1260), 670 (max 1310)
4. Color: aluminium
5. Mounting: wall mounted
6. Wattage: 9.5 W
7. Voltage: 220 - 240 V
8. http://www.artemide.it/pdf/scheda-prodotto656852685596345385.pdf

H. 26 51 00 D2 - Tolomeo terra Aluminium

1. Model: Artemide Tolomeo terra Aluminium 001000 A + 012820 A
2. Location: Living Space
3. Dimensions: H, L, base diameter (mm): 1120 (max 2260), 890 (max 1340), 330
4. Color: aluminium
5. Mounting: free standing
6. Wattage: 9.5 W
7. Voltage: 220 - 240 V
8. http://www.artemide.it/pdf/scheda-prodotto5230857889857668655.pdf

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install lighting equipment in accordance with required clearances.

C. Install lighting to provide for ease of disconnecting the equipment with minimum interference to other installations.

D. Repair, refinish, or replace mountings and modules damaged during installation or transit.

END OF SECTION 26 51 00

26 56 00 EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes exterior luminaires used in the AIR House.

1.02 SECTION REQUIREMENTS

A. Fixtures, Emergency Lighting Units, Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.03 SUBMITTALS

A. Product Data.

PART 2 - PRODUCTS

2.01 LIGHTING FIXTURES AND COMPONENTS, GENERAL REQUIREMENTS

A. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

2.02 MANUFACTURER

A. Zumtobel Lighting, s.r.o.
Jankovcova 2
170 00 Praha 7
Czech Republic

B. GREENLUX s.r.o.
Zeleznicni II/174
738 01 Stare Mesto u Frydku - Mistku
Czech Republic

C. BEGA
Hennenbusch
587 08 Menden
Germany

2.03 PRODUCTS

A. 26 56 00 A - LED Strip WW

1. Model: Greenlux LED Strip IP65 WW 5 m GXLS017
2. Location: Terrace, Ramp around the AIR House, Outdoor Kitchen
3. Dimensions: L (mm): 10500 (Terrace) + 20435 (Ramp around the AIR House) +1800 (Outdoor Kitchen)

4. Color: hot white
5. Mounting: under handrail recessed, wall recessed, under cabinet recessed
6. Protection: IP 65
7. Wattage: 2 x 75 W, 1 x 30 W
8. Voltage: 12 V
9. http://www.greenlux.cz/img.asp?attid=982

B. 26 56 00 B - LEDOS III Luminaire

1. Model Number: Zumtobel LEDOS3 L D89 1/2.1W LED832 230V 1.5M FL
2. Location: Terrace
3. Dimensions: H, diameter (mm): 102, 89
4. Mounting: floor recessed
5. Protection: IP 67
6. Wattage: 2.1 W
7. Voltage: 230 V
8. http://www.zumtobel.com/com-en/products/1338.html?60813775

C. 26 56 00 C - LED wall luminaire

1. Model Number: Bega BE 3328 1/9W LED830 230V
2. Location: Terrace
3. Dimensions: H x W x D (mm): 160 x 160 x 180
4. Mounting: wall mounted
5. Protection: IP 65
6. Wattage: 8.6 W
7. Voltage: 220 – 240 V
8. http://www.bega.de/download/gebrauchsanweisungen/3328.PDF

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install lighting equipment in accordance with required clearances.

C. Install lighting to provide for ease of disconnecting the equipment with minimum interference to other installations.

D. Repair, refinish, or replace mountings and modules damaged during installation or transit.

END OF SECTION 26 56 00

DIVISION 26: ATTACHEMENTS

TPB - TEAM PANEL BOARD SPECIFICATIONS

Code	Reference	Description	Quantity	Unit
26 24 16 A	NSYS3D12630P	Enclosure S3D, 1200x600x300, mp, RAL 7035	1	Each
26 24 16 A	NSYAEFPFSC	Grounding system	1	Each
26 24 16 A	NSYEDCOS	Grounding system	1	Each
26 24 16 A	NSYECB1M153	Grounding system	1	Each
26 24 16 A	NSYCEP	Grounding system	1	Each
26 24 16 A	NSYSDR60A	Top-hat trail 15x35, 600mm	6	Each
26 24 16 A	A9N18404	Circuit breaker C120H 1P 125A B	1	Each
26 24 16 A	16971	Residual current device ID 2P 125A 300mA A	1	Each
26 24 16 A	16454	Current transformer 125/5A	1	Each
26 24 16 A	A9MEM3210	Electricity meter iEM3210, impuls output	1	Each
26 24 16 A	A9F03763	Circuit breaker iC60N 3P+N 63A B	2	Each
26 24 16 A	A9C70124	Contact Acti9 RCA 3-4P Ti24	2	Each
26 24 16 A	A9A26476	Shunt trip iMX 100-415V AC	2	Each
26 24 16 A	A9A26897	Contact ACTI9 IOF SD24	4	Each
26 24 16 A	A9MEM3110	Electricity meter iEM3110 do 63A, impuls output	2	Each
26 24 16 A	A9L16634	Surge protection PRF1 12,5r 3P+N T1+T2	1	Each
26 24 16 A	DF223C	Fused switch 22x58 3P 125A	1	Each
26 24 16 A	DF2FN100	Fuses gG 22X58, 100A, 500V	10	Each
26 24 16 A	A9F03116	Circuit breaker iC60N 1P 16A B	14	Each
26 24 16 A	A9W21463	Release of RCD Vigi iC60 4P 63A 30mA A	2	Each
26 24 16 A	A9F03320	Circuit breaker iC60N 3P 20A B	1	Each
26 24 16 A	A9F03732	Circuit breaker iC60N 3P+N 32A B	1	Each

26 24 16 A	A9F03120	Circuit breaker iC60N 1P 20A B	1	Each
26 24 16 A	A9F03132	Circuit breaker iC60N 1P 32A B	1	Each
26 24 16 A	A9F03110	Circuit breaker iC60N 1P 10A B	2	Each
26 24 16 A	A9F03363	Circuit breaker iC60N 3P 63A B	1	Each
26 24 16 A	A9F03140	Circuit breaker iC60N 1P 40A B	1	Each
26 24 16 A	A9F03332	Circuit breaker iC60N 3P 32A B	1	Each
26 24 16 A	A9F04110	Circuit breaker iC60N 1P 10A C	1	Each
26 24 16 A	MTN649212	KNX relay actuator REG-K/12x230/10	1	Each
26 24 16 A	A9XMSB11	Smart Modbus RS485 communicating I/O module	1	Each
26 24 16 A	A9XCAM06	Prefabricated cables 160mm	1	Each
26 24 16 A	A9XCAL06	Prefabricated cables 870mm	1	Each
26 24 16 A	A9XMFA04	Mounting kit for hot-top trail	1	Each

RMR-1 – MEASUREMENT AND CONTROL PANEL BOARD SPECIFICATIONS

Code	Reference	Description	Quantity	Unit
26 24 16 E	NSYSM20830P	Switchboard 2000x800x300	1	Each
26 24 16 E	NSYSPF8100	Equipment of switchboard w. 800X100	1	Each
26 24 16 E	NSYSPS3100	Equipment of switchboard w. 300X100	1	Each
26 24 16 E	NSYSMEC83	Equipment of switchboard w. 800x300	1	Each
26 24 16 E	NSYSMBCE8	Cable gland panel width 800	1	Each
26 24 16 E	NSYSDCR8	Equipment of switchboard w d.800	2	Each
26 24 16 E	NSYDPA44	Pocket for documents	1	Each
26 24 16 E	NSYCEP	Grounding system	1	Each
26 24 16 E	NSYECB1M153	Grounding systém	1	Each

26 24 16 E	NSYSDR80	Top-hat rail 35x15 mm, width 800 mm	20	Each
26 24 16 E	A9F03140	Circuit breaker iC60N 1P 40A B	1	Each
26 24 16 E	A9A26476	Shunt trip iMX vypínací spoušť 100-415V AC	1	Each
26 24 16 E	A9L16295	Surge protection iQUICK PRD20r kA 1P+N	1	Each
26 24 16 E	A9F03106	Circuit breaker iC60N 1P 6A B	2	Each
26 24 16 E	A9F03116	Circuit breaker iC60N 1P 16A B	2	Each
26 24 16 E	A9F04210	Circuit breaker iC60N 2P 10A C	1	Each
26 24 16 E	ABT7ESM025B	Transformer 230V/24V, 250VA	1	Each
26 24 16 E	ABL7RM24025	DC power supply 230VAC/24VDC 2,5 A	1	Each
26 24 16 E	A9F03104	Circuit breaker iC60N 1P 4A B	2	Each
26 24 16 E	15635	STI 1P 8,5x31,5 400V	30	Each
26 24 16 E	DF2BN0100	Fuse gG 8,5X31,5, 1A, 380V	20	Each
26 24 16 E	15767	Fuse gl, gG 8,5x31,5 2A	2	Each
26 24 16 E	XB4BS8445	Total Stop button, Red heat	1	Each
26 24 16 E	XB4BV61	Pilot-lamp BA 9s, 250 V, white	1	Each
26 24 16 E	XB4BV64	Pilot-lamp BA 9s, 250 V, red	1	Each
26 24 16 E	XB4BA21	Push button – black	1	Each
26 24 16 E	A9F04104	Circuit breaker iC60N 1P 4A C	3	Each
26 24 16 E	A9F04116	Circuit breaker iC60N 1P 16A C	1	Each
26 24 16 E	A9A26924	iOF signaling contact	16	Each
26 24 16 E	XB4BK123B5	Switch with lamp, LED, 1 Z + 1 V, 24 V, green	6	Each
26 24 16 E	A9C22111	AC Contactor iCT 16A 1ZAP 24/V AC 50Hz	10	Each
26 24 16 E	A9C15914	iACTs 1ZAP+1VYP signaling contact	12	Each
26 24 16 E	RSB2A080BD	Relay 2P/ 8 A, 24 V DC	10	Each

26 24 16 E	RSZE1S48M	Mount relay base RSB-2A080/1A160	10	Each
26 24 16 E	A9F04102	Circuit breaker iC60N 1P 2A C	4	Each
26 24 16 E	A9F04101	Circuit breaker iC60N 1P 1A C	3	Each
26 24 16 E	A9C22112	AC Contactor iCT 16A 2ZAP 24/V AC 50Hz	2	Each
26 24 16 E	A9F04606	Circuit breaker iC60N 1P+N 6A C	1	Each
26 24 16 E	A9W21225	Residual current device Vigi iC60 2P 25A 30mA A	1	Each
26 24 16 E	A9F03110	Circuit breaker iC60N 1P 10A B	2	Each
26 24 16 E	RSB2A080BD	Relay 2P/ 8 A, 24 V DC	20	Each
26 24 16 E	RSB2A080B7	Relay 2P/ 8 A, 24 V AC	20	Each
26 24 16 E	RSZE1S48M	Mount relay base RSB-2A080/1A160	40	Each
26 24 16 E	RXM4AB2B7	Relay 6 A, 24 V AC s LED	10	Each
26 24 16 E	RXZE2S114M	Mount relay base 4P	10	Each
26 24 16 E	AB1RRN235U2GR	Cable terminals 2,5mm2 2.pol, grey	200	Each
26 24 16 E	AB1VV435U	Cable terminals	100	Each
26 24 16 E	MTN684032	KNX power supply REG-K/320 mA	1	Each
26 24 16 E	MTN680191	KNX-DALI gateway REG-K/1/16(64)/64	1	Each
26 24 16 E	A9MEM3150	Electricity meter iEM3150 do 63A, Modbus RTU communication	4	Each
26 24 16 E	IBOX-BAC-KNX-100	IntensisBox BACnetIP-KNX/EIB gateway, 100 data points	1	Each

DIVISION 27 COMMUNICATIONS

27 21 29 COMMUNICATIONS SWITCHES AND HUBS

PART 1 - GENERAL

1.01 SUMMARY

A. This section is linked with section of integrated automation where is the same content in the same structured section.

PART 2 PRODUCTS

2.01 SEE SECTION 25 11 16.

PART 3 INSTALLATION

3.01 SEE SECTION 25 11 16.¨

END OF SECTION 27 21 29

27 21 33 COMMUNICATIONS WIRELESS ACCESS POINT

PART 1 - GENERAL

1.01 SUMMARY

A. This section is linked with section of integrated automation where is the same content in the same structured section.

PART 2 PRODUCTS

2.01 SEE SECTION 25 11 16.

PART 3 INSTALLATION

3.01 SEE SECTION 25 11 16.

END OF SECTION 27 21 33

DIVISION 28 ELECTRONIC SAFETY AND SECURITY

28 31 00 ELECTRONIC DETECTION AND ALARM

PART 1 - GENERAL

1.01 SUMMARY

A. This section is linked with section of integrated automation where is the same content in the same structured section.

PART 2 PRODUCTS

2.01 SEE SECTION 25 51 00.

PART 3 INSTALLATION

3.01 SEE SECTION 25 51 00.

END OF SECTION 28 31 00

DIVISION 32 EXTERIOR IMPROVEMENTS

32 71 00 CONSTRUCTED WETLANDS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all information and data about constructed wetlands.

B. Related sections:

1. 05 12 00 steel framing
2. 21 30 00 fire pump
3. 21 40 00 facility fire water tank
4. 22 11 16 domestic water piping
5. 22 11 19 domestic water piping specialties
6. 22 11 23 domestic water pump
7. 22 12 19 facility water tanks
8. 22 13 29 sewage pump
9. 22 13 53 facility septic tank
10. 22 13 63 facility gray water tank
11. 22 13 73 facility planter
12. 23 82 42 outdoor compressor unit
13. 32 93 00 plants

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. PLANTS

Las Pilitas Nursery
8331 Nelson way,
Escondido, CA 92026
http://www.laspilitas.com/

B. STEEL FRAMING

AUGUR-kovo spol. s r.o.
ul. Škroupova 836
266 01 Beroun 3 - Závodí

C. WELDED TANKS AND PLANTER

Realplast
Žižkova 1413
282 01 Český Brod
http://www.azrealplast.cz/

D. WATER AND FIRE TANKS

Obal centrum Ltd.
Veská 35
533 04 Sezemice
http://www.obal-centrum.com/

PART 3 - EXECUTION

3.01 ASSEMBLY, SYSTEM FUNCTIONING

A. Assembly

1. Whole wetlands are transported in one piece excluding soil and plants. Only piping will be connected with piping in the technical room – water, fire water, sewage and outdoor unit.

B. System functioning

1. Constructed wetland supplies AIR House with water and fire water. Grey water is treated first in septic tank – removal of sediments, than pumped into the planter and filtered by soil and plants. Treated water is stored in the gray water tank and used for garden-watering.

3.02 CONSTRUCTED WETLANDS ARE USED DURING COMPETITIONS AS SAMPLE – WHILE HOUSE ASSEMBLED IN COUNTRYSIDE ALL TANKS WILL BE BURRIED IN THE GROUND.

END OF SECTION 32 71 00

32 93 00 PLANTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all plants that will be located on the CTU site. Refer to planting schedules in construction documentation for specific plant species and exact location.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Las Pilitas Nursery

8331 Nelson way,
Escondido, CA 92026
http://www.laspilitas.com/

2.02 PRODUCTS

A. All selected plants available through Las Pilitas Nursery.

1. *Fragaria californica* (california strawberry)
2. *Mentha arvensis* (field mint)
3. *Satureja douglasii* (yerba buena)
4. *Solanum lycopersicum* (tomato)
5. *Lavandula dentata* (lavender)
6. *Rosmarinus officinalis* (rosemary)
7. *Capsicum annuum* (pepper)
8. *Lactuca sativa L. var. Longifolia* (romaine lettuce) – or various spieces of lettuce
9. *Petroselinum crispum* (parsley)
10. *Ocimum basilicum* (Basil)
11. *Salvia mellifera repens* (creeping black sage)
12. *Eriogonum fasciculatum* (california buckwheat)
13. *Encelia californica* (california brittlebush)
14. *Artemisia californica* (california sagebrush)
15. *Eriogonum grande rubescens* (RED BUCKWHEAT)
16. *Salvia Celestial Blue* (purple sage)
17. *Heleocharis macrostachya* (spike rush)
18. *Typha domingensis* (southern cat-tail)
19. *Anemopsis californica* (yerba mansa)
20. *Iris Pseudacorus* (yellow flag)

PART 3 - EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

A. Watering

1. Immediately after the installation on the site water each plant with 0.13 gallons of water. Than according to needs and weather conditions water every day with 0.8 gallons of water.

B. Transportation

1. All plants are to be transported in a conditioned flower truck.

C. Installation

1. To plant plants in planting pots, first fill the pots with soil mix. Spread root ball of the plant and insert it in soil. Lay an inch of compost around the plant. Saturate soil.

END OF SECTION 32 93 00

DIVISION 41 MATERIAL PROCESSING AND HANDLING EQUIPMENT

41 22 13.23 MOBILE CRANES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes information about :

1. This specification includes the requirements, terms of use, and product data of a mobile crane used to unload and load the modules of the house for the competition.

A. DELIVERY, STORAGE AND HANDLING

B. Acceptance at site:

1. Inspect product upon delivery. Report any damaged or missing components directly to the manufacturer.

2. Provide appropriate matting material beneath crane feet to comply with required load factors.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Liebherr International

B. Grove Crane

A. MODEL

C. LIEBHERR LTM 1050-3.1

D. GROVE TMS870

2.02 GENERAL NOTES

A. Rated loads as shown on Lift Charts pertain to this machine as originally manufactured and equipped. Modifications to the machine or use of optional equipment other than that specified can result in a reduction of capacity.

B. Construction equipment can be hazardous if improperly operated or maintained. Operation and maintenance of this machine shall be in compliance with the information in the Operator’s, Parts and Safety Manuals supplied with this machine. If these manuals are missing, order replacements from the manufacturer through your distributor.

C. These warnings do not constitute all of the operating conditions for the crane. The operator and job site supervision must read the operators manual, CIMA safety manual, applicable OSHA regulations, and ASME safety standards for cranes.

D. This crane and its load ratings are in accordance with power crane & shovel association, standard no. 4, sae crane load stability testcode J765A, sae method of test for crane structure J1063 and applicable safety code for cranes, derricks and hoists, ASME/ANSI B30.5

2.03 CAPACITIES

A. LIEBHERR LTM 1050-3.1

1. Max. lifting capacity: 50 t at 3 m radius (110,200 lbs at 10 ft)
2. Telescopic boom: 11.3 m - 38 m (37 ft - 125 ft)
3. Lattice jib: 9 m - 16 m (30 ft - 52 ft)
4. Crane Engine/Output: Liebherr 6-cylinder, turbo-Diesel, 270 kW
5. Drive/steering: 6 x 6 x 6
6. Travel speed: 80 km/h (50 mile/h)
7. Operational Weight: 36 ton (79,200 lbs)
8. Total Counterweight: 7 ton (15,400 lbs)
9. Calculus of radius a weight: 8,5 tons at 12 m (18740 lbs at 40 ft)

B. GROVE TMS870

1. Max. lifting capacity: 140000 lb 63502.9 kg
2. Min Height @ Max Raise Angle 36 ft in 11 m; Max Height @ Max Raise Angle - no jib 118 ft in 36 m
3. Min Working Radius 10 ft in 3 m; Max Working Radius 100 ft in 30.5 m
4. Crane Engine/Output: Make Cummins; Model MII 400E; Gross Power 399.6 hp - 298 kw
5. Travel speed: 88,5 km/h (55 mile/h)
6. Operational Weight: 41,3 ton (91,090 lbs)
7. Calculus of radius a weight: 8,5 tons at 12 m (18740 lbs at 40 ft)

PART 3 - EXECUTION

3.01 SETUP

A. Crane load ratings are based on the crane being levelled and standing on a firm, uniform supporting surface.

B. Crane load ratings on outriggers are based on all outrigger beams being fully extended or in the case of partial extension ratings mechanically pinned in the appropriate position, and the tires free of the supporting surface.

C. Crane load ratings on tires depend on appropriate inflation pressure and the tire conditions. Caution must be exercised when increasing air pressures in tires. Consult Operator's Manual for precautions.

D. Use of gibs, lattice–type boom extensions or fourth section pullouts extended is not permitted for pick and carry operations.

E. Consult appropriate section of the Operator's and Service Manual for more exact description of hoist line revving.

F. The use of more parts of line than required by the load may result in having insufficient rope to allow the hook block to reach the ground.

G. Properly maintained wire rope is essential for safe crane operation. Consult Operator's Manual for proper maintenance and inspection requirements.

H. When spin-resistant wire rope is used, the allowable rope loading shall be the breaking strength divided by five (5), unless otherwise specified by the wire rope manufacturer.

I. Do not elevate the boom above 60°unless the boom is positioned in-line with the crane's chassis or the outriggers are extended. Failure to observe this warning may result in loss of stability.

A. OPERATION

J. Crane load ratings must not be exceeded. Do not attempt to top the crane to determine allowable loads.

K. When either radius or boom length, or both, are between listed values, the smaller of the two listed load ratings shall be used.

L. Do not operate at longer radii than those listed on the applicable load rating chart

M. The boom angles shown on the Capacity Chart give an approximation of the operating radius for a specified boom length. The boom angle, before loading, should be greater to account for boom deflection. It may be necessary to retract the boom if maximum boom angle is insufficient to maintain rated radius.

N. Power telescoping boom sections must be extended equally.

O. Rated loads include the weight of hook block, slings, and auxiliary lifting devices. Their weights shall be subtracted from the listed rated load to obtain the net load that can be lifted. When lifting over the jib the weight of any hook block, slings, and auxiliary lifting devices at the boom head must be added to the load. When jibs are erected but unused add two (2) times the weight of any hook block, slings, and auxiliary lifting devices at the jib head to the load.

P. Rated loads do not exceed 85% on outriggers or 75% on tires, of the tipping load as determined by SAE Crane Stability Test Code J765a.

Q. Rated loads are based on freely suspended loads. No attempt shall be made to drag a load horizontally on the ground in any direction.

R. The user shall operate at reduced ratings to allow for adverse job conditions, such as: Soft or uneven ground, out of level conditions, high winds, side loads, pendulum action, jerking or sudden stopping of loads, hazardous conditions, experience of personnel, two machine lifts, travelling with loads, electric wires, etc., (side pull on boom or jib is hazardous). Derating of the cranes lifting capacity is required when wind speed exceeds 20 MPH. the center of the lifted load must never be allowed to move more than 3 feet off the center line of the base boom section due to the effects of wind, inertia, or any combination of the two. Use 2 feet off the center line of the base boom for a two section boom, 3 feet for a three section boom, or 4 feet for a four section boom.

S. The maximum load which can be telescoped is not definable, because of variations in loadings and crane maintenance, but it is permissible to attempt retraction and extension if load ratings are not exceeded.

T. Load ratings are dependent upon the crane being maintained according to manufacturer's specifications.

U. It is recommended that load handling devices, including hooks, and hook blocks, be kept away from boom head at all times.

V. 360°capacities apply only to machines equipped with a front outrigger jack and all five (5) out- rigger jacks properly set. If the front (5th) outrigger jack is not properly set, the work area is restricted to the over side and over rear areas as shown on the Crane Working Positions diagram. Use the 360°load ratings in the overside work areas.

W. Do not lift with outrigger beams positioned between the fully extended and intermediate (pinned) positions.

X. Truck Cranes not equipped with equalizing (bogie) beams between the rear axles may not be used for lifting "on tires". Truck Cranes equipped with equalizing beams and rear air suspension should "dump" the air before lifting "on tires".

A. SPECIAL RESTRICTIONS

Y. Crane may not leave access road when on the Orange County Great Park. Crane is not allowed to travel on any of the grass on the mall.

Z. Crane must wait aside the Orange Country Great Park mall for Solar Decathlon Operations Director to approve site access.

END OF SECTION 41 22 13.23

41 65 16 MOBILE GENERATORS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes information about :

1. Specification for engine generators to be used during initial construction of site.

A. PERFORMANCE

B. Generator required on site during the assembly and disassembly phases of the competition, and will be removed during the competition period. Generator is required to power tools and lighting during the assembly/disassembly phases.

C. Engine Generators shall meet the National Park Service (NPS) noise regulation stated in 36CFR2.12 – a maximum of 60 DB(A) at 50 ft / 15m under full load.

1.02 SELECTION

A. Mobile Generator model to be confirmed in Irvine at time of hire.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Honda Engines

2.02 MODEL

A. 1. EU 6500iS

2.03 PERFORMANCE

A. 120/240V 6500W max. (54.1/27.1A) 5500W rated (45.8/22.9A)

B. Full GFCI Protection

C. Noise Level: 60 dB(A) @ rated load, 52 dB(A) @ 1/4 load, distance for this noise rating is 7 m (23 ft).

D. http://www.justhonda.co.uk/pages/Honda_EU65is.htm

PART 3 - EXECUTION

3.01 INSTALLERS

A. Team Czech Republic

3.02 INSTALLATION

A. Special Techniques

1. See the General Installation Manual and Use and Care Guide.

3.03 PROTECTION

A. All receptacles on the generator are protected by a ground fault circuit interrupter (GFCI) for protection against the shock hazard of ground fault current. The GFCI has TEST and RESET buttons and is connected to the circuit breaker.

B. The GFCI will not protect against short circuits or overloads.

C. Observe the following precautions to ensure proper GFCI operation and to reduce shock hazards.

1. Use grounded 3-conductor extension cords, tools, and appliances, or double-insulated tools and appliances.

2. Inspect cords and plugs, and replace if damage.

3. Do not use cord lengths greater than 164 feet, and do not use multiple tools and appliances with built-in noise filters. Such use may activate the GFCI and trip the circuit breaker.

4. The generator ground terminal is connected to the frame of the generator, the metal non-current carrying parts of the generator, and the ground terminals of each receptacle.

3.04 MAINTENANCE

A. Scheduled maintenance is recommended to maintain optimal output performance. Sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, will require more frequent service.

B. Keep engine clean and well oiled to maintain power output levels.

C. It is recommended to change the oil in the engine twice or more per year, depending on frequency of use. It is recommended to clean as needed. A mild, non-abrasive detergent may be applied for persistent dirt.

D. It is also recommended to inspect the mechanical and electrical connections annually.

END OF SECTION 41 65 16

DIVISION 42 PROCESS HEATING, COOLING AND DRYING EQUIPMENT

42 01 00 OPERATION AND MAINTENANCE OF PROCESS HEATING, COOLING, AND DRYING EQUIPMENT

PART 1 **- GENERAL**

1.01 SUMMARY

A. This section includes operation and maintenance of process heating, cooling, and drying equipment.

1.02 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings.

PART 2 **- PRODUCTS**
Not used

PART 3 **- EXECUTION**

3.01 PROCESS HEATING

A. Radiation heating ceiling and convection indoor diffusers.

B. Daikin's heat pumps is heating solutions, meaning comfortably warm in winter.

C. The indoor unit can be used for a pair application - one indoor unit connected to one outdoor unit.

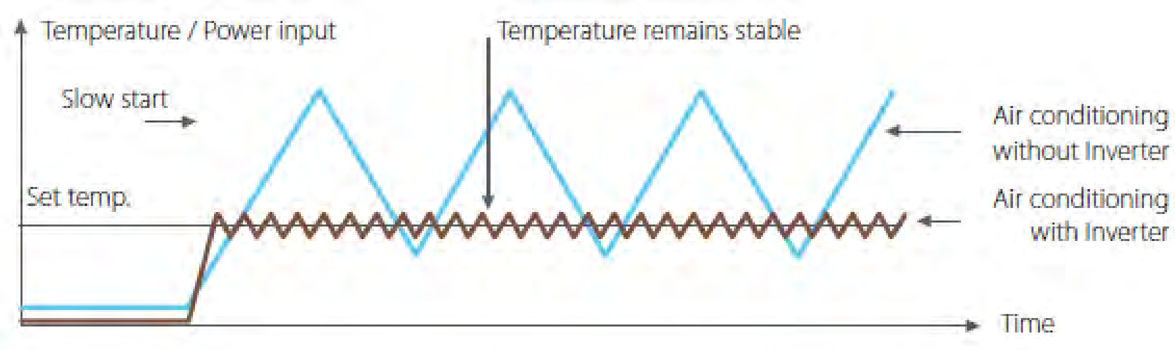
D. Daikin's heat pumps achieve COPs of up to 5.14.

E. Daikin's inverter technology is a true innovation in the field of climate control. The principle is simple: inverters adjust the power used to suit the actual requirement - no more, no less! This technology provides you with two concrete benefits:

1. Comfort: The inverter repays its investment many times over by improving comfort. An air conditioning system with an inverter continuously adjusts its cooling and heating output to suit the temperature in the room thus improving comfort levels. The inverter reduces system start-up time enabling the required room temperature to be reached more quickly. As soon as the correct temperature is reached, the inverter ensures that it is constantly maintained.

2. Energy efficient: Because an inverter monitors and adjusts ambient temperature whenever needed, energy consumption drops by 30% compared to a traditional on/off system! (non-inverter).

F. Heating operation:



3.02 PROCESS COOLING

A. Radiation cooling ceiling and convection indoor diffusers.

B. Daikin’s heat pumps is cooling solutions, meaning comfortably cool in summer.

C. The indoor unit can be used for a pair application - one indoor unit connected to one outdoor unit.

D. Daikin's heat pumps achieve EERs of up to 5.00.

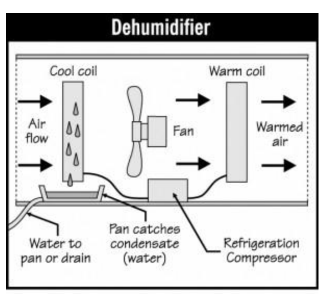
E. Daikin’s inverter technology is a true innovation in the field of climate control. The principle is the same as for process heating.

3.03 PROCESS DRYING

A. Honeywell TrueDRY™ Dehumidification systems are a more effective and energy-efficient way to remove humidity. And all Honeywell TrueDRY Dehumidifiers are ENERGY STAR® Rated. They can be installed "out of sight, out of mind" in the central heating and cooling system - or as standalone to remove moisture from specific problem areas. And with several sizes available, TrueDRY Dehumidification Systems, Honeywell gives you one brand for every application.

B. Also, all TrueDRYTM models utilize environmentally-friendly R-410A refrigerant and conform to EPA standards for refrigerants. So, along with offering you a complete selection to meet the dehumidification needs of any size home, Honeywell also has you covered as EPA regulations take hold. That’s peace of mind for both you and your customers.

C. Dehumidification operation:



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END OF SECTION 42 01 00

DIVISION 43 PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT

43 01 00 OPERATION AND MAINTENANCE OF PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes operation and maintenance of process gas and liquid handling, purification and storage equipment.

1.02 SECTION REQUIREMENTS

A. Submittals: Product Data.

PART 2 - PRODUCTS

2.01 REFRIGERANT

A. R-410A, ASHRAE.

1. Non-ozone depleting refrigerant.

2. Material Safety Data Sheet (MSDS):

B. www.daikin.com/chm/products/pdfDown.php?url=pdf/msds/msds_r410a_e.pdf

PART 3 - EXECUTION

3.01 REFRIGERANT HANDLING

A. Install refrigerant piping and charge with refrigerant according to ASHRAE.

B. HANDLING AND STORAGE

1. Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

2. R-410A should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

3. Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

C. TRANSPORT INFORMATION

1. US DOT PROPER SHIPPING NAME: Liquefied gas, n.o.s., (Pentafluoroethane, Difluoromethane)

2. US DOT HAZARD CLASS: 2.2

3. US DOT PACKING GROUP: Not applicable

4. US DOT ID NUMBER: UN3163

D. MORE INFO AND CERTIFICATION:

1. http://www.refrigerants.com/pdf/MSDS410A.pdf

2. http://www.refrigerants.com/pdf/R410A_LINK.pdf

3. www.daikin.com/chm/products/pdfDown.php?url=pdf/tds/tds_r410a_e.pdf

END OF SECTION 43 01 00

DIVISION 48 ELECTRICAL POWER GENERATION

48 19 16 ELECTRICAL POWER GENERATION INVERTERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes information about electrical power generation inverters.

1.02 RELATED SECTIONS

A. 26 05 19 Low-voltage electrical power conductors and cables

B. 26 31 00 Photovoltaic collectors

1.03 SUBMITTALS

A. Product data

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. SMA Solar Technology AG

Sonnenalle 1
34266 Niestetal
Germany
tel.: +49 561 9522 0
fax :+49 561 9522 100
Info@SMA.de
www.SMA.de

2.02 PRODUCT

A. Sunny Boy 5000-US

1. UL certification (UL 1741/IEEE 1547)
2. Dimensions (W / H / D) in mm (in): 470 / 615 / 240 mm (18.5 / 24 / 9)
3. Weight/DC disconnect: 64 kg (141 lb) / 3.5 kg (8 lb)
4. Operating temperature range: –25 °C ... +45 °C (–13 °F ... +113 °F)
5. Noise emission (typical): 44 dB(A)
6. Internal consumption (night): 0.1 W

7. Topology: LF transformer, galvanic isolation

8. Cooling concept : OptiCool

9. Electronics protection rating / connection area (as per IEC 60529): NEMA 3R / NEMA 3R

10. For more information see Data sheet: http://www.sma-america.com/en_US/products/grid-tied-inverters/sunny-boy/sunny-boy-5000-us-6000-us-7000-us-8000-us.html

PART 3 - EXECUTION

3.01 INSTALLERS

A. Team Czech Republic

3.02 INSTALLATION

A. Install in accordance with Installation guide. See instructions on unpacking, mounting, and wiring the inverters with a parallel connection.

B. Confirm compatibility of string sizing with photovoltaic panels and inverters.

END OF SECTION 48 19 16

APPENDIX 1 – STRUCTURAL CALCULATIONS

INTRODUCTION

This structural calculation is based on requirements given in Solar Decathlon 2013 Rules and International Building Code 2009. Calculation is done according to European procedures and standards using abovementioned values of loads. Theoretical background of calculation procedures and loads, load groups and combinations is given. Further detailed structural calculations and results are exported from Dlubal RFEM software and listed in pictures and data sheets.

This structural calculation is for Solar Decathlon 2013 competition purposes only.

Structure model and calculation: Pavel Nechanický Faculty of Steel and Timber structures, CTU in Prague

Revised and authorised by: Dr. Jakub Dolejš Faculty of Steel and Timber structures, CTU in Prague

14.2.2013

OSVĚDČENÍ O AUTORIZACI

číslo 26298

vydané

Českou komorou autorizovaných inženýrů a techniků
činných ve výstavbě
podle zákona ČNR č. 360/1992 Sb.

Dr.Ing. Jakub Dolejš
jméno a příjmení

710517/2129
rodné číslo

je

autorizovaným inženýrem

v oboru

statika a dynamika staveb

V seznamu autorizovaných osob vedeném ČKAIT je veden pod číslem

0009135

a je oprávněn používat autorizační razítko, jehož kontrolní otisk
je uveden zde:

Autorizace je udělena ke dni 26.5.2005

Ing. Václav Mach
předseda ČKAIT

Translation from the Czech language

CERTIFICATE OF AUTHORIZATION

Number 26298

Issued by the

Czech Chamber of Authorized Engineers and Technicians
Active in Construction (ČKAIT)

Pursuant to Czech National Council Act No. 360/1992

This is to certify that

Dr. Ing. Jakub Dolejš
Name and surname

710517/2129
Birth Registration Number

is an

Authorized Engineer

in the field of

Statics and Dynamics of Structures.

He is listed in the list of authorized persons maintained by ČKAIT under number

009135

and he has the right to use the authorization stamp the imprint of which is affixed below:

/official stamp/
Dr. Ing. Jakub Dolejš
Authorized Engineer in Statics
and Dynamics of Structure
ČKAIT – 0009135

The authorization has been granted as of 26 May 2005

/official stamp/
Czech Chamber of Authorized
Engineers and Technicians
ČKAIT

/signature/
Václav Mach
Chairman, ČKAIT

STRUCTURAL CALCULATIONS

PART 1 - INPUTS

1.01 DESIGN CODES

A. International Building Code (IBC)

B. International Residential Code (IRC)

C. 2013 SD Building Code Requirements

D. European standards:

1. EN 1990: Basis of structural design

2. EN 1991-1-1: Action on structures – Densities, self-weight and imposed loads

3. EN 1991-1-3: Action on structures – Snow loads

4. EN 1991-1-4: Action on structures – Wind loads

5. EN 1993: Design of steel structures

6. EN 1995: Design of timber structures

7. EN 338: Structural timber. Strength classes

8. EN 1194: Timber structures. Glued laminated timber. Strength classes and determination of characteristic values

1.02 SOFTWARE

A. RFEM v.4.10.1301 – 3D analysis of complete structures

B. Additional modules to RFEM:

1. RF - LAMINATE – Laminated slabs design (for CLT elements)

2. RF - COMBI 2006 – Load group and combinations generator

3. RF – TIMBER Pro – Timber cross sections check

4. RF – STEEL EC3 – Steel cross sections check

5. RF – DYNAM – Dynamic analysis and Earthquake design

C. MS EXCEL 2010 – Spread sheet calculations

1.03 LOADS

A. DEAD LOADS – SELF WEIGHT

Type of structure	characteristic value	
SK01 Exterior wall	0,94	[kN/m^2]
SK02 Interior floor	1,95	
SK03 Roof of interior	1,58	
SK04 Photofoltaic panels	0,31	
SK05 Exterior timber wall	0,23	

B. LIVE LOADS

1. 2013 SD BUILDING CODE REQUIREMENTS

structure	psf	[kN/m^2]
interior floors	50	2,39
exterior floors	100	4,79
roof	20	0,96

2. IMPOSED LOADS – ACCORDING TO EN 1991-1-1

Category of loaded areas	characteristic value	
Residential area - Category A	1,5	[kN/m2]
Space, where people can gather Category C3	3,0	
Roofs - Category H	0,75	

3. SNOW LOADS – ACCORDING TO EN 1991-1-3

Snow load is calculated according to Czech National Annex of EN 1991-1-3, where ground snow load map of the Czech Republic is included. Characteristic ground snow load for Prague area is s_k=0,7 kN/m^2.

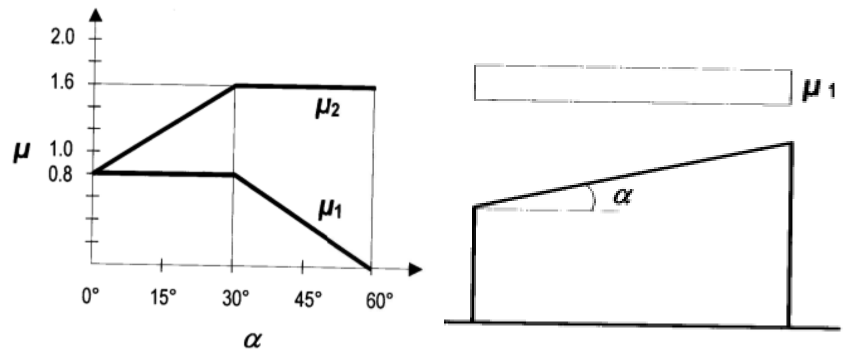
Characteristic value of snow load on the roof:

$$s = \mu_i \cdot C_e \cdot C_t \cdot s_k$$

C_e is exposure factor. Recommended value is 1,0

C_e is heat factor. Recommended value is 1,0

μ_i is roof shape factor, for flat roofs is 0,8 (see figure 3.1)



C. **Figure 3.1**: Roof shape factor for flat roofs.

$$\boldsymbol{s_{CZ}} = \mu_i \cdot C_e \cdot C_t \cdot s_k = 0{,}8 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 = \mathbf{0{,}8}\ \boldsymbol{kN/m^2}$$

$$\boldsymbol{s_{US}} = \mathbf{0{,}96}\ \boldsymbol{kN/m^2}$$

Event Condition is governing the design.

4. WIND LOADS – ACCORDING TO EN 1991-1-4

SD Building Code requires a wind speed of 85 mph (38.0 m/s) in 3-second gust. According to [1] is possible to converse this value to 10 minutes mean velocity by equation:

$$v_{b,0} = v_{ref}^{10min} = \frac{2}{3} \cdot v_{ref}^{3sec}$$

a. Basic wind velocity

The fundamental value of the basic wind velocity is the characteristic 10 minutes mean wind velocity, irrespective of wind direction and time of year, at 10 m above ground level in open country terrain with low vegetation such as grass and isolated obstacles with separations of at least 20 obstacle heights. The fundamental value of the basic wind velocity for SD Rules requirements is:

$$v_{b,0} = v_{ref}^{10min} = \frac{2}{3} \cdot v_{ref}^{3sec} = \frac{2}{3} \cdot 38{,}0 = 25{,}3\ m/s$$

The fundamental value of the basic wind velocity according to wind velocity map of the Czech Republic and according to National Annex of EN 1991-1-4 is:

$$v_{b,0} = 25{,}0\ m/s$$

The basic wind velocity should be calculated using expression:

$$v_b = C_{DIR} \cdot C_{SEASON} \cdot v_{b,0}$$

C_{DIR} is a wind direction factor. Recommended value is 1.0.
C_{SEASON} is a season factor. Recommended value is 1.0.

$$v_{b,US} = 1{,}0 \cdot 1{,}0 \cdot 25{,}3 = 25{,}3\ m/s$$

$$v_{b,CZ} = 1{,}0 \cdot 1{,}0 \cdot 25{,}0 = 25{,}0\ m/s$$

b. Basic velocity pressure

$$q_{b,US} = \frac{1}{2} \cdot \rho \cdot v_b^2\ \ z\ \ = \frac{1}{2} \cdot 1{,}25 \cdot 25{,}3^2 = 400\ N/m^2$$

$$q_{b,CZ} = \frac{1}{2} \cdot \rho \cdot v_b^2\ \ z\ \ = \frac{1}{2} \cdot 1{,}25 \cdot 25{,}0^2 = 391\ N/m^2$$

ρ is the air density, which depends on the altitude, temperature and barometric pressure to be expected in the region during wind storms. Recommended value is 1,25 kg/m³ (0,0775 lb/cu.ft).

c. Peak velocity pressure

The peak velocity pressure $q_p(z)$ at height z, which includes mean and short-term velocity fluctuations, should be determined by expression:

$$q_b\ \ z\ \ = C_e\ \ z\ \ \cdot q_b$$

$C_e(z)$ is exposure factor determined by EN 1991-1-4, see figure 3.1

$C_e(z)$ for US conditions and building height 5,0m is 1,95.

$C_e(z)$ for CZ conditions and building height 5,0m is 1,2.

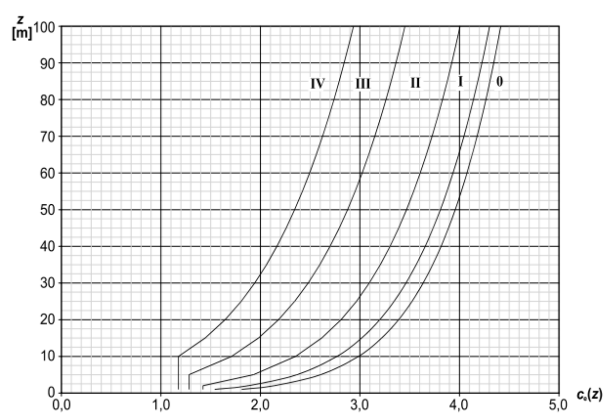


Figure 4.1: Exposure factor.

Roman numerals in figure 3.1 describe the terrain roughness. The terrain roughness to be used for a given wind direction depends on the ground roughness and the distance with uniform terrain roughness in an angular sector around the wind direction. Small areas (less than 10% of the area under consideration) with deviating roughness may be ignored. Description of terrain category is given in figure 3.2.

$$q_{b,US}\ z\ = C_e\ z\ \cdot q_b$$

Terrain category	z_0 m	z_{min} m
0 Sea or coastal area exposed to the open sea	0,003	1
I Lakes or flat and horizontal area with negligible vegetation and without obstacles	0,01	1
II Area with low vegetation such as grass and isolated obstacles (trees, buildings) with separations of at least 20 obstacle heights	0,05	2
III Area with regular cover of vegetation or buildings or with isolated obstacles with separations of maximum 20 obstacle heights (such as villages, suburban terrain, permanent forest)	0,3	5
IV Area in which at least 15 % of the surface is covered with buildings and their average height exceeds 15 m	1,0	10
NOTE: The terrain categories are illustrated in A.1.		

Figure 4.2: Terrain categories and terrain parameters.

$$q_{p,US}\ z\ = C_{e,US}\ z\ \cdot q_{b,US} = 1{,}93 \cdot 400 = 772\ N/m^2$$

$$q_{p,CZ}\ z\ = C_{e,CZ}\ z\ \cdot q_{b,CZ} = 1{,}38 \cdot 391 = 543\ N/m^2$$

Higher value of calculated peak velocity pressures of two different area conditions will be used for further calculation of wind loads.

d. Wind pressure on surfaces

$$w_e = q_{p,US}\ z_e\ \cdot C_{pe}$$

C_{pe} is the pressure coefficient for the external pressure.

z_e is the reference height for the external pressure (for Airhouse is 5,0m)

Pressure coefficient is calculated for both walls and flat roof. Four wind directions are considered

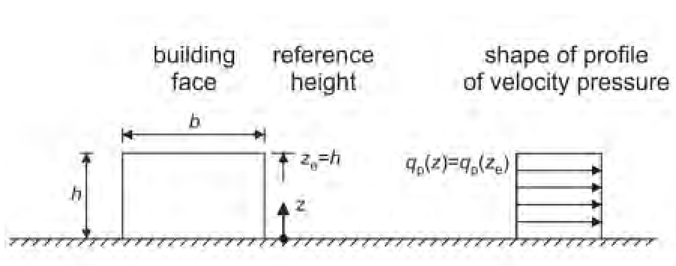


Figure 4.3: Reference high for Airhouse.

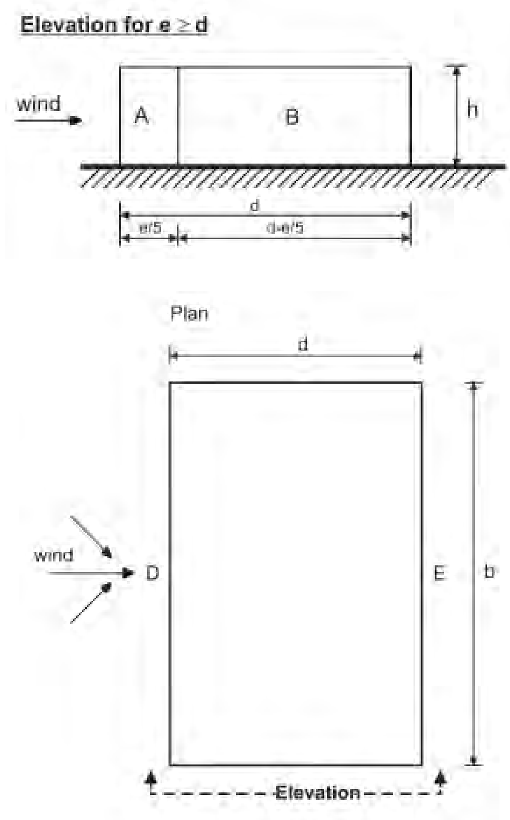
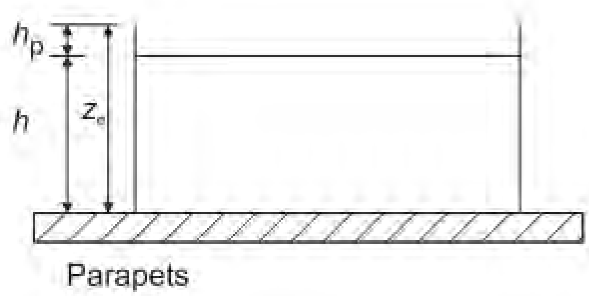


Figure 4.4: Key for vertical load.

Zone	A		B		C		D		E	
h/d	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$
5	-1,2	-1,4	-0,8	-1,1	-0,5		+0,8	+1,0	-0,7	
1	-1,2	-1,4	-0,8	-1,1	-0,5		+0,8	+1,0	-0,5	
≤ 0,25	-1,2	-1,4	-0,8	-1,1	-0,5		+0,7	+1,0	-0,3	

Figure 4.5: Recommended values of external pressure coefficients for vertical walls of rectangular plan buildings.



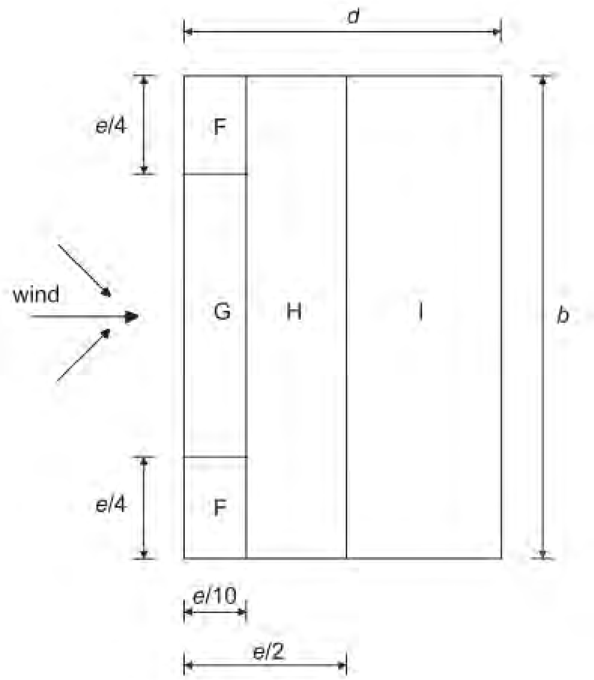
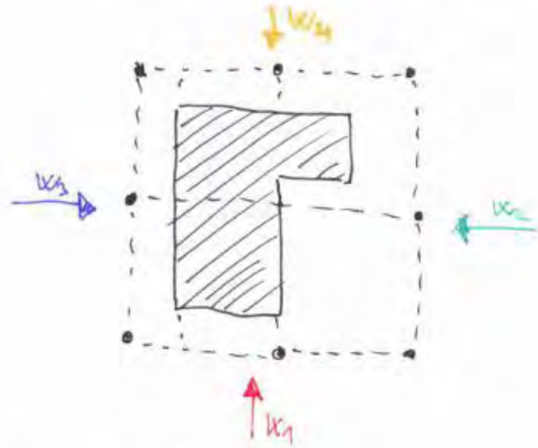


Figure 4.6: Key for flat roofs.

Roof type		**Zone**							
		F		**G**		**H**		**I**	
		$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$	$c_{pe,10}$	$c_{pe,1}$
Sharp eaves		-1,8	-2,5	-1,2	-2,0	-0,7	-1,2	+0,2 -0,2	
With Parapets	h_p/h=0,025	-1,6	-2,2	-1,1	-1,8	-0,7	-1,2	+0,2 -0,2	
	h_p/h=0,05	-1,4	-2,0	-0,9	-1,6	-0,7	-1,2	+0,2 -0,2	
	h_p/h=0,10	-1,2	-1,8	-0,8	-1,4	-0,7	-1,2	+0,2 -0,2	

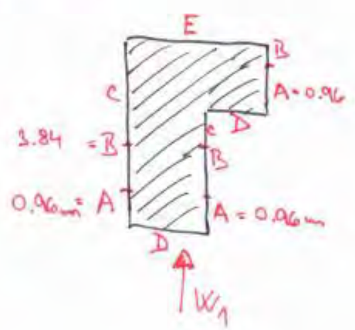
Figure 4.7: External pressure coefficients for flat roofs.

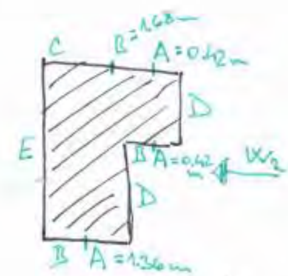
WIND DIRECTIONS AND PRESSURE COEFFICIENT

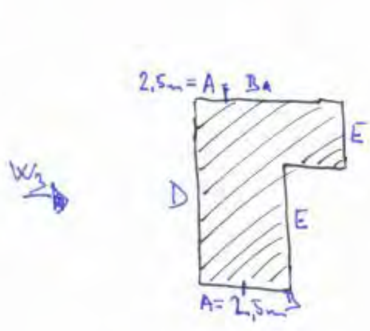


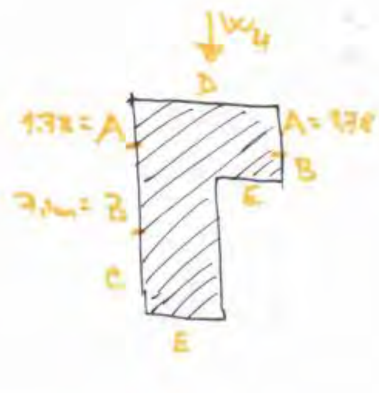
Pressure coefficients for walls :

WIND W1









C_{pe} coefficients for W1

Wind directon W1, left facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-0,98	-0,5	0,73	-0,36

Wind directon W1, right long facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,08	-0,5	0,75	-0,39

Wind directon W1, right short facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,19	-0,5	0,8	-0,57

C_{pe} coefficients for W2

Wind directon W2, left long facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,39	-0,5	0,8	-0,5

Wind directon W2, left short facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,22	-0,5	0,8	-0,56

Wind directon W2, right facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,16	-0,5	0,76	-0,42

C_{pe} coefficients for W3

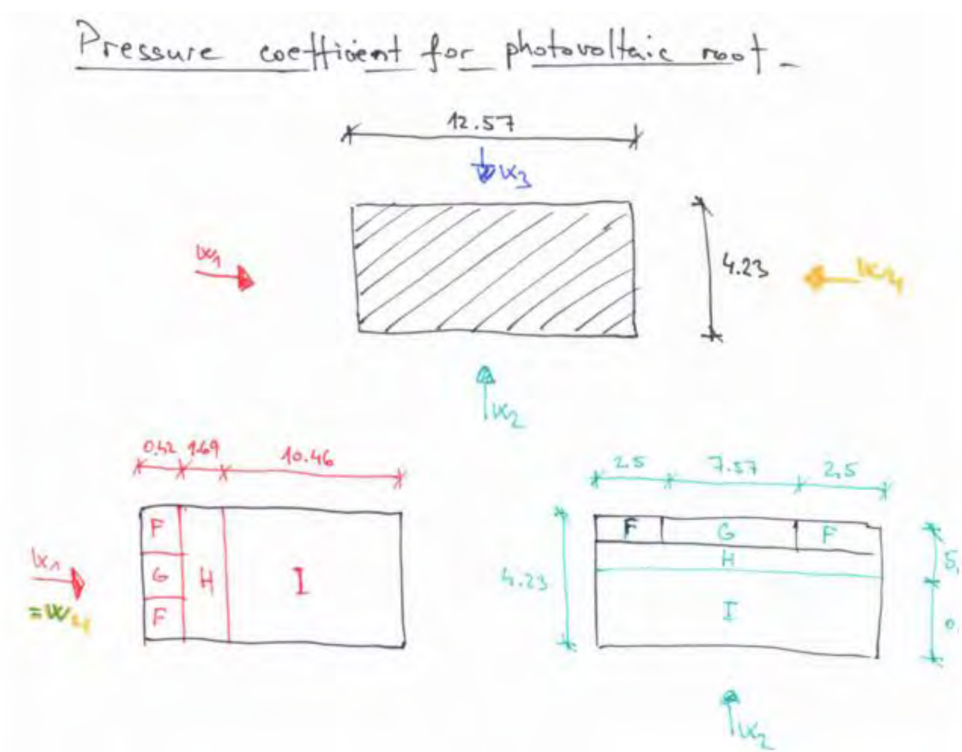
Wind directon W3, right facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,39	-0,5	0,8	-0,5

Wind directon W3, left facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,16	-0,5	0,76	-0,42

C_{pe} coefficients for W4

Wind directon W4, right facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-0,98	-0,5	0,73	-0,36

Wind directon W4, left facade- External pressure coefficients					
zone	A	B	C	D	E
$C_{pe,10}$	-1,2	-1,19	-0,5	0,8	-0,57



Wind directon W1 - External pressure coefficients				
zone	F	G	H	I
$C_{pe,10}$	-1,4	-0,9	-0,7	-0,2

1.04 LOAD COMBINATIONS

A. Ultimate limit states (ULS)

To satisfy the ultimate limit state, the structure must not collapse when subjected to the peak of loads for which it was designed. The failure mechanisms that must be checked are bending, shear, compression/tension and buckling for elements of the structural system. For the whole structure sliding, uplift and lateral stability are checked. The load combination in Ultimate limit state is:

$$\gamma_G . G_k \oplus \gamma_Q . Q_k \oplus \sum_{i>1} \gamma_{Q,i} . \psi_{0,i} \, Q_{k,i}$$

γ_G is a partial safety factor for dead loads, it's value depends on the nature of the effect caused by the dead loads.

γ_G = 1,35 for generally negative effects

γ_G = 1,00 for generally positive effects

γ_Q is a partial safety factor for variable loads, it's value depends on the nature of the effect caused by the variable load (e.g. wind loads, live load).

γ_Q = 1,50 for generally negative effects

γ_Q = 1,00 for generally positive effects

ψ_o is a factor for a combination of variable loads. Its purpose is to take in account the improbability that all variable loads will peak at the same time.

ψ_o = 0,7 for live loads

ψ_o = 0,5 for snow loads

ψ_o = 0,6 for wind loads

Note that $\oplus$ is not an algebraic summation because the load can be different in nature an occurrence.

This method, prescribed by the Eurocode 1990, is based on a probability of failure of 1/1000 during a lifetime of 100 years.

B. Serviceability limit states (SLS)

To satisfy the serviceability limit state criteria, a structure must remain functional for its intended use subject to routine (everyday) loading, and as such the structure must not cause occupant discomfort under routine conditions. This implies that the deformations must be limited to certain values.

The load combination in Serviceability limit state is:

$$G_k \oplus \gamma_Q . Q_k \oplus \sum_{i>1} \gamma_{Q,i} . \psi_{0,i} \, Q_{k,i}$$

$γ_Q$ is a partial safety factor for variable loads , the values are different than those used in ULS.

$γ_Q$ = 1,00 for generally negative effects

$γ_Q$ = 0,00 for generally positive effects

The combination factors are the same as those in Ultimate limit state.

C. Load groups and combinations

1. All load groups and calculations were automatically generated by additional RFEM modul RF COMBI. Results are in **APPENDIX A - Structural Calculations** of this document.

PART 2 - EARTHQUAKE DESIGN

2.01 Earthquake design was performed according to sd 2013 rules and ibc 2009 and asce 7. Earthquake design parameters are as follows:

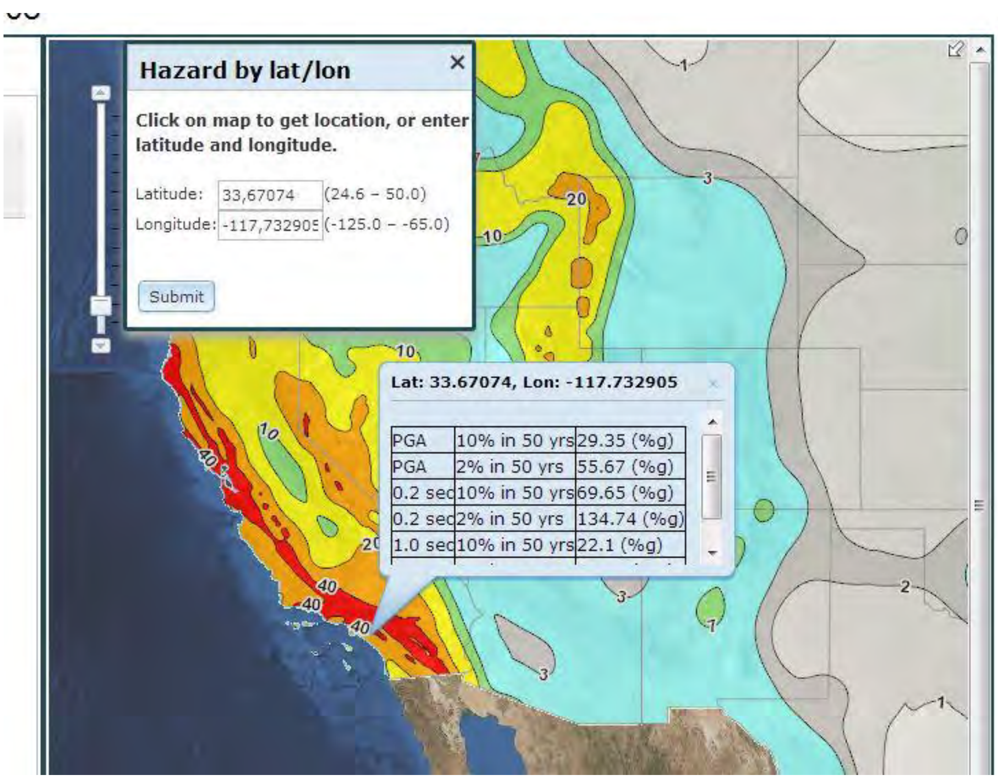


Figure 4.8: Interactive map of hazards for Competition site. (Source: http://earthquake.usgs.gov/hazards/apps/map/).

On the base of abovementioned data, all other coefficients for equivalent lateral loads calculation were obtained. Summary of these data is in figure 4.9 and 4.10.

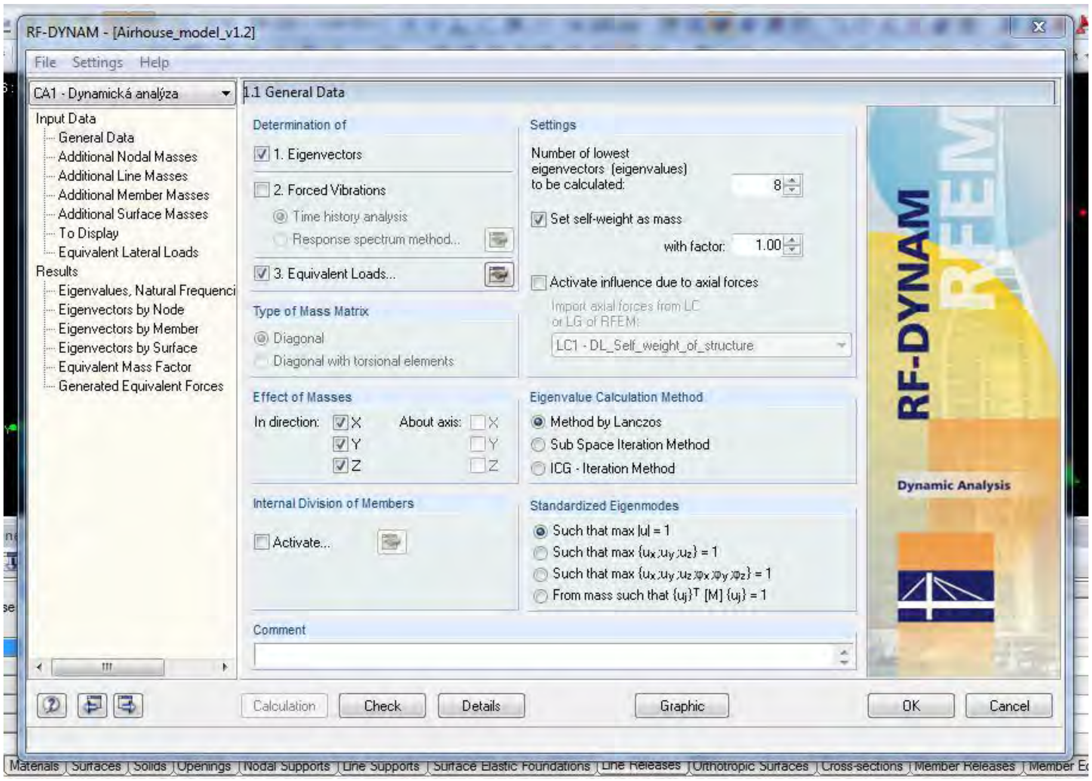


Figure 4.9: General data for dynamic analysis.

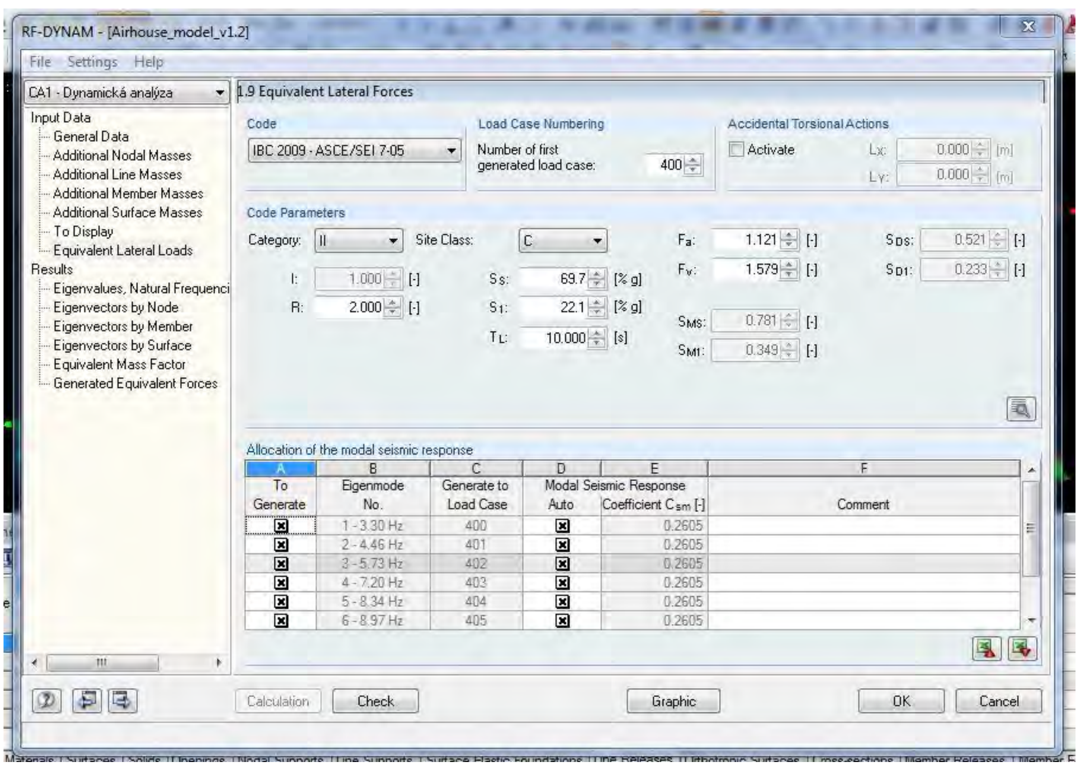


Figure 4.10: Equivalent lateral forces for earthquake analysis.

2.02 Lateral forces transmission

To satisfy the stability of structure, no uplift, slide or overturning must not appear. All forces have to be transmitted to supports by contact friction between substructure and an asphalt runway surface. Those forces, which are not transmitted via friction have to be transmitted with anchoring system (1 inch thick steel rods punched to drilled holes).

Lateral forces on canopy grid are transmitted to fixed supports above the CLT (cross laminated timber) building by tension rods (steel rods Ø20mm). Then all lateral forces are transmitted with CLT massive timber panels to steel substructure frame and with tension steel rods to glulam bottom grid of Canopy. Self-weight of all structure and lateral bracing between CLT building and Canopy grid where all lateral forces are concentrated is important part of structural design.

Some uplift and shear forces occur in some load combination situations. All these forces are transmitted with satisfactory reserves.

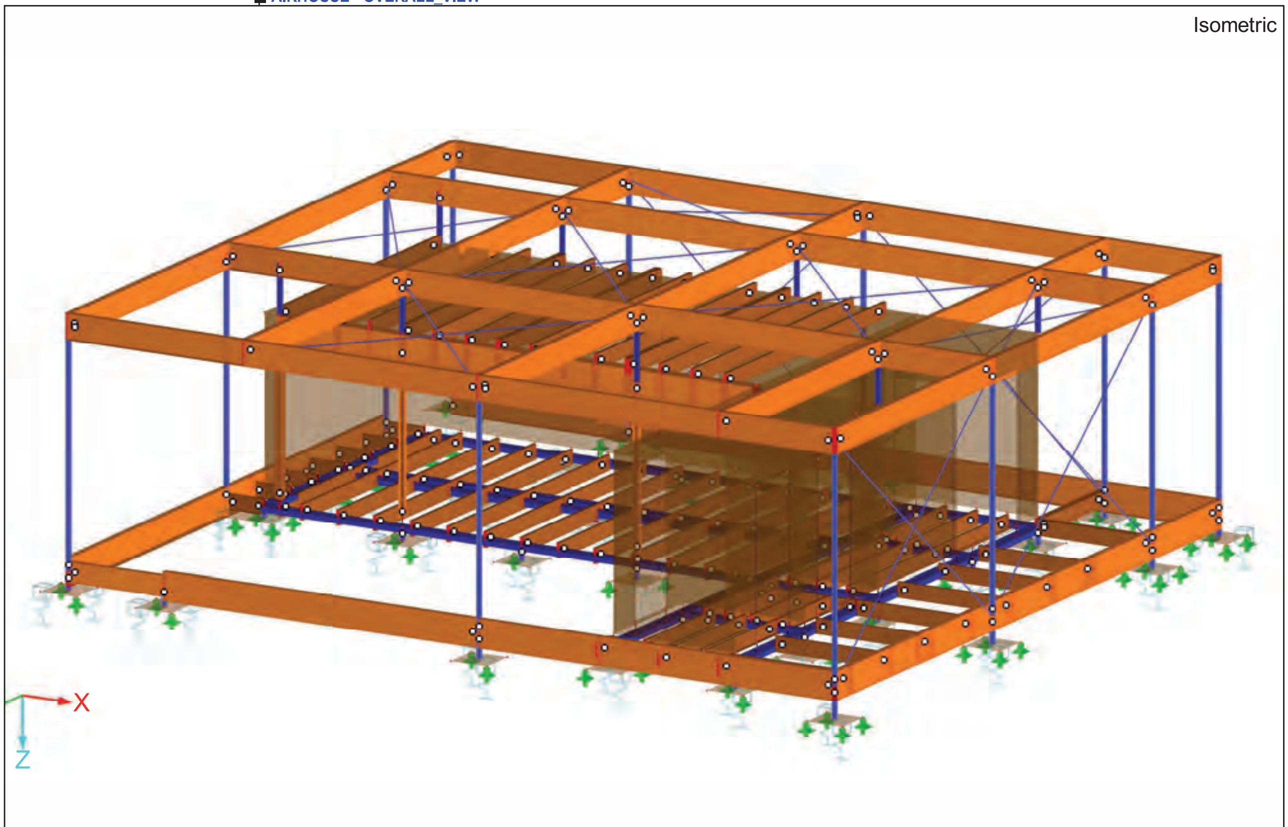
PART 3 - STRUCTURE PARTS

3.01 LATERAL FORCES TRANSMISSION

Structure model and calculations are divided to three independent parts:

- Overall model of building and Canopy.
- Model of 3D steel frame for technology.
- Steel ramps.

■ AIRHOUSE - OVERALL_VIEW



■ 1.1 MATERIALS

Material No.	Material Description	E-Modulus E [N/mm²]	G-Modulus G [N/mm²]	Poisson's R. μ [-]	Sp. Weight γ [kN/m³]	Coeff. Thermal α [1/°C]	Saf. Factor γM [-]
1	RF-LAMINATE CA1 Material Model - Isotropic... Specific material created by RF-LAMINATE module.	0.00	0.00	0.000	4.20	5.0000E-06	1.000
2	Steel S 235 | CSN EN 1993-1-1:2005-05 Material Model - Isotropic...	210000.00	81000.00	0.300	78.50	1.2000E-05	1.000
3	Poplar and Coniferous Timber C24 | CSN EN 1995-1-1:2010-05 Material Model - Isotropic...	11000.00	690.00	0.000	4.20	5.0000E-06	1.300
4	Glulam Timber GL24h | CSN EN 1995-1-1:2010-05 Material Model - Isotropic...	11600.00	720.00	0.000	3.70	5.0000E-06	1.250
5	Glulam Timber GL28c | CSN EN 1995-1-1:2010-05 Material Model - Isotropic...	12600.00	720.00	0.000	3.70	5.0000E-06	1.250
6	RF-LAMINATE CA2 Material Model - Isotropic... Specific material created by RF-LAMINATE module.	0.00	0.00	0.000	4.20	5.0000E-06	1.000
7	RF-LAMINATE CA3 Material Model - Isotropic... Specific material created by RF-LAMINATE module.	0.00	0.00	0.000	4.20	5.0000E-06	1.000
8	RF-LAMINATE CA4 Material Model - Isotropic... Specific material created by RF-LAMINATE module.	0.00	0.00	0.000	4.20	5.0000E-06	1.000
9	RF-LAMINATE CA5 Material Model - Isotropic... Specific material created by RF-LAMINATE module.	0.00	0.00	0.000	4.20	5.0000E-06	1.000
10	Steel S 355 | CSN EN 1993-1-1:2005-05 Material Model - Isotropic...	210000.00	81000.00	0.300	78.50	1.2000E-05	1.000
11	OSB (OSB/2 and OSB/3)	3800.00	1080.00	0.000	7.00	5.0000E-06	1.300

1.1 MATERIALS

Material No.	Material Description	E-Modulus E [N/mm²]	G-Modulus G [N/mm²]	Poisson's R. μ [-]	Sp. Weight γ [kN/m³]	Coeff. Thermal α [1/°C]	Saf. Factor γ_M [-]
11	(> 18 - 25 mm) | DIN 1052:2008-12 Material Model - Isotropic...	3800.00	1080.00	0.000	7.00	5.0000E-06	1.300
12	Material 8.8 (threaded rod) | Material Model - Isotropic... User Defined Material	210000.00	81000.00	0.300	78.50	1.2000E-05	1.250
13	Steel S 235 | CSN EN 1993-1-1:2005-05 Material Model - Isotropic...	210000.00	81000.00	0.300	78.50	1.2000E-05	1.000
14	Glulam Timber GL24h | CSN EN 1995-1-1:2010-05 Material Model - Isotropic...	11600.00	720.00	0.000	3.70	5.0000E-06	1.250
15	Material 8.8 (threaded rod) | Material Model - Isotropic... User Defined Material	210000.00	81000.00	0.300	78.50	1.2000E-05	1.250

1.2 SURFACES

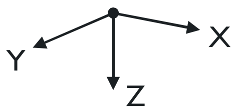
Surface No.	Surface type	Boundary Line No.	Mater. No.	Thickness Type	Thickness d [mm]	Excentr. e_z [mm]	Integrated Objects No. Nodes	Lines	Openings
1	Plane	1,390,392,394,396, 8,9,15,3,234,316, 228,226,224,222,4	1		80.0	0.0			
2	Plane	5,398,400,402,6-8	1		80.0	0.0			
3	Plane	10,405,407,409, 411,415,11,74,12, 249,250,248,318, 238,244,243,17,19, 6	1		80.0	0.0			
4	Plane	14,242,230,236,15- 17	1		80.0	0.0			
5	Plane	20,383,381,379, 377,375,21,22,576, 506,573,4	1		80.0	0.0			
7	Plane	26,167,418,420,27, 28,74,11	1		80.0	0.0			
8	Plane	30,565,54,566,48, 443,514,512,33, 434,430,31,32,39, 191,49,55,27	1		80.0	0.0		42,44, 104	1-3
9	Plane	31,34-36,449,447, 445	1		80.0	0.0			
10	Plane	72,76,38,476,516, 35,40	1		80.0	0.0			4
11	Plane	41,453,455,60,457, 459,463,461,42,43, 62,72,76	1		80.0	0.0		57	
14	Plane	56-59	1		80.0	0.0			
15	Plane	64-67	1		80.0	0.0			
17	Plane	34,32,39,191,49,55, 28,479,78,508,77, 73,40	1		80.0	0.0		43,58, 62-64, 101, 103, 105, 489,493	
18	Plane	98,511,99,440,438, 102,100,106,101, 103	1		80.0	0.0		65	
19	Plane	104-107	1		80.0	0.0			
20	Plane	478,484,479,74,11, 481	1		80.0	0.0			
21	Plane	72,73,77,508,78, 484,485,532,534	1		80.0	0.0		46,98, 253	
22	Plane	21,23,251,344,25	1		80.0	0.0			
23	Plane	44,489,63,493,46, 253,533,47,466, 468,71,61,470,472	1		80.0	0.0		59,67	
24	Plane	25,819-833,77,508,	11	Constant	37.0	0.0		221,	

1.2 SURFACES

Surface No.	Surface type	Boundary Line No.	Mater. No.	Thickness Type	d [mm]	Excentr. e_z [mm]	Integrated Objects No. Nodes	Lines	Openings
24	Plane	78,479,12,249,250, 248,318,238,244, 243,14,242,230, 236,3,234,316,228, 226,224,222,573, 506,576,22	11	Constant	37.0	0.0		223, 225, 227, 229, 231, 233, 235, 237, 239-241, 245-247, 521,528	4
25	Plane	840-843	14	Constant	80.0	0.0	410		
26	Plane	844-847	14	Constant	80.0	0.0	417		
27	Plane	848-851	14	Constant	80.0	0.0	422		
28	Plane	852-855	14	Constant	80.0	0.0	432		
29	Plane	856-859	14	Constant	80.0	0.0	437		
30	Plane	860-863	14	Constant	80.0	0.0	516		
31	Plane	864-867	14	Constant	80.0	0.0	521		
32	Plane	868-871	14	Constant	80.0	0.0	526		
33	Plane	872-875	14	Constant	80.0	0.0	479		
34	Plane	876-879	14	Constant	80.0	0.0	511		
35	Plane	880-883	14	Constant	80.0	0.0	374		
36	Plane	884-887	14	Constant	80.0	0.0	373		
37	Plane	888-891	14	Constant	80.0	0.0	506		
38	Plane	892-895	14	Constant	80.0	0.0	501		
39	Plane	896-899	14	Constant	80.0	0.0	372		
40	Plane	900-903	14	Constant	80.0	0.0	371		
41	Plane	904-907	14	Constant	80.0	0.0	370		
42	Plane	908-911	14	Constant	80.0	0.0	404		
43	Plane	912-915	14	Constant	80.0	0.0	399		
44	Plane	916-919	14	Constant	80.0	0.0	457		
45	Plane	920-923	14	Constant	80.0	0.0	456		
46	Plane	924-927	14	Constant	80.0	0.0	485		
47	Plane	928-931	14	Constant	80.0	0.0	490		
48	Plane	932-935	14	Constant	80.0	0.0	495		
51	Plane	944-947	14	Constant	80.0	0.0	442,446		
52	Plane	948-951	14	Constant	80.0	0.0	471		
53	Plane	952-955	14	Constant	80.0	0.0	451		
54	Plane	956-959	14	Constant	80.0	0.0	531,532		
55	Plane	960-963	14	Constant	80.0	0.0	533,534		
56	Plane	964-967	14	Constant	80.0	0.0	535,536		
57	Plane	968-971	14	Constant	80.0	0.0	500, 537,538		
58	Plane	972,982,940,974, 983,975	14	Constant	80.0	0.0	576, 577,596		
59	Plane	976,977,980,978, 979,981	14	Constant	80.0	0.0	477,481		

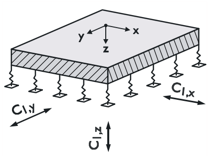
1.6 OPENINGS

Opening No.	Boundary Lines No.	In Surface No.	Area A [m^2]
1	79,95,80-82	8	4.110
2	83-86	8	2.102
3	87-90	8	2.101
4	91-94	10	2.101



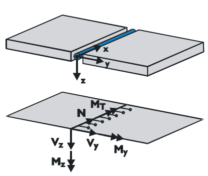
1.3 NODAL SUPPORTS

Support No.	Nodes No.	Rotation [°] Sequen.	about X	about Y	about Z	Column In Z	Support Conditions uX'	uY'	uZ'	φX'	φY'	φZ'
1	375,376,381-384, 389-392,395-398, 400-403,405-408, 411,413,414,416, 418-421,423-426, 433-436,439,441, 443,445,448,449, 454,455,460,461, 467,468,472,473, 476,478,480,482-484,486,487,492, 498,499,502-505, 507,508,514,515, 517,518,522,523, 527,528,612,618-620	XYZ	0.00	0.00	0.00	☐	☒	☒	☒	☐	☐	☐



1.9 SURFACE ELASTIC FOUNDATIONS

Found. No.	On Surfaces No.	Automatic with RF-SOILIN	$C_{1,x}$ [kN/m³]	$C_{1,y}$ [kN/m³]	$C_{1,z}$ [kN/m³]	$C_{2,x}$ [kN/m]	$C_{2,y}$ [kN/m]	Foundation Inefectivity
1	25-48,51-59	☐	0.000	0.000	100000.	0.000	0.000	Tension



1.5 LINE RELEASES

Release No.	Line No.	Surface No.	Side	Axial/Shear Release [kN/m²] N	V_y	V_z	Moment Release [kNm/rad/m] M_T	M_y	M_z
1	12	24	-	☐	☐	☐	☒	☐	☐
2	14	24	-	☐	☐	☐	☒	☐	☐
3	22	24	-	☐	☐	☐	☒	☐	☐
4	25	24	-	☐	☐	☐	☒	☐	☐
5	77	24	-	☐	☐	☐	☒	☐	☐
6	78	24	-	☐	☐	☐	☒	☐	☐
7	224	24	-	☐	☐	☐	☒	☐	☐
8	226	24	-	☐	☐	☐	☒	☐	☐
9	228	24	-	☐	☐	☐	☒	☐	☐
10	230	24	-	☐	☐	☐	☒	☐	☐
11	234	24	-	☐	☐	☐	☒	☐	☐
12	236	24	-	☐	☐	☐	☒	☐	☐
13	238	24	-	☐	☐	☐	☒	☐	☐
14	242	24	-	☐	☐	☐	☒	☐	☐
15	243	24	-	☐	☐	☐	☒	☐	☐
16	244	24	-	☐	☐	☐	☒	☐	☐
17	248	24	-	☐	☐	☐	☒	☐	☐
18	249	24	-	☐	☐	☐	☒	☐	☐
19	250	24	-	☐	☐	☐	☒	☐	☐
20	316	24	-	☐	☐	☐	☒	☐	☐
21	318	24	-	☐	☐	☐	☒	☐	☐
22	479	24	-	☐	☐	☐	☒	☐	☐
23	506	24	-	☐	☐	☐	☒	☐	☐
24	508	24	-	☐	☐	☐	☒	☐	☐
25	573	24	-	☐	☐	☐	☒	☐	☐
26	576	24	-	☐	☐	☐	☒	☐	☐

1.12.1 ORTHOTROPIC SURFACES - COEFFICIENTS

Surface No.	Bending Component Symbol	Value	Unit	Membrane Component Symbol	Value	Unit
1	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m

1.12.1 ORTHOTROPIC SURFACES - COEFFICIENTS

Surface No.	Bending Component Symbol	Value	Unit	Membrane Component Symbol	Value	Unit
1	D_{44}	12273.565	kN/m	D_{88}	55200.000	kN/m
	D_{55}	17250.000	kN/m			
2	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
3	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
4	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
5	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
7	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
8	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
9	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
10	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
11	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m

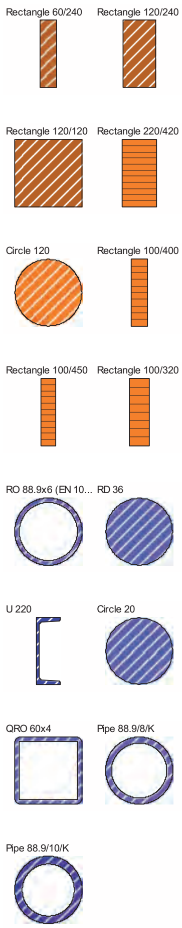
■ 1.12.1 ORTHOTROPIC SURFACES - COEFFICIENTS

Surface	Bending Component			Membrane Component		
No.	Symbol	Value	Unit	Symbol	Value	Unit
11	D_{44}	12273.565	kN/m	D_{88}	55200.000	kN/m
	D_{55}	17250.000	kN/m			
14	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
15	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
17	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
18	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
19	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
20	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
21	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
22	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m
	D_{44}	12273.565	kN/m			
	D_{55}	17250.000	kN/m			
23	D_{11}	22.904	kNm	D_{66}	242526.313	kN/m
	D_{22}	462.869	kNm	D_{77}	668299.188	kN/m
	D_{12}	3.162	kNm	D_{67}	5927.976	kN/m
	D_{33}	29.440	kNm	D_{88}	55200.000	kN/m

1.12.1 ORTHOTROPIC SURFACES - COEFFICIENTS

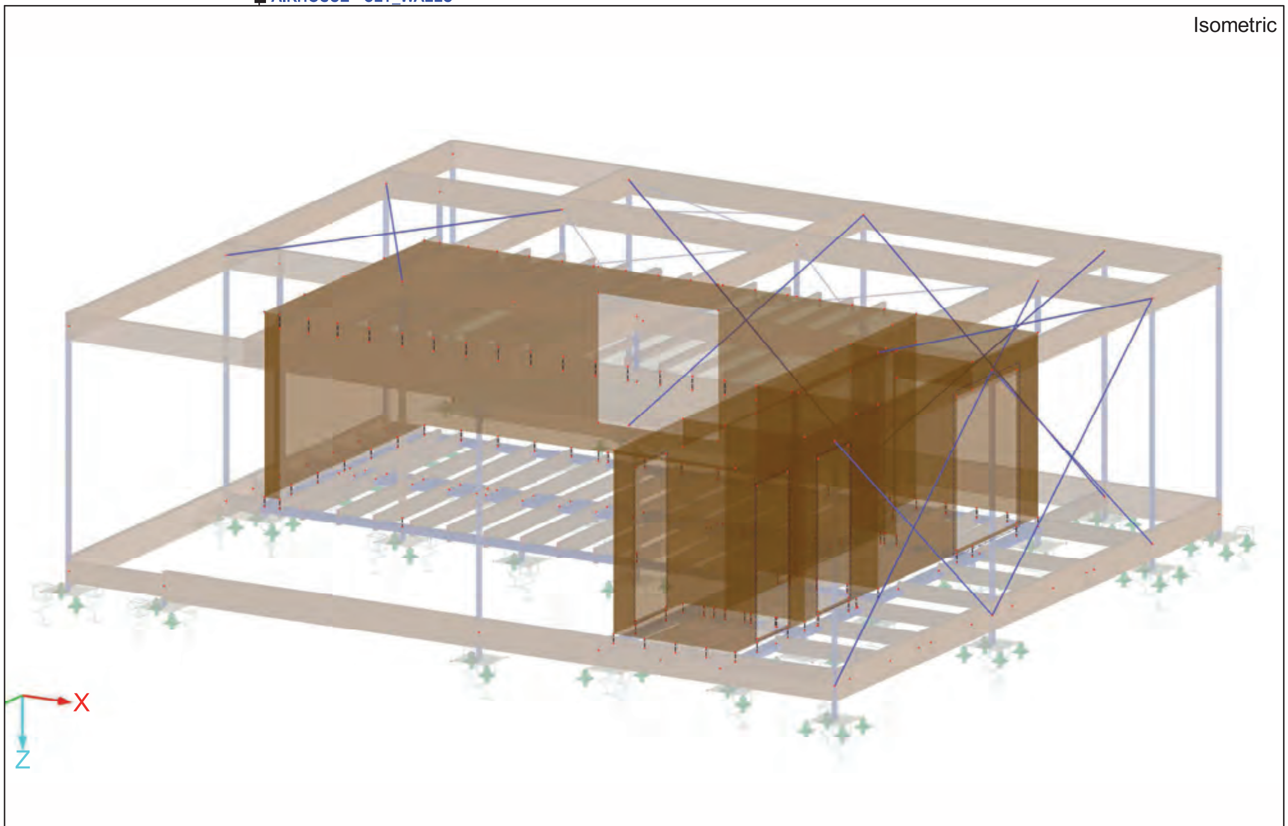
Surface No.	Bending Component Symbol	Bending Component Value	Bending Component Unit	Membrane Component Symbol	Membrane Component Value	Membrane Component Unit
23	D_{44} D_{55}	12273.565 17250.000	kN/m kN/m	D_{88}	55200.000	kN/m

1.6 CROSS-SECTIONS

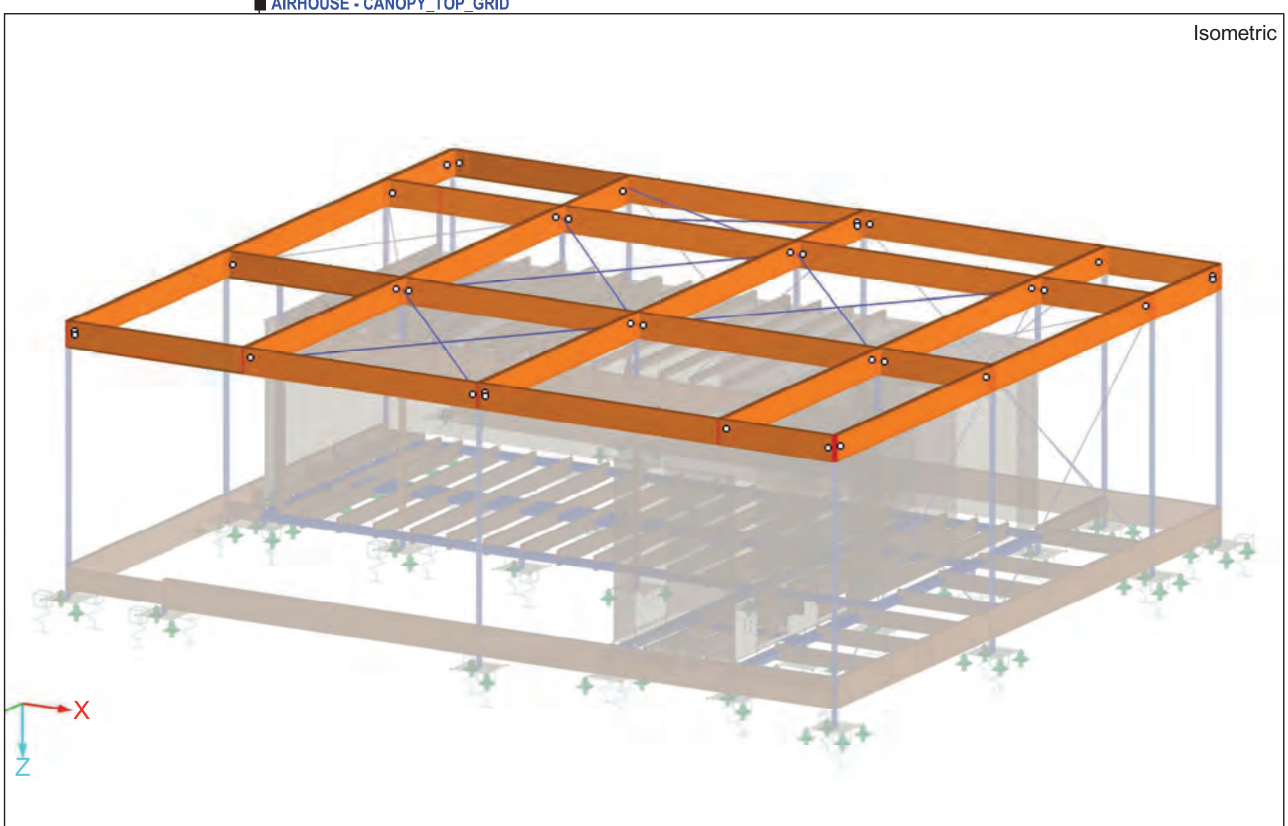


Section No.	Cross-section Description	Mater. No.	I_T [cm^4] A [cm^2]	I_y [cm^4] A_y [cm^2]	I_z [cm^4] A_z [cm^2]	Principal axis α [°]	Crossec. Rot. α' [°]
1	Rectangle 60/240	3	1455.93 144.00	6912.00 120.00	432.00 120.00	0.00	0.00
2	Rectangle 120/240	3	9491.90 288.00	13824.00 240.00	3456.00 240.00	0.00	0.00
3	Rectangle 120/120	3	2916.86 144.00	1728.00 120.00	1728.00 120.00	0.00	0.00
4	Rectangle 220/420	4	100183.91 924.00	135828.00 770.00	37268.00 770.00	0.00	0.00
5	Circle 120	5	2035.75 113.10	1017.88 95.85	1017.88 95.85	0.00	0.00
6	Rectangle 100/400	4	11234.01 400.00	53333.33 333.33	3333.33 333.33	0.00	0.00
8	Rectangle 100/450	4	12900.42 450.00	75937.50 375.00	3750.00 375.00	0.00	0.00
10	Rectangle 100/320	4	8568.32 320.00	27306.67 266.67	2666.67 266.67	0.00	0.00
17	RO 88.9x6 (EN 10219-2)	2	268.48 15.63	134.94 7.77	134.94 7.77	0.00	0.00
19	RD 36	12	16.49 10.20	8.24 8.57	8.24 8.57	0.00	0.00
20	U 220	10	16.00 37.40	2690.00 8.83	197.00 17.23	0.00	90.00
21	Circle 20	2	1.57 3.14	0.79 2.66	0.79 2.66	0.00	0.00
22	QRO 60x4	2	71.20 8.82	45.90 3.76	45.90 3.76	0.00	0.00
23	Pipe 88.9/8/K	2	340.26 20.33	167.97 10.15	167.97 10.15	0.00	0.00
24	Pipe 88.9/10/K	10	400.20 24.79	195.98 12.42	195.98 12.42	0.00	0.00
25	RD 36	15	16.49 10.20	8.24 8.57	8.24 8.57	0.00	0.00
26	Pipe 88.9/8/K	13	340.26 20.33	167.97 10.15	167.97 10.15	0.00	0.00

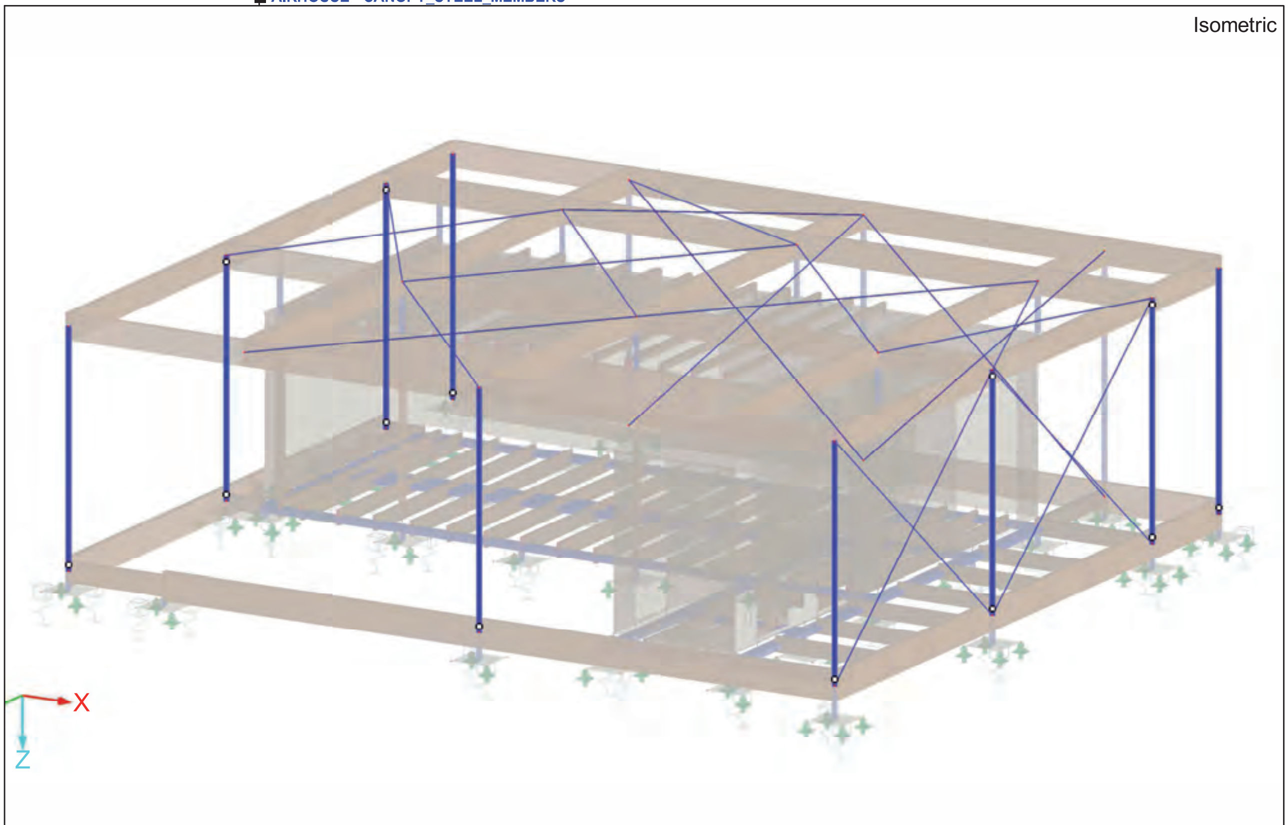
AIRHOUSE - CLT_WALLS



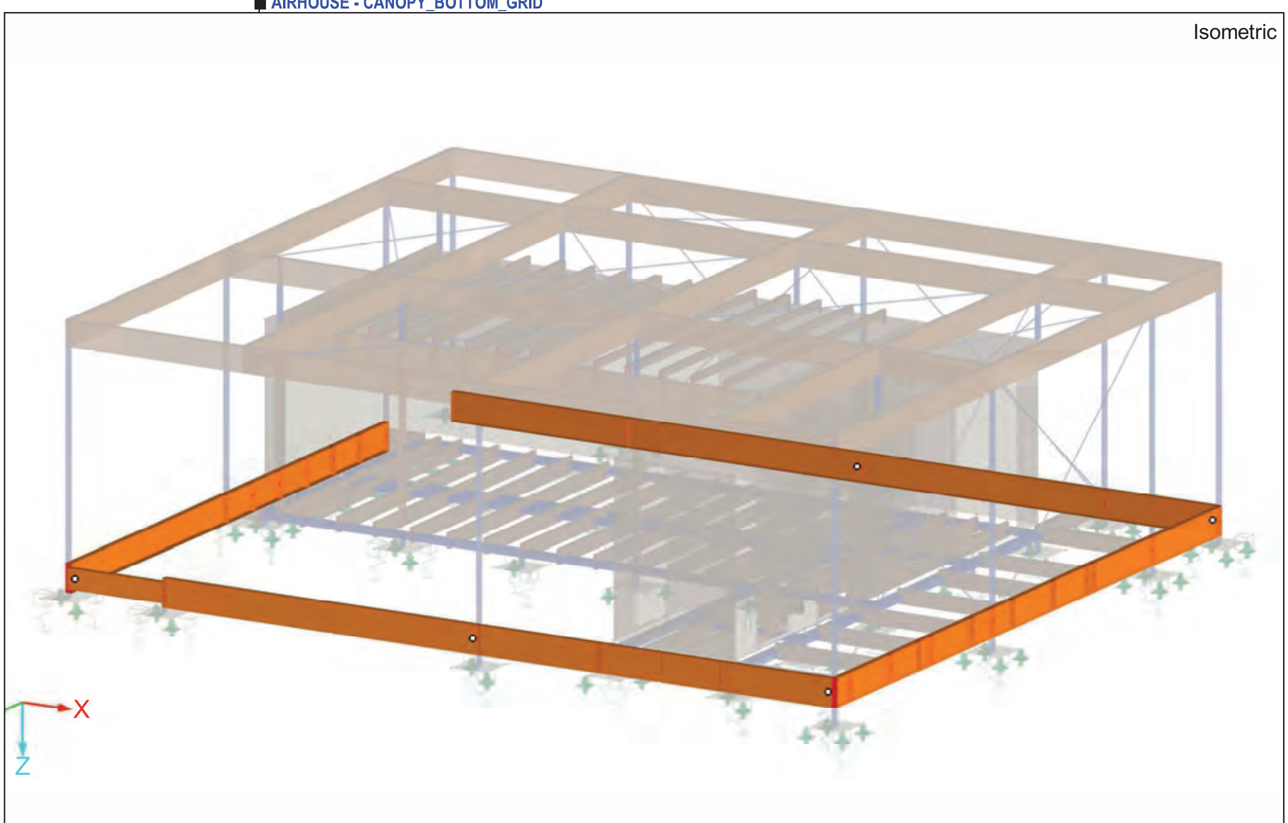
AIRHOUSE - CANOPY_TOP_GRID



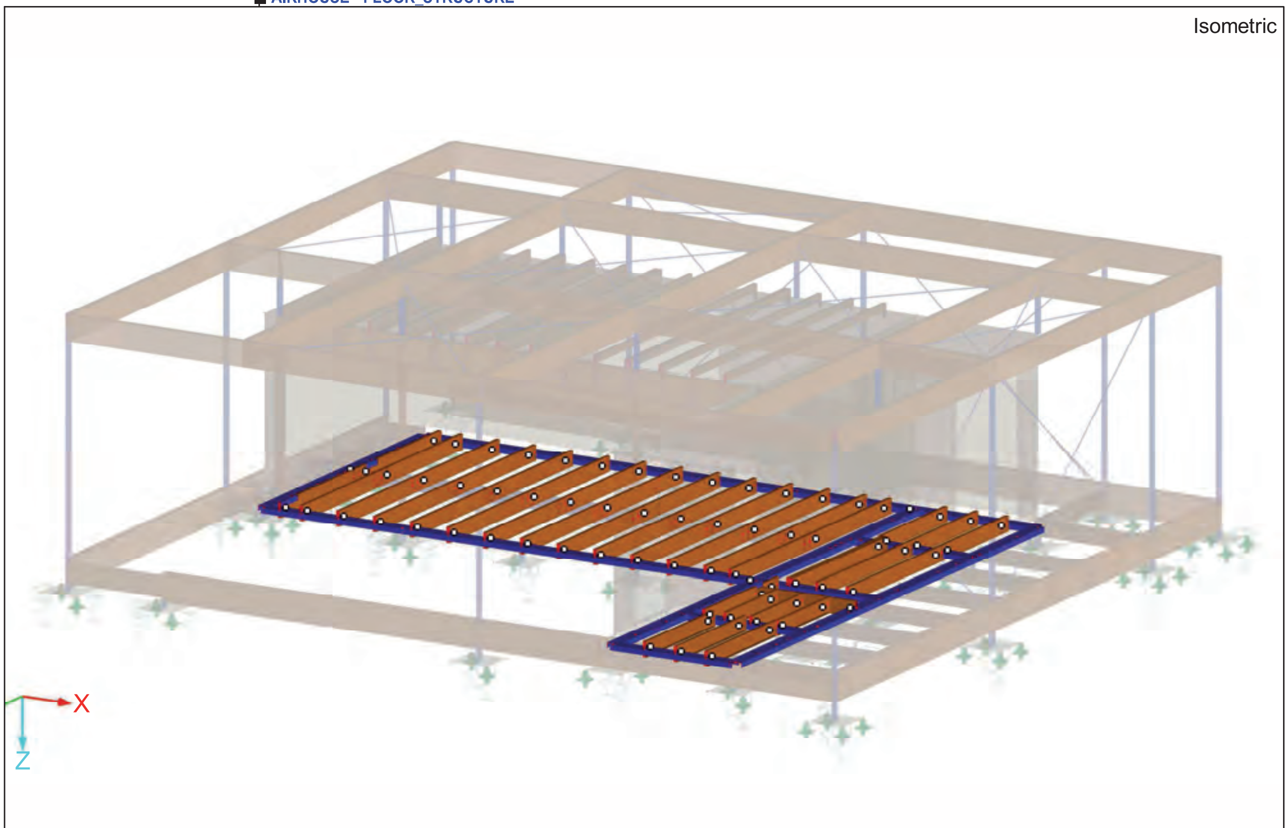
AIRHOUSE - CANOPY_STEEL_MEMBERS



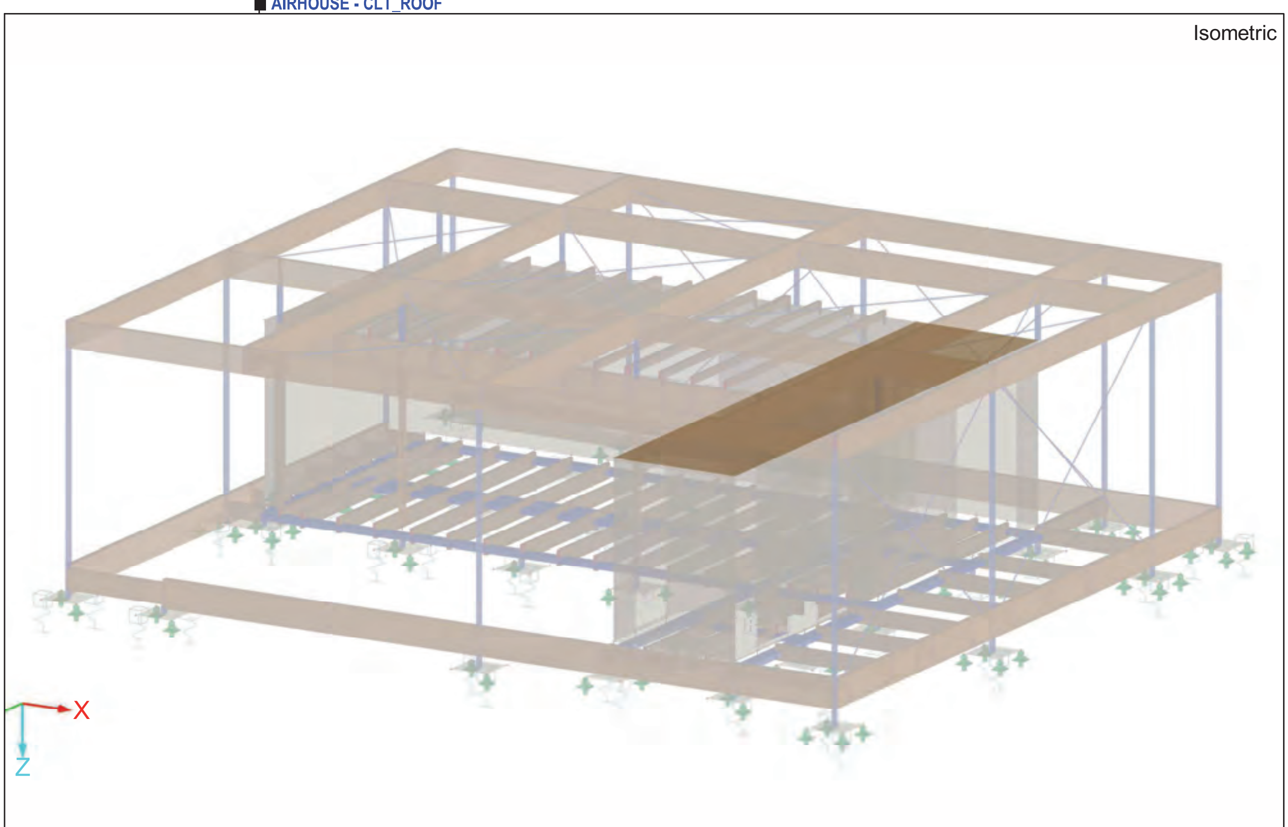
AIRHOUSE - CANOPY_BOTTOM_GRID



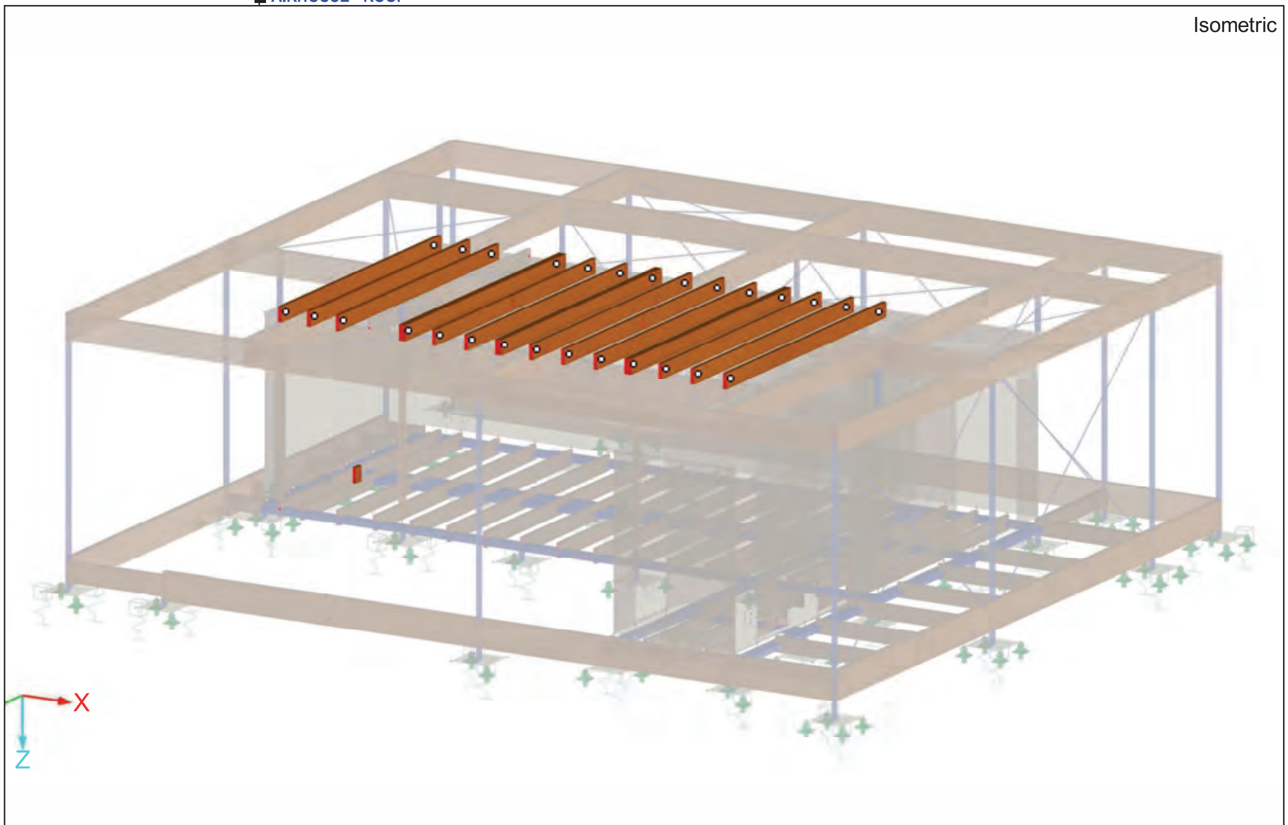
AIRHOUSE - FLOOR_STRUCTURE



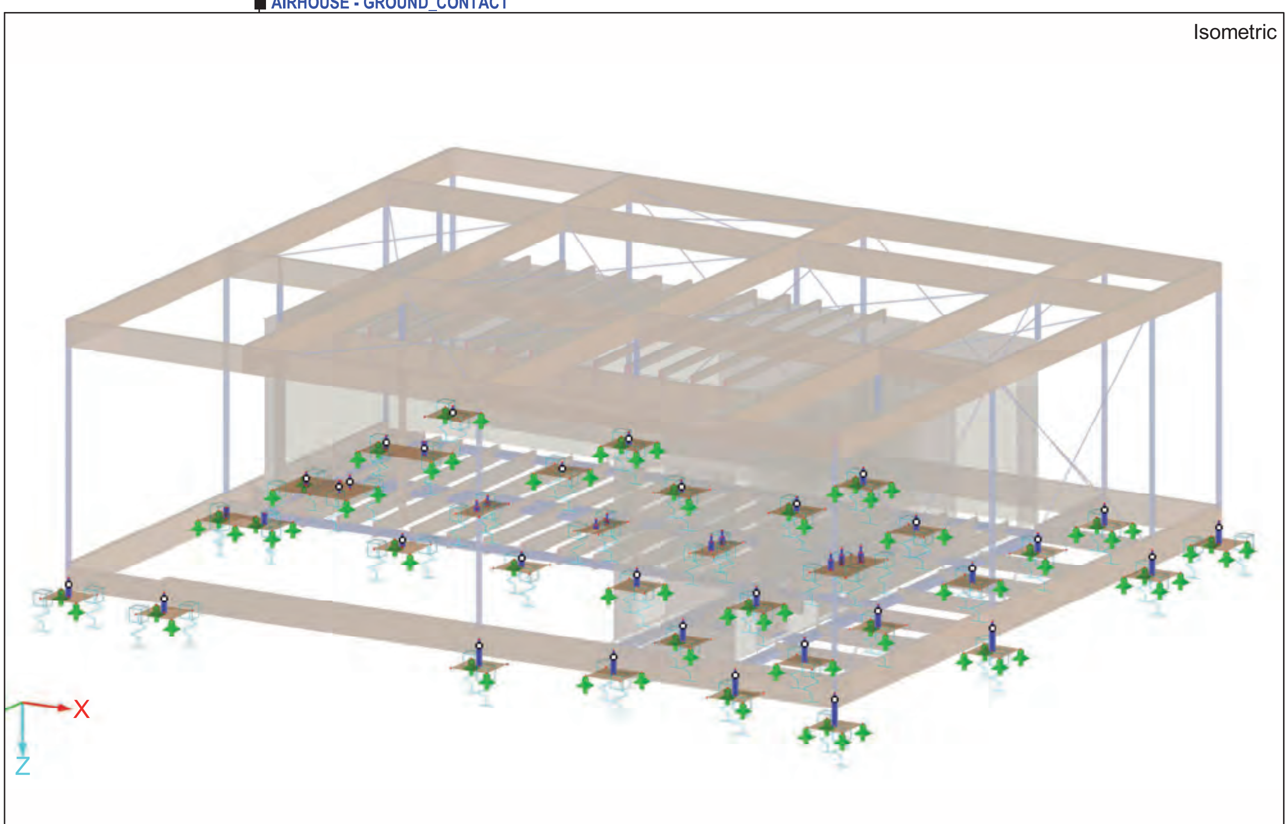
AIRHOUSE - CLT_ROOF



AIRHOUSE - ROOF



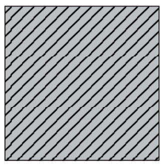
AIRHOUSE - GROUND_CONTACT



CROSS-SECTION DETAILS

Rectangle 120/120

Rectangle 120/120

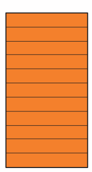


CROSS-SECTION VALUES Rectangle 120/120

Cross-section Value Description	Symbol	Value	Unit	
	b	120.0	mm	
	d	120.0	mm	
Cross-section area	A	144.00	cm^2	
Shear area	A_y	120.00	cm^2	
Shear area	A_z	120.00	cm^2	
Moment of inertia	I_y	1728.00	cm^4	
Moment of inertia	I_z	1728.00	cm^4	
Governing radius of gyration	r_y	34.6	mm	
Governing radius of gyration	r_z	34.6	mm	
Weight	wt	6.0	kg/m	
Surface	A_{Surf}	0.480	m^2/m	
Torsional constant	J	2916.86	cm^4	
Section modulus for torsion	W_t	359.42	cm^3	
Elastic section modulus	S_y	288.00	cm^3	
Elastic section modulus	S_z	288.00	cm^3	
Statical moment of area	Q_y	216.00	cm^3	
Statical moment of area	Q_z	216.00	cm^3	

Rectangle 220/420

Rectangle 220/420

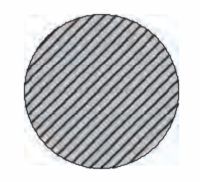


CROSS-SECTION VALUES Rectangle 220/420

Cross-section Value Description	Symbol	Value	Unit	
	b	220.0	mm	
	d	420.0	mm	
Cross-section area	A	924.00	cm^2	
Shear area	A_y	770.00	cm^2	
Shear area	A_z	770.00	cm^2	
Moment of inertia	I_y	135828.0	cm^4	
Moment of inertia	I_z	37268.00	cm^4	
Governing radius of gyration	r_y	121.2	mm	
Governing radius of gyration	r_z	63.5	mm	
Weight	wt	34.2	kg/m	
Surface	A_{Surf}	1.280	m^2/m	
Torsional constant	J	100184.0	cm^4	
Section modulus for torsion	W_t	4945.25	cm^3	
Elastic section modulus	S_y	6468.00	cm^3	
Elastic section modulus	S_z	3388.00	cm^3	
Statical moment of area	Q_y	4851.00	cm^3	
Statical moment of area	Q_z	2541.00	cm^3	

Circle 120

Circle 120

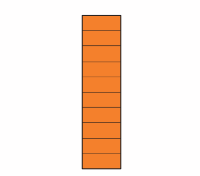


■ **CROSS-SECTION VALUES** — Circle 120

Cross-section Value Description	Symbol	Value	Unit
Diameter	D	120.0	mm
Cross-section area	A	113.10	cm^2
Shear area	A_y	95.85	cm^2
Moment of inertia	I_y	1017.88	cm^4
Moment of inertia	I_z	1017.88	cm^4
Governing radius of gyration	r_y	30.0	mm
Governing radius of gyration	r_z	30.0	mm
Weight	wt	4.2	kg/m
Surface	A_{Surf}	0.377	m^2/m
Torsional constant	J	2035.75	cm^4
Elastic section modulus	S_y	169.65	cm^3
Elastic section modulus	S_z	169.65	cm^3
Plastic section modulus	$Z_{y,max}$	288.00	cm^3
Statical moment of area	Q_y	144.00	cm^3
Statical moment of area	Q_z	144.00	cm^3

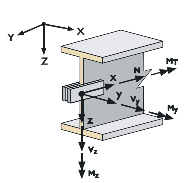
■ **Rectangle 100/400**

Rectangle 100/400



■ **CROSS-SECTION VALUES** — Rectangle 100/400

Cross-section Value Description	Symbol	Value	Unit
	b	100.0	mm
	d	400.0	mm
Cross-section area	A	400.00	cm^2
Shear area	A_y	333.33	cm^2
Shear area	A_z	333.33	cm^2
Moment of inertia	I_y	53333.30	cm^4
Moment of inertia	I_z	3333.33	cm^4
Governing radius of gyration	r_y	115.5	mm
Governing radius of gyration	r_z	28.9	mm
Weight	wt	14.8	kg/m
Surface	A_{Surf}	1.000	m^2/m
Torsional constant	J	11234.00	cm^4
Section modulus for torsion	W_t	1124.00	cm^3
Elastic section modulus	S_y	2666.67	cm^3
Elastic section modulus	S_z	666.67	cm^3
Statical moment of area	Q_y	2000.00	cm^3
Statical moment of area	Q_z	500.00	cm^3



■ **1.7 MEMBER RELEASES**

Release No.	Force Release or Spring [kN/m] N	Force Release or Spring [kN/m] V_y	Force Release or Spring [kN/m] V_z	Moment Release or Spring [kNm/rad] M_T	Moment Release or Spring [kNm/rad] M_y	Moment Release or Spring [kNm/rad] M_z	Comment
1	☐	☐	☐	☐	☒	☒	
2	☐	☐	☐	☒	☐	☒	
3	☐	☐	☐	☒	☒	☐	
4	☐	☐	☐	☐	☒	☐	
5	☐	☐	☐	☒	☒	☒	
6	☐	☐	☐	☒	☒	☒	
7	☐	☐	☐	☐	☐	☒	
8	☐	☐	☐	☒	☒	☒	
9	☐	☐	☐	☒	☒	☒	

■ **LOAD CASES**

LC No.	LC Description	LC Factor	Property of load case	Self-weight	Method of Analysis
1	SELF_WEIGH_OF_STRUCTURE	1.0000	Permanent	1.00	Linear
2	IMPOSED_INTERIOR LIVING SPACE+BOX	1.0000	Variable	-	Linear
3	IMPOSED_ROOF LIVING SPACE	1.0000	Variable	-	Linear
4	SNOW	1.0000	Variable	-	Linear
5	WIND_W1	1.0000	Variable	-	Linear
6	WIND_W2	1.0000	Variable	-	Linear
7	WIND_W3	1.0000	Variable	-	Linear
8	WIND_W4	1.0000	Variable	-	Linear
9	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 1 3.23 Hz	1.0000	Exceptional	-	Linear
10	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 2 6.00 Hz	1.0000	Exceptional	-	Linear
11	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 3 7.11 Hz	1.0000	Exceptional	-	Linear
12	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 4 7.61 Hz	1.0000	Exceptional	-	Linear
13	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 5 7.68 Hz	1.0000	Exceptional	-	Linear
14	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 6 7.97 Hz	1.0000	Exceptional	-	Linear
15	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 7 8.66 Hz	1.0000	Exceptional	-	Linear
16	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 8 8.93 Hz	1.0000	Exceptional	-	Linear
17	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 9 10.07 Hz	1.0000	Exceptional	-	Linear
18	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 10 - 10.41 Hz	1.0000	Exceptional	-	Linear
19	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 11 - 10.76 Hz	1.0000	Exceptional	-	Linear
20	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 12 - 11.77 Hz	1.0000	Exceptional	-	Linear
21	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 13 - 12.31 Hz	1.0000	Exceptional	-	Linear
22	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 14 - 14.64 Hz	1.0000	Exceptional	-	Linear
23	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 15 - 14.77 Hz	1.0000	Exceptional	-	Linear
24	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 16 - 14.83 Hz	1.0000	Exceptional	-	Linear
25	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 17 - 14.91 Hz	1.0000	Exceptional	-	Linear
26	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 18 - 15.37 Hz	1.0000	Exceptional	-	Linear
27	Equivalent lateral loads from RF-DYNAM, Eigenmode No. 19 - 16.46 Hz	1.0000	Exceptional	-	Linear
28	Equivalent lateral loads from RF-DYNAM, Eigenmode No.	1.0000	Exceptional	-	Linear

LOAD CASES

LC No.	LC Description	LC Factor	Property of load case	Self-weight	Method of Analysis
28	20 - 16.49 Hz	1.0000	Exceptional	-	Linear

LC1

SELF_WEIGH_OF_STRUCTURE

2.1 NODAL LOADS LC1

No.	On nodes No.	Force [kN] Px	Py	Pz	Moment [kNm] Mx	My	Mz
1	192,195,196,199 SOLAR	0.000	0.000	0.150	0.000	0.000	0.000

2.2 MEMBER LOADS LC1

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	146	Force	2 x 2 P	ZL	True Length	P	0.333	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
	LEFT EDGE BEAM - PART A1+A2								
2	Members	146	Force	n x P	ZL	True Length	P	0.213	kN
							n	2	
							A	3.640	m
							B	0.630	m
	EDGE LEFT BEAM - PART A3								
4	Members	156	Force	n x P	ZL	True Length	P	0.373	kN
							n	2	
							A	0.230	m
							B	1.470	m
	EDGE_LEFT_BEAM - PART A7								
5	Members	147	Force	2 x 2 P	ZL	True Length	P	0.773	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
	MIDDLE_LEFT_BEAM - PART x1+x2								
6	Members	147	Force	n x P	ZL	True Length	P	0.480	kN
							n	2	
							A	3.640	m
							B	0.630	m
8	Members	160	Force	2 x 2 P	ZL	True Length	P	0.640	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
9	Members	163	Force	n x P	ZL	True Length	P	0.160	kN
							n	2	
							A	3.660	m
							B	0.840	m
10	Members	151	Force	2 x 2 P	ZL	True Length	P	0.706	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
11	Members	151	Force	n x P	ZL	True Length	P	0.520	kN
							n	2	
							A	3.660	m
							B	0.840	m
12	Members	157	Force	n x P	ZL	True Length	P	0.830	kN
							n	2	
							A	0.230	m
							B	1.470	m
	EDGE_LEFT_BEAM - PART A7								
13	Members	158	Force	n x P	ZL	True Length	P	0.920	kN

2.2 MEMBER LOADS LC1

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
13	Members	158	Force	n x P	ZL	True Length	n	2	
							A	0.230	m
							B	1.470	m
	EDGE_LEFT_BEAM - PART A7								
14	Members	161	Force	n x P	ZL	True Length	P	0.720	kN
							n	2	
							A	0.230	m
							B	1.470	m
	EDGE_LEFT_BEAM - PART A7								
15	Members	164	Force	n x P	ZL	True Length	P	0.250	kN
							n	2	
							A	0.230	m
							B	1.470	m
	EDGE_LEFT_BEAM - PART A7								
16	Members	153	Force	2 x 2 P	ZL	True Length	P	0.853	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
	MIDDLE_LEFT_BEAM - PART x1+x2								
17	Members	153	Force	n x P	ZL	True Length	P	0.547	kN
							n	2	
							A	3.640	m
							B	0.630	m
18	Members	154	Force	2 x 2 P	ZL	True Length	P	0.853	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
19	Members	154	Force	n x P	ZL	True Length	P	0.640	kN
							n	2	
							A	3.660	m
							B	0.840	m
20	Members	162	Force	2 x 2 P	ZL	True Length	P	0.227	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
	LEFT EDGE BEAM - PART A1+A2								
21	Members	159	Force	2 x 2 P	ZL	True Length	P	0.640	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
	MIDDLE_LEFT_BEAM - PART x1+x2								
22	Members	162	Force	n x P	ZL	True Length	P	0.160	kN
							n	2	
							A	3.640	m
							B	0.630	m
	EDGE LEFT BEAM - PART A3								
23	Members	159	Force	n x P	ZL	True Length	P	0.440	kN
							n	2	
							A	3.640	m
							B	0.630	m
24	Members	160	Force	n x P	ZL	True Length	P	0.440	kN
							n	2	
							A	3.660	m
							B	0.840	m
25	Members	163	Force	2 x 2 P	ZL	True Length	P	0.227	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
26	Members	150	Force	2 x 2 P	ZL	True Length	P	0.333	kN

2.2 MEMBER LOADS LC1

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
26	Members	150	Force	2 x 2 P	ZL	True Length	X	0.280	kN
							A	1.260	m
							B	0.430	m
27	Members	151	Force	n x P	ZL	True Length	P	0.427	kN
							n	10	
							A	0.000	m
							B	0.523	m
	PV_PANELS								
28	Members	154	Force	n x P	ZL	True Length	P	0.547	kN
							n	10	
							A	0.000	m
							B	0.523	m
	PV_PANELS								
29	Members	160	Force	n x P	ZL	True Length	P	0.280	kN
							n	10	
							A	0.000	m
							B	0.523	m
	PV_PANELS								
30	Members	150	Force	n x P	ZL	True Length	P	0.213	kN
							n	2	
							A	3.660	m
							B	0.840	m
31	Members	150	Force	n x P	ZL	True Length	P	0.213	kN
							n	10	
							A	0.000	m
							B	0.523	m
	PV_PANELS								
123	Members	1,4,6,7,12,17, 22,27,32,37,42, 47,52,57,62,67, 72,73,89,91,95, 107,108,119, 121,123,259-262,286,295, 297,300-302, 304,328,330, 337-339,346, 433,437,440, 443,446	Force	Uniform	ZL	True Length	p	1.620	kN/m
124	Members	181,183,192, 210,224	Force	Uniform	ZL	True Length	p	0.760	kN/m
125	Members	182,195,213, 222,223,345, 435,438,441, 444,447	Force	Uniform	ZL	True Length	p	0.900	kN/m
126	Members	11,16,21,26,31, 36,41,46,51,61, 66,71,258,270, 272	Force	Uniform	ZL	True Length	p	0.170	kN/m
127	Members	160,163	Force	n x P	ZL	True Length	P	0.150	kN
							n	2	
							A	1.200	m
							B	2.310	m
128	Members	108,295,446	Force	Uniform	ZL	True Length	p	1.200	kN/m
129	Members	1	Force	Uniform	ZL	True Length	p	0.115	kN/m
	From area load p: 0.990 kN/m^2 (direction: 'ZL')								
130	Members	2	Force	Uniform	ZL	True Length	p	0.419	kN/m
	From area load p: 0.990 kN/m^2 (direction: 'ZL')								
131	Members	3	Force	Uniform	ZL	True Length	p	0.155	kN/m

2.2 MEMBER LOADS LC1

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
	From area load p: 0.990 kN/m² (direction: 'ZL')								
132	Members	4	Force	Uniform	ZL	True Length	p	0.071	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
133	Members	5,361	Force	Uniform	ZL	True Length	p	0.327	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
134	Members	6,7,259	Force	Uniform	ZL	True Length	p	0.115	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
135	Members	640,641	Force	Uniform	ZL	True Length	p	0.186	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
136	Members	8	Force	Uniform	ZL	True Length	p	0.396	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
137	Members	9	Force	Uniform	ZL	True Length	p	0.189	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
138	Members	10	Force	Uniform	ZL	True Length	p	0.189	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
139	Members	11,21,22,27,36, 61	Force	Uniform	ZL	True Length	p	0.241	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
140	Members	12,16,17,26,31, 32,37,41,42,46, 47,51,52,62, 272,330	Force	Uniform	ZL	True Length	p	0.241	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
141	Members	13	Force	Uniform	ZL	True Length	p	0.482	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
142	Members	14,19,24,29,34, 39,44,49,54,59, 359,395,398, 402-405,588	Force	Uniform	ZL	True Length	p	0.210	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
143	Members	15,20	Force	Uniform	ZL	True Length	p	0.210	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
144	Members	586,642	Force	Uniform	ZL	True Length	p	0.346	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
145	Members	443	Force	Uniform	ZL	True Length	p	0.218	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
146	Members	18,23,25,28,30, 33,35,38,40,43, 45,48,50,53,58, 202,360,369, 585	Force	Uniform	ZL	True Length	p	0.482	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
147	Members	440	Force	Uniform	ZL	True Length	p	0.218	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
148	Members	437	Force	Uniform	ZL	True Length	p	0.231	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
149	Members	433	Force	Uniform	ZL	True Length	p	0.180	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
150	Members	391,394	Force	Uniform	ZL	True Length	p	0.277	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
151	Members	390,393	Force	Uniform	ZL	True Length	p	0.264	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
152	Members	374,385	Force	Uniform	ZL	True Length	p	0.346	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
153	Members	371,381	Force	Uniform	ZL	True Length	p	0.239	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
154	Members	362	Force	Uniform	ZL	True Length	p	0.419	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
155	Members	358	Force	Uniform	ZL	True Length	p	0.432	kN/m

2.2 MEMBER LOADS

LC1

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
	From area load p: 0.990 kN/m² (direction: 'ZL')								
156	Members	346	Force	Uniform	ZL	True Length	p	0.197	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
157	Members	339	Force	Uniform	ZL	True Length	p	0.115	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
158	Members	338	Force	Uniform	ZL	True Length	p	0.071	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
159	Members	335	Force	Uniform	ZL	True Length	p	0.397	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
160	Members	331	Force	Uniform	ZL	True Length	p	0.207	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
161	Members	329	Force	Uniform	ZL	True Length	p	0.207	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
162	Members	304	Force	Uniform	ZL	True Length	p	0.197	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
163	Members	302	Force	Uniform	ZL	True Length	p	0.197	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
164	Members	297	Force	Uniform	ZL	True Length	p	0.180	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
165	Members	296	Force	Uniform	ZL	True Length	p	0.155	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
166	Members	295	Force	Uniform	ZL	True Length	p	0.218	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
167	Members	270,328,337	Force	Uniform	ZL	True Length	p	0.241	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
168	Members	261,262	Force	Uniform	ZL	True Length	p	0.115	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
169	Members	260	Force	Uniform	ZL	True Length	p	0.115	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
170	Members	258,301	Force	Uniform	ZL	True Length	p	0.155	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
171	Members	201	Force	Uniform	ZL	True Length	p	0.396	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
172	Members	149,299,383, 392,401	Force	Uniform	ZL	True Length	p	0.346	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
173	Members	128,370	Force	Uniform	ZL	True Length	p	0.270	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
174	Members	124	Force	Uniform	ZL	True Length	p	0.438	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
175	Members	122	Force	Uniform	ZL	True Length	p	0.401	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
176	Members	121,123	Force	Uniform	ZL	True Length	p	0.203	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
177	Members	120	Force	Uniform	ZL	True Length	p	0.407	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
178	Members	119	Force	Uniform	ZL	True Length	p	0.203	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
179	Members	118	Force	Uniform	ZL	True Length	p	0.407	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
180	Members	117	Force	Uniform	ZL	True Length	p	0.448	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
181	Members	116	Force	Uniform	ZL	True Length	p	0.421	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
182	Members	115	Force	Uniform	ZL	True Length	p	0.411	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
183	Members	55,63	Force	Uniform	ZL	True Length	p	0.415	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
184	Members	56,57	Force	Uniform	ZL	True Length	p	0.241	kN/m

■ 2.2 MEMBER LOADS LC1

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
	From area load p: 0.990 kN/m² (direction: 'ZL')								
185	Members	114	Force	Uniform	ZL	True Length	p	0.448	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
186	Members	113	Force	Uniform	ZL	True Length	p	0.421	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
187	Members	112	Force	Uniform	ZL	True Length	p	0.435	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
188	Members	60,68	Force	Uniform	ZL	True Length	p	0.359	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
189	Members	111	Force	Uniform	ZL	True Length	p	0.425	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
190	Members	110	Force	Uniform	ZL	True Length	p	0.397	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
191	Members	109	Force	Uniform	ZL	True Length	p	0.428	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
192	Members	64,406	Force	Uniform	ZL	True Length	p	0.195	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
193	Members	65,70,152,179, 372,373,377, 378,384,386- 389,396,397, 399,400	Force	Uniform	ZL	True Length	p	0.346	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
194	Members	66,67	Force	Uniform	ZL	True Length	p	0.175	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
195	Members	108	Force	Uniform	ZL	True Length	p	0.203	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
196	Members	107	Force	Uniform	ZL	True Length	p	0.218	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
197	Members	69,587	Force	Uniform	ZL	True Length	p	0.182	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
198	Members	106	Force	Uniform	ZL	True Length	p	0.410	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
199	Members	71,286	Force	Uniform	ZL	True Length	p	0.185	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
200	Members	72,446	Force	Uniform	ZL	True Length	p	0.203	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
201	Members	73	Force	Uniform	ZL	True Length	p	0.198	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
202	Members	74	Force	Uniform	ZL	True Length	p	0.432	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
203	Members	75,333	Force	Uniform	ZL	True Length	p	0.383	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
204	Members	76	Force	Uniform	ZL	True Length	p	0.386	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
205	Members	77	Force	Uniform	ZL	True Length	p	0.358	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
206	Members	78	Force	Uniform	ZL	True Length	p	0.207	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
207	Members	79	Force	Uniform	ZL	True Length	p	0.207	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
208	Members	80	Force	Uniform	ZL	True Length	p	0.414	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
209	Members	81	Force	Uniform	ZL	True Length	p	0.350	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
210	Members	82,85	Force	Uniform	ZL	True Length	p	0.207	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								
211	Members	83	Force	Uniform	ZL	True Length	p	0.414	kN/m
	From area load p: 0.990 kN/m² (direction: 'ZL')								

2.2 MEMBER LOADS

LC1

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
212	Members From area load p: 0.990 kN/m² (direction: 'ZL')	84	Force	Uniform	ZL	True Length	p	0.376	kN/m
213	Members From area load p: 0.990 kN/m² (direction: 'ZL')	105	Force	Uniform	ZL	True Length	p	0.377	kN/m
214	Members From area load p: 0.990 kN/m² (direction: 'ZL')	86	Force	Uniform	ZL	True Length	p	0.404	kN/m
215	Members From area load p: 0.990 kN/m² (direction: 'ZL')	87	Force	Uniform	ZL	True Length	p	0.366	kN/m
216	Members From area load p: 0.990 kN/m² (direction: 'ZL')	88	Force	Uniform	ZL	True Length	p	0.197	kN/m
217	Members From area load p: 0.990 kN/m² (direction: 'ZL')	89	Force	Uniform	ZL	True Length	p	0.197	kN/m
218	Members From area load p: 0.990 kN/m² (direction: 'ZL')	90	Force	Uniform	ZL	True Length	p	0.152	kN/m
219	Members From area load p: 0.990 kN/m² (direction: 'ZL')	91,300	Force	Uniform	ZL	True Length	p	0.180	kN/m
220	Members From area load p: 0.990 kN/m² (direction: 'ZL')	92	Force	Uniform	ZL	True Length	p	0.295	kN/m
221	Members From area load p: 0.990 kN/m² (direction: 'ZL')	93	Force	Uniform	ZL	True Length	p	0.465	kN/m
222	Members From area load p: 0.990 kN/m² (direction: 'ZL')	94	Force	Uniform	ZL	True Length	p	0.350	kN/m
223	Members From area load p: 0.990 kN/m² (direction: 'ZL')	95	Force	Uniform	ZL	True Length	p	0.231	kN/m
224	Members From area load p: 0.990 kN/m² (direction: 'ZL')	96	Force	Uniform	ZL	True Length	p	0.382	kN/m
225	Members From area load p: 0.990 kN/m² (direction: 'ZL')	97	Force	Uniform	ZL	True Length	p	0.374	kN/m
226	Members From area load p: 0.990 kN/m² (direction: 'ZL')	98	Force	Uniform	ZL	True Length	p	0.312	kN/m
227	Members From area load p: 0.990 kN/m² (direction: 'ZL')	99	Force	Uniform	ZL	True Length	p	0.376	kN/m
228	Members From area load p: 0.990 kN/m² (direction: 'ZL')	100	Force	Uniform	ZL	True Length	p	0.400	kN/m
229	Members From area load p: 0.990 kN/m² (direction: 'ZL')	101	Force	Uniform	ZL	True Length	p	0.338	kN/m
230	Members From area load p: 0.990 kN/m² (direction: 'ZL')	102	Force	Uniform	ZL	True Length	p	0.376	kN/m
231	Members From area load p: 0.990 kN/m² (direction: 'ZL')	103	Force	Uniform	ZL	True Length	p	0.400	kN/m
232	Members From area load p: 0.990 kN/m² (direction: 'ZL')	104	Force	Uniform	ZL	True Length	p	0.349	kN/m
335	Members From area load p: 1.180 kN/m² (direction: 'ZL')	125	Force	Uniform	ZL	True Length	p	0.289	kN/m
336	Members From area load p: 1.180 kN/m² (direction: 'ZL')	126	Force	Uniform	ZL	True Length	p	0.578	kN/m
337	Members From area load p: 1.180 kN/m² (direction: 'ZL')	127	Force	Uniform	ZL	True Length	p	0.608	kN/m
338	Members From area load p: 1.180 kN/m² (direction: 'ZL')	129,136,137	Force	Uniform	ZL	True Length	p	0.649	kN/m
339	Members From area load p: 1.180 kN/m² (direction: 'ZL')	130	Force	Uniform	ZL	True Length	p	0.649	kN/m
340	Members From area load p: 1.180 kN/m² (direction: 'ZL')	131,212	Force	Uniform	ZL	True Length	p	0.640	kN/m
341	Members From area load p: 1.180 kN/m² (direction: 'ZL')	132,133	Force	Uniform	ZL	True Length	p	0.649	kN/m
342	Members From area load p: 1.180 kN/m² (direction: 'ZL')	382	Force	Uniform	ZL	True Length	p	0.652	kN/m
343	Members	134,135,138,	Force	Uniform	ZL	True Length	p	0.649	kN/m

2.2 MEMBER LOADS

LC1

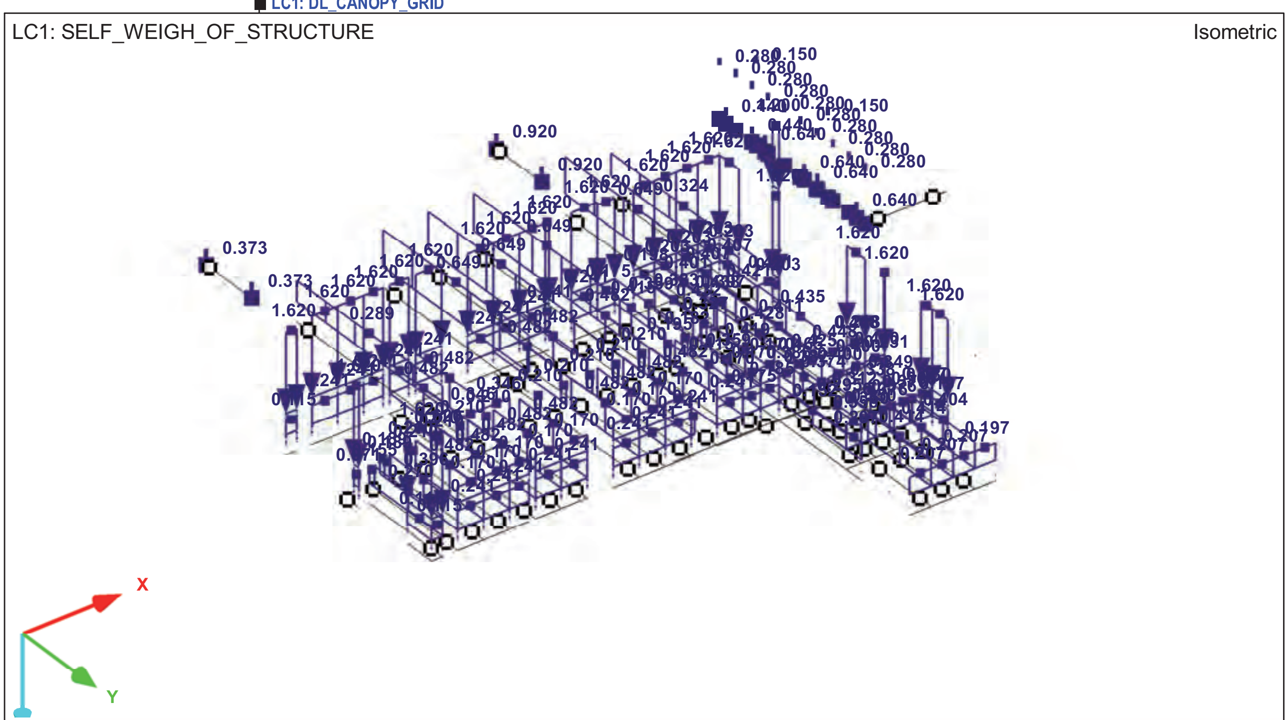
No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
343	Members	228	Force	Uniform	ZL	True Length	p	0.649	
	From area load p: 1.180 kN/m^2 (direction: 'ZL')								
344	Members	139	Force	Uniform	ZL	True Length	p	0.324	kN/m
	From area load p: 1.180 kN/m^2 (direction: 'ZL')								
352	Members	183	Force	Uniform	ZL	True Length	p	0.152	kN/m
	From area load p: 0.155 kN/m^2 (direction: 'ZL')								
353	Members	343	Force	Uniform	ZL	True Length	p	0.093	kN/m
	From area load p: 0.155 kN/m^2 (direction: 'ZL')								
354	Members	344,432,436, 439,442	Force	Uniform	ZL	True Length	p	0.186	kN/m
	From area load p: 0.155 kN/m^2 (direction: 'ZL')								
355	Members	347	Force	Uniform	ZL	True Length	p	0.286	kN/m
	From area load p: 0.155 kN/m^2 (direction: 'ZL')								
356	Members	445	Force	Uniform	ZL	True Length	p	0.226	kN/m
	From area load p: 0.155 kN/m^2 (direction: 'ZL')								

2.4 SURFACE LOADS

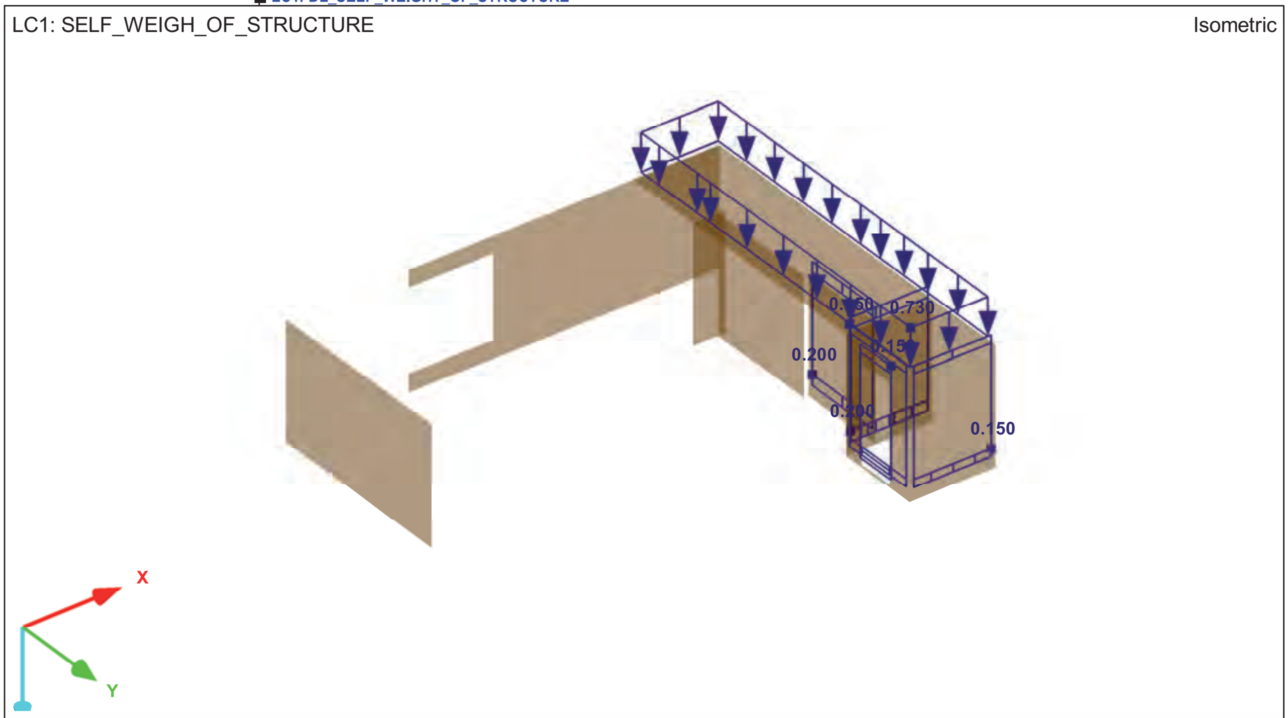
LC1

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	17	Force	Uniform	ZL	p_1	0.730	kN/m^2
2	9,10	Force	Uniform	ZL	p_1	0.150	kN/m^2
3	11,14	Force	Uniform	ZL	p_1	0.200	kN/m^2

LC1: DL_CANOPY_GRID



■ LC1: DL_SELF_WEIGHT_OF_STRUCTURE



LC2
IMPOSED_INTERIOR

■ 2.2 MEMBER LOADS

LC2

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	1	Force	Uniform	ZL	True Length	p	0.291	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
2	Members	2,362	Force	Uniform	ZL	True Length	p	1.058	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
3	Members	3	Force	Uniform	ZL	True Length	p	0.392	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
4	Members	4	Force	Uniform	ZL	True Length	p	0.179	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
5	Members	5,361	Force	Uniform	ZL	True Length	p	0.825	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
6	Members	6,261,262	Force	Uniform	ZL	True Length	p	0.291	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
7	Members	7,260	Force	Uniform	ZL	True Length	p	0.291	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
8	Members	8	Force	Uniform	ZL	True Length	p	0.999	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
9	Members	9	Force	Uniform	ZL	True Length	p	0.478	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
10	Members	10	Force	Uniform	ZL	True Length	p	0.478	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
11	Members	11,21,22,27,36,51,61	Force	Uniform	ZL	True Length	p	0.608	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
12	Members	12,16,17,26,31,32,37,41,42,46,47,52,62,272	Force	Uniform	ZL	True Length	p	0.608	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
13	Members	13	Force	Uniform	ZL	True Length	p	1.216	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
14	Members	14,19,24,29,34,39,44,49,54,59,	Force	Uniform	ZL	True Length	p	0.529	kN/m

LC2

IMPOSED_INTERIOR

■ 2.2 MEMBER LOADS LC2

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
14	Members	359,395,398, 402-405,588	Force	Uniform	ZL	True Length	p	0.529	
	From area load p: 2.500 kN/m² (direction: 'ZL')								
15	Members	15,20	Force	Uniform	ZL	True Length	p	0.529	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
16	Members	642	Force	Uniform	ZL	True Length	p	0.873	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
17	Members	641	Force	Uniform	ZL	True Length	p	0.470	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
18	Members	18,53,58	Force	Uniform	ZL	True Length	p	1.216	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
19	Members	640	Force	Uniform	ZL	True Length	p	0.470	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
20	Members	586	Force	Uniform	ZL	True Length	p	0.873	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
21	Members	443	Force	Uniform	ZL	True Length	p	0.549	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
22	Members	440	Force	Uniform	ZL	True Length	p	0.549	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
23	Members	23,25,28,30,33, 35,38,40,43,45, 48,50,202,360, 369,585	Force	Uniform	ZL	True Length	p	1.216	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
24	Members	437	Force	Uniform	ZL	True Length	p	0.582	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
25	Members	433	Force	Uniform	ZL	True Length	p	0.453	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
26	Members	391,394	Force	Uniform	ZL	True Length	p	0.701	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
27	Members	390,393	Force	Uniform	ZL	True Length	p	0.668	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
28	Members	374,385	Force	Uniform	ZL	True Length	p	0.873	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
29	Members	371,381	Force	Uniform	ZL	True Length	p	0.604	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
30	Members	358	Force	Uniform	ZL	True Length	p	1.091	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
31	Members	346	Force	Uniform	ZL	True Length	p	0.498	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
32	Members	339	Force	Uniform	ZL	True Length	p	0.291	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
33	Members	338	Force	Uniform	ZL	True Length	p	0.179	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
34	Members	335	Force	Uniform	ZL	True Length	p	1.003	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
35	Members	331	Force	Uniform	ZL	True Length	p	0.522	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
36	Members	330	Force	Uniform	ZL	True Length	p	0.608	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
37	Members	329	Force	Uniform	ZL	True Length	p	0.522	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
38	Members	304	Force	Uniform	ZL	True Length	p	0.498	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
39	Members	302	Force	Uniform	ZL	True Length	p	0.498	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
40	Members	300	Force	Uniform	ZL	True Length	p	0.453	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
41	Members	297	Force	Uniform	ZL	True Length	p	0.453	kN/m

LC2

IMPOSED_INTERIOR

2.2 MEMBER LOADS

LC2

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
	From area load p: 2.500 kN/m² (direction: 'ZL')								
42	Members	296	Force	Uniform	ZL	True Length	p	0.392	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
43	Members	295	Force	Uniform	ZL	True Length	p	0.549	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
44	Members	286	Force	Uniform	ZL	True Length	p	0.467	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
45	Members	270,328,337	Force	Uniform	ZL	True Length	p	0.608	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
46	Members	259	Force	Uniform	ZL	True Length	p	0.291	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
47	Members	258,301	Force	Uniform	ZL	True Length	p	0.391	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
48	Members	201	Force	Uniform	ZL	True Length	p	0.999	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
49	Members	149,299,383, 392,397,401	Force	Uniform	ZL	True Length	p	0.873	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
50	Members	128,370	Force	Uniform	ZL	True Length	p	0.682	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
51	Members	124	Force	Uniform	ZL	True Length	p	1.105	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
52	Members	122	Force	Uniform	ZL	True Length	p	1.013	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
53	Members	121,123	Force	Uniform	ZL	True Length	p	0.514	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
54	Members	120	Force	Uniform	ZL	True Length	p	1.027	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
55	Members	55	Force	Uniform	ZL	True Length	p	1.049	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
56	Members	56	Force	Uniform	ZL	True Length	p	0.608	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
57	Members	57	Force	Uniform	ZL	True Length	p	0.608	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
58	Members	119	Force	Uniform	ZL	True Length	p	0.514	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
59	Members	118	Force	Uniform	ZL	True Length	p	1.027	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
60	Members	60,68	Force	Uniform	ZL	True Length	p	0.907	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
61	Members	117	Force	Uniform	ZL	True Length	p	1.132	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
62	Members	116	Force	Uniform	ZL	True Length	p	1.063	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
63	Members	63	Force	Uniform	ZL	True Length	p	1.049	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
64	Members	64,406	Force	Uniform	ZL	True Length	p	0.492	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
65	Members	65,70,152,179, 372,373,377, 378,384,386- 389,396,399, 400	Force	Uniform	ZL	True Length	p	0.873	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
66	Members	66,67	Force	Uniform	ZL	True Length	p	0.441	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
67	Members	115	Force	Uniform	ZL	True Length	p	1.039	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
68	Members	114	Force	Uniform	ZL	True Length	p	1.132	kN/m

LC2

IMPOSED_INTERIOR

■ 2.2 MEMBER LOADS LC2

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
	From area load p: 2.500 kN/m² (direction: 'ZL')								
69	Members	69,587	Force	Uniform	ZL	True Length	p	0.461	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
70	Members	113	Force	Uniform	ZL	True Length	p	1.063	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
71	Members	71	Force	Uniform	ZL	True Length	p	0.467	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
72	Members	72,446	Force	Uniform	ZL	True Length	p	0.514	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
73	Members	73	Force	Uniform	ZL	True Length	p	0.500	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
74	Members	74	Force	Uniform	ZL	True Length	p	1.091	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
75	Members	75,333	Force	Uniform	ZL	True Length	p	0.966	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
76	Members	76	Force	Uniform	ZL	True Length	p	0.974	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
77	Members	77	Force	Uniform	ZL	True Length	p	0.905	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
78	Members	78	Force	Uniform	ZL	True Length	p	0.522	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
79	Members	79	Force	Uniform	ZL	True Length	p	0.522	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
80	Members	80	Force	Uniform	ZL	True Length	p	1.044	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
81	Members	81	Force	Uniform	ZL	True Length	p	0.884	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
82	Members	82,85	Force	Uniform	ZL	True Length	p	0.522	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
83	Members	83	Force	Uniform	ZL	True Length	p	1.044	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
84	Members	84	Force	Uniform	ZL	True Length	p	0.949	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
85	Members	112	Force	Uniform	ZL	True Length	p	1.099	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
86	Members	86	Force	Uniform	ZL	True Length	p	1.020	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
87	Members	87	Force	Uniform	ZL	True Length	p	0.925	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
88	Members	88	Force	Uniform	ZL	True Length	p	0.498	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
89	Members	89	Force	Uniform	ZL	True Length	p	0.498	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
90	Members	90	Force	Uniform	ZL	True Length	p	0.383	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
91	Members	91	Force	Uniform	ZL	True Length	p	0.453	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
92	Members	92	Force	Uniform	ZL	True Length	p	0.745	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
93	Members	93	Force	Uniform	ZL	True Length	p	1.174	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
94	Members	94	Force	Uniform	ZL	True Length	p	0.884	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
95	Members	95	Force	Uniform	ZL	True Length	p	0.582	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
96	Members	96	Force	Uniform	ZL	True Length	p	0.965	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								
97	Members	97	Force	Uniform	ZL	True Length	p	0.944	kN/m
	From area load p: 2.500 kN/m² (direction: 'ZL')								

LC2

IMPOSED_INTERIOR

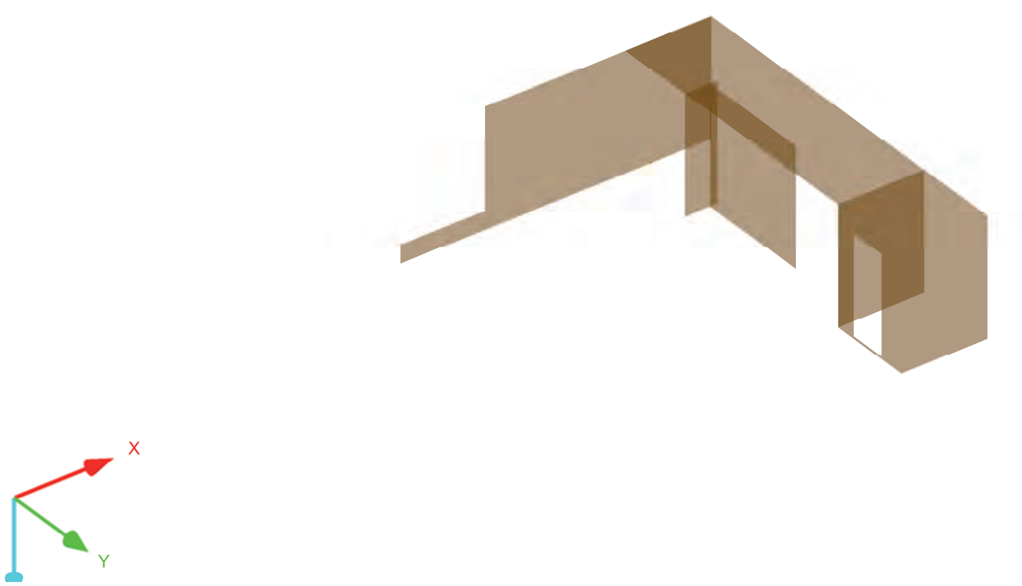
■ 2.2 MEMBER LOADS LC2

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
98	Members	98	Force	Uniform	ZL	True Length	p	0.788	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
99	Members	99	Force	Uniform	ZL	True Length	p	0.949	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
100	Members	100	Force	Uniform	ZL	True Length	p	1.009	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
101	Members	101	Force	Uniform	ZL	True Length	p	0.854	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
102	Members	102	Force	Uniform	ZL	True Length	p	0.949	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
103	Members	103	Force	Uniform	ZL	True Length	p	1.009	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
104	Members	104	Force	Uniform	ZL	True Length	p	0.880	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
105	Members	105	Force	Uniform	ZL	True Length	p	0.952	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
106	Members	106	Force	Uniform	ZL	True Length	p	1.036	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
107	Members	107	Force	Uniform	ZL	True Length	p	0.549	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
108	Members	108	Force	Uniform	ZL	True Length	p	0.514	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
109	Members	109	Force	Uniform	ZL	True Length	p	1.081	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
110	Members	110	Force	Uniform	ZL	True Length	p	1.003	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								
111	Members	111	Force	Uniform	ZL	True Length	p	1.072	kN/m
	From area load p: 2.500 kN/m^2 (direction: 'ZL')								

■ **LC2: LL_CLT_BUILDING**

LC2: IMPOSED_INTERIOR

Isometric



LC3
IMPOSED_ROOF

2.2 MEMBER LOADS

LC3

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	125	Force	Uniform	ZL	True Length	p	0.184	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
2	Members	126	Force	Uniform	ZL	True Length	p	0.368	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
3	Members	127	Force	Uniform	ZL	True Length	p	0.386	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
4	Members	129,130	Force	Uniform	ZL	True Length	p	0.413	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
5	Members	382	Force	Uniform	ZL	True Length	p	0.414	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
6	Members	131,212	Force	Uniform	ZL	True Length	p	0.407	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
7	Members	132	Force	Uniform	ZL	True Length	p	0.412	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
8	Members	133-135,138, 228	Force	Uniform	ZL	True Length	p	0.412	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
9	Members	139	Force	Uniform	ZL	True Length	p	0.206	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								
10	Members	136,137	Force	Uniform	ZL	True Length	p	0.413	kN/m
	From area load p: 0.750 kN/m² (direction: 'ZL')								

2.4 SURFACE LOADS

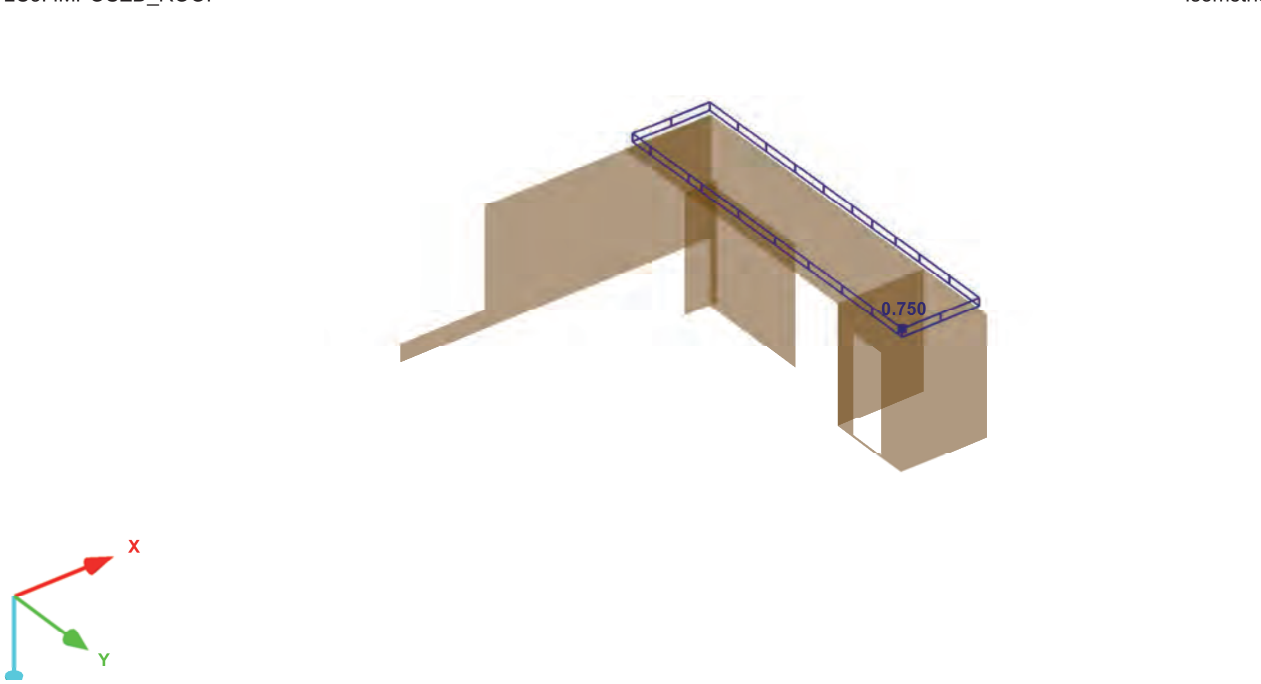
LC3

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	17	Force	Uniform	ZL	p_1	0.750	kN/m²

LC3: LL_CLT_BUILDING

LC3: IMPOSED_ROOF

Isometric



LC4
SNOW

2.2 MEMBER LOADS LC4

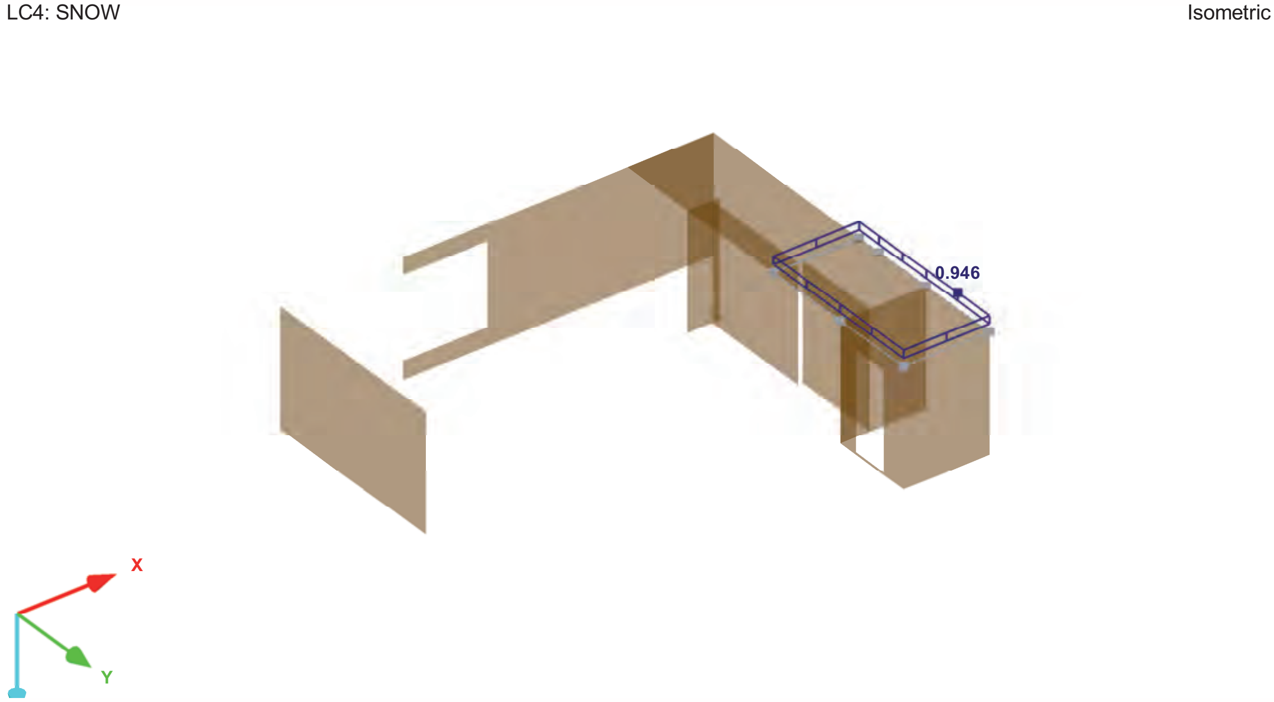
No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	160	Force	n x P	ZL	True Length	P	0.780	kN
							n	10	
							A	0.000	m
	PV_PANELS						B	0.523	m
3	Members	151	Force	n x P	ZL	True Length	P	1.190	kN
							n	10	
							A	0.000	m
	PV_PANELS						B	0.523	m
4	Members	154	Force	n x P	ZL	True Length	P	1.539	kN
							n	10	
							A	0.000	m
	PV_PANELS						B	0.523	m

2.8 FREE RECTANGULAR LOADS LC4

No.	On Surfaces No.	Projection	Load Distribution	Load Direction	Magnitude Symbol	Value	Unit	Load Position X [m]	Y [m]	Z [m]
1	17	XY	Uniform	ZL	p	0.946	kN/m²	10.440	8.920	
	SNOW_BOX							8.370	4.710	

LC4: LL_CLT_BUILDING

LC4: SNOW Isometric



LC5
WIND_W1

2.2 MEMBER LOADS LC5

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	146,150,156	Force	Uniform	XL	True Length	p	0.571	kN/m
2	Members	177,188,211,	Force	Uniform	XL	True Length	p	0.614	kN/m

LC5

WIND_W1

2.2 MEMBER LOADS

LC5

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
2	Members	449,451,650, 652	Force	Uniform	XL	True Length	p	0.614	
3	Members	181,183,210, 224	Force	Uniform	XL	True Length	p	0.116	kN/m
4	Members	147,151,153, 154,157-164	Force	Uniform	XL	True Length	p	0.571	kN/m
5	Members	155,174-176	Force	Uniform	XL	True Length	p	0.116	kN/m
6	Members	125	Force	Uniform	ZL	True Length	p	-0.132	kN/m
	From area load p: -0.540 kN/m² (direction: 'ZL')								
7	Members	126	Force	Uniform	ZL	True Length	p	-0.265	kN/m
	From area load p: -0.540 kN/m² (direction: 'ZL')								
8	Members	127	Force	Uniform	ZL	True Length	p	-0.278	kN/m
	From area load p: -0.540 kN/m² (direction: 'ZL')								
9	Members	130	Force	Uniform	ZL	True Length	p	-0.153	kN/m
	From area load p: -0.540 kN/m² (direction: 'ZL')								
10	Members	382	Force	Uniform	ZL	True Length	p	-0.298	kN/m
	From area load p: -0.540 kN/m² (direction: 'ZL')								
11	Members	129,136,137	Force	Uniform	ZL	True Length	p	-0.085	kN/m
	From area load p: -0.155 kN/m² (direction: 'ZL')								
12	Members	130	Force	Uniform	ZL	True Length	p	-0.041	kN/m
	From area load p: -0.155 kN/m² (direction: 'ZL')								
13	Members	131,212	Force	Uniform	ZL	True Length	p	-0.084	kN/m
	From area load p: -0.155 kN/m² (direction: 'ZL')								
14	Members	132,134,135, 138,228	Force	Uniform	ZL	True Length	p	-0.085	kN/m
	From area load p: -0.155 kN/m² (direction: 'ZL')								
15	Members	133	Force	Uniform	ZL	True Length	p	-0.085	kN/m
	From area load p: -0.155 kN/m² (direction: 'ZL')								
16	Members	139	Force	Uniform	ZL	True Length	p	-0.126	kN/m
	From area load p: -0.155 kN/m² (direction: 'ZL')								

2.3 LINE LOADS

LC5

No.	Reference to	On Lines No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit	Comment
3	Lines	22	Force	Varying	ZL	x_1	0.000	m	
						p_1	-1.390	kN/m	
						x_2	1.1775	m	
						p_2	-1.390	kN/m	
						$A_{(x1)}$	0.000	m	
						$B_{(x2)}$	1.1775	m	
4	Lines	506	Force	Varying	ZL	x_1	0.000	m	
						p_1	-0.926	kN/m	
						x_2	1.1775	m	
						p_2	-0.926	kN/m	
						$A_{(x1)}$	0.000	m	
						$B_{(x2)}$	1.1775	m	
5	Lines	573	Force	Varying	ZL	x_1	0.000	m	
						p_1	-0.926	kN/m	
						x_2	.007499	m	
						p_2	-0.926	kN/m	
						x_3	.007499	m	
						p_3	-1.390	kN/m	
						x_4	1.1775	m	
						p_4	-1.390	kN/m	
						$A_{(x1)}$	0.000	m	
						$B_{(x4)}$	1.1775	m	
6	Lines	576	Force	Varying	ZL	x_1	0.000	m	
						p_1	-1.390	kN/m	

2.3 LINE LOADS

LC5

No.	Reference to	On Lines No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit	Comment
6	Lines	576	Force	Varying	ZL	x_2	.002499	m	
						p_2	-1.390	kN/m	
						x_3	.002499	m	
						p_3	-0.926	kN/m	
						x_4	1.1775	m	
						p_4	-0.926	kN/m	
						$A_{(x1)}$	0.000	m	
						$B_{(x4)}$	1.1775	m	

2.4 SURFACE LOADS

LC5

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	5,10	Force	Uniform	XL	p_1	0.618	kN/m^2
2	3,7	Force	Uniform	YL	p_1	-0.386	kN/m^2
3	8	Force	Uniform	XL	p_1	0.247	kN/m^2

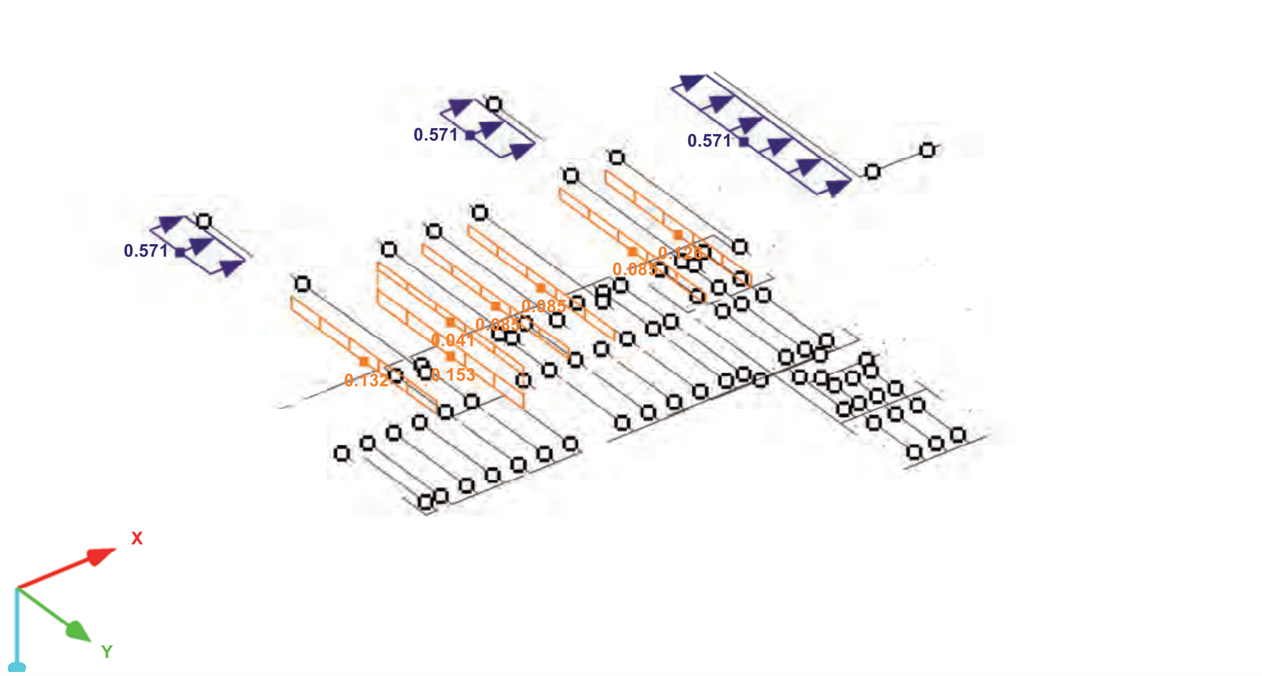
2.8 FREE RECTANGULAR LOADS

LC5

No.	On Surfaces No.	Projection	Load Distribution	Load Direction	Magnitude Symbol	Value	Unit	Load Position X [m]	Y [m]	Z [m]
1	1	XZ	Uniform	YL	p	-0.618	kN/m^2	0.625		0.000
								2.960		-2.815
2	2	XZ	Uniform	YL	p	-0.618	kN/m^2	2.960		-0.435
								3.750		0.000
3	4	XZ	Uniform	YL	p	-0.618	kN/m^2	3.430		-2.815
								2.960		-2.415
4	2	XZ	Uniform	YL	p	-0.386	kN/m^2	3.750		0.000
								5.000		-0.435
5	4	XZ	Uniform	YL	p	-0.386	kN/m^2	3.430		-2.815
								5.000		-2.415
6	1	XZ	Uniform	YL	p	-0.926	kN/m^2	0.625		0.000
								0.000		-2.815
7	21	YZ	Uniform	XL	p	0.618	kN/m^2		4.710	-2.815
									6.875	-2.395
8	14	YZ	Uniform	XL	p	0.618	kN/m^2		4.710	0.000
									6.875	-2.395
9	9	XZ	Uniform	YL	p	0.926	kN/m^2	8.895		0.000
								8.370		-2.815
10	9	XZ	Uniform	YL	p	0.618	kN/m^2	8.895		0.000
								10.440		-2.815
11	17	XY	Uniform	ZL	p	-0.155	kN/m^2	8.370	0.000	
								10.440	4.710	

■ LC5: LL_CANOPY_GRID

LC5: WIND_W1 Isometric



LC6

WIND_W2

■ 2.2 MEMBER LOADS

LC6

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
1	Members	148,165-173, 178,180,644, 646	Force	Uniform	YL	True Length	p	0.295	kN/m
6	Members	162-164,192, 195,213,222, 223,345,435, 438,441,444, 447	Force	Uniform	YL	True Length	p	0.116	kN/m
12	Members	176,183	Force	Uniform	YL	True Length	p	2.916	kN/m
13	Members	175,224	Force	Uniform	YL	True Length	p	2.502	kN/m
14	Members	155,174,181, 210	Force	Uniform	YL	True Length	p	1.962	kN/m
15	Members	146	Force	2 x 2 P	YL	True Length	P	0.360	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
16	Members	147	Force	2 x 2 P	YL	True Length	P	0.760	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
17	Members	153	Force	2 x 2 P	YL	True Length	P	0.980	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
18	Members	159	Force	2 x 2 P	YL	True Length	P	0.730	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
19	Members	162	Force	2 x 2 P	YL	True Length	P	0.240	kN
							X	0.260	kN
							A	1.260	m

LC6

WIND_W2

■ 2.2 MEMBER LOADS

LC6

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
19	Members	162	Force	2 x 2 P	YL	True Length	B	0.430	m
20	Members	146	Force	n x P	YL	True Length	P	0.225	kN
							n	2	
							A	3.640	m
							B	0.630	m
21	Members	147	Force	n x P	YL	True Length	P	0.471	kN
							n	2	
							A	3.640	m
							B	0.630	m
22	Members	153	Force	n x P	YL	True Length	P	0.610	kN
							n	2	
							A	3.640	m
							B	0.630	m
23	Members	159	Force	n x P	YL	True Length	P	0.460	kN
							n	2	
							A	3.640	m
							B	0.630	m
24	Members	162	Force	n x P	YL	True Length	P	0.150	kN
							n	2	
							A	3.640	m
							B	0.630	m
25	Members	163	Force	2 x 2 P	YL	True Length	P	0.150	kN
							X	0.240	kN
							A	1.260	m
							B	0.430	m
26	Members	150	Force	2 x 2 P	YL	True Length	P	0.360	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
27	Members	151	Force	2 x 2 P	YL	True Length	P	0.760	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
28	Members	154	Force	2 x 2 P	YL	True Length	P	0.980	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
29	Members	160	Force	2 x 2 P	YL	True Length	P	0.730	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
30	Members	150	Force	n x P	YL	True Length	P	0.270	kN
							n	2	
							A	3.660	m
							B	0.840	m
31	Members	151	Force	n x P	YL	True Length	P	0.570	kN
							n	2	
							A	3.660	m
							B	0.840	m
32	Members	154	Force	n x P	YL	True Length	P	0.730	kN
							n	2	
							A	3.660	m
							B	0.840	m
33	Members	160	Force	n x P	YL	True Length	P	0.550	kN
							n	2	
							A	3.660	m
							B	0.840	m
34	Members	163	Force	n x P	YL	True Length	P	0.180	kN
							n	2	

LC6

WIND_W2

■ 2.2 MEMBER LOADS LC6

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
34	Members	163	Force	n x P	YL	True Length	A	3.660	m
							B	0.840	m
35	Members	156	Force	n x P	YL	True Length	P	0.405	kN
							n	2	
							A	0.230	m
							B	1.470	m
36	Members	164	Force	n x P	YL	True Length	P	0.270	kN
							n	2	
							A	0.230	m
							B	1.470	m
37	Members	161	Force	n x P	YL	True Length	P	0.820	kN
							n	2	
							A	0.230	m
							B	1.470	m
38	Members	158	Force	n x P	YL	True Length	P	1.100	kN
							n	2	
							A	0.230	m
							B	1.470	m
39	Members	157	Force	n x P	YL	True Length	P	0.850	kN
							n	2	
							A	0.230	m
							B	1.470	m
40	Members	151,154	Force	n x P	ZL	True Length	P	0.220	kN
							n	10	
							A	0.000	m
							B	0.523	m
41	Members	150,160	Force	n x P	ZL	True Length	P	0.120	kN
							n	10	
							A	0.000	m
							B	0.523	m

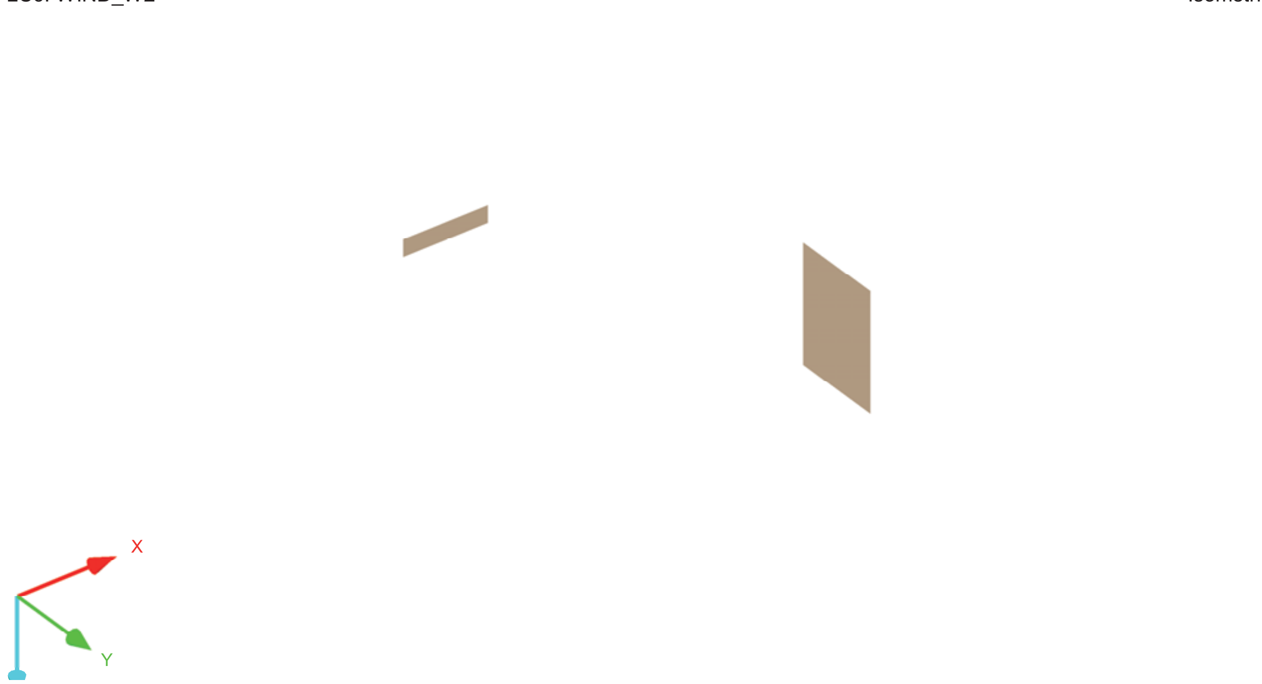
■ **2.4 SURFACE LOADS** LC6

No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	22	Force	Uniform	YL	p_1	0.386	kN/m^2
2	5	Force	Uniform	XL	p_1	-0.618	kN/m^2

LC6: LL_CLT_ROOF_PANELS

LC6: WIND_W2

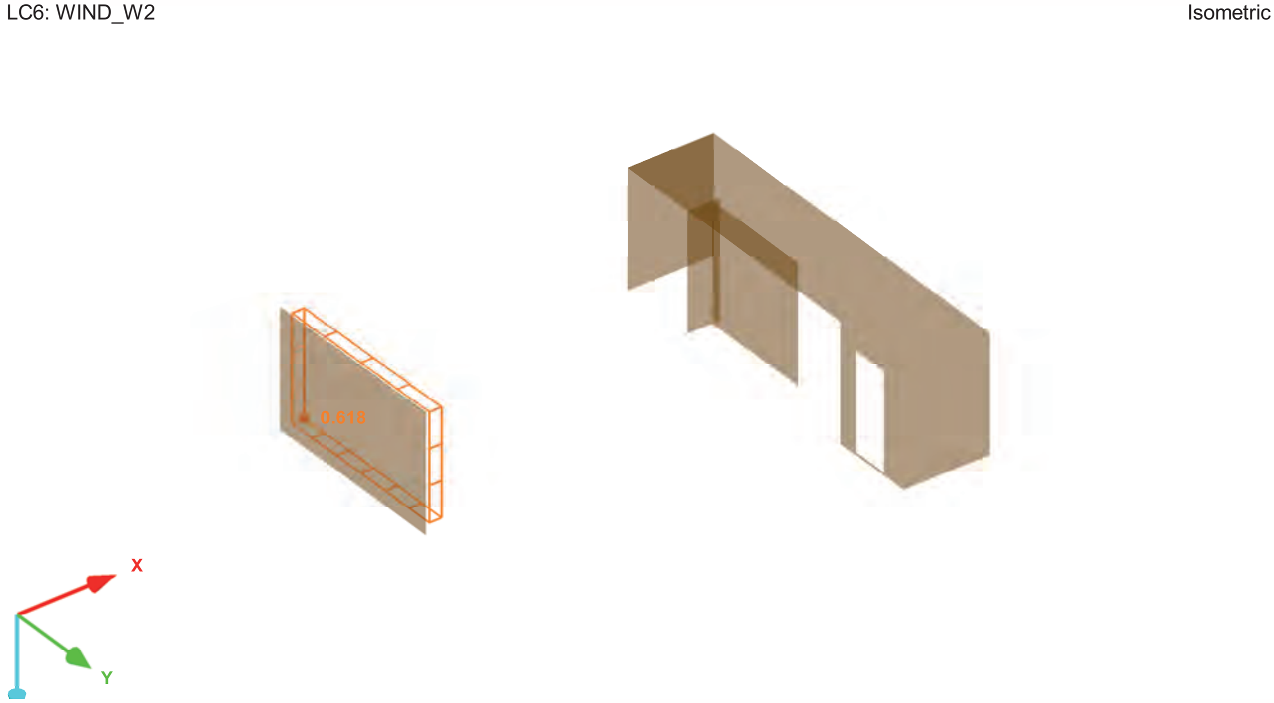
Isometric



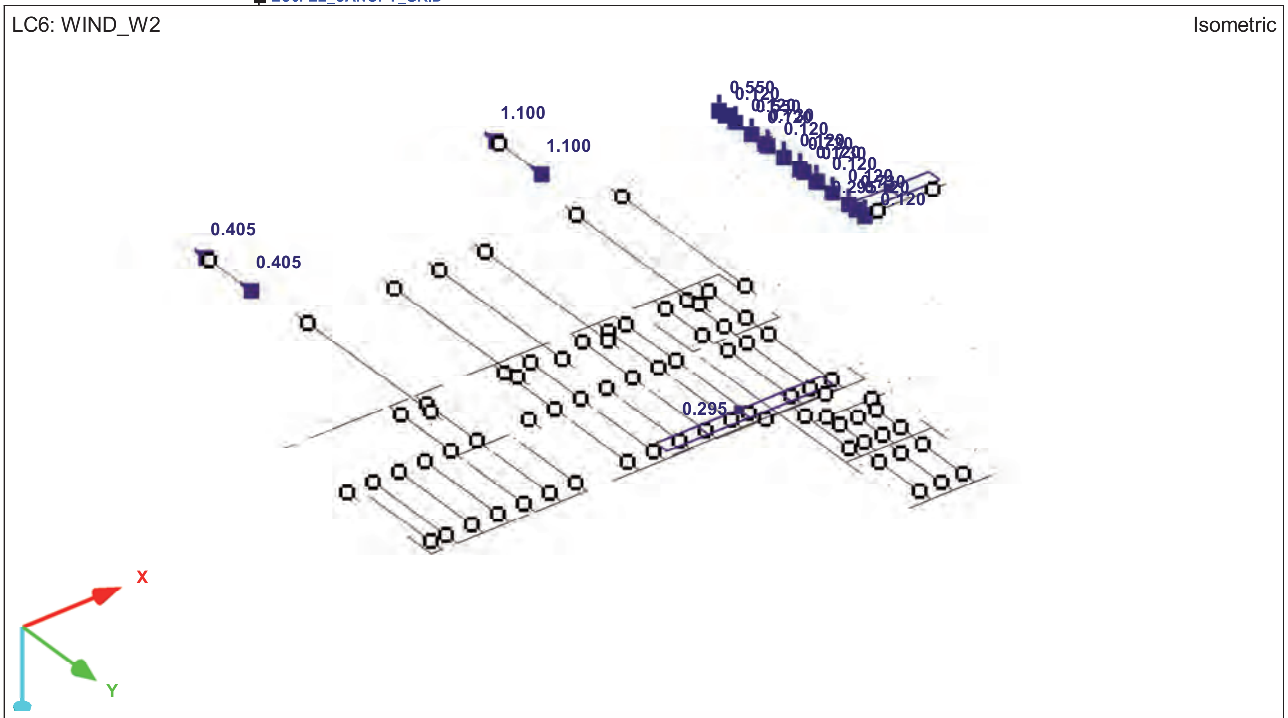
LC6: LL_CLT_WALL_PANELS

LC6: WIND_W2

Isometric



LC6: LL_CANOPY_GRID



LC7

WIND_W3

2.1 NODAL LOADS LC7

No.	On nodes No.	Force [kN] PX	PY	PZ	Moment [kNm] MX	MY	MZ
1	192,196	0.000	0.000	-0.200	0.000	0.000	0.000
2	195,199	0.000	0.000	-0.120	0.000	0.000	0.000

2.2 MEMBER LOADS LC7

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	148,165-167	Force	Uniform	YL	True Length	p	-0.590	kN/m
2	Members	11,16,21,26,31, 36,41,46,51,61, 66,71,141,143, 145,184,232, 234,237,239, 241,243,245, 247,251,253, 255,270,272	Force	Uniform	YL	True Length	p	-0.650	kN/m
3	Members	155,168-170, 174-176	Force	Uniform	YL	True Length	p	-0.295	kN/m
4	Members	125-127,133, 137-139,382	Force	Varying	ZL	True Length	x_1	0.000	m
							p_1	1.240	kN/m
							x_2	0.840	m
							p_2	1.240	kN/m
							x_3	0.840	m
							p_3	0.540	kN/m
							x_4	4.180	m
							p_4	0.540	kN/m
							x_5	4.180	m
							p_5	0.154	kN/m
							x_6	4.710	m
							p_6	0.154	kN/m

2.2 MEMBER LOADS LC7

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
4	Members	137-139,382	Force	Varying	ZL	True Length	A(x1)	0.000	m
							B(x6)	4.710	m
5	Members	129,130,132, 134,136	Force	Varying	ZL	True Length	x_1	0.000	m
							p_1	0.849	kN/m
							x_2	0.840	m
							p_2	0.849	kN/m
							x_3	0.840	m
							p_3	0.540	kN/m
							x_4	4.180	m
							p_4	0.540	kN/m
							x_5	4.180	m
							p_5	0.154	kN/m
							x_6	4.710	m
							p_6	0.154	kN/m
							A(x1)	0.000	m
							B(x6)	4.710	m
6	Members	162-164,192, 195,213,222, 223,345,435, 438,441,444, 447	Force	Uniform	YL	True Length	p	-0.116	kN/m
12	Members	131	Force	Varying	ZL	True Length	x_1	0.000	m
							p_1	0.849	kN/m
							x_2	0.840	m
							p_2	0.849	kN/m
							x_3	0.840	m
							p_3	0.540	kN/m
							x_4	2.355	m
							p_4	0.540	kN/m
							A(x1)	0.000	m
							B(x4)	2.355	m
13	Members	212	Force	Varying	ZL	True Length	x_1	0.000	m
							p_1	0.540	kN/m
							x_2	1.825	m
							p_2	0.540	kN/m
							x_3	1.825	m
							p_3	0.154	kN/m
							x_4	2.355	m
							p_4	0.154	kN/m
							A(x1)	0.000	m
							B(x4)	2.355	m
14	Members	135	Force	Varying	ZL	True Length	x_1	0.000	m
							p_1	0.849	kN/m
							x_2	0.840	m
							p_2	0.849	kN/m
							x_3	0.840	m
							p_3	0.540	kN/m
							x_4	2.355	m
							p_4	0.540	kN/m
							A(x1)	0.000	m
							B(x4)	2.355	m
15	Members	228	Force	Varying	ZL	True Length	x_1	0.000	m
							p_1	0.540	kN/m
							x_2	1.825	m
							p_2	0.540	kN/m
							x_3	1.825	m
							p_3	0.154	kN/m
							x_4	2.355	m

2.2 MEMBER LOADS

LC7

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
15	Members	228	Force	Varying	ZL	True Length	p4	0.154	kN/m
							A(x1)	0.000	m
							B(x4)	2.355	m
16	Members	180,644	Force	Uniform	YL	True Length	p	-0.295	kN/m
17	Members	146	Force	2 x 2 P	YL	True Length	P	-0.360	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
18	Members	147	Force	2 x 2 P	YL	True Length	P	-0.760	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
19	Members	153	Force	2 x 2 P	YL	True Length	P	-0.980	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
20	Members	159	Force	2 x 2 P	YL	True Length	P	-0.730	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
21	Members	162	Force	2 x 2 P	YL	True Length	P	-0.240	kN
							X	0.260	kN
							A	1.260	m
							B	0.430	m
22	Members	146	Force	n x P	YL	True Length	P	-0.225	kN
							n	2	
							A	3.640	m
							B	0.630	m
23	Members	147	Force	n x P	YL	True Length	P	-0.471	kN
							n	2	
							A	3.640	m
							B	0.630	m
24	Members	153	Force	n x P	YL	True Length	P	-0.610	kN
							n	2	
							A	3.640	m
							B	0.630	m
25	Members	159	Force	n x P	YL	True Length	P	-0.460	kN
							n	2	
							A	3.640	m
							B	0.630	m
26	Members	162	Force	n x P	YL	True Length	P	-0.150	kN
							n	2	
							A	3.640	m
							B	0.630	m
27	Members	150	Force	2 x 2 P	YL	True Length	P	-0.360	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
28	Members	151	Force	2 x 2 P	YL	True Length	P	-0.760	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
29	Members	154	Force	2 x 2 P	YL	True Length	P	-0.980	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
30	Members	160	Force	2 x 2 P	YL	True Length	P	-0.730	kN
							X	0.280	kN
							A	1.260	m

2.2 MEMBER LOADS LC7

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
30	Members	160	Force	2 x 2 P	YL	True Length	B	0.430	m
31	Members	163	Force	2 x 2 P	YL	True Length	P	-0.240	kN
							X	0.280	kN
							A	1.260	m
							B	0.430	m
32	Members	150	Force	n x P	YL	True Length	P	-0.270	kN
							n	2	
							A	3.660	m
							B	0.840	m
33	Members	151	Force	n x P	YL	True Length	P	-0.570	kN
							n	2	
							A	3.660	m
							B	0.840	m
34	Members	154	Force	n x P	YL	True Length	P	-0.270	kN
							n	2	
							A	3.660	m
							B	0.730	m
35	Members	160	Force	n x P	YL	True Length	P	-0.550	kN
							n	2	
							A	3.660	m
							B	0.840	m
36	Members	163	Force	n x P	YL	True Length	P	-0.180	kN
							n	2	
							A	3.660	m
							B	0.840	m
37	Members	156	Force	n x P	YL	True Length	P	-0.405	kN
							n	2	
							A	0.230	m
							B	1.470	m
38	Members	157	Force	n x P	YL	True Length	P	-0.850	kN
							n	2	
							A	0.230	m
							B	1.470	m
39	Members	158	Force	n x P	YL	True Length	P	-1.100	kN
							n	2	
							A	0.230	m
							B	1.470	m
40	Members	161	Force	n x P	YL	True Length	P	-0.820	kN
							n	2	
							A	0.230	m
							B	1.470	m
41	Members	164	Force	n x P	YL	True Length	P	-0.270	kN
							n	2	
							A	0.230	m
							B	1.470	m
42	Members	160,163	Force	2 x P	ZL	True Length	P_1	-0.120	kN
							P_2	-0.200	kN
							A	1.200	m
							B	2.310	m
43	Members	150,160	Force	n x P	ZL	True Length	P	-0.120	kN
							n	10	
							A	0.000	m
							B	0.523	m
44	Members	151,154	Force	n x P	ZL	True Length	P	-0.220	kN
							n	10	
							A	0.000	m
							B	0.523	m

2.4 SURFACE LOADS

LC7

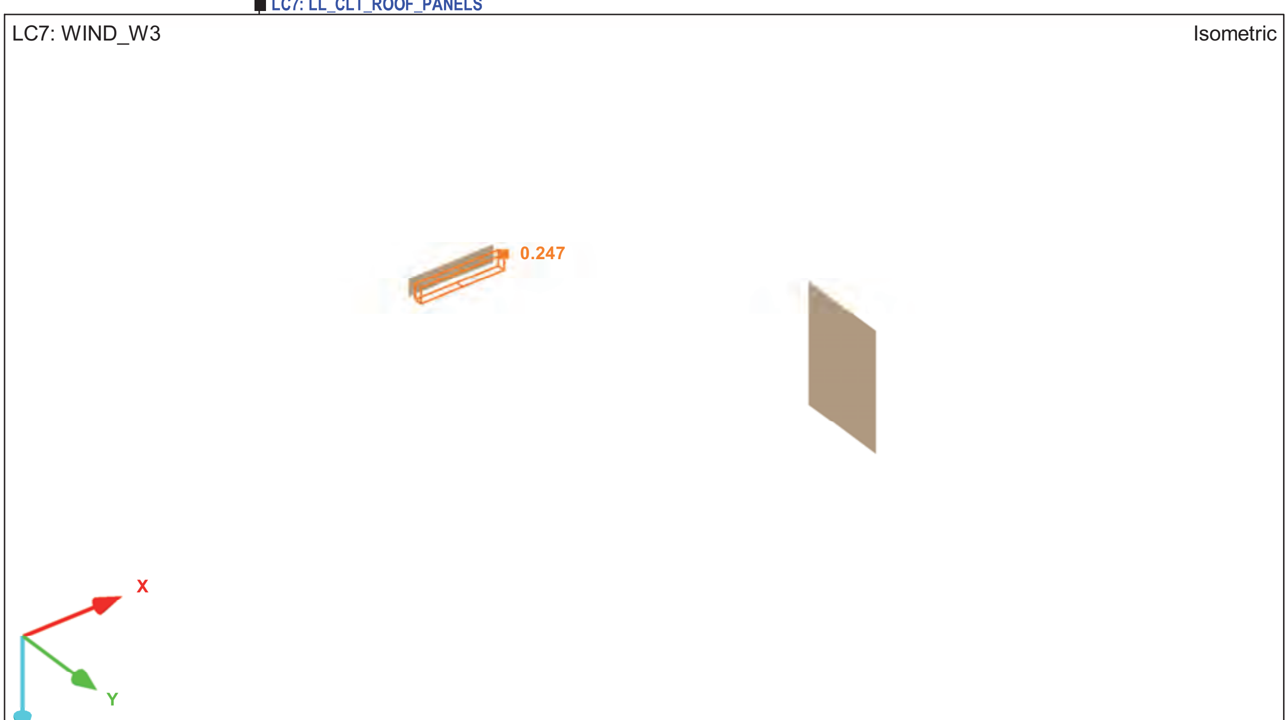
No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	9,22	Force	Uniform	YL	p1	-0.618	kN/m2
2	1-4,7	Force	Uniform	YL	p1	-0.247	kN/m2

2.8 FREE RECTANGULAR LOADS

LC7

No.	On Surfaces No.	Projection	Load Distribution	Load Direction	Magnitude Symbol	Value	Unit	Load Position X [m]	Y [m]	Z [m]
1	5	YZ	Uniform	XL	p	-0.926	kN/m2		3.140	0.000
									4.710	-2.815
2	5	YZ	Uniform	XL	p	-0.618	kN/m2		3.140	0.000
									0.000	-2.815
3	8	YZ	Uniform	XL	p	0.926	kN/m2		8.275	0.000
									8.920	-2.815
4	8	YZ	Uniform	XL	p	0.618	kN/m2		8.275	0.000
									6.875	-2.815
5	8	YZ	Uniform	XL	p	0.386	kN/m2		6.875	-2.815
									0.000	0.000
6	10	YZ	Uniform	XL	p	-0.926	kN/m2		8.275	0.000
									8.920	-2.815
7	10	YZ	Uniform	XL	p	-0.618	kN/m2		8.275	0.000
									6.875	-2.815
8	11	XZ	Uniform	YL	p	-0.247	kN/m2	8.370		0.000
								9.085		-2.815
9	17	XY	Uniform	ZL	p	-0.247	kN/m2	8.370	8.920	
								10.440	7.920	
10	17	XY	Uniform	ZL	p	-0.247	kN/m2	10.440	0.000	
								8.370	7.920	

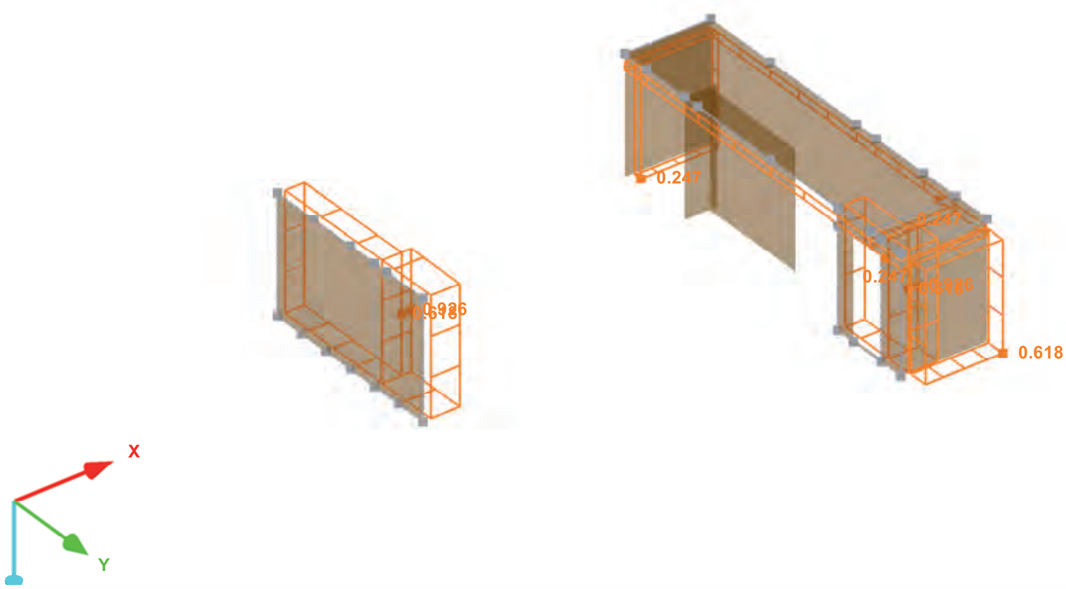
LC7: LL_CLT_ROOF_PANELS



■ LC7: LL_CLT_WALL_PANELS

LC7: WIND_W3

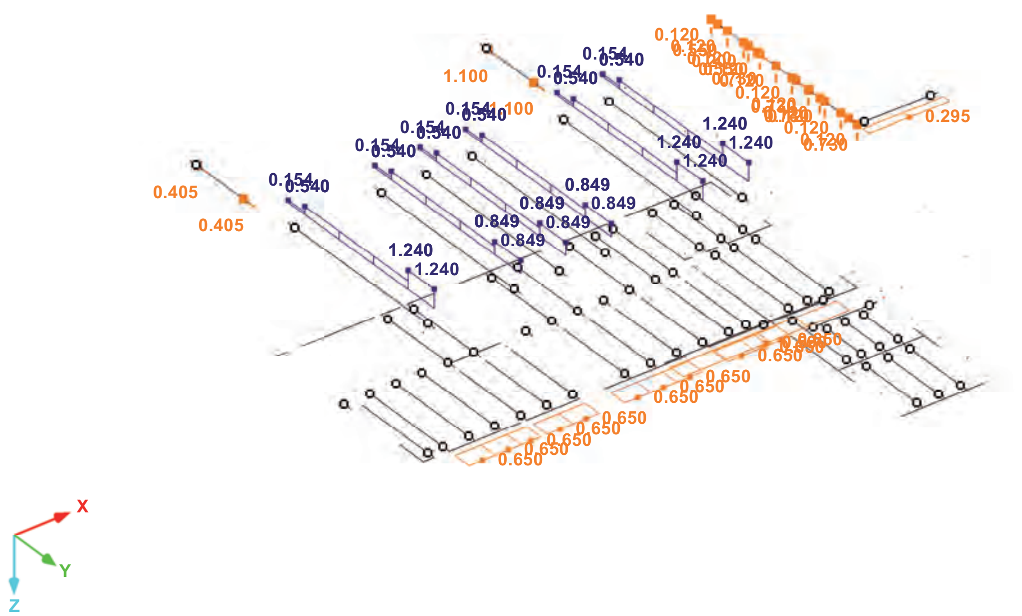
Isometric



■ LC7: LL_CANOPY_GRID

LC7: WIND_W3

Isometric



LC8

WIND_W4

■ 2.2 MEMBER LOADS

LC8

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	146,147,150, 151,153,154, 156-161	Force	Uniform	XL	True Length	p	-0.571	kN/m

LC8

WIND_W4

2.2 MEMBER LOADS LC8

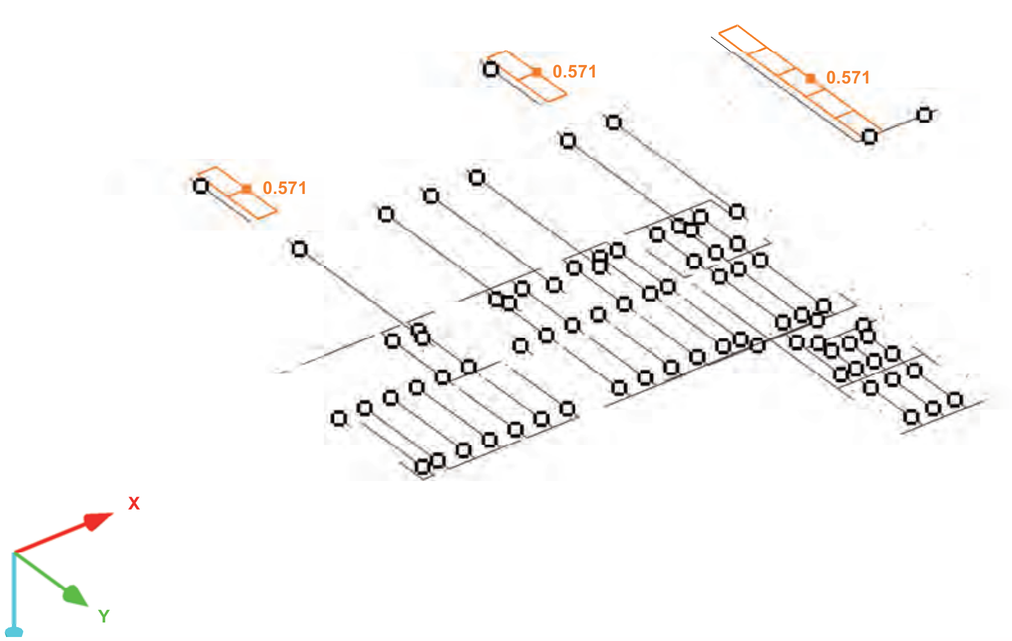
No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
3	Members	181,183,210, 224	Force	Uniform	XL	True Length	p	-0.116	kN/m
5	Members	155,174-176	Force	Uniform	XL	True Length	p	-0.116	kN/m
6	Members	164,192	Force	Uniform	XL	True Length	p	-2.916	kN/m
7	Members	163,195,223, 441,444,447	Force	Uniform	XL	True Length	p	-2.502	kN/m
8	Members	162,182,213, 222,345,435, 438	Force	Uniform	XL	True Length	p	-1.962	kN/m

2.4 SURFACE LOADS LC8

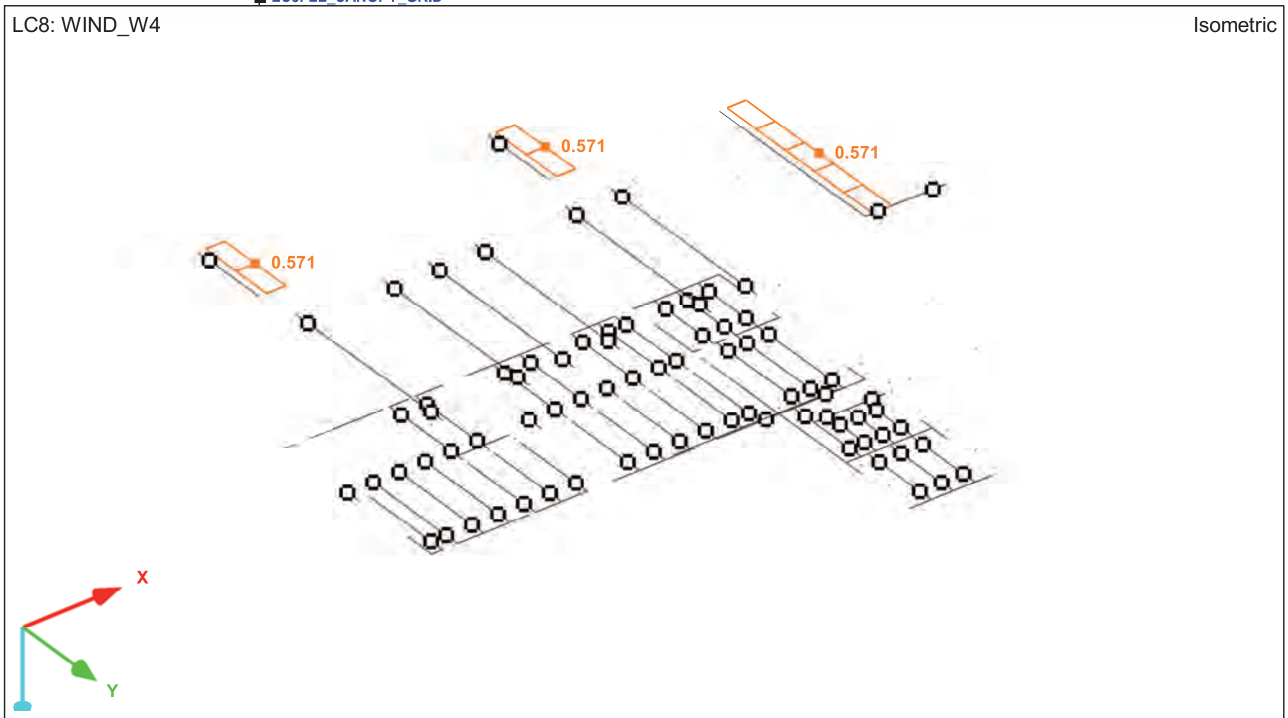
No.	On Surfaces No.	Load Type	Load Distribution	Load Direction	Load Parameters Symbol	Value	Unit
1	9	Force	Uniform	YL	p_1	0.618	kN/m^2
2	10	Force	Uniform	XL	p_1	-0.386	kN/m^2

LC8: LL_CANOPY_GRID

LC8: WIND_W4 Isometric



■ LC8: LL_CANOPY_GRID



■ LOAD GROUPS

LG No.	LG-Description	Factor	Load Cases in LG	Method of Analysis
1	UB (1.35*LC1)	1.0000	1.35*LC1	2nd Order
2	UB (1.35*LC1 + 1.5*LC2)	1.0000	1.35*LC1 + 1.5*LC2	2nd Order
3	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3)	1.0000	1.35*LC1 + 1.5*LC2 + 1.5*LC3	2nd Order
4	UB (1.35*LC1 + 1.5*LC3)	1.0000	1.35*LC1 + 1.5*LC3	2nd Order
5	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4)	1.0000	1.35*LC1 + 1.5*LC2 + 0.75*LC4	2nd Order
6	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC5)	1.0000	1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC5	2nd Order
7	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC6)	1.0000	1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC6	2nd Order
8	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC7)	1.0000	1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC7	2nd Order
9	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC8)	1.0000	1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC8	2nd Order
10	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC5)	1.0000	1.35*LC1 + 1.5*LC2 + 0.9*LC5	2nd Order
11	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC6)	1.0000	1.35*LC1 + 1.5*LC2 + 0.9*LC6	2nd Order
12	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC7)	1.0000	1.35*LC1 + 1.5*LC2 + 0.9*LC7	2nd Order
13	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC8)	1.0000	1.35*LC1 + 1.5*LC2 + 0.9*LC8	2nd Order
14	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC5)	1.0000	1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC5	2nd Order
15	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC6)	1.0000	1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC6	2nd Order
16	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC7)	1.0000	1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC7	2nd Order
17	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC8)	1.0000	1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC8	2nd Order
18	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC5)	1.0000	1.35*LC1 + 1.5*LC3 + 0.9*LC5	2nd Order
19	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC6)	1.0000	1.35*LC1 + 1.5*LC3 + 0.9*LC6	2nd Order
20	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC7)	1.0000	1.35*LC1 + 1.5*LC3 + 0.9*LC7	2nd Order

■ LOAD GROUPS

LG No.	LG-Description	Factor	Load Cases in LG	Method of Analysis
21	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC8)	1.0000	1.35*LC1 + 1.5*LC3 + 0.9*LC8	2nd Order
22	UB (1.35*LC1 + 1.5*LC4)	1.0000	1.35*LC1 + 1.5*LC4	2nd Order
23	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC4	2nd Order
24	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC5)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC5	2nd Order
25	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC6)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC6	2nd Order
26	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC7)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC7	2nd Order
27	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC8)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC8	2nd Order
28	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC5)	1.0000	1.35*LC1 + 1.5*LC4 + 0.9*LC5	2nd Order
29	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC6)	1.0000	1.35*LC1 + 1.5*LC4 + 0.9*LC6	2nd Order
30	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC7)	1.0000	1.35*LC1 + 1.5*LC4 + 0.9*LC7	2nd Order
31	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC8)	1.0000	1.35*LC1 + 1.5*LC4 + 0.9*LC8	2nd Order
32	UB (1.35*LC1 + 1.5*LC5)	1.0000	1.35*LC1 + 1.5*LC5	2nd Order
33	UB (1.35*LC1 + 1.5*LC6)	1.0000	1.35*LC1 + 1.5*LC6	2nd Order
34	UB (1.35*LC1 + 1.5*LC7)	1.0000	1.35*LC1 + 1.5*LC7	2nd Order
35	UB (1.35*LC1 + 1.5*LC8)	1.0000	1.35*LC1 + 1.5*LC8	2nd Order
36	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC5)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC5	2nd Order
37	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC6)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC6	2nd Order
38	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC7)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC7	2nd Order
39	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC8)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC8	2nd Order
40	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC5)	1.0000	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC5	2nd Order
41	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC6)	1.0000	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC6	2nd Order
42	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC7)	1.0000	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC7	2nd Order
43	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC8)	1.0000	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC8	2nd Order
44	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC5)	1.0000	1.35*LC1 + 1.05*LC3 + 1.5*LC5	2nd Order
45	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC6)	1.0000	1.35*LC1 + 1.05*LC3 + 1.5*LC6	2nd Order
46	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC7)	1.0000	1.35*LC1 + 1.05*LC3 + 1.5*LC7	2nd Order
47	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC8)	1.0000	1.35*LC1 + 1.05*LC3 + 1.5*LC8	2nd Order
48	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC5)	1.0000	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC5	2nd Order
49	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC6)	1.0000	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC6	2nd Order
50	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC7)	1.0000	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC7	2nd Order
51	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC8)	1.0000	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC8	2nd Order
52	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC5)	1.0000	1.35*LC1 + 0.75*LC4 + 1.5*LC5	2nd Order
53	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC6)	1.0000	1.35*LC1 + 0.75*LC4 + 1.5*LC6	2nd Order
54	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC7)	1.0000	1.35*LC1 + 0.75*LC4 + 1.5*LC7	2nd Order
55	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC8)	1.0000	1.35*LC1 + 0.75*LC4 + 1.5*LC8	2nd Order
87	UB (LC1 + 1.5*LC5)	1.0000	LC1 + 1.5*LC5	2nd Order
88	UB (LC1 + 1.5*LC6)	1.0000	LC1 + 1.5*LC6	2nd Order
89	UB (LC1 + 1.5*LC7)	1.0000	LC1 + 1.5*LC7	2nd Order
90	UB (LC1 + 1.5*LC8)	1.0000	LC1 + 1.5*LC8	2nd Order
111	US (LC1 + LC10)	1.0000	LC1 + LC10	2nd Order

■ LOAD GROUPS

LG No.	LG-Description	Factor	Load Cases in LG	Method of Analysis
112	US (LC1 + LC11)	1.0000	LC1 + LC11	2nd Order
113	US (LC1 + LC14)	1.0000	LC1 + LC14	2nd Order
114	US (LC1 + LC17)	1.0000	LC1 + LC17	2nd Order
115	US (LC1 + LC20)	1.0000	LC1 + LC20	2nd Order
116	US (LC1 + LC21)	1.0000	LC1 + LC21	2nd Order
117	US (LC1 + 0.6*LC2 + LC10)	1.0000	LC1 + 0.6*LC2 + LC10	2nd Order
118	US (LC1 + 0.6*LC2 + LC11)	1.0000	LC1 + 0.6*LC2 + LC11	2nd Order
119	US (LC1 + 0.6*LC2 + LC14)	1.0000	LC1 + 0.6*LC2 + LC14	2nd Order
120	US (LC1 + 0.6*LC2 + LC17)	1.0000	LC1 + 0.6*LC2 + LC17	2nd Order
121	US (LC1 + 0.6*LC2 + LC20)	1.0000	LC1 + 0.6*LC2 + LC20	2nd Order
122	US (LC1 + 0.6*LC2 + LC21)	1.0000	LC1 + 0.6*LC2 + LC21	2nd Order
123	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC10)	1.0000	LC1 + 0.6*LC2 + 0.6*LC3 + LC10	2nd Order
124	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC11)	1.0000	LC1 + 0.6*LC2 + 0.6*LC3 + LC11	2nd Order
125	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC14)	1.0000	LC1 + 0.6*LC2 + 0.6*LC3 + LC14	2nd Order
126	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC17)	1.0000	LC1 + 0.6*LC2 + 0.6*LC3 + LC17	2nd Order
127	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC20)	1.0000	LC1 + 0.6*LC2 + 0.6*LC3 + LC20	2nd Order
128	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC21)	1.0000	LC1 + 0.6*LC2 + 0.6*LC3 + LC21	2nd Order
129	US (LC1 + 0.6*LC3 + LC10)	1.0000	LC1 + 0.6*LC3 + LC10	2nd Order
130	US (LC1 + 0.6*LC3 + LC11)	1.0000	LC1 + 0.6*LC3 + LC11	2nd Order
131	US (LC1 + 0.6*LC3 + LC14)	1.0000	LC1 + 0.6*LC3 + LC14	2nd Order
132	US (LC1 + 0.6*LC3 + LC17)	1.0000	LC1 + 0.6*LC3 + LC17	2nd Order
133	US (LC1 + 0.6*LC3 + LC20)	1.0000	LC1 + 0.6*LC3 + LC20	2nd Order
134	US (LC1 + 0.6*LC3 + LC21)	1.0000	LC1 + 0.6*LC3 + LC21	2nd Order
261	SC (LC1)	1.0000	LC1	2nd Order
262	SC (LC1 + LC2)	1.0000	LC1 + LC2	2nd Order
263	SC (LC1 + LC2 + LC3)	1.0000	LC1 + LC2 + LC3	2nd Order
264	SC (LC1 + LC3)	1.0000	LC1 + LC3	2nd Order
265	SC (LC1 + LC2 + 0.5*LC4)	1.0000	LC1 + LC2 + 0.5*LC4	2nd Order
266	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC5)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC5	2nd Order
267	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC6)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC6	2nd Order
268	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC7)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC7	2nd Order
269	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC8)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC8	2nd Order
270	SC (LC1 + LC2 + 0.6*LC5)	1.0000	LC1 + LC2 + 0.6*LC5	2nd Order
271	SC (LC1 + LC2 + 0.6*LC6)	1.0000	LC1 + LC2 + 0.6*LC6	2nd Order
272	SC (LC1 + LC2 + 0.6*LC7)	1.0000	LC1 + LC2 + 0.6*LC7	2nd Order
273	SC (LC1 + LC2 + 0.6*LC8)	1.0000	LC1 + LC2 + 0.6*LC8	2nd Order
274	SC (LC1 + LC2 + LC3 + 0.6*LC5)	1.0000	LC1 + LC2 + LC3 + 0.6*LC5	2nd Order
275	SC (LC1 + LC2 + LC3 + 0.6*LC6)	1.0000	LC1 + LC2 + LC3 + 0.6*LC6	2nd Order
276	SC (LC1 + LC2 + LC3 + 0.6*LC7)	1.0000	LC1 + LC2 + LC3 + 0.6*LC7	2nd Order
277	SC (LC1 + LC2 + LC3 + 0.6*LC8)	1.0000	LC1 + LC2 + LC3 + 0.6*LC8	2nd Order
278	SC (LC1 + LC3 + 0.6*LC5)	1.0000	LC1 + LC3 + 0.6*LC5	2nd Order
279	SC (LC1 + LC3 + 0.6*LC6)	1.0000	LC1 + LC3 + 0.6*LC6	2nd Order
280	SC (LC1 + LC3 + 0.6*LC7)	1.0000	LC1 + LC3 + 0.6*LC7	2nd Order
281	SC (LC1 + LC3 + 0.6*LC8)	1.0000	LC1 + LC3 + 0.6*LC8	2nd Order
282	SC (LC1 + LC4)	1.0000	LC1 + LC4	2nd Order
283	SC (LC1 + 0.7*LC2 + LC4)	1.0000	LC1 + 0.7*LC2 + LC4	2nd Order
284	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC5)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC5	2nd Order
285	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC6)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC6	2nd Order
286	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC7)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC7	2nd Order
287	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC8)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC8	2nd Order
288	SC (LC1 + LC4 + 0.6*LC5)	1.0000	LC1 + LC4 + 0.6*LC5	2nd Order
289	SC (LC1 + LC4 + 0.6*LC6)	1.0000	LC1 + LC4 + 0.6*LC6	2nd Order

LOAD GROUPS

LG No.	LG-Description	Factor	Load Cases in LG	Method of Analysis
290	SC (LC1 + LC4 + 0.6*LC7)	1.0000	LC1 + LC4 + 0.6*LC7	2nd Order
291	SC (LC1)	1.0000	LC1	2nd Order
292	SC (LC1 + LC2)	1.0000	LC1 + LC2	2nd Order
293	SC (LC1 + LC2 + LC3)	1.0000	LC1 + LC2 + LC3	2nd Order
294	SC (LC1 + LC3)	1.0000	LC1 + LC3	2nd Order
295	SC (LC1 + LC2 + 0.5*LC4)	1.0000	LC1 + LC2 + 0.5*LC4	2nd Order
296	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC5)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC5	2nd Order
297	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC6)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC6	2nd Order
298	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC7)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC7	2nd Order
299	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC8)	1.0000	LC1 + LC2 + 0.5*LC4 + 0.6*LC8	2nd Order
300	SC (LC1 + LC2 + 0.6*LC5)	1.0000	LC1 + LC2 + 0.6*LC5	2nd Order
301	SC (LC1 + LC2 + 0.6*LC6)	1.0000	LC1 + LC2 + 0.6*LC6	2nd Order
302	SC (LC1 + LC2 + 0.6*LC7)	1.0000	LC1 + LC2 + 0.6*LC7	2nd Order
303	SC (LC1 + LC2 + 0.6*LC8)	1.0000	LC1 + LC2 + 0.6*LC8	2nd Order
304	SC (LC1 + LC2 + LC3 + 0.6*LC5)	1.0000	LC1 + LC2 + LC3 + 0.6*LC5	2nd Order
305	SC (LC1 + LC2 + LC3 + 0.6*LC6)	1.0000	LC1 + LC2 + LC3 + 0.6*LC6	2nd Order
306	SC (LC1 + LC2 + LC3 + 0.6*LC7)	1.0000	LC1 + LC2 + LC3 + 0.6*LC7	2nd Order
307	SC (LC1 + LC2 + LC3 + 0.6*LC8)	1.0000	LC1 + LC2 + LC3 + 0.6*LC8	2nd Order
308	SC (LC1 + LC3 + 0.6*LC5)	1.0000	LC1 + LC3 + 0.6*LC5	2nd Order
309	SC (LC1 + LC3 + 0.6*LC6)	1.0000	LC1 + LC3 + 0.6*LC6	2nd Order
310	SC (LC1 + LC3 + 0.6*LC7)	1.0000	LC1 + LC3 + 0.6*LC7	2nd Order
311	SC (LC1 + LC3 + 0.6*LC8)	1.0000	LC1 + LC3 + 0.6*LC8	2nd Order
312	SC (LC1 + LC4)	1.0000	LC1 + LC4	2nd Order
313	SC (LC1 + 0.7*LC2 + LC4)	1.0000	LC1 + 0.7*LC2 + LC4	2nd Order
314	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC5)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC5	2nd Order
315	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC6)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC6	2nd Order
316	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC7)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC7	2nd Order
317	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC8)	1.0000	LC1 + 0.7*LC2 + LC4 + 0.6*LC8	2nd Order
318	SC (LC1 + LC4 + 0.6*LC5)	1.0000	LC1 + LC4 + 0.6*LC5	2nd Order
319	SC (LC1 + LC4 + 0.6*LC6)	1.0000	LC1 + LC4 + 0.6*LC6	2nd Order
320	SC (LC1 + LC4 + 0.6*LC7)	1.0000	LC1 + LC4 + 0.6*LC7	2nd Order
321	SC (LC1 + LC4 + 0.6*LC8)	1.0000	LC1 + LC4 + 0.6*LC8	2nd Order
322	SC (LC1 + LC5)	1.0000	LC1 + LC5	2nd Order
323	SC (LC1 + LC6)	1.0000	LC1 + LC6	2nd Order
324	SC (LC1 + LC7)	1.0000	LC1 + LC7	2nd Order
325	SC (LC1 + LC8)	1.0000	LC1 + LC8	2nd Order
326	SC (LC1 + 0.7*LC2 + LC5)	1.0000	LC1 + 0.7*LC2 + LC5	2nd Order
327	SC (LC1 + 0.7*LC2 + LC6)	1.0000	LC1 + 0.7*LC2 + LC6	2nd Order
328	SC (LC1 + 0.7*LC2 + LC7)	1.0000	LC1 + 0.7*LC2 + LC7	2nd Order
329	SC (LC1 + 0.7*LC2 + LC8)	1.0000	LC1 + 0.7*LC2 + LC8	2nd Order
330	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC5)	1.0000	LC1 + 0.7*LC2 + 0.7*LC3 + LC5	2nd Order
331	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC6)	1.0000	LC1 + 0.7*LC2 + 0.7*LC3 + LC6	2nd Order
332	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC7)	1.0000	LC1 + 0.7*LC2 + 0.7*LC3 + LC7	2nd Order
333	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC8)	1.0000	LC1 + 0.7*LC2 + 0.7*LC3 + LC8	2nd Order
334	SC (LC1 + 0.7*LC3 + LC5)	1.0000	LC1 + 0.7*LC3 + LC5	2nd Order
335	SC (LC1 + 0.7*LC3 + LC6)	1.0000	LC1 + 0.7*LC3 + LC6	2nd Order
336	SC (LC1 + 0.7*LC3 + LC7)	1.0000	LC1 + 0.7*LC3 + LC7	2nd Order
337	SC (LC1 + 0.7*LC3 + LC8)	1.0000	LC1 + 0.7*LC3 + LC8	2nd Order
338	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC5)	1.0000	LC1 + 0.7*LC2 + 0.5*LC4 + LC5	2nd Order
339	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC6)	1.0000	LC1 + 0.7*LC2 + 0.5*LC4 + LC6	2nd Order
340	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC7)	1.0000	LC1 + 0.7*LC2 + 0.5*LC4 + LC7	2nd Order

LOAD GROUPS

LG No.	LG-Description	Factor	Load Cases in LG	Method of Analysis
341	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC8)	1.0000	LC1 + 0.7*LC2 + 0.5*LC4 + LC8	2nd Order
342	SC (LC1 + 0.5*LC4 + LC5)	1.0000	LC1 + 0.5*LC4 + LC5	2nd Order
343	SC (LC1 + 0.5*LC4 + LC6)	1.0000	LC1 + 0.5*LC4 + LC6	2nd Order
344	SC (LC1 + 0.5*LC4 + LC7)	1.0000	LC1 + 0.5*LC4 + LC7	2nd Order
345	SC (LC1 + 0.5*LC4 + LC8)	1.0000	LC1 + 0.5*LC4 + LC8	2nd Order

LOAD COMBINATIONS

CO No.	CO Description	Combination Criteria	Quadratic Combination (SRSS)
3	Effect resulting from equivalent lateral loads from DYNAM, Eigenmode No.1-20	LC9/P + LC10/P + LC11/P + LC12/P + LC13/P + LC14/P + LC15/P + LC16/P + LC17/P + LC18/P + LC19/P + LC20/P + LC21/P + LC22/P + LC23/P + LC24/P + LC25/P + LC26/P + LC27/P + LC28/P	☒
4	Ultimate limit state	LG1/P or LG2/P or LG3/P or LG4/P or LG5/P or LG6/P or LG7/P or LG8/P or LG9/P or LG10/P or LG11/P or LG12/P or LG13/P or LG14/P or LG15/P or LG16/P or LG17/P or LG18/P or LG19/P or LG20/P or LG21/P or LG22/P or LG23/P or LG24/P or LG25/P or LG26/P or LG27/P or LG28/P or LG29/P or LG30/P or LG31/P or LG32/P or LG33/P or LG34/P or LG35/P or LG36/P or LG37/P or LG38/P or LG39/P or LG40/P or LG41/P or LG42/P or LG43/P or LG44/P or LG45/P or LG46/P or LG47/P or LG48/P or LG49/P or LG50/P or LG51/P or LG52/P or LG53/P or LG54/P or LG55/P or LG87/P or LG88/P or LG89/P or LG90/P or LG111/P or LG112/P or LG113/P or LG114/P or LG115/P or LG116/P or LG117/P or LG118/P or LG119/P or LG120/P or LG121/P or LG122/P or LG123/P or LG124/P or LG125/P or LG126/P or LG127/P or LG128/P or LG129/P or LG130/P or LG131/P or LG132/P or LG133/P or LG134/P	☐
5	Serviceability Limit State - Characteristic	LG291/P or LG292/P or LG293/P or LG294/P or LG295/P or LG296/P or LG297/P or LG298/P or LG299/P or LG300/P or LG301/P or LG302/P or LG303/P or LG304/P or LG305/P or LG306/P or LG307/P or LG308/P or LG309/P or LG310/P or LG311/P or LG312/P or LG313/P or LG314/P or LG315/P or LG316/P or LG317/P or LG318/P or LG319/P or LG320/P or LG321/P or LG322/P or LG323/P or LG324/P or LG325/P or LG326/P or LG327/P or LG328/P or LG329/P or LG330/P or LG331/P or LG332/P or LG333/P or LG334/P or LG335/P or LG336/P or LG337/P or LG338/P or LG339/P or LG340/P or LG341/P or LG342/P or LG343/P or LG344/P or LG345/P	☐
6	Design Internal Forces	LG87 or LG88 or LG89 or LG90	☐

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	LC1 - SELF_WEIGH_OF_STRUCTURE			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	358.56	kN	
	Sum of Support Reactions in Z	358.56	kN	Deviation 0.00%
	Max Displacement in X	0.5	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.5	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	7.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	7.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	4.5	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-8.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.5	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	3		
	LC2 - IMPOSED_INTERIOR			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	144.72	kN	
	Sum of Support Reactions in Z	144.71	kN	Deviation 0.00%
	Max Displacement in X	0.1	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	0.1	mm	FE Node No. 7624 (X: 9.085, Y: 4.808, Z: 0.000 m)
	Max Displacement in Z	1.9	mm	Member No. 13, x: 1.646 m
	Max. Vector Displacement	1.9	mm	Member No. 13, x: 1.646 m
	Max rotation about X	1.5	mrad	Member No. 202, x: 2.195 m
	Max rotation about Y	-2.6	mrad	Member No. 641, x: 0.000 m
	Max rotation about Z	-0.2	mrad	FE Node No. 57 (X: 9.150, Y: 1.930, Z: 0.000 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	4		
	LC3 - IMPOSED_ROOF			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	40.59	kN	
	Sum of Support Reactions in Z	40.59	kN	Deviation 0.00%
	Max Displacement in X	0.1	mm	FE Node No. 4901 (X: 10.440, Y: 3.307, Z: -0.503 m)
	Max Displacement in Y	-0.2	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	3.4	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	3.4	mm	Member No. 228, x: 0.000 m
	Max rotation about X	2.1	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-3.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.2	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	5		
	LC4 - SNOW			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	43.33	kN	
	Sum of Support Reactions in Z	43.33	kN	Deviation -0.00%
	Max Displacement in X	0.1	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	0.1	mm	FE Node No. 6305 (X: 9.441, Y: 8.920, Z: -1.709 m)
	Max Displacement in Z	1.8	mm	Member No. 154, x: 2.355 m
	Max. Vector Displacement	1.8	mm	Member No. 154, x: 2.355 m
	Max rotation about X	-0.9	mrad	Member No. 154, x: 0.523 m
	Max rotation about Y	-0.4	mrad	FE Node No. 33 (X: 8.370, Y: 4.710, Z: 0.000 m)
	Max rotation about Z	0.2	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	5		
	LC5 - WIND_W1			
	Sum of Loads in X	59.47	kN	
	Sum of Support Reactions in X	59.47	kN	Deviation -0.00%
	Sum of Loads in Y	-8.33	kN	
	Sum of Support Reactions in Y	-8.33	kN	Deviation -0.00%
	Sum of Loads in Z	-16.67	kN	
	Sum of Support Reactions in Z	-16.67	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in X	13.1	mm	Member No. 147, x: 1.520 m
	Max Displacement in Y	6.5	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	-2.1	mm	FE Node No. 12884 (X: 1.348, Y: 2.305, Z: -2.815 m)
	Max. Vector Displacement	14.6	mm	Member No. 146, x: 1.520 m
	Max rotation about X	5.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-7.0	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	3.3	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC6 - WIND_W2			
	Sum of Loads in X	-8.19	kN	
	Sum of Support Reactions in X	-8.19	kN	Deviation -0.00%
	Sum of Loads in Y	113.21	kN	
	Sum of Support Reactions in Y	113.21	kN	Deviation -0.00%
	Sum of Loads in Z	6.80	kN	
	Sum of Support Reactions in Z	6.80	kN	Deviation 0.00%
	Max Displacement in X	14.5	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	35.7	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	0.9	mm	FE Node No. 12297 (X: 0.456, Y: 4.710, Z: -2.815 m)
	Max. Vector Displacement	37.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	33.3	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-9.5	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-11.0	mrad	Member No. 175, x: 3.519 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC7 - WIND_W3			
	Sum of Loads in X	-4.48	kN	
	Sum of Support Reactions in X	-4.48	kN	Deviation -0.00%
	Sum of Loads in Y	-77.88	kN	
	Sum of Support Reactions in Y	-77.88	kN	Deviation 0.00%
	Sum of Loads in Z	28.96	kN	
	Sum of Support Reactions in Z	28.96	kN	Deviation 0.00%
	Max Displacement in X	-10.7	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-24.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	4.6	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	26.7	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-22.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	6.7	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	8.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC8 - WIND_W4			
	Sum of Loads in X	-83.58	kN	
	Sum of Support Reactions in X	-83.58	kN	Deviation 0.00%
	Sum of Loads in Y	3.60	kN	
	Sum of Support Reactions in Y	3.60	kN	Deviation -0.00%
	Sum of Loads in Z	0.00	kN	
	Sum of Support Reactions in Z	0.00	kN	
	Max Displacement in X	-25.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-9.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	-1.3	mm	FE Node No. 394 (X: 10.745, Y: 8.615, Z: 0.546 m)
	Max. Vector Displacement	26.0	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-7.7	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	10.8	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-8.8	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	8		
	LC9 - Equivalent lateral loads from RF-DYNAM, Ei			
	Sum of Loads in X	9.87	kN	
	Sum of Support Reactions in X	9.87	kN	Deviation 0.00%
	Sum of Loads in Y	16.98	kN	
	Sum of Support Reactions in Y	16.98	kN	Deviation -0.00%
	Sum of Loads in Z	0.18	kN	
	Sum of Support Reactions in Z	0.18	kN	Deviation -0.48%
	Max Displacement in X	10.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	13.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	-0.6	mm	FE Node No. 513 (X: 8.065, Y: 8.615, Z: 0.505 m)
	Max. Vector Displacement	17.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	12.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-6.0	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-4.5	mrad	Member No. 178, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC10 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	3.07	kN	
	Sum of Support Reactions in X	3.07	kN	Deviation 0.00%
	Sum of Loads in Y	-2.83	kN	
	Sum of Support Reactions in Y	-2.83	kN	Deviation 0.00%
	Sum of Loads in Z	0.09	kN	
	Sum of Support Reactions in Z	0.09	kN	Deviation 0.06%
	Max Displacement in X	0.8	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	-0.5	mm	Member No. 196, x: 0.000 m
	Max Displacement in Z	-0.1	mm	FE Node No. 440 (X: -0.955, Y: -1.660, Z: 0.275 m)
	Max. Vector Displacement	1.0	mm	Member No. 216, x: 0.000 m
	Max rotation about X	-0.7	mrad	Member No. 206, x: 0.000 m
	Max rotation about Y	-0.4	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	0.4	mrad	FE Node No. 411 (X: 12.690, Y: -1.660, Z: 0.501 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	7		
	LC11 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	0.03	kN	
	Sum of Support Reactions in X	0.03	kN	Deviation -0.00%
	Sum of Loads in Y	-0.11	kN	
	Sum of Support Reactions in Y	-0.11	kN	Deviation -0.00%
	Sum of Loads in Z	0.71	kN	
	Sum of Support Reactions in Z	0.71	kN	Deviation 0.00%
	Max Displacement in X	0.1	mm	Member No. 216, x: 0.000 m
	Max Displacement in Y	0.1	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	0.0	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	0.1	mm	Member No. 185, x: 0.000 m
	Max rotation about X	0.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-0.0	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-0.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	5		
	LC12 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	0.46	kN	
	Sum of Support Reactions in X	0.46	kN	Deviation -0.00%
	Sum of Loads in Y	1.32	kN	
	Sum of Support Reactions in Y	1.32	kN	Deviation -0.00%
	Sum of Loads in Z	0.36	kN	
	Sum of Support Reactions in Z	0.36	kN	Deviation -0.00%
	Max Displacement in X	-0.3	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-0.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	0.0	mm	Member No. 212, x: 0.000 m
	Max. Vector Displacement	0.5	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-0.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	0.1	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	0.2	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC13 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	3.02	kN	
	Sum of Support Reactions in X	3.02	kN	Deviation 0.00%
	Sum of Loads in Y	2.47	kN	
	Sum of Support Reactions in Y	2.47	kN	Deviation -0.00%
	Sum of Loads in Z	-0.26	kN	
	Sum of Support Reactions in Z	-0.26	kN	Deviation -0.00%
	Max Displacement in X	0.3	mm	Member No. 375, x: 6.014 m
	Max Displacement in Y	-1.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	-0.1	mm	FE Node No. 440 (X: -0.955, Y: -1.660, Z: 0.275 m)
	Max. Vector Displacement	1.5	mm	Member No. 156, x: 0.230 m
	Max rotation about X	-1.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-0.3	mrad	Member No. 125, x: 4.710 m
	Max rotation about Z	0.5	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC14 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	-0.00	kN	
	Sum of Support Reactions in X	-0.00	kN	
	Sum of Loads in Y	-0.02	kN	
	Sum of Support Reactions in Y	-0.02	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in Z	0.09	kN	
	Sum of Support Reactions in Z	0.09	kN	Deviation 0.00%
	Max Displacement in X	0.0	mm	Member No. 216, x: 0.000 m
	Max Displacement in Y	0.0	mm	Member No. 353, x: 0.000 m
	Max Displacement in Z	-0.0	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	0.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	0.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-0.0	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-0.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	5		
	LC15 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	-0.00	kN	
	Sum of Support Reactions in X	-0.00	kN	
	Sum of Loads in Y	0.01	kN	
	Sum of Support Reactions in Y	0.01	kN	Deviation 0.00%
	Sum of Loads in Z	0.01	kN	
	Sum of Support Reactions in Z	0.01	kN	Deviation 0.00%
	Max Displacement in X	-0.0	mm	Member No. 379, x: 3.580 m
	Max Displacement in Y	0.0	mm	Member No. 221, x: 0.000 m
	Max Displacement in Z	-0.0	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	0.0	mm	Member No. 221, x: 0.000 m
	Max rotation about X	0.0	mrad	Member No. 253, x: 0.000 m
	Max rotation about Y	-0.0	mrad	Member No. 382, x: 2.004 m
	Max rotation about Z	-0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	8		
	LC16 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	6.69	kN	
	Sum of Support Reactions in X	6.69	kN	Deviation -0.00%
	Sum of Loads in Y	6.28	kN	
	Sum of Support Reactions in Y	6.28	kN	Deviation 0.00%
	Sum of Loads in Z	1.15	kN	
	Sum of Support Reactions in Z	1.15	kN	Deviation -0.01%
	Max Displacement in X	-3.3	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-1.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	-0.2	mm	FE Node No. 440 (X: -0.955, Y: -1.660, Z: 0.275 m)
	Max. Vector Displacement	3.6	mm	Member No. 185, x: 0.000 m
	Max rotation about X	1.9	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	1.3	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-1.5	mrad	FE Node No. 416 (X: 12.690, Y: -2.270, Z: 0.501 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	10		
	LC17 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.03	kN	
	Sum of Support Reactions in Y	-0.03	kN	Deviation 0.00%
	Sum of Loads in Z	0.49	kN	
	Sum of Support Reactions in Z	0.49	kN	Deviation 0.00%
	Max Displacement in X	-0.0	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	0.0	mm	Member No. 126, x: 4.309 m
	Max Displacement in Z	0.5	mm	Member No. 165, x: 0.665 m
	Max. Vector Displacement	0.5	mm	Member No. 165, x: 0.665 m
	Max rotation about X	0.1	mrad	Member No. 147, x: 0.000 m
	Max rotation about Y	-0.2	mrad	Member No. 148, x: 2.995 m
	Max rotation about Z	0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	11		
	LC18 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	0.04	kN	
	Sum of Support Reactions in X	0.04	kN	Deviation 0.00%
	Sum of Loads in Y	0.02	kN	
	Sum of Support Reactions in Y	0.02	kN	Deviation 0.00%
	Sum of Loads in Z	0.01	kN	
	Sum of Support Reactions in Z	0.01	kN	Deviation 0.00%
	Max Displacement in X	-0.0	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.0	mm	Member No. 352, x: 4.961 m
	Max Displacement in Z	-0.0	mm	Member No. 212, x: 0.000 m
	Max. Vector Displacement	0.0	mm	Member No. 148, x: 2.396 m
	Max rotation about X	-0.0	mrad	FE Node No. 24 (X: 0.260, Y: 4.710, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about Y	-0.0	mrad	Member No. 488, x: 0.000 m
	Max rotation about Z	-0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	11		
	LC19 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	1.80	kN	
	Sum of Support Reactions in X	1.80	kN	Deviation 0.00%
	Sum of Loads in Y	2.23	kN	
	Sum of Support Reactions in Y	2.23	kN	Deviation 0.00%
	Sum of Loads in Z	-0.01	kN	
	Sum of Support Reactions in Z	-0.01	kN	Deviation 0.31%
	Max Displacement in X	0.2	mm	Member No. 163, x: 3.230 m
	Max Displacement in Y	0.1	mm	Member No. 417, x: 5.553 m
	Max Displacement in Z	-0.1	mm	FE Node No. 440 (X: -0.955, Y: -1.660, Z: 0.275 m)
	Max. Vector Displacement	0.3	mm	Member No. 160, x: 3.230 m
	Max rotation about X	0.3	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	-0.2	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-0.2	mrad	FE Node No. 416 (X: 12.690, Y: -2.270, Z: 0.501 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	8		
	LC20 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	0.08	kN	
	Sum of Support Reactions in X	0.08	kN	Deviation 0.00%
	Sum of Loads in Y	0.01	kN	
	Sum of Support Reactions in Y	0.01	kN	Deviation 0.00%
	Sum of Loads in Z	-0.00	kN	
	Sum of Support Reactions in Z	-0.00	kN	
	Max Displacement in X	0.0	mm	Member No. 646, x: 0.000 m
	Max Displacement in Y	-0.0	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	-0.0	mm	FE Node No. 440 (X: -0.955, Y: -1.660, Z: 0.275 m)
	Max. Vector Displacement	0.0	mm	Member No. 187, x: 0.000 m
	Max rotation about X	0.0	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	-0.0	mrad	Member No. 488, x: 0.000 m
	Max rotation about Z	-0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	7		
	LC21 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.00	kN	
	Sum of Support Reactions in Y	-0.00	kN	
	Sum of Loads in Z	0.00	kN	
	Sum of Support Reactions in Z	0.00	kN	
	Max Displacement in X	-0.0	mm	Member No. 356, x: 5.469 m
	Max Displacement in Y	-0.0	mm	Member No. 303, x: 0.000 m
	Max Displacement in Z	-0.0	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	0.0	mm	Member No. 418, x: 0.000 m
	Max rotation about X	-0.0	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	0.0	mrad	Member No. 125, x: 4.710 m
	Max rotation about Z	0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC22 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	-0.30	kN	
	Sum of Support Reactions in X	-0.30	kN	Deviation -0.00%
	Sum of Loads in Y	0.40	kN	
	Sum of Support Reactions in Y	0.40	kN	Deviation -0.00%
	Sum of Loads in Z	0.43	kN	
	Sum of Support Reactions in Z	0.43	kN	Deviation 0.00%
	Max Displacement in X	0.2	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.1	mm	Member No. 216, x: 0.000 m
	Max Displacement in Z	0.2	mm	Member No. 166, x: 3.519 m
	Max. Vector Displacement	0.3	mm	Member No. 166, x: 3.519 m
	Max rotation about X	0.1	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	0.1	mrad	Member No. 167, x: 1.945 m
	Max rotation about Z	-0.1	mrad	FE Node No. 411 (X: 12.690, Y: -1.660, Z: 0.501 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	8		
	LC23 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	-0.02	kN	
	Sum of Support Reactions in X	-0.02	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in Y	0.05	kN	
	Sum of Support Reactions in Y	0.05	kN	Deviation 0.00%
	Sum of Loads in Z	-0.06	kN	
	Sum of Support Reactions in Z	-0.06	kN	Deviation 0.00%
	Max Displacement in X	0.0	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.0	mm	Member No. 206, x: 0.000 m
	Max Displacement in Z	-0.0	mm	Member No. 166, x: 2.932 m
	Max. Vector Displacement	0.0	mm	Member No. 166, x: 3.519 m
	Max rotation about X	0.0	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	-0.0	mrad	Member No. 167, x: 1.945 m
	Max rotation about Z	-0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	9		
	LC24 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	0.16	kN	
	Sum of Support Reactions in X	0.16	kN	Deviation 0.00%
	Sum of Loads in Y	-0.04	kN	
	Sum of Support Reactions in Y	-0.04	kN	Deviation 0.00%
	Sum of Loads in Z	-0.02	kN	
	Sum of Support Reactions in Z	-0.02	kN	Deviation -0.02%
	Max Displacement in X	0.0	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.0	mm	Member No. 196, x: 0.000 m
	Max Displacement in Z	-0.0	mm	Member No. 166, x: 3.519 m
	Max. Vector Displacement	0.0	mm	Member No. 166, x: 3.519 m
	Max rotation about X	0.0	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	-0.0	mrad	Member No. 583, x: 0.000 m
	Max rotation about Z	-0.0	mrad	FE Node No. 411 (X: 12.690, Y: -1.660, Z: 0.501 m)
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC25 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	-0.10	kN	
	Sum of Support Reactions in X	-0.10	kN	Deviation 0.00%
	Sum of Loads in Y	0.09	kN	
	Sum of Support Reactions in Y	0.09	kN	Deviation 0.00%
	Sum of Loads in Z	0.00	kN	
	Sum of Support Reactions in Z	0.00	kN	
	Max Displacement in X	0.0	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.0	mm	Member No. 196, x: 0.000 m
	Max Displacement in Z	-0.0	mm	Member No. 166, x: 2.932 m
	Max. Vector Displacement	0.0	mm	Member No. 166, x: 3.519 m
	Max rotation about X	0.0	mrad	Member No. 468, x: 0.000 m
	Max rotation about Y	0.0	mrad	Member No. 206, x: 0.000 m
	Max rotation about Z	-0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	7		
	LC26 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	0.21	kN	
	Sum of Support Reactions in X	0.21	kN	Deviation -0.00%
	Sum of Loads in Y	-0.11	kN	
	Sum of Support Reactions in Y	-0.11	kN	Deviation 0.00%
	Sum of Loads in Z	-0.01	kN	
	Sum of Support Reactions in Z	-0.01	kN	Deviation 0.00%
	Max Displacement in X	0.0	mm	Member No. 656, x: 0.000 m
	Max Displacement in Y	-0.0	mm	Member No. 473, x: 0.000 m
	Max Displacement in Z	-0.0	mm	FE Node No. 377 (X: 10.135, Y: 0.305, Z: 0.425 m)
	Max. Vector Displacement	0.0	mm	Member No. 358, x: 0.334 m
	Max rotation about X	-0.0	mrad	Member No. 410, x: 0.000 m
	Max rotation about Y	-0.0	mrad	Member No. 583, x: 0.000 m
	Max rotation about Z	0.0	mrad	Member No. 468, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	7		
	LC27 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	1.41	kN	
	Sum of Support Reactions in X	1.41	kN	Deviation -0.00%
	Sum of Loads in Y	0.79	kN	
	Sum of Support Reactions in Y	0.79	kN	Deviation -0.00%
	Sum of Loads in Z	0.35	kN	
	Sum of Support Reactions in Z	0.35	kN	Deviation 0.00%
	Max Displacement in X	0.1	mm	Member No. 213, x: 0.600 m
	Max Displacement in Y	0.0	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	-0.2	mm	Member No. 359, x: 0.160 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max. Vector Displacement	0.2	mm	Member No. 359, x: 0.160 m
	Max rotation about X	0.1	mrad	Member No. 506, x: 0.000 m
	Max rotation about Y	-0.2	mrad	Member No. 641, x: 0.000 m
	Max rotation about Z	0.1	mrad	Member No. 193, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	6		
	LC28 - Equivalent lateral loads from RF-DYNAM,			
	Sum of Loads in X	0.05	kN	
	Sum of Support Reactions in X	0.05	kN	Deviation 0.00%
	Sum of Loads in Y	-0.14	kN	
	Sum of Support Reactions in Y	-0.14	kN	Deviation 0.00%
	Sum of Loads in Z	0.45	kN	
	Sum of Support Reactions in Z	0.45	kN	Deviation 0.00%
	Max Displacement in X	0.0	mm	Member No. 655, x: 0.000 m
	Max Displacement in Y	-0.0	mm	FE Node No. 491 (X: 4.680, Y: 5.015, Z: 0.380 m)
	Max Displacement in Z	-0.2	mm	Member No. 359, x: 0.160 m
	Max. Vector Displacement	0.2	mm	Member No. 359, x: 0.160 m
	Max rotation about X	-0.1	mrad	Member No. 360, x: 2.195 m
	Max rotation about Y	-0.1	mrad	Member No. 641, x: 0.000 m
	Max rotation about Z	-0.0	mrad	Member No. 621, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	12		
	LG1 - UB (1.35*LC1)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	484.05	kN	
	Sum of Support Reactions in Z	484.05	kN	Deviation -0.00%
	Max Displacement in X	0.8	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.9	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	13.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.0	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.9	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG2 - UB (1.35*LC1 + 1.5*LC2)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	701.13	kN	
	Sum of Support Reactions in Z	701.13	kN	Deviation 0.00%
	Max Displacement in X	0.9	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.9	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	13.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.0	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.9	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG3 - UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in Z	762.01	kN	
	Sum of Support Reactions in Z	762.02	kN	Deviation -0.00%
	Max Displacement in X	1.0	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-1.3	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	20.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	20.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	12.2	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-21.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-1.3	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG4 - UB (1.35*LC1 + 1.5*LC3)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	544.94	kN	
	Sum of Support Reactions in Z	544.94	kN	Deviation 0.00%
	Max Displacement in X	0.8	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-1.3	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	19.8	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	19.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	12.2	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-21.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-1.3	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG5 - UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	733.63	kN	
	Sum of Support Reactions in Z	733.63	kN	Deviation 0.00%
	Max Displacement in X	1.1	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.9	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	13.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.0	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-1.0	mrad	FE Node No. 1 (X: 0.000, Y: 0.000, Z: 0.000 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG6 - UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*			
	Sum of Loads in X	53.53	kN	
	Sum of Support Reactions in X	53.52	kN	Deviation 0.00%
	Sum of Loads in Y	-7.49	kN	
	Sum of Support Reactions in Y	-7.49	kN	Deviation 0.00%
	Sum of Loads in Z	718.63	kN	
	Sum of Support Reactions in Z	718.63	kN	Deviation 0.00%
	Max Displacement in X	13.9	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.4	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	13.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max. Vector Displacement	15.3	mm	Member No. 146, x: 1.520 m
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-11.6	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	3.8	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG7 - UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*			
	Sum of Loads in X	-7.37	kN	
	Sum of Support Reactions in X	-7.37	kN	Deviation 0.00%
	Sum of Loads in Y	101.89	kN	
	Sum of Support Reactions in Y	101.89	kN	Deviation -0.00%
	Sum of Loads in Z	739.75	kN	
	Sum of Support Reactions in Z	739.75	kN	Deviation 0.00%
	Max Displacement in X	15.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	37.0	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	38.4	mm	Member No. 185, x: 0.000 m
	Max rotation about X	34.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-14.4	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-12.7	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG8 - UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*			
	Sum of Loads in X	-4.03	kN	
	Sum of Support Reactions in X	-4.03	kN	Deviation -0.00%
	Sum of Loads in Y	-70.09	kN	
	Sum of Support Reactions in Y	-70.09	kN	Deviation -0.00%
	Sum of Loads in Z	759.70	kN	
	Sum of Support Reactions in Z	759.70	kN	Deviation 0.00%
	Max Displacement in X	-9.3	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-23.8	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	19.3	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.6	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-22.5	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-21.9	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG9 - UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*			
	Sum of Loads in X	-75.22	kN	
	Sum of Support Reactions in X	-75.22	kN	Deviation 0.00%
	Sum of Loads in Y	3.24	kN	
	Sum of Support Reactions in Y	3.24	kN	Deviation -0.00%
	Sum of Loads in Z	733.63	kN	
	Sum of Support Reactions in Z	733.63	kN	Deviation 0.00%
	Max Displacement in X	-25.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-8.3	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	14.1	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.9	mm	Member No. 162, x: 1.950 m
	Max rotation about X	8.0	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.6	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-10.5	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG10 - UB (1.35*LC1 + 1.5*LC2 + 0.9*LC5)			
	Sum of Loads in X	53.53	kN	
	Sum of Support Reactions in X	53.52	kN	Deviation 0.00%
	Sum of Loads in Y	-7.49	kN	
	Sum of Support Reactions in Y	-7.49	kN	Deviation -0.00%
	Sum of Loads in Z	686.13	kN	
	Sum of Support Reactions in Z	686.13	kN	Deviation 0.00%
	Max Displacement in X	13.8	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.3	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	12.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	15.1	mm	Member No. 147, x: 1.520 m
	Max rotation about X	7.5	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-11.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	3.8	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG11 - UB (1.35*LC1 + 1.5*LC2 + 0.9*LC6)			
	Sum of Loads in X	-7.37	kN	
	Sum of Support Reactions in X	-7.37	kN	Deviation 0.00%
	Sum of Loads in Y	101.89	kN	
	Sum of Support Reactions in Y	101.89	kN	Deviation -0.00%
	Sum of Loads in Z	707.25	kN	
	Sum of Support Reactions in Z	707.25	kN	Deviation 0.00%
	Max Displacement in X	15.1	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	36.6	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	37.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	33.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-14.3	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-12.5	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG12 - UB (1.35*LC1 + 1.5*LC2 + 0.9*LC7)			
	Sum of Loads in X	-4.03	kN	
	Sum of Support Reactions in X	-4.03	kN	Deviation -0.00%
	Sum of Loads in Y	-70.09	kN	
	Sum of Support Reactions in Y	-70.09	kN	Deviation -0.00%
	Sum of Loads in Z	727.19	kN	
	Sum of Support Reactions in Z	727.19	kN	Deviation 0.00%
	Max Displacement in X	-9.3	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-23.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	19.0	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.3	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-22.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-21.8	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	8.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	5		
	LG13 - UB (1.35*LC1 + 1.5*LC2 + 0.9*LC8)			
	Sum of Loads in X	-75.22	kN	
	Sum of Support Reactions in X	-75.22	kN	Deviation 0.00%
	Sum of Loads in Y	3.24	kN	
	Sum of Support Reactions in Y	3.24	kN	Deviation -0.00%
	Sum of Loads in Z	701.13	kN	
	Sum of Support Reactions in Z	701.13	kN	Deviation 0.00%
	Max Displacement in X	-25.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-8.3	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	13.8	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	26.0	mm	Member No. 162, x: 1.950 m
	Max rotation about X	7.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.6	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-10.5	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG14 - UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*			
	Sum of Loads in X	53.53	kN	
	Sum of Support Reactions in X	53.53	kN	Deviation -0.00%
	Sum of Loads in Y	-7.49	kN	
	Sum of Support Reactions in Y	-7.49	kN	Deviation 0.00%
	Sum of Loads in Z	747.01	kN	
	Sum of Support Reactions in Z	747.01	kN	Deviation 0.00%
	Max Displacement in X	13.8	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.2	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	19.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	19.3	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	11.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-18.6	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	3.8	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG15 - UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*			
	Sum of Loads in X	-7.37	kN	
	Sum of Support Reactions in X	-7.37	kN	Deviation 0.00%
	Sum of Loads in Y	101.89	kN	
	Sum of Support Reactions in Y	101.89	kN	Deviation -0.00%
	Sum of Loads in Z	768.13	kN	
	Sum of Support Reactions in Z	768.13	kN	Deviation 0.00%
	Max Displacement in X	15.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	36.6	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	20.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	37.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	33.5	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-21.4	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-12.5	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG16 - UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*			
	Sum of Loads in X	-4.03	kN	
	Sum of Support Reactions in X	-4.03	kN	Deviation -0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in Y	-70.09	kN	
	Sum of Support Reactions in Y	-70.09	kN	Deviation -0.00%
	Sum of Loads in Z	788.08	kN	
	Sum of Support Reactions in Z	788.08	kN	Deviation 0.00%
	Max Displacement in X	-9.3	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-23.6	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	25.5	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.6	mm	Member No. 135, x: 2.257 m
	Max rotation about X	-22.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-28.9	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG17 - UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*			
	Sum of Loads in X	-75.22	kN	
	Sum of Support Reactions in X	-75.22	kN	Deviation 0.00%
	Sum of Loads in Y	3.24	kN	
	Sum of Support Reactions in Y	3.24	kN	Deviation -0.00%
	Sum of Loads in Z	762.01	kN	
	Sum of Support Reactions in Z	762.01	kN	Deviation 0.00%
	Max Displacement in X	-25.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-8.3	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	20.3	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.9	mm	Member No. 162, x: 1.950 m
	Max rotation about X	12.1	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-20.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-10.5	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG18 - UB (1.35*LC1 + 1.5*LC3 + 0.9*LC5)			
	Sum of Loads in X	53.53	kN	
	Sum of Support Reactions in X	53.52	kN	Deviation 0.00%
	Sum of Loads in Y	-7.49	kN	
	Sum of Support Reactions in Y	-7.49	kN	Deviation 0.00%
	Sum of Loads in Z	529.94	kN	
	Sum of Support Reactions in Z	529.94	kN	Deviation 0.00%
	Max Displacement in X	13.7	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.2	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	18.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	18.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	11.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-18.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	3.7	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG19 - UB (1.35*LC1 + 1.5*LC3 + 0.9*LC6)			
	Sum of Loads in X	-7.37	kN	
	Sum of Support Reactions in X	-7.37	kN	Deviation 0.00%
	Sum of Loads in Y	101.89	kN	
	Sum of Support Reactions in Y	101.89	kN	Deviation 0.00%
	Sum of Loads in Z	551.06	kN	
	Sum of Support Reactions in Z	551.06	kN	Deviation 0.00%
	Max Displacement in X	14.9	mm	Member No. 185, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in Y	36.6	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	19.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	37.7	mm	Member No. 185, x: 0.000 m
	Max rotation about X	33.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-21.3	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-12.4	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG20 - UB (1.35*LC1 + 1.5*LC3 + 0.9*LC7)			
	Sum of Loads in X	-4.03	kN	
	Sum of Support Reactions in X	-4.03	kN	Deviation -0.00%
	Sum of Loads in Y	-70.09	kN	
	Sum of Support Reactions in Y	-70.09	kN	Deviation -0.00%
	Sum of Loads in Z	571.00	kN	
	Sum of Support Reactions in Z	571.00	kN	Deviation 0.00%
	Max Displacement in X	-9.5	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-23.7	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	25.1	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.5	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-22.5	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-28.8	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG21 - UB (1.35*LC1 + 1.5*LC3 + 0.9*LC8)			
	Sum of Loads in X	-75.22	kN	
	Sum of Support Reactions in X	-75.22	kN	Deviation 0.00%
	Sum of Loads in Y	3.24	kN	
	Sum of Support Reactions in Y	3.24	kN	Deviation -0.00%
	Sum of Loads in Z	544.94	kN	
	Sum of Support Reactions in Z	544.94	kN	Deviation 0.00%
	Max Displacement in X	-26.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-8.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	20.0	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	26.1	mm	Member No. 162, x: 1.950 m
	Max rotation about X	12.1	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-20.6	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-10.5	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG22 - UB (1.35*LC1 + 1.5*LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	549.05	kN	
	Sum of Support Reactions in Z	549.05	kN	Deviation 0.00%
	Max Displacement in X	1.0	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.9	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	13.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.1	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about Z	1.2	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG23 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	701.01	kN	
	Sum of Support Reactions in Z	701.00	kN	Deviation 0.00%
	Max Displacement in X	1.1	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.9	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	14.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	14.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.1	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	1.2	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG24 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9			
	Sum of Loads in X	53.53	kN	
	Sum of Support Reactions in X	53.52	kN	Deviation 0.00%
	Sum of Loads in Y	-7.49	kN	
	Sum of Support Reactions in Y	-7.49	kN	Deviation 0.00%
	Sum of Loads in Z	686.01	kN	
	Sum of Support Reactions in Z	686.01	kN	Deviation 0.00%
	Max Displacement in X	14.0	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.5	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	13.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	15.4	mm	Member No. 146, x: 1.520 m
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	11.7	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	3.7	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG25 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9			
	Sum of Loads in X	-7.37	kN	
	Sum of Support Reactions in X	-7.37	kN	Deviation 0.00%
	Sum of Loads in Y	101.89	kN	
	Sum of Support Reactions in Y	101.89	kN	Deviation 0.00%
	Sum of Loads in Z	707.13	kN	
	Sum of Support Reactions in Z	707.12	kN	Deviation 0.00%
	Max Displacement in X	15.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	37.3	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	14.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	38.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	34.7	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-14.5	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-12.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG26 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9			
	Sum of Loads in X	-4.03	kN	
	Sum of Support Reactions in X	-4.03	kN	Deviation -0.00%
	Sum of Loads in Y	-70.09	kN	
	Sum of Support Reactions in Y	-70.09	kN	Deviation 0.00%
	Sum of Loads in Z	727.07	kN	
	Sum of Support Reactions in Z	727.08	kN	Deviation -0.00%
	Max Displacement in X	-9.5	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-24.0	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	19.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-22.8	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-21.9	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	5		
	LG27 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9			
	Sum of Loads in X	-75.22	kN	
	Sum of Support Reactions in X	-75.22	kN	Deviation 0.00%
	Sum of Loads in Y	3.24	kN	
	Sum of Support Reactions in Y	3.24	kN	Deviation 0.00%
	Sum of Loads in Z	701.01	kN	
	Sum of Support Reactions in Z	701.00	kN	Deviation 0.00%
	Max Displacement in X	-25.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-8.4	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	14.3	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.9	mm	Member No. 162, x: 1.950 m
	Max rotation about X	8.0	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-10.5	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG28 - UB (1.35*LC1 + 1.5*LC4 + 0.9*LC5)			
	Sum of Loads in X	53.53	kN	
	Sum of Support Reactions in X	53.52	kN	Deviation 0.00%
	Sum of Loads in Y	-7.49	kN	
	Sum of Support Reactions in Y	-7.49	kN	Deviation 0.00%
	Sum of Loads in Z	534.05	kN	
	Sum of Support Reactions in Z	534.05	kN	Deviation -0.00%
	Max Displacement in X	13.9	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.4	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	12.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	15.2	mm	Member No. 146, x: 1.520 m
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	11.9	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	3.7	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG29 - UB (1.35*LC1 + 1.5*LC4 + 0.9*LC6)			

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in X	-7.37	kN	
	Sum of Support Reactions in X	-7.37	kN	Deviation 0.00%
	Sum of Loads in Y	101.89	kN	
	Sum of Support Reactions in Y	101.89	kN	Deviation 0.00%
	Sum of Loads in Z	555.17	kN	
	Sum of Support Reactions in Z	555.17	kN	Deviation 0.00%
	Max Displacement in X	15.5	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	37.3	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	38.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	34.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-14.4	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-12.8	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG30 - UB (1.35*LC1 + 1.5*LC4 + 0.9*LC7)			
	Sum of Loads in X	-4.03	kN	
	Sum of Support Reactions in X	-4.03	kN	Deviation -0.00%
	Sum of Loads in Y	-70.09	kN	
	Sum of Support Reactions in Y	-70.09	kN	Deviation -0.00%
	Sum of Loads in Z	575.12	kN	
	Sum of Support Reactions in Z	575.12	kN	Deviation 0.00%
	Max Displacement in X	-9.6	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-24.0	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	19.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	25.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-22.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-21.9	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.1	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	5		
	LG31 - UB (1.35*LC1 + 1.5*LC4 + 0.9*LC8)			
	Sum of Loads in X	-75.22	kN	
	Sum of Support Reactions in X	-75.22	kN	Deviation -0.00%
	Sum of Loads in Y	3.24	kN	
	Sum of Support Reactions in Y	3.24	kN	Deviation 0.00%
	Sum of Loads in Z	549.05	kN	
	Sum of Support Reactions in Z	549.05	kN	Deviation 0.00%
	Max Displacement in X	-26.0	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-8.5	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	14.0	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	26.1	mm	Member No. 162, x: 1.950 m
	Max rotation about X	8.0	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-10.5	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG32 - UB (1.35*LC1 + 1.5*LC5)			
	Sum of Loads in X	89.21	kN	
	Sum of Support Reactions in X	89.21	kN	Deviation -0.00%
	Sum of Loads in Y	-12.49	kN	
	Sum of Support Reactions in Y	-12.49	kN	Deviation -0.00%
	Sum of Loads in Z	459.05	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Support Reactions in Z	459.06	kN	Deviation -0.00%
	Max Displacement in X	22.4	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	10.3	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	11.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.5	mm	Member No. 146, x: 1.520 m
	Max rotation about X	9.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-11.1	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	6.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG33 - UB (1.35*LC1 + 1.5*LC6)			
	Sum of Loads in X	-12.29	kN	
	Sum of Support Reactions in X	-12.29	kN	Deviation -0.00%
	Sum of Loads in Y	169.82	kN	
	Sum of Support Reactions in Y	169.81	kN	Deviation 0.01%
	Sum of Loads in Z	494.25	kN	
	Sum of Support Reactions in Z	494.25	kN	Deviation 0.00%
	Max Displacement in X	24.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	61.6	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	62.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	56.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-20.6	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG34 - UB (1.35*LC1 + 1.5*LC7)			
	Sum of Loads in X	-6.72	kN	
	Sum of Support Reactions in X	-6.72	kN	Deviation 0.00%
	Sum of Loads in Y	-116.82	kN	
	Sum of Support Reactions in Y	-116.82	kN	Deviation 0.00%
	Sum of Loads in Z	527.50	kN	
	Sum of Support Reactions in Z	527.50	kN	Deviation 0.00%
	Max Displacement in X	-16.4	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-39.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	22.1	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	42.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-37.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-26.9	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	15.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG35 - UB (1.35*LC1 + 1.5*LC8)			
	Sum of Loads in X	-125.36	kN	
	Sum of Support Reactions in X	-125.36	kN	Deviation -0.00%
	Sum of Loads in Y	5.40	kN	
	Sum of Support Reactions in Y	5.40	kN	Deviation 0.00%
	Sum of Loads in Z	484.05	kN	
	Sum of Support Reactions in Z	484.05	kN	Deviation 0.00%
	Max Displacement in X	-44.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-14.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.5	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	44.1	mm	Member No. 162, x: 1.950 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about X	-12.3	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	17.4	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-17.6	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG36 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC5)			
	Sum of Loads in X	89.21	kN	
	Sum of Support Reactions in X	89.21	kN	Deviation -0.00%
	Sum of Loads in Y	-12.49	kN	
	Sum of Support Reactions in Y	-12.49	kN	Deviation -0.00%
	Sum of Loads in Z	611.01	kN	
	Sum of Support Reactions in Z	611.01	kN	Deviation 0.00%
	Max Displacement in X	22.5	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	10.3	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	11.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.5	mm	Member No. 146, x: 1.520 m
	Max rotation about X	9.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-11.2	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	6.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG37 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC6)			
	Sum of Loads in X	-12.29	kN	
	Sum of Support Reactions in X	-12.29	kN	Deviation 0.00%
	Sum of Loads in Y	169.82	kN	
	Sum of Support Reactions in Y	169.81	kN	Deviation 0.00%
	Sum of Loads in Z	646.21	kN	
	Sum of Support Reactions in Z	646.20	kN	Deviation 0.00%
	Max Displacement in X	24.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	61.6	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	62.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	56.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-20.7	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG38 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC7)			
	Sum of Loads in X	-6.72	kN	
	Sum of Support Reactions in X	-6.72	kN	Deviation -0.00%
	Sum of Loads in Y	-116.82	kN	
	Sum of Support Reactions in Y	-116.82	kN	Deviation 0.00%
	Sum of Loads in Z	679.45	kN	
	Sum of Support Reactions in Z	679.45	kN	Deviation 0.00%
	Max Displacement in X	-16.2	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-39.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	22.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	42.6	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-37.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-26.9	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	15.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG39 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC8)			
	Sum of Loads in X	-125.36	kN	
	Sum of Support Reactions in X	-125.36	kN	Deviation -0.00%
	Sum of Loads in Y	5.40	kN	
	Sum of Support Reactions in Y	5.40	kN	Deviation 0.00%
	Sum of Loads in Z	636.01	kN	
	Sum of Support Reactions in Z	636.00	kN	Deviation 0.00%
	Max Displacement in X	-43.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-14.0	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	13.8	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	44.0	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-12.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	17.4	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-17.6	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG40 - UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.			
	Sum of Loads in X	89.21	kN	
	Sum of Support Reactions in X	89.21	kN	Deviation -0.00%
	Sum of Loads in Y	-12.49	kN	
	Sum of Support Reactions in Y	-12.49	kN	Deviation -0.00%
	Sum of Loads in Z	653.63	kN	
	Sum of Support Reactions in Z	653.62	kN	Deviation 0.00%
	Max Displacement in X	22.5	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	10.3	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	16.5	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.6	mm	Member No. 146, x: 1.520 m
	Max rotation about X	10.1	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	14.8	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	6.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG41 - UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.			
	Sum of Loads in X	-12.29	kN	
	Sum of Support Reactions in X	-12.29	kN	Deviation 0.00%
	Sum of Loads in Y	169.82	kN	
	Sum of Support Reactions in Y	169.81	kN	Deviation 0.00%
	Sum of Loads in Z	688.82	kN	
	Sum of Support Reactions in Z	688.82	kN	Deviation 0.00%
	Max Displacement in X	24.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	61.6	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	18.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	62.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	56.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-19.4	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-20.7	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Number of Iterations	4		
	LG42 - UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.			
	Sum of Loads in X	-6.72	kN	
	Sum of Support Reactions in X	-6.72	kN	Deviation 0.00%
	Sum of Loads in Y	-116.82	kN	
	Sum of Support Reactions in Y	-116.82	kN	Deviation 0.00%
	Sum of Loads in Z	722.07	kN	
	Sum of Support Reactions in Z	722.07	kN	Deviation 0.00%
	Max Displacement in X	-16.2	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-39.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	27.0	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	42.6	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-37.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-31.8	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	15.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG43 - UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.			
	Sum of Loads in X	-125.36	kN	
	Sum of Support Reactions in X	-125.36	kN	Deviation -0.00%
	Sum of Loads in Y	5.40	kN	
	Sum of Support Reactions in Y	5.40	kN	Deviation 0.00%
	Sum of Loads in Z	678.62	kN	
	Sum of Support Reactions in Z	678.62	kN	Deviation 0.00%
	Max Displacement in X	-43.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-14.0	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	18.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	43.9	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-12.3	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-18.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-17.6	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG44 - UB (1.35*LC1 + 1.05*LC3 + 1.5*LC5)			
	Sum of Loads in X	89.21	kN	
	Sum of Support Reactions in X	89.21	kN	Deviation -0.00%
	Sum of Loads in Y	-12.49	kN	
	Sum of Support Reactions in Y	-12.49	kN	Deviation -0.00%
	Sum of Loads in Z	501.67	kN	
	Sum of Support Reactions in Z	501.67	kN	Deviation 0.00%
	Max Displacement in X	22.4	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	10.3	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	16.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.5	mm	Member No. 146, x: 1.520 m
	Max rotation about X	10.1	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	15.0	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	6.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG45 - UB (1.35*LC1 + 1.05*LC3 + 1.5*LC6)			
	Sum of Loads in X	-12.29	kN	
	Sum of Support Reactions in X	-12.29	kN	Deviation -0.00%
	Sum of Loads in Y	169.82	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Support Reactions in Y	169.81	kN	Deviation 0.01%
	Sum of Loads in Z	536.87	kN	
	Sum of Support Reactions in Z	536.87	kN	Deviation 0.00%
	Max Displacement in X	24.5	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	61.6	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	17.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	62.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	56.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-19.4	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-20.6	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	5		
	LG46 - UB (1.35*LC1 + 1.05*LC3 + 1.5*LC7)			
	Sum of Loads in X	-6.72	kN	
	Sum of Support Reactions in X	-6.72	kN	Deviation 0.00%
	Sum of Loads in Y	-116.82	kN	
	Sum of Support Reactions in Y	-116.82	kN	Deviation 0.00%
	Sum of Loads in Z	570.11	kN	
	Sum of Support Reactions in Z	570.11	kN	Deviation -0.00%
	Max Displacement in X	-16.3	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-39.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	26.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	42.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-37.3	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-31.8	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	15.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG47 - UB (1.35*LC1 + 1.05*LC3 + 1.5*LC8)			
	Sum of Loads in X	-125.36	kN	
	Sum of Support Reactions in X	-125.36	kN	Deviation -0.00%
	Sum of Loads in Y	5.40	kN	
	Sum of Support Reactions in Y	5.40	kN	Deviation 0.00%
	Sum of Loads in Z	526.67	kN	
	Sum of Support Reactions in Z	526.67	kN	Deviation -0.00%
	Max Displacement in X	-44.0	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-14.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	18.1	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	44.1	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-12.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-18.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-17.6	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG48 - UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.			
	Sum of Loads in X	89.21	kN	
	Sum of Support Reactions in X	89.21	kN	Deviation -0.00%
	Sum of Loads in Y	-12.49	kN	
	Sum of Support Reactions in Y	-12.49	kN	Deviation -0.00%
	Sum of Loads in Z	643.51	kN	
	Sum of Support Reactions in Z	643.51	kN	Deviation 0.00%
	Max Displacement in X	22.7	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	10.5	mm	Member No. 189, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in Z	12.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.7	mm	Member No. 146, x: 1.520 m
	Max rotation about X	9.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-11.2	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	6.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG49 - UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.			
	Sum of Loads in X	-12.29	kN	
	Sum of Support Reactions in X	-12.29	kN	Deviation 0.00%
	Sum of Loads in Y	169.82	kN	
	Sum of Support Reactions in Y	169.81	kN	Deviation 0.00%
	Sum of Loads in Z	678.71	kN	
	Sum of Support Reactions in Z	678.71	kN	Deviation 0.00%
	Max Displacement in X	25.0	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	62.2	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	63.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	57.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-16.0	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-21.1	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG50 - UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.			
	Sum of Loads in X	-6.72	kN	
	Sum of Support Reactions in X	-6.72	kN	Deviation 0.00%
	Sum of Loads in Y	-116.82	kN	
	Sum of Support Reactions in Y	-116.82	kN	Deviation 0.00%
	Sum of Loads in Z	711.95	kN	
	Sum of Support Reactions in Z	711.95	kN	Deviation 0.00%
	Max Displacement in X	-16.3	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-39.7	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	22.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	43.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-37.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-27.0	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	15.1	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG51 - UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.			
	Sum of Loads in X	-125.36	kN	
	Sum of Support Reactions in X	-125.36	kN	Deviation -0.00%
	Sum of Loads in Y	5.40	kN	
	Sum of Support Reactions in Y	5.40	kN	Deviation 0.00%
	Sum of Loads in Z	668.51	kN	
	Sum of Support Reactions in Z	668.50	kN	Deviation 0.00%
	Max Displacement in X	-43.9	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-14.1	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	14.1	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	43.9	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-12.3	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	17.4	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-17.6	mrad	Member No. 162, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG52 - UB (1.35*LC1 + 0.75*LC4 + 1.5*LC5)			
	Sum of Loads in X	89.21	kN	
	Sum of Support Reactions in X	89.21	kN	Deviation -0.00%
	Sum of Loads in Y	-12.49	kN	
	Sum of Support Reactions in Y	-12.49	kN	Deviation -0.00%
	Sum of Loads in Z	491.56	kN	
	Sum of Support Reactions in Z	491.56	kN	Deviation 0.00%
	Max Displacement in X	22.6	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	10.4	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	11.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.6	mm	Member No. 146, x: 1.520 m
	Max rotation about X	9.3	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-11.2	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	6.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG53 - UB (1.35*LC1 + 0.75*LC4 + 1.5*LC6)			
	Sum of Loads in X	-12.29	kN	
	Sum of Support Reactions in X	-12.29	kN	Deviation -0.00%
	Sum of Loads in Y	169.82	kN	
	Sum of Support Reactions in Y	169.81	kN	Deviation 0.01%
	Sum of Loads in Z	526.75	kN	
	Sum of Support Reactions in Z	526.75	kN	Deviation 0.00%
	Max Displacement in X	24.9	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	62.2	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	63.7	mm	Member No. 185, x: 0.000 m
	Max rotation about X	57.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-16.0	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-21.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG54 - UB (1.35*LC1 + 0.75*LC4 + 1.5*LC7)			
	Sum of Loads in X	-6.72	kN	
	Sum of Support Reactions in X	-6.72	kN	Deviation 0.00%
	Sum of Loads in Y	-116.82	kN	
	Sum of Support Reactions in Y	-116.82	kN	Deviation 0.00%
	Sum of Loads in Z	560.00	kN	
	Sum of Support Reactions in Z	560.00	kN	Deviation 0.00%
	Max Displacement in X	-16.5	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-39.8	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	22.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	43.1	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-37.7	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-26.9	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	15.1	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG55 - UB (1.35*LC1 + 0.75*LC4 + 1.5*LC8)			
	Sum of Loads in X	-125.36	kN	
	Sum of Support Reactions in X	-125.36	kN	Deviation -0.00%
	Sum of Loads in Y	5.40	kN	
	Sum of Support Reactions in Y	5.40	kN	Deviation 0.00%
	Sum of Loads in Z	516.55	kN	
	Sum of Support Reactions in Z	516.55	kN	Deviation 0.00%
	Max Displacement in X	-44.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-14.2	mm	Member No. 353, x: 0.000 m
	Max Displacement in Z	13.8	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	44.1	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-12.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	17.5	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-17.6	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG87 - UB (LC1 + 1.5*LC5)			
	Sum of Loads in X	89.21	kN	
	Sum of Support Reactions in X	89.21	kN	Deviation 0.00%
	Sum of Loads in Y	-12.49	kN	
	Sum of Support Reactions in Y	-12.49	kN	Deviation -0.00%
	Sum of Loads in Z	333.56	kN	
	Sum of Support Reactions in Z	333.56	kN	Deviation -0.00%
	Max Displacement in X	22.2	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	10.2	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	8.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.3	mm	Member No. 146, x: 1.520 m
	Max rotation about X	9.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-11.1	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	6.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG88 - UB (LC1 + 1.5*LC6)			
	Sum of Loads in X	-12.29	kN	
	Sum of Support Reactions in X	-12.29	kN	Deviation 0.00%
	Sum of Loads in Y	169.82	kN	
	Sum of Support Reactions in Y	169.82	kN	Deviation -0.00%
	Sum of Loads in Z	368.76	kN	
	Sum of Support Reactions in Z	368.76	kN	Deviation -0.00%
	Max Displacement in X	24.1	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	61.3	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	9.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	62.3	mm	Member No. 185, x: 0.000 m
	Max rotation about X	55.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.6	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-20.4	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG89 - UB (LC1 + 1.5*LC7)			
	Sum of Loads in X	-6.72	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Support Reactions in X	-6.72	kN	Deviation 0.00%
	Sum of Loads in Y	-116.82	kN	
	Sum of Support Reactions in Y	-116.82	kN	Deviation 0.00%
	Sum of Loads in Z	402.00	kN	
	Sum of Support Reactions in Z	402.00	kN	Deviation -0.00%
	Max Displacement in X	-16.5	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-39.3	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	18.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	42.7	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-36.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-23.3	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	14.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG90 - UB (LC1 + 1.5*LC8)			
	Sum of Loads in X	-125.36	kN	
	Sum of Support Reactions in X	-125.36	kN	Deviation -0.00%
	Sum of Loads in Y	5.40	kN	
	Sum of Support Reactions in Y	5.40	kN	Deviation 0.00%
	Sum of Loads in Z	358.56	kN	
	Sum of Support Reactions in Z	358.56	kN	Deviation 0.00%
	Max Displacement in X	-44.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-14.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.1	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	44.3	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-12.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	17.3	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-17.5	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG111 - US (LC1 + LC10)			
	Sum of Loads in X	3.07	kN	
	Sum of Support Reactions in X	3.07	kN	Deviation 0.00%
	Sum of Loads in Y	-2.83	kN	
	Sum of Support Reactions in Y	-2.83	kN	Deviation -0.00%
	Sum of Loads in Z	358.65	kN	
	Sum of Support Reactions in Z	358.65	kN	Deviation -0.00%
	Max Displacement in X	1.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	-0.7	mm	Member No. 216, x: 0.000 m
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.6	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	11		
	LG112 - US (LC1 + LC11)			
	Sum of Loads in X	0.03	kN	
	Sum of Support Reactions in X	0.03	kN	Deviation 0.00%
	Sum of Loads in Y	-0.11	kN	
	Sum of Support Reactions in Y	-0.11	kN	Deviation 0.00%
	Sum of Loads in Z	359.27	kN	
	Sum of Support Reactions in Z	359.27	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.6	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG113 - US (LC1 + LC14)			
	Sum of Loads in X	-0.00	kN	
	Sum of Support Reactions in X	-0.00	kN	
	Sum of Loads in Y	-0.02	kN	
	Sum of Support Reactions in Y	-0.02	kN	Deviation 0.00%
	Sum of Loads in Z	358.64	kN	
	Sum of Support Reactions in Z	358.64	kN	Deviation -0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.6	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG114 - US (LC1 + LC17)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.03	kN	
	Sum of Support Reactions in Y	-0.03	kN	Deviation -0.00%
	Sum of Loads in Z	359.04	kN	
	Sum of Support Reactions in Z	359.05	kN	Deviation -0.00%
	Max Displacement in X	0.5	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.6	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG115 - US (LC1 + LC20)			
	Sum of Loads in X	0.08	kN	
	Sum of Support Reactions in X	0.08	kN	Deviation 0.00%
	Sum of Loads in Y	0.01	kN	
	Sum of Support Reactions in Y	0.01	kN	Deviation 0.00%
	Sum of Loads in Z	358.56	kN	
	Sum of Support Reactions in Z	358.56	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.6	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG116 - US (LC1 + LC21)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.00	kN	
	Sum of Support Reactions in Y	-0.00	kN	
	Sum of Loads in Z	358.56	kN	
	Sum of Support Reactions in Z	358.56	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.6	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG117 - US (LC1 + 0.6*LC2 + LC10)			
	Sum of Loads in X	3.07	kN	
	Sum of Support Reactions in X	3.07	kN	Deviation 0.00%
	Sum of Loads in Y	-2.83	kN	
	Sum of Support Reactions in Y	-2.83	kN	Deviation 0.00%
	Sum of Loads in Z	445.48	kN	
	Sum of Support Reactions in Z	445.48	kN	Deviation -0.00%
	Max Displacement in X	1.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	-0.7	mm	Member No. 216, x: 0.000 m
	Max Displacement in Z	9.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	0.7	mrad	FE Node No. 411 (X: 12.690, Y: -1.660, Z: 0.501 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	11		
	LG118 - US (LC1 + 0.6*LC2 + LC11)			
	Sum of Loads in X	0.03	kN	
	Sum of Support Reactions in X	0.03	kN	Deviation 0.00%
	Sum of Loads in Y	-0.11	kN	
	Sum of Support Reactions in Y	-0.11	kN	Deviation 0.00%
	Sum of Loads in Z	446.10	kN	
	Sum of Support Reactions in Z	446.10	kN	Deviation 0.00%
	Max Displacement in X	0.7	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG119 - US (LC1 + 0.6*LC2 + LC14)			
	Sum of Loads in X	-0.00	kN	
	Sum of Support Reactions in X	-0.00	kN	
	Sum of Loads in Y	-0.02	kN	
	Sum of Support Reactions in Y	-0.02	kN	Deviation 0.00%
	Sum of Loads in Z	445.47	kN	
	Sum of Support Reactions in Z	445.47	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG120 - US (LC1 + 0.6*LC2 + LC17)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.03	kN	
	Sum of Support Reactions in Y	-0.03	kN	Deviation 0.00%
	Sum of Loads in Z	445.87	kN	
	Sum of Support Reactions in Z	445.87	kN	Deviation -0.00%
	Max Displacement in X	0.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG121 - US (LC1 + 0.6*LC2 + LC20)			
	Sum of Loads in X	0.08	kN	
	Sum of Support Reactions in X	0.08	kN	Deviation 0.00%
	Sum of Loads in Y	0.01	kN	
	Sum of Support Reactions in Y	0.01	kN	Deviation 0.00%
	Sum of Loads in Z	445.39	kN	
	Sum of Support Reactions in Z	445.39	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	LG122 - US (LC1 + 0.6*LC2 + LC21)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.00	kN	
	Sum of Support Reactions in Y	-0.00	kN	
	Sum of Loads in Z	445.39	kN	
	Sum of Support Reactions in Z	445.39	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG123 - US (LC1 + 0.6*LC2 + 0.6*LC3 + LC10)			
	Sum of Loads in X	3.07	kN	
	Sum of Support Reactions in X	3.07	kN	Deviation 0.00%
	Sum of Loads in Y	-2.83	kN	
	Sum of Support Reactions in Y	-2.83	kN	Deviation 0.00%
	Sum of Loads in Z	469.84	kN	
	Sum of Support Reactions in Z	469.84	kN	Deviation 0.00%
	Max Displacement in X	1.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	11		
	LG124 - US (LC1 + 0.6*LC2 + 0.6*LC3 + LC11)			
	Sum of Loads in X	0.03	kN	
	Sum of Support Reactions in X	0.03	kN	Deviation 0.00%
	Sum of Loads in Y	-0.11	kN	
	Sum of Support Reactions in Y	-0.11	kN	Deviation -0.00%
	Sum of Loads in Z	470.45	kN	
	Sum of Support Reactions in Z	470.45	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.6	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG125 - US (LC1 + 0.6*LC2 + 0.6*LC3 + LC14)			
	Sum of Loads in X	-0.00	kN	
	Sum of Support Reactions in X	-0.00	kN	
	Sum of Loads in Y	-0.02	kN	
	Sum of Support Reactions in Y	-0.02	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in Z	469.83	kN	
	Sum of Support Reactions in Z	469.83	kN	Deviation 0.00%
	Max Displacement in X	0.7	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG126 - US (LC1 + 0.6*LC2 + 0.6*LC3 + LC17)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.03	kN	
	Sum of Support Reactions in Y	-0.03	kN	Deviation 0.00%
	Sum of Loads in Z	470.23	kN	
	Sum of Support Reactions in Z	470.23	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG127 - US (LC1 + 0.6*LC2 + 0.6*LC3 + LC20)			
	Sum of Loads in X	0.08	kN	
	Sum of Support Reactions in X	0.08	kN	Deviation 0.00%
	Sum of Loads in Y	0.01	kN	
	Sum of Support Reactions in Y	0.01	kN	Deviation -0.00%
	Sum of Loads in Z	469.74	kN	
	Sum of Support Reactions in Z	469.74	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.6	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG128 - US (LC1 + 0.6*LC2 + 0.6*LC3 + LC21)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.00	kN	
	Sum of Support Reactions in Y	-0.00	kN	
	Sum of Loads in Z	469.74	kN	
	Sum of Support Reactions in Z	469.74	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max. Vector Displacement	12.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG129 - US (LC1 + 0.6*LC3 + LC10)			
	Sum of Loads in X	3.07	kN	
	Sum of Support Reactions in X	3.07	kN	Deviation -0.00%
	Sum of Loads in Y	-2.83	kN	
	Sum of Support Reactions in Y	-2.83	kN	Deviation 0.00%
	Sum of Loads in Z	383.00	kN	
	Sum of Support Reactions in Z	383.01	kN	Deviation -0.00%
	Max Displacement in X	1.4	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	12.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	11		
	LG130 - US (LC1 + 0.6*LC3 + LC11)			
	Sum of Loads in X	0.03	kN	
	Sum of Support Reactions in X	0.03	kN	Deviation -0.00%
	Sum of Loads in Y	-0.11	kN	
	Sum of Support Reactions in Y	-0.11	kN	Deviation 0.00%
	Sum of Loads in Z	383.62	kN	
	Sum of Support Reactions in Z	383.62	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.5	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	12.5	mm	Member No. 135, x: 2.257 m
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG131 - US (LC1 + 0.6*LC3 + LC14)			
	Sum of Loads in X	-0.00	kN	
	Sum of Support Reactions in X	-0.00	kN	
	Sum of Loads in Y	-0.02	kN	
	Sum of Support Reactions in Y	-0.02	kN	Deviation 0.00%
	Sum of Loads in Z	383.00	kN	
	Sum of Support Reactions in Z	383.00	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	12.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG132 - US (LC1 + 0.6*LC3 + LC17)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation -0.00%
	Sum of Loads in Y	-0.03	kN	
	Sum of Support Reactions in Y	-0.03	kN	Deviation -0.00%
	Sum of Loads in Z	383.40	kN	
	Sum of Support Reactions in Z	383.40	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	12.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG133 - US (LC1 + 0.6*LC3 + LC20)			
	Sum of Loads in X	0.08	kN	
	Sum of Support Reactions in X	0.08	kN	Deviation 0.00%
	Sum of Loads in Y	0.01	kN	
	Sum of Support Reactions in Y	0.01	kN	Deviation 0.00%
	Sum of Loads in Z	382.91	kN	
	Sum of Support Reactions in Z	382.91	kN	Deviation -0.00%
	Max Displacement in X	0.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	12.4	mm	Member No. 135, x: 2.257 m
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG134 - US (LC1 + 0.6*LC3 + LC21)			
	Sum of Loads in X	-0.01	kN	
	Sum of Support Reactions in X	-0.01	kN	Deviation 0.00%
	Sum of Loads in Y	-0.00	kN	
	Sum of Support Reactions in Y	-0.00	kN	
	Sum of Loads in Z	382.91	kN	
	Sum of Support Reactions in Z	382.91	kN	Deviation -0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.8	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	12.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	12.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	7.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.8	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		

3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG261 - SC (LC1)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	358.56	kN	
	Sum of Support Reactions in Z	358.56	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.6	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG262 - SC (LC1 + LC2)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	503.27	kN	
	Sum of Support Reactions in Z	503.28	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG263 - SC (LC1 + LC2 + LC3)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	543.86	kN	
	Sum of Support Reactions in Z	543.87	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-1.0	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	14.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	14.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-15.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-1.0	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG264 - SC (LC1 + LC3)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	

■ 3.0 RESULTS - SUMMARY

Description	Value	Unit	Comment
Sum of Loads in Y	0.00	kN	
Sum of Support Reactions in Y	0.00	kN	
Sum of Loads in Z	399.15	kN	
Sum of Support Reactions in Z	399.15	kN	Deviation 0.00%
Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
Max Displacement in Y	-0.9	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
Max Displacement in Z	14.2	mm	Member No. 135, x: 2.257 m
Max. Vector Displacement	14.2	mm	Member No. 135, x: 2.257 m
Max rotation about X	8.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
Max rotation about Y	-15.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
Max rotation about Z	-1.0	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
Consider favorable effects of tensile forces	Yes		
Divide results back by LG factor	No		
Stiffness Reduction by Gamma-M	Yes		
Consider favorable effects due to tension forces	Yes		
Divide results back by LG factor	No		
Reduction of stiffness by safety factor	Yes		
Number of Iterations	4		
LG265 - SC (LC1 + LC2 + 0.5*LC4)			
Sum of Loads in X	0.00	kN	
Sum of Support Reactions in X	0.00	kN	
Sum of Loads in Y	0.00	kN	
Sum of Support Reactions in Y	0.00	kN	
Sum of Loads in Z	524.94	kN	
Sum of Support Reactions in Z	524.95	kN	Deviation -0.00%
Max Displacement in X	0.8	mm	Member No. 215, x: 6.127 m
Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
Max Displacement in Z	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
Max. Vector Displacement	10.3	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
Max rotation about Y	-10.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
Max rotation about Z	0.7	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
Consider favorable effects of tensile forces	Yes		
Divide results back by LG factor	No		
Stiffness Reduction by Gamma-M	Yes		
Consider favorable effects due to tension forces	Yes		
Divide results back by LG factor	No		
Reduction of stiffness by safety factor	Yes		
Number of Iterations	4		
LG266 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC5)			
Sum of Loads in X	35.68	kN	
Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
Sum of Loads in Y	-5.00	kN	
Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
Sum of Loads in Z	514.94	kN	
Sum of Support Reactions in Z	514.94	kN	Deviation -0.00%
Max Displacement in X	9.3	mm	Member No. 153, x: 1.520 m
Max Displacement in Y	4.2	mm	Member No. 189, x: 0.000 m
Max Displacement in Z	9.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
Max. Vector Displacement	10.2	mm	Member No. 146, x: 1.520 m
Max rotation about X	5.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
Max rotation about Y	-8.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
Consider favorable effects of tensile forces	Yes		
Divide results back by LG factor	No		
Stiffness Reduction by Gamma-M	Yes		
Consider favorable effects due to tension forces	Yes		
Divide results back by LG factor	No		
Reduction of stiffness by safety factor	Yes		
Number of Iterations	4		
LG267 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC6)			
Sum of Loads in X	-4.92	kN	
Sum of Support Reactions in X	-4.92	kN	Deviation -0.00%
Sum of Loads in Y	67.93	kN	
Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
Sum of Loads in Z	529.02	kN	
Sum of Support Reactions in Z	529.02	kN	Deviation 0.00%
Max Displacement in X	10.1	mm	Member No. 215, x: 6.127 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in Y	24.3	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.3	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.3	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG268 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	542.32	kN	
	Sum of Support Reactions in Z	542.32	kN	Deviation -0.00%
	Max Displacement in X	-6.1	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.7	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.8	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	16.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-14.8	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG269 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	524.94	kN	
	Sum of Support Reactions in Z	524.94	kN	Deviation 0.00%
	Max Displacement in X	-17.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	5.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG270 - SC (LC1 + LC2 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	493.28	kN	
	Sum of Support Reactions in Z	493.28	kN	Deviation 0.00%
	Max Displacement in X	9.2	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.2	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	9.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.2	mm	Member No. 147, x: 1.520 m
	Max rotation about X	5.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-8.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG271 - SC (LC1 + LC2 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation -0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	507.35	kN	
	Sum of Support Reactions in Z	507.35	kN	Deviation -0.00%
	Max Displacement in X	10.0	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.2	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.6	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.2	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG272 - SC (LC1 + LC2 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	520.65	kN	
	Sum of Support Reactions in Z	520.65	kN	Deviation 0.00%
	Max Displacement in X	-6.1	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.6	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.6	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	16.7	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-14.7	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.6	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG273 - SC (LC1 + LC2 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	503.27	kN	
	Sum of Support Reactions in Z	503.28	kN	Deviation -0.00%
	Max Displacement in X	-17.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	5.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG274 - SC (LC1 + LC2 + LC3 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation -0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	533.87	kN	
	Sum of Support Reactions in Z	533.87	kN	Deviation 0.00%
	Max Displacement in X	9.2	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.1	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	13.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.4	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG275 - SC (LC1 + LC2 + LC3 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	547.94	kN	
	Sum of Support Reactions in Z	547.94	kN	Deviation -0.00%
	Max Displacement in X	10.0	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.2	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	14.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.3	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.2	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG276 - SC (LC1 + LC2 + LC3 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	561.24	kN	
	Sum of Support Reactions in Z	561.24	kN	Deviation 0.00%
	Max Displacement in X	-6.1	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-15.6	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	18.0	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	18.0	mm	Member No. 135, x: 2.257 m
	Max rotation about X	-14.8	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-20.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG277 - SC (LC1 + LC2 + LC3 + 0.6*LC8)			

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation -0.00%
	Sum of Loads in Z	543.86	kN	
	Sum of Support Reactions in Z	543.86	kN	Deviation -0.00%
	Max Displacement in X	-17.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 353, x: 0.000 m
	Max Displacement in Z	14.5	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	8.7	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.8	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG278 - SC (LC1 + LC3 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	389.15	kN	
	Sum of Support Reactions in Z	389.15	kN	Deviation 0.00%
	Max Displacement in X	9.1	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.1	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	13.5	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.4	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG279 - SC (LC1 + LC3 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	403.23	kN	
	Sum of Support Reactions in Z	403.23	kN	Deviation 0.00%
	Max Displacement in X	9.9	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.1	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	14.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.3	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.1	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG280 - SC (LC1 + LC3 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation -0.00%
	Sum of Loads in Z	416.52	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Support Reactions in Z	416.52	kN	Deviation 0.00%
	Max Displacement in X	-6.2	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-15.7	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	17.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.8	mm	Member No. 135, x: 2.257 m
	Max rotation about X	-14.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-20.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG281 - SC (LC1 + LC3 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	399.15	kN	
	Sum of Support Reactions in Z	399.14	kN	Deviation 0.00%
	Max Displacement in X	-17.3	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 353, x: 0.000 m
	Max Displacement in Z	14.3	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.3	mm	Member No. 162, x: 1.950 m
	Max rotation about X	8.7	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.8	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG282 - SC (LC1 + LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	401.89	kN	
	Sum of Support Reactions in Z	401.90	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	6.0	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	0.9	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG283 - SC (LC1 + 0.7*LC2 + LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	503.19	kN	
	Sum of Support Reactions in Z	503.19	kN	Deviation -0.00%
	Max Displacement in X	0.8	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about X	6.0	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.6	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	0.9	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG284 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	493.19	kN	
	Sum of Support Reactions in Z	493.20	kN	Deviation -0.00%
	Max Displacement in X	9.3	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.3	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	9.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.2	mm	Member No. 146, x: 1.520 m
	Max rotation about X	5.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-8.8	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG285 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	507.27	kN	
	Sum of Support Reactions in Z	507.27	kN	Deviation -0.00%
	Max Displacement in X	10.3	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.3	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.5	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.4	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG286 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	520.57	kN	
	Sum of Support Reactions in Z	520.58	kN	Deviation -0.00%
	Max Displacement in X	-6.1	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.8	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.9	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	16.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-14.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	6.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG287 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	503.19	kN	
	Sum of Support Reactions in Z	503.20	kN	Deviation -0.00%
	Max Displacement in X	-17.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.5	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	5.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG288 - SC (LC1 + LC4 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation -0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	391.89	kN	
	Sum of Support Reactions in Z	391.89	kN	Deviation -0.00%
	Max Displacement in X	9.2	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.2	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	9.5	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.1	mm	Member No. 146, x: 1.520 m
	Max rotation about X	5.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	8.9	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG289 - SC (LC1 + LC4 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	405.97	kN	
	Sum of Support Reactions in Z	405.97	kN	Deviation -0.00%
	Max Displacement in X	10.2	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	24.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.4	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.4	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Number of Iterations	4		
	LG290 - SC (LC1 + LC4 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	419.27	kN	
	Sum of Support Reactions in Z	419.27	kN	Deviation 0.00%
	Max Displacement in X	-6.2	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.8	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-15.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	6.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG291 - SC (LC1)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	358.56	kN	
	Sum of Support Reactions in Z	358.56	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.6	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	9.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG292 - SC (LC1 + LC2)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	503.27	kN	
	Sum of Support Reactions in Z	503.28	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-0.7	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG293 - SC (LC1 + LC2 + LC3)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	543.86	kN	
	Sum of Support Reactions in Z	543.87	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-1.0	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	14.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	14.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-15.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-1.0	mrad	FE Node No. 667 (X: 1.457, Y: 0.000, Z: -2.115 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG294 - SC (LC1 + LC3)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	399.15	kN	
	Sum of Support Reactions in Z	399.15	kN	Deviation 0.00%
	Max Displacement in X	0.6	mm	Member No. 379, x: 5.967 m
	Max Displacement in Y	-0.9	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	14.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	14.2	mm	Member No. 135, x: 2.257 m
	Max rotation about X	8.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-15.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-1.0	mrad	FE Node No. 698 (X: 1.456, Y: 0.000, Z: -2.214 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG295 - SC (LC1 + LC2 + 0.5*LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	524.94	kN	
	Sum of Support Reactions in Z	524.95	kN	Deviation -0.00%
	Max Displacement in X	0.8	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.3	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	5.9	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	0.7	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG296 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	514.94	kN	
	Sum of Support Reactions in Z	514.94	kN	Deviation -0.00%
	Max Displacement in X	9.3	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.2	mm	Member No. 189, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in Z	9.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.2	mm	Member No. 146, x: 1.520 m
	Max rotation about X	5.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-8.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG297 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation -0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	529.02	kN	
	Sum of Support Reactions in Z	529.02	kN	Deviation 0.00%
	Max Displacement in X	10.1	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.3	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.3	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.3	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG298 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	542.32	kN	
	Sum of Support Reactions in Z	542.32	kN	Deviation -0.00%
	Max Displacement in X	-6.1	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.7	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.8	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	16.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-14.8	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG299 - SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	524.94	kN	
	Sum of Support Reactions in Z	524.94	kN	Deviation 0.00%
	Max Displacement in X	-17.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	5.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG300 - SC (LC1 + LC2 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	493.28	kN	
	Sum of Support Reactions in Z	493.28	kN	Deviation 0.00%
	Max Displacement in X	9.2	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.2	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	9.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.2	mm	Member No. 147, x: 1.520 m
	Max rotation about X	5.6	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-8.7	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG301 - SC (LC1 + LC2 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation -0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	507.35	kN	
	Sum of Support Reactions in Z	507.35	kN	Deviation -0.00%
	Max Displacement in X	10.0	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.2	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.6	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.2	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG302 - SC (LC1 + LC2 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	520.65	kN	
	Sum of Support Reactions in Z	520.65	kN	Deviation 0.00%
	Max Displacement in X	-6.1	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.6	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.6	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	16.7	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-14.7	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.6	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG303 - SC (LC1 + LC2 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	503.27	kN	
	Sum of Support Reactions in Z	503.28	kN	Deviation -0.00%
	Max Displacement in X	-17.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	5.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG304 - SC (LC1 + LC2 + LC3 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation -0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	533.87	kN	
	Sum of Support Reactions in Z	533.87	kN	Deviation 0.00%
	Max Displacement in X	9.2	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.1	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	13.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.4	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG305 - SC (LC1 + LC2 + LC3 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	547.94	kN	
	Sum of Support Reactions in Z	547.94	kN	Deviation -0.00%
	Max Displacement in X	10.0	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.2	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	14.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.3	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.2	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG306 - SC (LC1 + LC2 + LC3 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	561.24	kN	
	Sum of Support Reactions in Z	561.24	kN	Deviation 0.00%
	Max Displacement in X	-6.1	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-15.6	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	18.0	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	18.0	mm	Member No. 135, x: 2.257 m
	Max rotation about X	-14.8	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-20.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG307 - SC (LC1 + LC2 + LC3 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation -0.00%
	Sum of Loads in Z	543.86	kN	
	Sum of Support Reactions in Z	543.86	kN	Deviation -0.00%
	Max Displacement in X	-17.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 353, x: 0.000 m
	Max Displacement in Z	14.5	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	8.7	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.8	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG308 - SC (LC1 + LC3 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	389.15	kN	
	Sum of Support Reactions in Z	389.15	kN	Deviation 0.00%
	Max Displacement in X	9.1	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.1	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	13.5	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	13.6	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	8.4	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-13.4	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG309 - SC (LC1 + LC3 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	403.23	kN	
	Sum of Support Reactions in Z	403.23	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in X	9.9	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.1	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	14.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	24.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.3	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.1	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG310 - SC (LC1 + LC3 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation -0.00%
	Sum of Loads in Z	416.52	kN	
	Sum of Support Reactions in Z	416.52	kN	Deviation 0.00%
	Max Displacement in X	-6.2	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-15.7	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	17.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.8	mm	Member No. 135, x: 2.257 m
	Max rotation about X	-14.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-20.3	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	5.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG311 - SC (LC1 + LC3 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	399.15	kN	
	Sum of Support Reactions in Z	399.14	kN	Deviation 0.00%
	Max Displacement in X	-17.3	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 353, x: 0.000 m
	Max Displacement in Z	14.3	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.3	mm	Member No. 162, x: 1.950 m
	Max rotation about X	8.7	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-14.8	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG312 - SC (LC1 + LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	401.89	kN	
	Sum of Support Reactions in Z	401.90	kN	Deviation -0.00%
	Max Displacement in X	0.7	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.2	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	6.0	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about Y	-10.5	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	0.9	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG313 - SC (LC1 + 0.7*LC2 + LC4)			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	503.19	kN	
	Sum of Support Reactions in Z	503.19	kN	Deviation -0.00%
	Max Displacement in X	0.8	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	-0.7	mm	FE Node No. 17915 (X: 1.777, Y: 0.000, Z: -1.816 m)
	Max Displacement in Z	10.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.4	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max rotation about X	6.0	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.6	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	0.9	mrad	FE Node No. 172 (X: 7.830, Y: 4.710, Z: -2.815 m)
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG314 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation 0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	493.19	kN	
	Sum of Support Reactions in Z	493.20	kN	Deviation -0.00%
	Max Displacement in X	9.3	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.3	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	9.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.2	mm	Member No. 146, x: 1.520 m
	Max rotation about X	5.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-8.8	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG315 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	507.27	kN	
	Sum of Support Reactions in Z	507.27	kN	Deviation -0.00%
	Max Displacement in X	10.3	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	24.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.3	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.5	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.4	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG316 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	520.57	kN	
	Sum of Support Reactions in Z	520.58	kN	Deviation -0.00%
	Max Displacement in X	-6.1	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.8	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.9	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	16.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-14.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	6.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG317 - SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation 0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	503.19	kN	
	Sum of Support Reactions in Z	503.20	kN	Deviation -0.00%
	Max Displacement in X	-17.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.5	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.5	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	5.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG318 - SC (LC1 + LC4 + 0.6*LC5)			
	Sum of Loads in X	35.68	kN	
	Sum of Support Reactions in X	35.68	kN	Deviation -0.00%
	Sum of Loads in Y	-5.00	kN	
	Sum of Support Reactions in Y	-5.00	kN	Deviation -0.00%
	Sum of Loads in Z	391.89	kN	
	Sum of Support Reactions in Z	391.89	kN	Deviation -0.00%
	Max Displacement in X	9.2	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	4.2	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	9.5	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	10.1	mm	Member No. 146, x: 1.520 m
	Max rotation about X	5.7	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	8.9	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	2.5	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	LG319 - SC (LC1 + LC4 + 0.6*LC6)			
	Sum of Loads in X	-4.92	kN	
	Sum of Support Reactions in X	-4.92	kN	Deviation 0.00%
	Sum of Loads in Y	67.93	kN	
	Sum of Support Reactions in Y	67.93	kN	Deviation -0.00%
	Sum of Loads in Z	405.97	kN	
	Sum of Support Reactions in Z	405.97	kN	Deviation -0.00%
	Max Displacement in X	10.2	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	24.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	25.4	mm	Member No. 185, x: 0.000 m
	Max rotation about X	22.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-8.4	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG320 - SC (LC1 + LC4 + 0.6*LC7)			
	Sum of Loads in X	-2.69	kN	
	Sum of Support Reactions in X	-2.69	kN	Deviation -0.00%
	Sum of Loads in Y	-46.73	kN	
	Sum of Support Reactions in Y	-46.73	kN	Deviation 0.00%
	Sum of Loads in Z	419.27	kN	
	Sum of Support Reactions in Z	419.27	kN	Deviation 0.00%
	Max Displacement in X	-6.2	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-15.8	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.0	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-15.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-15.7	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	6.0	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG321 - SC (LC1 + LC4 + 0.6*LC8)			
	Sum of Loads in X	-50.15	kN	
	Sum of Support Reactions in X	-50.15	kN	Deviation -0.00%
	Sum of Loads in Y	2.16	kN	
	Sum of Support Reactions in Y	2.16	kN	Deviation 0.00%
	Sum of Loads in Z	401.89	kN	
	Sum of Support Reactions in Z	401.90	kN	Deviation -0.00%
	Max Displacement in X	-17.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-5.6	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	10.3	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	17.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	5.9	mrad	FE Node No. 14942 (X: 5.172, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	-10.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-7.0	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG322 - SC (LC1 + LC5)			
	Sum of Loads in X	59.47	kN	
	Sum of Support Reactions in X	59.47	kN	Deviation -0.00%
	Sum of Loads in Y	-8.33	kN	
	Sum of Support Reactions in Y	-8.33	kN	Deviation -0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in Z	341.89	kN	
	Sum of Support Reactions in Z	341.89	kN	Deviation 0.00%
	Max Displacement in X	14.9	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.8	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	8.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	16.3	mm	Member No. 146, x: 1.520 m
	Max rotation about X	6.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	8.1	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	4.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG323 - SC (LC1 + LC6)			
	Sum of Loads in X	-8.19	kN	
	Sum of Support Reactions in X	-8.19	kN	Deviation 0.00%
	Sum of Loads in Y	113.21	kN	
	Sum of Support Reactions in Y	113.21	kN	Deviation 0.00%
	Sum of Loads in Z	365.36	kN	
	Sum of Support Reactions in Z	365.36	kN	Deviation 0.00%
	Max Displacement in X	16.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	40.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	9.7	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	41.4	mm	Member No. 185, x: 0.000 m
	Max rotation about X	37.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-13.6	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG324 - SC (LC1 + LC7)			
	Sum of Loads in X	-4.48	kN	
	Sum of Support Reactions in X	-4.48	kN	Deviation -0.00%
	Sum of Loads in Y	-77.88	kN	
	Sum of Support Reactions in Y	-77.88	kN	Deviation -0.00%
	Sum of Loads in Z	387.52	kN	
	Sum of Support Reactions in Z	387.52	kN	Deviation -0.00%
	Max Displacement in X	-10.7	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-26.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	15.7	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	28.3	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-24.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-19.0	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG325 - SC (LC1 + LC8)			
	Sum of Loads in X	-83.58	kN	
	Sum of Support Reactions in X	-83.58	kN	Deviation -0.00%
	Sum of Loads in Y	3.60	kN	
	Sum of Support Reactions in Y	3.60	kN	Deviation -0.00%
	Sum of Loads in Z	358.56	kN	
	Sum of Support Reactions in Z	358.55	kN	Deviation 0.00%
	Max Displacement in X	-29.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-9.3	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.0	mm	Member No. 135, x: 2.257 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max. Vector Displacement	29.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-8.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	11.6	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-11.7	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG326 - SC (LC1 + 0.7*LC2 + LC5)			
	Sum of Loads in X	59.47	kN	
	Sum of Support Reactions in X	59.47	kN	Deviation -0.00%
	Sum of Loads in Y	-8.33	kN	
	Sum of Support Reactions in Y	-8.33	kN	Deviation 0.00%
	Sum of Loads in Z	443.19	kN	
	Sum of Support Reactions in Z	443.20	kN	Deviation -0.00%
	Max Displacement in X	14.9	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.8	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	8.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	16.3	mm	Member No. 146, x: 1.520 m
	Max rotation about X	6.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	8.0	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	4.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG327 - SC (LC1 + 0.7*LC2 + LC6)			
	Sum of Loads in X	-8.19	kN	
	Sum of Support Reactions in X	-8.19	kN	Deviation -0.00%
	Sum of Loads in Y	113.21	kN	
	Sum of Support Reactions in Y	113.21	kN	Deviation 0.00%
	Sum of Loads in Z	466.66	kN	
	Sum of Support Reactions in Z	466.66	kN	Deviation -0.00%
	Max Displacement in X	16.2	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	40.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	9.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	41.5	mm	Member No. 185, x: 0.000 m
	Max rotation about X	37.0	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-13.6	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	5		
	LG328 - SC (LC1 + 0.7*LC2 + LC7)			
	Sum of Loads in X	-4.48	kN	
	Sum of Support Reactions in X	-4.48	kN	Deviation -0.00%
	Sum of Loads in Y	-77.88	kN	
	Sum of Support Reactions in Y	-77.88	kN	Deviation -0.00%
	Sum of Loads in Z	488.82	kN	
	Sum of Support Reactions in Z	488.82	kN	Deviation 0.00%
	Max Displacement in X	-10.6	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-26.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	15.9	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	28.2	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-24.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-19.0	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.8	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG329 - SC (LC1 + 0.7*LC2 + LC8)			
	Sum of Loads in X	-83.58	kN	
	Sum of Support Reactions in X	-83.58	kN	Deviation 0.00%
	Sum of Loads in Y	3.60	kN	
	Sum of Support Reactions in Y	3.60	kN	Deviation 0.00%
	Sum of Loads in Z	459.86	kN	
	Sum of Support Reactions in Z	459.86	kN	Deviation 0.00%
	Max Displacement in X	-29.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-9.2	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	10.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	29.1	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-8.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	11.5	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-11.7	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG330 - SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC5)			
	Sum of Loads in X	59.47	kN	
	Sum of Support Reactions in X	59.47	kN	Deviation -0.00%
	Sum of Loads in Y	-8.33	kN	
	Sum of Support Reactions in Y	-8.33	kN	Deviation -0.00%
	Sum of Loads in Z	471.61	kN	
	Sum of Support Reactions in Z	471.61	kN	Deviation 0.00%
	Max Displacement in X	15.0	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.8	mm	Member No. 189, x: 0.000 m
	Max Displacement in Z	12.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	16.3	mm	Member No. 146, x: 1.520 m
	Max rotation about X	7.3	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	10.8	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	4.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG331 - SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC6)			
	Sum of Loads in X	-8.19	kN	
	Sum of Support Reactions in X	-8.19	kN	Deviation -0.00%
	Sum of Loads in Y	113.21	kN	
	Sum of Support Reactions in Y	113.21	kN	Deviation 0.00%
	Sum of Loads in Z	495.07	kN	
	Sum of Support Reactions in Z	495.07	kN	Deviation -0.00%
	Max Displacement in X	16.2	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	40.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	13.0	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	41.5	mm	Member No. 185, x: 0.000 m
	Max rotation about X	36.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-14.0	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-13.6	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG332 - SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC7)			
	Sum of Loads in X	-4.48	kN	
	Sum of Support Reactions in X	-4.48	kN	Deviation -0.00%
	Sum of Loads in Y	-77.88	kN	
	Sum of Support Reactions in Y	-77.88	kN	Deviation -0.00%
	Sum of Loads in Z	517.23	kN	
	Sum of Support Reactions in Z	517.23	kN	Deviation -0.00%
	Max Displacement in X	-10.6	mm	Member No. 196, x: 0.000 m
	Max Displacement in Y	-26.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	19.0	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	28.2	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-24.6	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-22.3	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG333 - SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC8)			
	Sum of Loads in X	-83.58	kN	
	Sum of Support Reactions in X	-83.58	kN	Deviation 0.00%
	Sum of Loads in Y	3.60	kN	
	Sum of Support Reactions in Y	3.60	kN	Deviation -0.00%
	Sum of Loads in Z	488.27	kN	
	Sum of Support Reactions in Z	488.27	kN	Deviation -0.00%
	Max Displacement in X	-29.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-9.3	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	13.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	29.1	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-8.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-13.2	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-11.7	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG334 - SC (LC1 + 0.7*LC3 + LC5)			
	Sum of Loads in X	59.47	kN	
	Sum of Support Reactions in X	59.47	kN	Deviation -0.00%
	Sum of Loads in Y	-8.33	kN	
	Sum of Support Reactions in Y	-8.33	kN	Deviation 0.00%
	Sum of Loads in Z	370.30	kN	
	Sum of Support Reactions in Z	370.30	kN	Deviation -0.00%
	Max Displacement in X	14.9	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.8	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	11.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	16.3	mm	Member No. 146, x: 1.520 m
	Max rotation about X	7.3	mrad	FE Node No. 14560 (X: 5.000, Y: 0.098, Z: -2.815 m)
	Max rotation about Y	10.9	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	4.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG335 - SC (LC1 + 0.7*LC3 + LC6)			
	Sum of Loads in X	-8.19	kN	
	Sum of Support Reactions in X	-8.19	kN	Deviation -0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Sum of Loads in Y	113.21	kN	
	Sum of Support Reactions in Y	113.21	kN	Deviation 0.00%
	Sum of Loads in Z	393.77	kN	
	Sum of Support Reactions in Z	393.77	kN	Deviation -0.00%
	Max Displacement in X	16.1	mm	Member No. 185, x: 0.000 m
	Max Displacement in Y	40.5	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	12.8	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	41.4	mm	Member No. 185, x: 0.000 m
	Max rotation about X	36.9	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-14.0	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-13.6	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG336 - SC (LC1 + 0.7*LC3 + LC7)			
	Sum of Loads in X	-4.48	kN	
	Sum of Support Reactions in X	-4.48	kN	Deviation 0.00%
	Sum of Loads in Y	-77.88	kN	
	Sum of Support Reactions in Y	-77.88	kN	Deviation -0.00%
	Sum of Loads in Z	415.93	kN	
	Sum of Support Reactions in Z	415.93	kN	Deviation -0.00%
	Max Displacement in X	-10.7	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-26.2	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	18.8	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	28.3	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-24.7	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-22.3	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG337 - SC (LC1 + 0.7*LC3 + LC8)			
	Sum of Loads in X	-83.58	kN	
	Sum of Support Reactions in X	-83.58	kN	Deviation -0.00%
	Sum of Loads in Y	3.60	kN	
	Sum of Support Reactions in Y	3.60	kN	Deviation 0.00%
	Sum of Loads in Z	386.97	kN	
	Sum of Support Reactions in Z	386.97	kN	Deviation -0.00%
	Max Displacement in X	-29.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-9.3	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	13.0	mm	Member No. 228, x: 0.000 m
	Max. Vector Displacement	29.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-8.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-13.1	mrad	FE Node No. 12270 (X: 0.087, Y: 2.355, Z: -2.815 m)
	Max rotation about Z	-11.7	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG338 - SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC5)			
	Sum of Loads in X	59.47	kN	
	Sum of Support Reactions in X	59.47	kN	Deviation -0.00%
	Sum of Loads in Y	-8.33	kN	
	Sum of Support Reactions in Y	-8.33	kN	Deviation 0.00%
	Sum of Loads in Z	464.86	kN	
	Sum of Support Reactions in Z	464.87	kN	Deviation -0.00%
	Max Displacement in X	15.0	mm	Member No. 153, x: 1.520 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in Y	6.9	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	9.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	16.4	mm	Member No. 146, x: 1.520 m
	Max rotation about X	6.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	8.1	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	4.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG339 - SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC6)			
	Sum of Loads in X	-8.19	kN	
	Sum of Support Reactions in X	-8.19	kN	Deviation -0.00%
	Sum of Loads in Y	113.21	kN	
	Sum of Support Reactions in Y	113.21	kN	Deviation 0.00%
	Sum of Loads in Z	488.33	kN	
	Sum of Support Reactions in Z	488.33	kN	Deviation 0.00%
	Max Displacement in X	16.4	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	40.8	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	10.1	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	41.9	mm	Member No. 185, x: 0.000 m
	Max rotation about X	37.4	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.8	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-13.8	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG340 - SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC7)			
	Sum of Loads in X	-4.48	kN	
	Sum of Support Reactions in X	-4.48	kN	Deviation -0.00%
	Sum of Loads in Y	-77.88	kN	
	Sum of Support Reactions in Y	-77.88	kN	Deviation -0.00%
	Sum of Loads in Z	510.49	kN	
	Sum of Support Reactions in Z	510.49	kN	Deviation -0.00%
	Max Displacement in X	-10.7	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-26.3	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	16.1	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	28.4	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-24.8	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-19.1	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG341 - SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC8)			
	Sum of Loads in X	-83.58	kN	
	Sum of Support Reactions in X	-83.58	kN	Deviation 0.00%
	Sum of Loads in Y	3.60	kN	
	Sum of Support Reactions in Y	3.60	kN	Deviation 0.00%
	Sum of Loads in Z	481.53	kN	
	Sum of Support Reactions in Z	481.52	kN	Deviation 0.00%
	Max Displacement in X	-29.1	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-9.3	mm	Member No. 186, x: 0.000 m
	Max Displacement in Z	10.4	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	29.1	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-8.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	11.6	mrad	Member No. 125, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about Z	-11.7	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG342 - SC (LC1 + 0.5*LC4 + LC5)			
	Sum of Loads in X	59.47	kN	
	Sum of Support Reactions in X	59.47	kN	Deviation -0.00%
	Sum of Loads in Y	-8.33	kN	
	Sum of Support Reactions in Y	-8.33	kN	Deviation -0.00%
	Sum of Loads in Z	363.56	kN	
	Sum of Support Reactions in Z	363.56	kN	Deviation 0.00%
	Max Displacement in X	15.0	mm	Member No. 153, x: 1.520 m
	Max Displacement in Y	6.9	mm	Member No. 352, x: 5.582 m
	Max Displacement in Z	8.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	16.4	mm	Member No. 146, x: 1.520 m
	Max rotation about X	6.1	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	8.2	mrad	FE Node No. 16170 (X: 8.262, Y: 2.345, Z: -2.815 m)
	Max rotation about Z	4.2	mrad	Member No. 185, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG343 - SC (LC1 + 0.5*LC4 + LC6)			
	Sum of Loads in X	-8.19	kN	
	Sum of Support Reactions in X	-8.19	kN	Deviation -0.00%
	Sum of Loads in Y	113.21	kN	
	Sum of Support Reactions in Y	113.21	kN	Deviation 0.00%
	Sum of Loads in Z	387.02	kN	
	Sum of Support Reactions in Z	387.03	kN	Deviation -0.00%
	Max Displacement in X	16.3	mm	Member No. 215, x: 6.127 m
	Max Displacement in Y	40.8	mm	Member No. 174, x: 1.995 m
	Max Displacement in Z	9.9	mm	FE Node No. 14584 (X: 4.994, Y: 2.453, Z: -2.815 m)
	Max. Vector Displacement	41.8	mm	Member No. 185, x: 0.000 m
	Max rotation about X	37.3	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-10.7	mrad	FE Node No. 12271 (X: 0.087, Y: 2.257, Z: -2.815 m)
	Max rotation about Z	-13.8	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG344 - SC (LC1 + 0.5*LC4 + LC7)			
	Sum of Loads in X	-4.48	kN	
	Sum of Support Reactions in X	-4.48	kN	Deviation -0.00%
	Sum of Loads in Y	-77.88	kN	
	Sum of Support Reactions in Y	-77.88	kN	Deviation -0.00%
	Sum of Loads in Z	409.19	kN	
	Sum of Support Reactions in Z	409.19	kN	Deviation 0.00%
	Max Displacement in X	-10.8	mm	Member No. 193, x: 0.000 m
	Max Displacement in Y	-26.3	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	15.9	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	28.4	mm	Member No. 185, x: 0.000 m
	Max rotation about X	-24.8	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-19.0	mrad	FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m)
	Max rotation about Z	9.9	mrad	Member No. 178, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	LG345 - SC (LC1 + 0.5*LC4 + LC8)			
	Sum of Loads in X	-83.58	kN	
	Sum of Support Reactions in X	-83.58	kN	Deviation -0.00%
	Sum of Loads in Y	3.60	kN	
	Sum of Support Reactions in Y	3.60	kN	Deviation 0.00%
	Sum of Loads in Z	380.22	kN	
	Sum of Support Reactions in Z	380.23	kN	Deviation -0.00%
	Max Displacement in X	-29.2	mm	Member No. 162, x: 1.950 m
	Max Displacement in Y	-9.3	mm	Member No. 185, x: 0.000 m
	Max Displacement in Z	10.2	mm	Member No. 135, x: 2.257 m
	Max. Vector Displacement	29.2	mm	Member No. 162, x: 1.950 m
	Max rotation about X	-8.2	mrad	FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	11.6	mrad	Member No. 125, x: 0.000 m
	Max rotation about Z	-11.7	mrad	Member No. 162, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	4		
	Summary			
	Max Displacement in X	-44.2	mm	LG90, Member No. 162, x: 1.950 m
	Max Displacement in Y	62.2	mm	LG53, Member No. 174, x: 1.995 m
	Max Displacement in Z	27.0	mm	LG42, Member No. 135, x: 2.257 m
	Max. Vector Displacement	63.8	mm	LG49, Member No. 185, x: 0.000 m
	Max rotation about X	57.0	mrad	LG49, FE Node No. 154 (X: 2.345, Y: 4.710, Z: -2.815 m)
	Max rotation about Y	-31.8	mrad	LG42, FE Node No. 12269 (X: 0.087, Y: 2.453, Z: -2.815 m
	Max rotation about Z	-21.1	mrad	LG49, Member No. 178, x: 0.000 m
	Number of 1D Finite Elements	1237		
	Number of 2D Finite Elements	17329		
	Number of 3D Finite Elements	0		
	Number of FE Mesh Nodes	18356		
	Number of Equations	110136		
	Matrix Solver Method	Direct		
	Max Number of Iterations	100		
	Number of Load Increments	1		
	Number of Divisions for Member Results	10		
	Solver Version 64-bit			
	Division of Cable/Foundation/Tapered Members	10		
	Refer Internal Forces to Deformed Structure	Yes		
	Activate shear rigidity (A-y, A-z) of members	No		
	Bending Theory	Mindlin		
	Activate Ineffective Supports	Yes		
	Activate Failed Members	Yes		
	Accuracy of convergence criteria in the non-line	1		

■ **3.1 NODES - SUPPORT FORCES**

Load combinations

Node No.	CO		Support forces [kN] Px'	Py'	Pz'	Support moments [kNm] Mx'	My'	Mz'	
375	CO3	Max	0.34	0.40	0.46	0.00	0.00	0.00	
		Min	-0.34	-0.40	-0.46	0.00	0.00	0.00	
	CO4	Max	1.07	3.02	4.13	0.00	0.00	0.00	
		Min	-1.28	-2.09	0.06	0.00	0.00	0.00	
	CO5	Max	0.73	1.99	2.91	0.00	0.00	0.00	
		Min	-0.85	-1.38	0.61	0.00	0.00	0.00	
	CO6	Max	1.03	3.02	2.87	0.00	0.00	0.00	
		Min	-1.24	-2.09	0.00	0.00	0.00	0.00	
376	CO3	Max	0.34	0.40	0.23	0.00	0.00	0.00	
		Min	-0.34	-0.40	-0.23	0.00	0.00	0.00	

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] Px'	Py'	Pz'	Support moments [kNm] Mx'	My'	Mz'
376	CO4	Max	1.07	3.02	3.65	0.00	0.00	0.00
		Min	-1.28	-2.09	0.24	0.00	0.00	0.00
	CO5	Max	0.73	1.99	2.59	0.00	0.00	0.00
		Min	-0.85	-1.38	0.67	0.00	0.00	0.00
	CO6	Max	1.03	3.02	2.45	0.00	0.00	0.00
		Min	-1.24	-2.09	0.00	0.00	0.00	0.00
381	CO3	Max	0.13	0.26	0.15	0.00	0.00	0.00
		Min	-0.13	-0.26	-0.15	0.00	0.00	0.00
	CO4	Max	0.74	2.53	2.84	0.00	0.00	0.00
		Min	-1.41	-1.75	0.46	0.00	0.00	0.00
	CO5	Max	0.47	1.69	1.99	0.00	0.00	0.00
		Min	-0.94	-1.16	0.65	0.00	0.00	0.00
	CO6	Max	0.74	2.51	1.98	0.00	0.00	0.00
		Min	-1.35	-1.75	0.00	0.00	0.00	0.00
382	CO3	Max	0.13	0.26	0.23	0.00	0.00	0.00
		Min	-0.13	-0.26	-0.23	0.00	0.00	0.00
	CO4	Max	0.74	2.53	2.66	0.00	0.00	0.00
		Min	-1.41	-1.75	-0.44	0.00	0.00	0.00
	CO5	Max	0.47	1.69	1.87	0.00	0.00	0.00
		Min	-0.94	-1.16	0.08	0.00	0.00	0.00
	CO6	Max	0.74	2.51	1.90	0.00	0.00	0.00
		Min	-1.35	-1.75	-0.44	0.00	0.00	0.00
383	CO3	Max	0.31	0.28	0.91	0.00	0.00	0.00
		Min	-0.31	-0.28	-0.91	0.00	0.00	0.00
	CO4	Max	0.78	2.10	5.71	0.00	0.00	0.00
		Min	-1.02	-1.57	-0.88	0.00	0.00	0.00
	CO5	Max	0.52	1.38	3.98	0.00	0.00	0.00
		Min	-0.68	-1.03	0.35	0.00	0.00	0.00
	CO6	Max	0.73	2.10	4.16	0.00	0.00	0.00
		Min	-0.74	-1.57	-0.88	0.00	0.00	0.00
384	CO3	Max	0.31	0.28	0.51	0.00	0.00	0.00
		Min	-0.31	-0.28	-0.51	0.00	0.00	0.00
	CO4	Max	0.78	2.10	4.47	0.00	0.00	0.00
		Min	-1.02	-1.57	-0.11	0.00	0.00	0.00
	CO5	Max	0.52	1.38	3.16	0.00	0.00	0.00
		Min	-0.68	-1.03	0.83	0.00	0.00	0.00
	CO6	Max	0.73	2.10	2.97	0.00	0.00	0.00
		Min	-0.74	-1.57	-0.11	0.00	0.00	0.00
389	CO3	Max	0.46	0.17	0.40	0.00	0.00	0.00
		Min	-0.46	-0.17	-0.40	0.00	0.00	0.00
	CO4	Max	1.46	1.62	3.96	0.00	0.00	0.00
		Min	-1.93	-1.21	-0.67	0.00	0.00	0.00
	CO5	Max	0.98	1.07	2.77	0.00	0.00	0.00
		Min	-1.28	-0.81	0.28	0.00	0.00	0.00
	CO6	Max	1.45	1.62	2.87	0.00	0.00	0.00
		Min	-1.78	-1.00	-0.67	0.00	0.00	0.00
390	CO3	Max	0.46	0.17	0.77	0.00	0.00	0.00
		Min	-0.46	-0.17	-0.77	0.00	0.00	0.00
	CO4	Max	1.46	1.62	4.32	0.00	0.00	0.00
		Min	-1.93	-1.21	-1.76	0.00	0.00	0.00
	CO5	Max	0.98	1.07	3.01	0.00	0.00	0.00
		Min	-1.28	-0.81	-0.27	0.00	0.00	0.00
	CO6	Max	1.45	1.62	3.13	0.00	0.00	0.00
		Min	-1.78	-1.00	-1.76	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
391	CO3	Max	0.52	0.25	0.93	0.00	0.00	0.00
		Min	-0.52	-0.25	-0.93	0.00	0.00	0.00
	CO4	Max	1.29	1.59	4.24	0.00	0.00	0.00
		Min	-1.57	-1.15	-3.02	0.00	0.00	0.00
	CO5	Max	0.87	1.06	2.91	0.00	0.00	0.00
		Min	-1.05	-0.78	-1.05	0.00	0.00	0.00
	CO6	Max	1.28	1.59	3.51	0.00	0.00	0.00
		Min	-1.32	-0.95	-3.02	0.00	0.00	0.00
392	CO3	Max	0.52	0.25	0.35	0.00	0.00	0.00
		Min	-0.52	-0.25	-0.35	0.00	0.00	0.00
	CO4	Max	1.29	1.59	1.68	0.00	0.00	0.00
		Min	-1.57	-1.15	-0.55	0.00	0.00	0.00
	CO5	Max	0.87	1.06	1.20	0.00	0.00	0.00
		Min	-1.05	-0.78	0.50	0.00	0.00	0.00
	CO6	Max	1.28	1.59	0.76	0.00	0.00	0.00
		Min	-1.32	-0.95	-0.55	0.00	0.00	0.00
395	CO3	Max	0.24	0.32	0.79	0.00	0.00	0.00
		Min	-0.24	-0.32	-0.79	0.00	0.00	0.00
	CO4	Max	1.70	2.37	5.79	0.00	0.00	0.00
		Min	-1.29	-1.80	-5.17	0.00	0.00	0.00
	CO5	Max	1.14	1.58	3.88	0.00	0.00	0.00
		Min	-0.85	-1.19	-3.04	0.00	0.00	0.00
	CO6	Max	1.69	2.35	5.57	0.00	0.00	0.00
		Min	-1.27	-1.77	-5.17	0.00	0.00	0.00
396	CO3	Max	0.24	0.32	0.18	0.00	0.00	0.00
		Min	-0.24	-0.32	-0.18	0.00	0.00	0.00
	CO4	Max	1.70	2.37	1.27	0.00	0.00	0.00
		Min	-1.29	-1.80	-0.74	0.00	0.00	0.00
	CO5	Max	1.14	1.58	0.92	0.00	0.00	0.00
		Min	-0.85	-1.19	-0.33	0.00	0.00	0.00
	CO6	Max	1.69	2.35	0.71	0.00	0.00	0.00
		Min	-1.27	-1.77	-0.74	0.00	0.00	0.00
397	CO3	Max	0.20	0.29	0.74	0.00	0.00	0.00
		Min	-0.20	-0.29	-0.74	0.00	0.00	0.00
	CO4	Max	1.20	2.28	5.63	0.00	0.00	0.00
		Min	-1.58	-1.73	-5.03	0.00	0.00	0.00
	CO5	Max	0.79	1.52	3.77	0.00	0.00	0.00
		Min	-1.05	-1.15	-2.94	0.00	0.00	0.00
	CO6	Max	1.18	2.27	5.41	0.00	0.00	0.00
		Min	-1.57	-1.70	-5.03	0.00	0.00	0.00
398	CO3	Max	0.20	0.29	0.14	0.00	0.00	0.00
		Min	-0.20	-0.29	-0.14	0.00	0.00	0.00
	CO4	Max	1.20	2.29	1.20	0.00	0.00	0.00
		Min	-1.58	-1.73	-0.59	0.00	0.00	0.00
	CO5	Max	0.79	1.52	0.88	0.00	0.00	0.00
		Min	-1.05	-1.15	-0.22	0.00	0.00	0.00
	CO6	Max	1.18	2.27	0.88	0.00	0.00	0.00
		Min	-1.57	-1.70	-0.59	0.00	0.00	0.00
400	CO3	Max	0.32	0.43	0.53	0.00	0.00	0.00
		Min	-0.32	-0.43	-0.53	0.00	0.00	0.00
	CO4	Max	2.38	3.28	4.96	0.00	0.00	0.00
		Min	-1.69	-2.33	-2.02	0.00	0.00	0.00
	CO5	Max	1.58	2.17	3.37	0.00	0.00	0.00
		Min	-1.12	-1.55	-0.99	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
400	CO6	Max	2.35	3.24	4.61	0.00	0.00	0.00
		Min	-1.66	-2.29	-2.02	0.00	0.00	0.00
401	CO3	Max	0.32	0.43	0.66	0.00	0.00	0.00
		Min	-0.32	-0.43	-0.66	0.00	0.00	0.00
	CO4	Max	2.38	3.28	3.82	0.00	0.00	0.00
		Min	-1.69	-2.33	-3.35	0.00	0.00	0.00
	CO5	Max	1.58	2.17	2.62	0.00	0.00	0.00
		Min	-1.12	-1.55	-1.81	0.00	0.00	0.00
	CO6	Max	2.35	3.24	3.47	0.00	0.00	0.00
		Min	-1.66	-2.29	-3.35	0.00	0.00	0.00
402	CO3	Max	0.27	0.39	0.46	0.00	0.00	0.00
		Min	-0.27	-0.39	-0.46	0.00	0.00	0.00
	CO4	Max	1.52	3.09	4.65	0.00	0.00	0.00
		Min	-2.12	-2.21	-1.80	0.00	0.00	0.00
	CO5	Max	1.01	2.05	3.17	0.00	0.00	0.00
		Min	-1.40	-1.47	-0.87	0.00	0.00	0.00
	CO6	Max	1.48	3.06	4.32	0.00	0.00	0.00
		Min	-2.10	-2.16	-1.80	0.00	0.00	0.00
403	CO3	Max	0.27	0.39	0.57	0.00	0.00	0.00
		Min	-0.27	-0.39	-0.57	0.00	0.00	0.00
	CO4	Max	1.52	3.09	3.63	0.00	0.00	0.00
		Min	-2.12	-2.21	-3.03	0.00	0.00	0.00
	CO5	Max	1.01	2.05	2.50	0.00	0.00	0.00
		Min	-1.40	-1.47	-1.60	0.00	0.00	0.00
	CO6	Max	1.48	3.06	3.26	0.00	0.00	0.00
		Min	-2.10	-2.16	-3.03	0.00	0.00	0.00
405	CO3	Max	0.43	0.57	0.21	0.00	0.00	0.00
		Min	-0.43	-0.57	-0.21	0.00	0.00	0.00
	CO4	Max	3.08	4.31	2.76	0.00	0.00	0.00
		Min	-2.04	-2.87	-1.03	0.00	0.00	0.00
	CO5	Max	2.03	2.84	1.96	0.00	0.00	0.00
		Min	-1.36	-1.91	-0.48	0.00	0.00	0.00
	CO6	Max	3.04	4.26	2.24	0.00	0.00	0.00
		Min	-2.02	-2.84	-1.03	0.00	0.00	0.00
406	CO3	Max	0.43	0.57	1.25	0.00	0.00	0.00
		Min	-0.43	-0.57	-1.25	0.00	0.00	0.00
	CO4	Max	3.08	4.31	4.89	0.00	0.00	0.00
		Min	-2.04	-2.87	-8.33	0.00	0.00	0.00
	CO5	Max	2.03	2.84	3.31	0.00	0.00	0.00
		Min	-1.36	-1.91	-5.00	0.00	0.00	0.00
	CO6	Max	3.04	4.26	4.61	0.00	0.00	0.00
		Min	-2.02	-2.83	-8.33	0.00	0.00	0.00
407	CO3	Max	0.35	0.51	0.18	0.00	0.00	0.00
		Min	-0.35	-0.51	-0.18	0.00	0.00	0.00
	CO4	Max	1.99	4.21	2.58	0.00	0.00	0.00
		Min	-2.94	-2.84	-0.95	0.00	0.00	0.00
	CO5	Max	1.33	2.77	1.84	0.00	0.00	0.00
		Min	-1.93	-1.89	-0.45	0.00	0.00	0.00
	CO6	Max	1.94	4.18	2.11	0.00	0.00	0.00
		Min	-2.93	-2.78	-0.95	0.00	0.00	0.00
408	CO3	Max	0.35	0.51	1.13	0.00	0.00	0.00
		Min	-0.35	-0.51	-1.13	0.00	0.00	0.00
	CO4	Max	1.99	4.21	4.85	0.00	0.00	0.00
		Min	-2.94	-2.84	-8.20	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
408	CO5	Max	1.33	2.77	3.28	0.00	0.00	0.00
		Min	-1.93	-1.89	-4.88	0.00	0.00	0.00
	CO6	Max	1.94	4.19	4.53	0.00	0.00	0.00
		Min	-2.93	-2.78	-8.20	0.00	0.00	0.00
411	CO3	Max	0.47	0.63	0.61	0.00	0.00	0.00
		Min	-0.47	-0.63	-0.61	0.00	0.00	0.00
	CO4	Max	2.60	4.27	3.38	0.00	0.00	0.00
		Min	-1.79	-2.90	-2.66	0.00	0.00	0.00
	CO5	Max	1.72	2.82	2.27	0.00	0.00	0.00
		Min	-1.19	-1.92	-1.71	0.00	0.00	0.00
	CO6	Max	2.57	4.22	3.26	0.00	0.00	0.00
		Min	-1.77	-2.85	-2.66	0.00	0.00	0.00
413	CO3	Max	0.47	0.63	0.80	0.00	0.00	0.00
		Min	-0.47	-0.63	-0.80	0.00	0.00	0.00
	CO4	Max	2.60	4.27	2.89	0.00	0.00	0.00
		Min	-1.79	-2.90	-5.27	0.00	0.00	0.00
	CO5	Max	1.72	2.82	1.93	0.00	0.00	0.00
		Min	-1.19	-1.92	-3.39	0.00	0.00	0.00
	CO6	Max	2.57	4.22	2.80	0.00	0.00	0.00
		Min	-1.77	-2.85	-5.27	0.00	0.00	0.00
414	CO3	Max	0.50	0.65	0.60	0.00	0.00	0.00
		Min	-0.50	-0.65	-0.60	0.00	0.00	0.00
	CO4	Max	2.81	5.44	5.08	0.00	0.00	0.00
		Min	-4.26	-3.62	-3.68	0.00	0.00	0.00
	CO5	Max	1.86	3.59	3.37	0.00	0.00	0.00
		Min	-2.80	-2.40	-2.41	0.00	0.00	0.00
	CO6	Max	2.74	5.39	4.97	0.00	0.00	0.00
		Min	-4.22	-3.54	-3.68	0.00	0.00	0.00
416	CO3	Max	0.50	0.65	0.88	0.00	0.00	0.00
		Min	-0.50	-0.65	-0.88	0.00	0.00	0.00
	CO4	Max	2.81	5.44	3.86	0.00	0.00	0.00
		Min	-4.26	-3.62	-7.13	0.00	0.00	0.00
	CO5	Max	1.86	3.59	2.57	0.00	0.00	0.00
		Min	-2.80	-2.40	-4.60	0.00	0.00	0.00
	CO6	Max	2.74	5.39	3.72	0.00	0.00	0.00
		Min	-4.22	-3.54	-7.13	0.00	0.00	0.00
418	CO3	Max	0.25	0.21	0.87	0.00	0.00	0.00
		Min	-0.25	-0.21	-0.87	0.00	0.00	0.00
	CO4	Max	0.33	0.70	1.36	0.00	0.00	0.00
		Min	-0.63	-0.46	-1.39	0.00	0.00	0.00
	CO5	Max	0.23	0.47	0.95	0.00	0.00	0.00
		Min	-0.42	-0.30	-0.62	0.00	0.00	0.00
	CO6	Max	0.31	0.70	1.14	0.00	0.00	0.00
		Min	-0.62	-0.46	-1.39	0.00	0.00	0.00
419	CO3	Max	0.25	0.21	0.53	0.00	0.00	0.00
		Min	-0.25	-0.21	-0.53	0.00	0.00	0.00
	CO4	Max	0.33	0.70	1.68	0.00	0.00	0.00
		Min	-0.63	-0.46	-2.22	0.00	0.00	0.00
	CO5	Max	0.23	0.47	1.16	0.00	0.00	0.00
		Min	-0.42	-0.30	-1.16	0.00	0.00	0.00
	CO6	Max	0.31	0.70	1.51	0.00	0.00	0.00
		Min	-0.62	-0.46	-2.22	0.00	0.00	0.00
420	CO3	Max	0.32	0.29	0.34	0.00	0.00	0.00
		Min	-0.32	-0.29	-0.34	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] Px'	Py'	Pz'	Support moments [kNm] Mx'	My'	Mz'
420	CO4	Max	1.24	2.14	1.21	0.00	0.00	0.00
		Min	-2.02	-1.32	0.04	0.00	0.00	0.00
	CO5	Max	0.83	1.40	0.93	0.00	0.00	0.00
		Min	-1.32	-0.88	0.15	0.00	0.00	0.00
	CO6	Max	1.23	2.14	0.75	0.00	0.00	0.00
		Min	-2.02	-1.31	0.00	0.00	0.00	0.00
421	CO3	Max	0.32	0.29	1.03	0.00	0.00	0.00
		Min	-0.32	-0.29	-1.03	0.00	0.00	0.00
	CO4	Max	1.24	2.14	2.71	0.00	0.00	0.00
		Min	-2.02	-1.32	-4.37	0.00	0.00	0.00
	CO5	Max	0.83	1.40	1.85	0.00	0.00	0.00
		Min	-1.32	-0.88	-2.57	0.00	0.00	0.00
	CO6	Max	1.23	2.14	2.51	0.00	0.00	0.00
		Min	-2.02	-1.31	-4.37	0.00	0.00	0.00
423	CO3	Max	0.40	0.28	0.37	0.00	0.00	0.00
		Min	-0.40	-0.28	-0.37	0.00	0.00	0.00
	CO4	Max	1.10	1.68	1.33	0.00	0.00	0.00
		Min	-1.14	-0.81	-0.34	0.00	0.00	0.00
	CO5	Max	0.73	1.13	0.93	0.00	0.00	0.00
		Min	-0.74	-0.52	-0.15	0.00	0.00	0.00
	CO6	Max	1.05	1.66	1.14	0.00	0.00	0.00
		Min	-1.14	-0.81	-0.34	0.00	0.00	0.00
424	CO3	Max	0.40	0.28	0.26	0.00	0.00	0.00
		Min	-0.40	-0.28	-0.26	0.00	0.00	0.00
	CO4	Max	1.10	1.68	1.26	0.00	0.00	0.00
		Min	-1.14	-0.81	-0.66	0.00	0.00	0.00
	CO5	Max	0.73	1.13	0.88	0.00	0.00	0.00
		Min	-0.74	-0.52	-0.37	0.00	0.00	0.00
	CO6	Max	1.05	1.66	1.12	0.00	0.00	0.00
		Min	-1.14	-0.81	-0.66	0.00	0.00	0.00
425	CO3	Max	0.40	0.28	0.26	0.00	0.00	0.00
		Min	-0.40	-0.28	-0.26	0.00	0.00	0.00
	CO4	Max	1.07	3.76	3.18	0.00	0.00	0.00
		Min	-3.40	-0.75	-0.20	0.00	0.00	0.00
	CO5	Max	0.71	2.49	2.15	0.00	0.00	0.00
		Min	-2.25	-0.50	-0.09	0.00	0.00	0.00
	CO6	Max	1.02	3.75	3.04	0.00	0.00	0.00
		Min	-3.39	-0.71	-0.19	0.00	0.00	0.00
426	CO3	Max	0.40	0.28	0.37	0.00	0.00	0.00
		Min	-0.40	-0.28	-0.37	0.00	0.00	0.00
	CO4	Max	1.07	3.76	1.30	0.00	0.00	0.00
		Min	-3.40	-0.75	-2.79	0.00	0.00	0.00
	CO5	Max	0.71	2.49	0.91	0.00	0.00	0.00
		Min	-2.25	-0.50	-1.74	0.00	0.00	0.00
	CO6	Max	1.02	3.75	1.11	0.00	0.00	0.00
		Min	-3.39	-0.71	-2.79	0.00	0.00	0.00
433	CO3	Max	0.57	0.40	0.25	0.00	0.00	0.00
		Min	-0.57	-0.40	-0.25	0.00	0.00	0.00
	CO4	Max	1.70	1.87	2.27	0.00	0.00	0.00
		Min	-1.52	-1.07	0.10	0.00	0.00	0.00
	CO5	Max	1.13	1.27	1.56	0.00	0.00	0.00
		Min	-0.99	-0.69	0.24	0.00	0.00	0.00
	CO6	Max	1.61	1.85	2.09	0.00	0.00	0.00
		Min	-1.52	-1.07	0.00	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
434	CO3	Max	0.57	0.40	0.80	0.00	0.00	0.00
		Min	-0.57	-0.40	-0.80	0.00	0.00	0.00
	CO4	Max	1.70	1.87	1.96	0.00	0.00	0.00
		Min	-1.52	-1.07	-1.81	0.00	0.00	0.00
	CO5	Max	1.13	1.27	1.35	0.00	0.00	0.00
		Min	-0.99	-0.69	-1.08	0.00	0.00	0.00
	CO6	Max	1.61	1.85	1.83	0.00	0.00	0.00
		Min	-1.52	-1.07	-1.80	0.00	0.00	0.00
435	CO3	Max	0.57	0.40	0.80	0.00	0.00	0.00
		Min	-0.57	-0.40	-0.80	0.00	0.00	0.00
	CO4	Max	1.72	4.63	4.07	0.00	0.00	0.00
		Min	-4.26	-1.22	-1.83	0.00	0.00	0.00
	CO5	Max	1.14	3.08	2.74	0.00	0.00	0.00
		Min	-2.82	-0.81	-1.08	0.00	0.00	0.00
	CO6	Max	1.63	4.63	3.91	0.00	0.00	0.00
		Min	-4.26	-1.16	-1.82	0.00	0.00	0.00
436	CO3	Max	0.57	0.40	0.25	0.00	0.00	0.00
		Min	-0.57	-0.40	-0.25	0.00	0.00	0.00
	CO4	Max	1.72	4.63	0.67	0.00	0.00	0.00
		Min	-4.26	-1.22	-0.92	0.00	0.00	0.00
	CO5	Max	1.14	3.08	0.49	0.00	0.00	0.00
		Min	-2.82	-0.81	-0.53	0.00	0.00	0.00
	CO6	Max	1.63	4.63	0.46	0.00	0.00	0.00
		Min	-4.26	-1.16	-0.92	0.00	0.00	0.00
439	CO3	Max	1.29	1.29	0.55	0.00	0.00	0.00
		Min	-1.29	-1.29	-0.55	0.00	0.00	0.00
	CO4	Max	4.14	4.14	1.12	0.00	0.00	0.00
		Min	-3.86	-3.68	-1.11	0.00	0.00	0.00
	CO5	Max	2.76	2.76	0.72	0.00	0.00	0.00
		Min	-2.50	-2.41	-0.67	0.00	0.00	0.00
	CO6	Max	3.89	3.89	1.12	0.00	0.00	0.00
		Min	-3.81	-3.68	-1.11	0.00	0.00	0.00
441	CO3	Max	1.29	1.30	0.55	0.00	0.00	0.00
		Min	-1.29	-1.30	-0.55	0.00	0.00	0.00
	CO4	Max	4.15	6.19	1.29	0.00	0.00	0.00
		Min	-5.72	-4.15	-1.59	0.00	0.00	0.00
	CO5	Max	2.76	4.07	0.85	0.00	0.00	0.00
		Min	-3.76	-2.77	-0.94	0.00	0.00	0.00
	CO6	Max	3.90	6.14	1.25	0.00	0.00	0.00
		Min	-5.68	-3.90	-1.59	0.00	0.00	0.00
443	CO3	Max	0.70	0.81	1.18	0.00	0.00	0.00
		Min	-0.70	-0.81	-1.18	0.00	0.00	0.00
	CO4	Max	2.20	2.67	2.53	0.00	0.00	0.00
		Min	-2.93	-2.58	-0.17	0.00	0.00	0.00
	CO5	Max	1.47	1.79	1.78	0.00	0.00	0.00
		Min	-1.90	-1.69	0.53	0.00	0.00	0.00
	CO6	Max	2.18	2.43	1.75	0.00	0.00	0.00
		Min	-2.93	-2.58	-0.17	0.00	0.00	0.00
445	CO3	Max	0.23	0.51	1.94	0.00	0.00	0.00
		Min	-0.23	-0.51	-1.94	0.00	0.00	0.00
	CO4	Max	2.12	2.28	4.24	0.00	0.00	0.00
		Min	-2.08	-2.13	-2.81	0.00	0.00	0.00
	CO5	Max	1.42	1.53	2.93	0.00	0.00	0.00
		Min	-1.34	-1.43	-0.92	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
445	CO6	Max	2.05	2.20	3.46	0.00	0.00	0.00
		Min	-2.08	-2.08	-2.81	0.00	0.00	0.00
448	CO3	Max	0.77	0.51	1.08	0.00	0.00	0.00
		Min	-0.77	-0.51	-1.08	0.00	0.00	0.00
	CO4	Max	2.00	1.32	1.17	0.00	0.00	0.00
		Min	-2.75	-1.79	-0.47	0.00	0.00	0.00
	CO5	Max	1.32	0.88	0.80	0.00	0.00	0.00
		Min	-1.83	-1.19	-0.19	0.00	0.00	0.00
	CO6	Max	2.00	1.32	1.10	0.00	0.00	0.00
		Min	-2.74	-1.78	-0.47	0.00	0.00	0.00
449	CO3	Max	0.45	0.35	0.87	0.00	0.00	0.00
		Min	-0.45	-0.35	-0.87	0.00	0.00	0.00
	CO4	Max	1.93	1.69	1.15	0.00	0.00	0.00
		Min	-2.41	-1.28	-0.45	0.00	0.00	0.00
	CO5	Max	1.28	1.13	0.79	0.00	0.00	0.00
		Min	-1.61	-0.84	-0.18	0.00	0.00	0.00
	CO6	Max	1.93	1.66	1.07	0.00	0.00	0.00
		Min	-2.40	-1.28	-0.45	0.00	0.00	0.00
454	CO3	Max	0.41	0.29	0.90	0.00	0.00	0.00
		Min	-0.41	-0.29	-0.90	0.00	0.00	0.00
	CO4	Max	2.79	0.35	3.94	0.00	0.00	0.00
		Min	-3.28	-1.08	1.16	0.00	0.00	0.00
	CO5	Max	1.87	0.21	2.80	0.00	0.00	0.00
		Min	-2.11	-0.73	1.41	0.00	0.00	0.00
	CO6	Max	2.74	0.35	2.49	0.00	0.00	0.00
		Min	-3.28	-1.03	0.00	0.00	0.00	0.00
455	CO3	Max	0.41	0.29	0.63	0.00	0.00	0.00
		Min	-0.41	-0.29	-0.63	0.00	0.00	0.00
	CO4	Max	2.79	0.35	4.21	0.00	0.00	0.00
		Min	-3.28	-1.08	0.62	0.00	0.00	0.00
	CO5	Max	1.87	0.21	2.99	0.00	0.00	0.00
		Min	-2.11	-0.73	1.03	0.00	0.00	0.00
	CO6	Max	2.74	0.35	2.76	0.00	0.00	0.00
		Min	-3.28	-1.03	0.00	0.00	0.00	0.00
460	CO3	Max	0.13	0.44	0.30	0.00	0.00	0.00
		Min	-0.13	-0.44	-0.30	0.00	0.00	0.00
	CO4	Max	1.65	3.63	4.04	0.00	0.00	0.00
		Min	-1.99	-3.22	1.02	0.00	0.00	0.00
	CO5	Max	1.11	2.35	2.86	0.00	0.00	0.00
		Min	-1.26	-2.14	1.24	0.00	0.00	0.00
	CO6	Max	1.58	3.63	2.72	0.00	0.00	0.00
		Min	-1.99	-3.22	0.00	0.00	0.00	0.00
461	CO3	Max	0.13	0.44	0.52	0.00	0.00	0.00
		Min	-0.13	-0.44	-0.52	0.00	0.00	0.00
	CO4	Max	1.65	3.63	4.58	0.00	0.00	0.00
		Min	-1.99	-3.22	0.31	0.00	0.00	0.00
	CO5	Max	1.11	2.35	3.23	0.00	0.00	0.00
		Min	-1.26	-2.14	0.81	0.00	0.00	0.00
	CO6	Max	1.58	3.63	3.17	0.00	0.00	0.00
		Min	-1.99	-3.22	0.00	0.00	0.00	0.00
467	CO3	Max	0.29	0.32	0.58	0.00	0.00	0.00
		Min	-0.29	-0.32	-0.58	0.00	0.00	0.00
	CO4	Max	1.82	0.66	3.81	0.00	0.00	0.00
		Min	-2.24	-1.32	1.62	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
467	CO5	Max	1.23	0.43	2.73	0.00	0.00	0.00
		Min	-1.44	-0.87	1.69	0.00	0.00	0.00
	CO6	Max	1.76	0.66	1.97	0.00	0.00	0.00
		Min	-2.24	-1.32	0.00	0.00	0.00	0.00
468	CO3	Max	0.29	0.32	0.93	0.00	0.00	0.00
		Min	-0.29	-0.32	-0.93	0.00	0.00	0.00
	CO4	Max	1.82	0.66	4.41	0.00	0.00	0.00
		Min	-2.24	-1.32	0.84	0.00	0.00	0.00
	CO5	Max	1.23	0.43	3.11	0.00	0.00	0.00
		Min	-1.44	-0.87	1.15	0.00	0.00	0.00
	CO6	Max	1.76	0.66	2.94	0.00	0.00	0.00
		Min	-2.24	-1.32	0.00	0.00	0.00	0.00
472	CO3	Max	0.24	0.12	0.64	0.00	0.00	0.00
		Min	-0.24	-0.12	-0.64	0.00	0.00	0.00
	CO4	Max	2.34	0.12	2.84	0.00	0.00	0.00
		Min	-2.91	-0.72	0.91	0.00	0.00	0.00
	CO5	Max	1.57	0.08	2.02	0.00	0.00	0.00
		Min	-1.87	-0.48	1.03	0.00	0.00	0.00
	CO6	Max	2.27	0.10	1.51	0.00	0.00	0.00
		Min	-2.91	-0.72	0.00	0.00	0.00	0.00
473	CO3	Max	0.24	0.12	0.79	0.00	0.00	0.00
		Min	-0.24	-0.12	-0.79	0.00	0.00	0.00
	CO4	Max	2.34	0.12	3.21	0.00	0.00	0.00
		Min	-2.91	-0.72	0.51	0.00	0.00	0.00
	CO5	Max	1.57	0.08	2.26	0.00	0.00	0.00
		Min	-1.87	-0.48	0.75	0.00	0.00	0.00
	CO6	Max	2.27	0.10	2.13	0.00	0.00	0.00
		Min	-2.91	-0.72	0.00	0.00	0.00	0.00
476	CO3	Max	0.25	0.19	0.54	0.00	0.00	0.00
		Min	-0.25	-0.19	-0.54	0.00	0.00	0.00
	CO4	Max	1.23	1.44	1.67	0.00	0.00	0.00
		Min	-2.26	-0.79	0.31	0.00	0.00	0.00
	CO5	Max	0.75	0.98	1.18	0.00	0.00	0.00
		Min	-1.53	-0.49	0.47	0.00	0.00	0.00
	CO6	Max	1.23	1.33	1.06	0.00	0.00	0.00
		Min	-2.05	-0.79	0.00	0.00	0.00	0.00
478	CO3	Max	1.48	2.04	1.14	0.00	0.00	0.00
		Min	-1.48	-2.04	-1.14	0.00	0.00	0.00
	CO4	Max	4.35	7.23	4.77	0.00	0.00	0.00
		Min	-5.00	-6.88	-2.48	0.00	0.00	0.00
	CO5	Max	2.76	4.75	3.26	0.00	0.00	0.00
		Min	-3.36	-4.58	-1.03	0.00	0.00	0.00
	CO6	Max	4.35	7.23	4.15	0.00	0.00	0.00
		Min	-4.73	-6.77	-2.48	0.00	0.00	0.00
480	CO3	Max	0.50	0.34	0.45	0.00	0.00	0.00
		Min	-0.50	-0.34	-0.45	0.00	0.00	0.00
	CO4	Max	1.27	0.87	0.14	0.00	0.00	0.00
		Min	-2.59	-1.73	-0.64	0.00	0.00	0.00
	CO5	Max	0.76	0.54	0.03	0.00	0.00	0.00
		Min	-1.75	-1.17	-0.44	0.00	0.00	0.00
	CO6	Max	1.27	0.87	0.14	0.00	0.00	0.00
		Min	-2.35	-1.58	-0.52	0.00	0.00	0.00
482	CO3	Max	0.48	0.53	0.10	0.00	0.00	0.00
		Min	-0.48	-0.53	-0.10	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
482	CO4	Max	1.26	1.17	1.64	0.00	0.00	0.00
		Min	-2.48	-1.90	0.35	0.00	0.00	0.00
	CO5	Max	0.77	0.72	1.16	0.00	0.00	0.00
		Min	-1.67	-1.28	0.45	0.00	0.00	0.00
	CO6	Max	1.26	1.17	1.04	0.00	0.00	0.00
		Min	-2.28	-1.78	0.00	0.00	0.00	0.00
483	CO3	Max	0.50	0.31	0.76	0.00	0.00	0.00
		Min	-0.50	-0.31	-0.76	0.00	0.00	0.00
	CO4	Max	1.52	1.07	1.54	0.00	0.00	0.00
		Min	-2.29	-1.53	-1.10	0.00	0.00	0.00
	CO5	Max	0.95	0.66	1.04	0.00	0.00	0.00
		Min	-1.54	-1.03	-0.60	0.00	0.00	0.00
	CO6	Max	1.52	1.07	1.48	0.00	0.00	0.00
		Min	-2.23	-1.49	-1.10	0.00	0.00	0.00
484	CO3	Max	0.28	0.21	0.32	0.00	0.00	0.00
		Min	-0.28	-0.21	-0.32	0.00	0.00	0.00
	CO4	Max	1.23	1.73	0.15	0.00	0.00	0.00
		Min	-2.39	-0.85	-0.63	0.00	0.00	0.00
	CO5	Max	0.74	1.17	0.04	0.00	0.00	0.00
		Min	-1.62	-0.50	-0.43	0.00	0.00	0.00
	CO6	Max	1.23	1.55	0.15	0.00	0.00	0.00
		Min	-2.15	-0.85	-0.51	0.00	0.00	0.00
486	CO3	Max	0.50	0.16	0.58	0.00	0.00	0.00
		Min	-0.50	-0.16	-0.58	0.00	0.00	0.00
	CO4	Max	1.45	0.27	5.43	0.00	0.00	0.00
		Min	-1.72	-0.85	1.03	0.00	0.00	0.00
	CO5	Max	0.97	0.18	3.85	0.00	0.00	0.00
		Min	-1.10	-0.57	1.47	0.00	0.00	0.00
	CO6	Max	1.35	0.27	3.48	0.00	0.00	0.00
		Min	-1.72	-0.84	0.00	0.00	0.00	0.00
487	CO3	Max	0.50	0.16	0.27	0.00	0.00	0.00
		Min	-0.50	-0.16	-0.27	0.00	0.00	0.00
	CO4	Max	1.45	0.27	5.21	0.00	0.00	0.00
		Min	-1.72	-0.85	2.06	0.00	0.00	0.00
	CO5	Max	0.97	0.18	3.70	0.00	0.00	0.00
		Min	-1.10	-0.57	2.13	0.00	0.00	0.00
	CO6	Max	1.35	0.27	3.25	0.00	0.00	0.00
		Min	-1.72	-0.84	0.00	0.00	0.00	0.00
492	CO3	Max	0.22	0.22	0.13	0.00	0.00	0.00
		Min	-0.22	-0.22	-0.13	0.00	0.00	0.00
	CO4	Max	0.60	0.60	1.25	0.00	0.00	0.00
		Min	-1.39	-1.39	0.01	0.00	0.00	0.00
	CO5	Max	0.37	0.37	0.86	0.00	0.00	0.00
		Min	-0.93	-0.93	0.10	0.00	0.00	0.00
	CO6	Max	0.60	0.60	0.79	0.00	0.00	0.00
		Min	-1.32	-1.33	0.00	0.00	0.00	0.00
498	CO3	Max	0.22	0.24	0.80	0.00	0.00	0.00
		Min	-0.22	-0.24	-0.80	0.00	0.00	0.00
	CO4	Max	1.13	0.42	5.63	0.00	0.00	0.00
		Min	-1.42	-0.73	1.50	0.00	0.00	0.00
	CO5	Max	0.76	0.27	4.00	0.00	0.00	0.00
		Min	-0.92	-0.49	1.82	0.00	0.00	0.00
	CO6	Max	1.08	0.42	3.62	0.00	0.00	0.00
		Min	-1.42	-0.73	0.00	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
499	CO3	Max	0.22	0.24	0.44	0.00	0.00	0.00
		Min	-0.22	-0.24	-0.44	0.00	0.00	0.00
	CO4	Max	1.13	0.42	5.96	0.00	0.00	0.00
		Min	-1.42	-0.73	2.06	0.00	0.00	0.00
	CO5	Max	0.76	0.27	4.22	0.00	0.00	0.00
		Min	-0.92	-0.49	2.20	0.00	0.00	0.00
	CO6	Max	1.08	0.42	3.90	0.00	0.00	0.00
		Min	-1.42	-0.73	0.00	0.00	0.00	0.00
502	CO3	Max	0.35	0.36	0.94	0.00	0.00	0.00
		Min	-0.35	-0.36	-0.94	0.00	0.00	0.00
	CO4	Max	1.20	1.48	3.15	0.00	0.00	0.00
		Min	-1.01	-1.27	0.38	0.00	0.00	0.00
	CO5	Max	0.79	0.97	2.21	0.00	0.00	0.00
		Min	-0.66	-0.83	0.66	0.00	0.00	0.00
	CO6	Max	1.20	1.48	1.80	0.00	0.00	0.00
		Min	-1.01	-1.27	0.00	0.00	0.00	0.00
503	CO3	Max	0.35	0.36	1.71	0.00	0.00	0.00
		Min	-0.35	-0.36	-1.71	0.00	0.00	0.00
	CO4	Max	1.20	1.48	4.07	0.00	0.00	0.00
		Min	-1.01	-1.27	-0.74	0.00	0.00	0.00
	CO5	Max	0.79	0.97	2.82	0.00	0.00	0.00
		Min	-0.66	-0.83	-0.08	0.00	0.00	0.00
	CO6	Max	1.20	1.48	2.86	0.00	0.00	0.00
		Min	-1.01	-1.27	-0.74	0.00	0.00	0.00
504	CO3	Max	0.11	0.16	1.31	0.00	0.00	0.00
		Min	-0.11	-0.16	-1.31	0.00	0.00	0.00
	CO4	Max	0.57	1.06	4.14	0.00	0.00	0.00
		Min	-0.78	-0.95	-0.56	0.00	0.00	0.00
	CO5	Max	0.38	0.69	2.87	0.00	0.00	0.00
		Min	-0.50	-0.63	0.12	0.00	0.00	0.00
	CO6	Max	0.55	1.06	2.95	0.00	0.00	0.00
		Min	-0.78	-0.94	-0.56	0.00	0.00	0.00
505	CO3	Max	0.11	0.16	1.35	0.00	0.00	0.00
		Min	-0.11	-0.16	-1.35	0.00	0.00	0.00
	CO4	Max	0.57	1.06	3.64	0.00	0.00	0.00
		Min	-0.78	-0.95	-0.28	0.00	0.00	0.00
	CO5	Max	0.38	0.69	2.54	0.00	0.00	0.00
		Min	-0.50	-0.63	0.23	0.00	0.00	0.00
	CO6	Max	0.55	1.06	2.40	0.00	0.00	0.00
		Min	-0.78	-0.94	-0.28	0.00	0.00	0.00
507	CO3	Max	0.52	0.54	1.19	0.00	0.00	0.00
		Min	-0.52	-0.54	-1.19	0.00	0.00	0.00
	CO4	Max	1.76	1.99	2.60	0.00	0.00	0.00
		Min	-2.37	-1.72	0.27	0.00	0.00	0.00
	CO5	Max	1.18	1.33	1.83	0.00	0.00	0.00
		Min	-1.52	-1.13	0.64	0.00	0.00	0.00
	CO6	Max	1.36	1.91	1.48	0.00	0.00	0.00
		Min	-2.37	-1.72	0.00	0.00	0.00	0.00
508	CO3	Max	0.52	0.54	2.29	0.00	0.00	0.00
		Min	-0.52	-0.54	-2.29	0.00	0.00	0.00
	CO4	Max	1.76	1.99	4.13	0.00	0.00	0.00
		Min	-2.37	-1.72	-1.71	0.00	0.00	0.00
	CO5	Max	1.18	1.33	2.83	0.00	0.00	0.00
		Min	-1.52	-1.13	-0.52	0.00	0.00	0.00

■ 3.1 NODES - SUPPORT FORCES

Load combinations

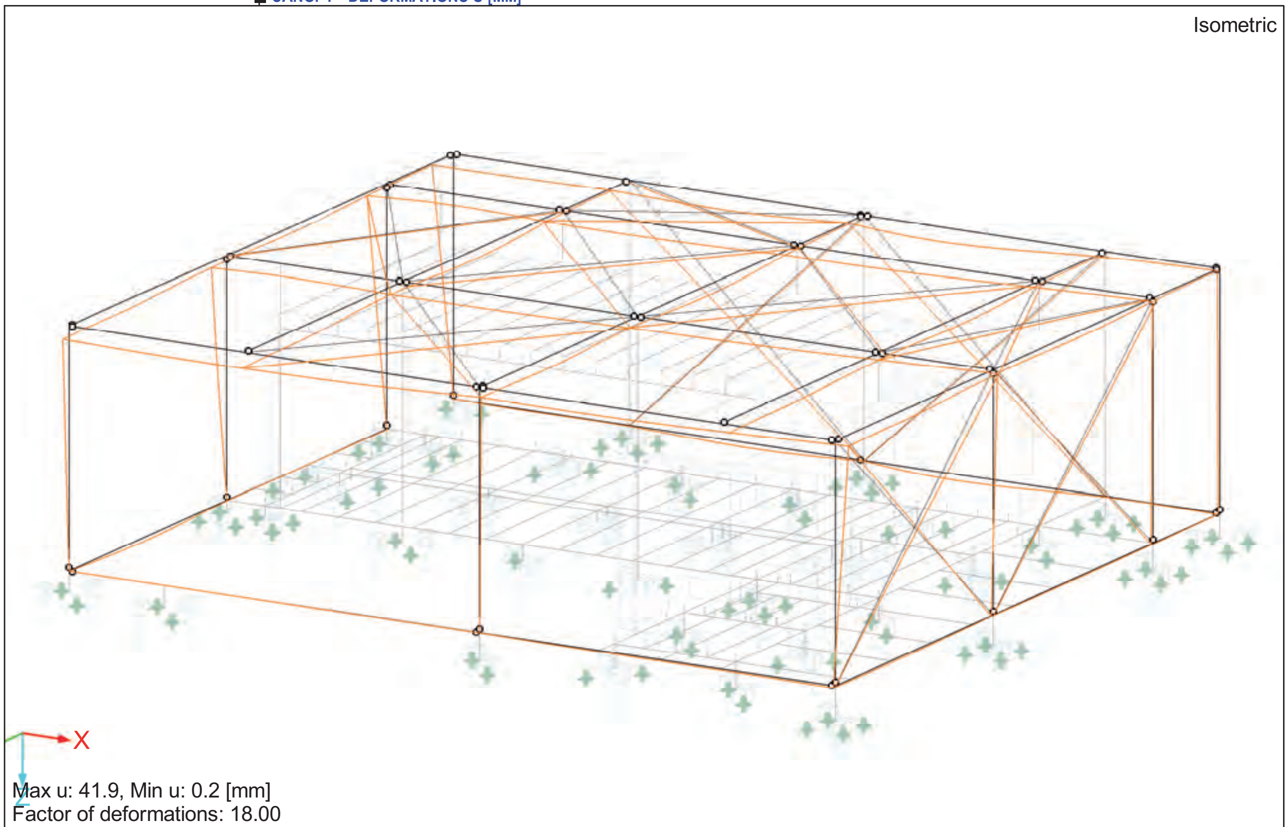
Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'	
508	CO6	Max	1.36	1.91	3.18	0.00	0.00	0.00	
		Min	-2.37	-1.72	-1.71	0.00	0.00	0.00	
514	CO3	Max	0.26	0.23	1.73	0.00	0.00	0.00	
		Min	-0.26	-0.23	-1.73	0.00	0.00	0.00	
	CO4	Max	1.44	1.33	3.26	0.00	0.00	0.00	
		Min	-2.25	-1.26	-2.75	0.00	0.00	0.00	
	CO5	Max	0.99	0.90	2.22	0.00	0.00	0.00	
		Min	-1.42	-0.84	-1.26	0.00	0.00	0.00	
	CO6	Max	1.10	1.13	2.71	0.00	0.00	0.00	
		Min	-2.25	-1.20	-2.75	0.00	0.00	0.00	
515	CO3	Max	0.26	0.23	1.26	0.00	0.00	0.00	
		Min	-0.26	-0.23	-1.26	0.00	0.00	0.00	
	CO4	Max	1.44	1.33	1.61	0.00	0.00	0.00	
		Min	-2.25	-1.26	-0.60	0.00	0.00	0.00	
	CO5	Max	0.99	0.90	1.13	0.00	0.00	0.00	
		Min	-1.42	-0.84	0.03	0.00	0.00	0.00	
	CO6	Max	1.10	1.13	0.90	0.00	0.00	0.00	
		Min	-2.25	-1.20	-0.60	0.00	0.00	0.00	
517	CO3	Max	0.09	0.02	0.03	0.00	0.00	0.00	
		Min	-0.09	-0.02	-0.03	0.00	0.00	0.00	
	CO4	Max	0.37	0.04	0.93	0.00	0.00	0.00	
		Min	-0.34	-0.03	0.36	0.00	0.00	0.00	
	CO5	Max	0.24	0.03	0.68	0.00	0.00	0.00	
		Min	-0.21	-0.02	0.39	0.00	0.00	0.00	
	CO6	Max	0.37	0.04	0.74	0.00	0.00	0.00	
		Min	-0.34	-0.03	0.00	0.00	0.00	0.00	
518	CO3	Max	0.09	0.02	0.13	0.00	0.00	0.00	
		Min	-0.09	-0.02	-0.13	0.00	0.00	0.00	
	CO4	Max	0.37	0.04	0.90	0.00	0.00	0.00	
		Min	-0.34	-0.03	0.35	0.00	0.00	0.00	
	CO5	Max	0.24	0.03	0.66	0.00	0.00	0.00	
		Min	-0.21	-0.02	0.37	0.00	0.00	0.00	
	CO6	Max	0.37	0.04	0.72	0.00	0.00	0.00	
		Min	-0.34	-0.03	0.00	0.00	0.00	0.00	
522	CO3	Max	0.12	0.00	0.04	0.00	0.00	0.00	
		Min	-0.12	0.00	-0.04	0.00	0.00	0.00	
	CO4	Max	0.53	0.00	0.32	0.00	0.00	0.00	
		Min	-0.45	0.00	-0.15	0.00	0.00	0.00	
	CO5	Max	0.36	0.00	0.24	0.00	0.00	0.00	
		Min	-0.30	0.00	-0.02	0.00	0.00	0.00	
	CO6	Max	0.51	0.00	0.24	0.00	0.00	0.00	
		Min	-0.45	0.00	-0.15	0.00	0.00	0.00	
523	CO3	Max	0.12	0.00	0.16	0.00	0.00	0.00	
		Min	-0.12	0.00	-0.16	0.00	0.00	0.00	
	CO4	Max	0.53	0.00	0.31	0.00	0.00	0.00	
		Min	-0.45	0.00	-0.21	0.00	0.00	0.00	
	CO5	Max	0.36	0.00	0.22	0.00	0.00	0.00	
		Min	-0.30	0.00	-0.07	0.00	0.00	0.00	
	CO6	Max	0.51	0.00	0.24	0.00	0.00	0.00	
		Min	-0.45	0.00	-0.21	0.00	0.00	0.00	
527	CO3	Max	0.19	0.08	0.06	0.00	0.00	0.00	
		Min	-0.19	-0.08	-0.06	0.00	0.00	0.00	
	CO4	Max	0.73	0.11	0.69	0.00	0.00	0.00	
		Min	-0.60	-0.04	0.08	0.00	0.00	0.00	

■ 3.1 NODES - SUPPORT FORCES

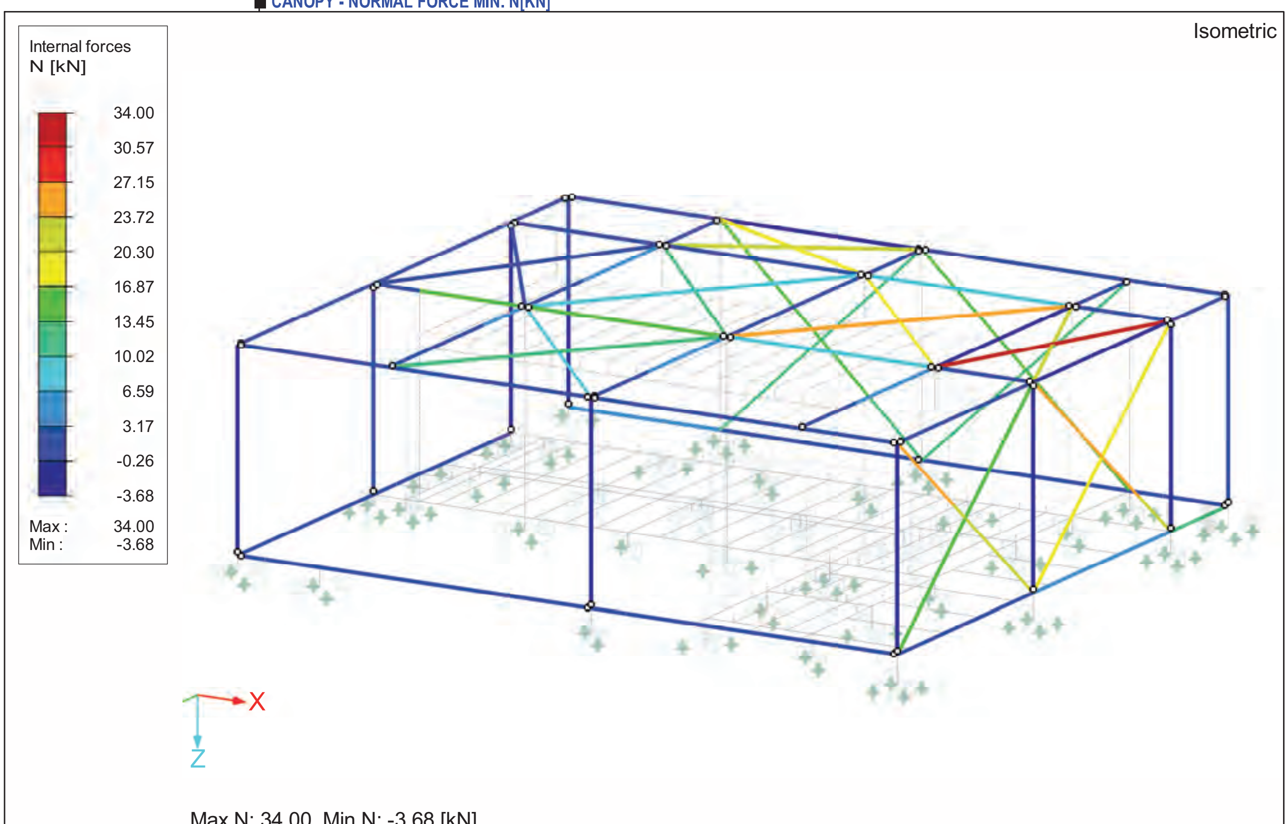
Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
527	CO5	Max	0.48	0.08	0.49	0.00	0.00	0.00
		Min	-0.37	-0.02	0.16	0.00	0.00	0.00
	CO6	Max	0.73	0.11	0.58	0.00	0.00	0.00
		Min	-0.60	-0.04	0.00	0.00	0.00	0.00
528	CO3	Max	0.19	0.08	0.18	0.00	0.00	0.00
		Min	-0.19	-0.08	-0.18	0.00	0.00	0.00
	CO4	Max	0.73	0.11	0.63	0.00	0.00	0.00
		Min	-0.60	-0.04	-0.02	0.00	0.00	0.00
	CO5	Max	0.48	0.08	0.45	0.00	0.00	0.00
		Min	-0.37	-0.02	0.08	0.00	0.00	0.00
	CO6	Max	0.73	0.11	0.54	0.00	0.00	0.00
		Min	-0.60	-0.04	-0.02	0.00	0.00	0.00
612	CO3	Max	0.16	0.12	0.76	0.00	0.00	0.00
		Min	-0.16	-0.12	-0.76	0.00	0.00	0.00
	CO4	Max	1.63	1.20	1.64	0.00	0.00	0.00
		Min	-1.89	-1.07	-1.10	0.00	0.00	0.00
	CO5	Max	1.03	0.80	1.11	0.00	0.00	0.00
		Min	-1.27	-0.70	-0.59	0.00	0.00	0.00
	CO6	Max	1.63	1.18	1.57	0.00	0.00	0.00
		Min	-1.83	-1.07	-1.10	0.00	0.00	0.00
618	CO3	Max	0.46	1.31	0.58	0.00	0.00	0.00
		Min	-0.46	-1.31	-0.58	0.00	0.00	0.00
	CO4	Max	1.75	7.28	3.02	0.00	0.00	0.00
		Min	-4.19	-4.62	-0.40	0.00	0.00	0.00
	CO5	Max	0.93	4.92	2.08	0.00	0.00	0.00
		Min	-2.87	-2.83	0.07	0.00	0.00	0.00
	CO6	Max	1.75	6.87	2.33	0.00	0.00	0.00
		Min	-3.73	-4.62	-0.40	0.00	0.00	0.00
619	CO3	Max	0.40	1.66	0.78	0.00	0.00	0.00
		Min	-0.40	-1.66	-0.78	0.00	0.00	0.00
	CO4	Max	3.27	7.11	7.27	0.00	0.00	0.00
		Min	-5.12	-5.71	-1.84	0.00	0.00	0.00
	CO5	Max	1.89	4.76	5.06	0.00	0.00	0.00
		Min	-3.49	-3.71	-0.13	0.00	0.00	0.00
	CO6	Max	3.27	7.05	6.03	0.00	0.00	0.00
		Min	-4.57	-5.71	-1.84	0.00	0.00	0.00
620	CO3	Max	2.07	1.78	0.15	0.00	0.00	0.00
		Min	-2.07	-1.78	-0.15	0.00	0.00	0.00
	CO4	Max	5.66	7.37	5.06	0.00	0.00	0.00
		Min	-6.82	-6.09	0.66	0.00	0.00	0.00
	CO5	Max	3.62	4.92	3.57	0.00	0.00	0.00
		Min	-4.57	-3.97	1.37	0.00	0.00	0.00
	CO6	Max	5.66	7.37	3.74	0.00	0.00	0.00
		Min	-6.60	-6.09	0.00	0.00	0.00	0.00

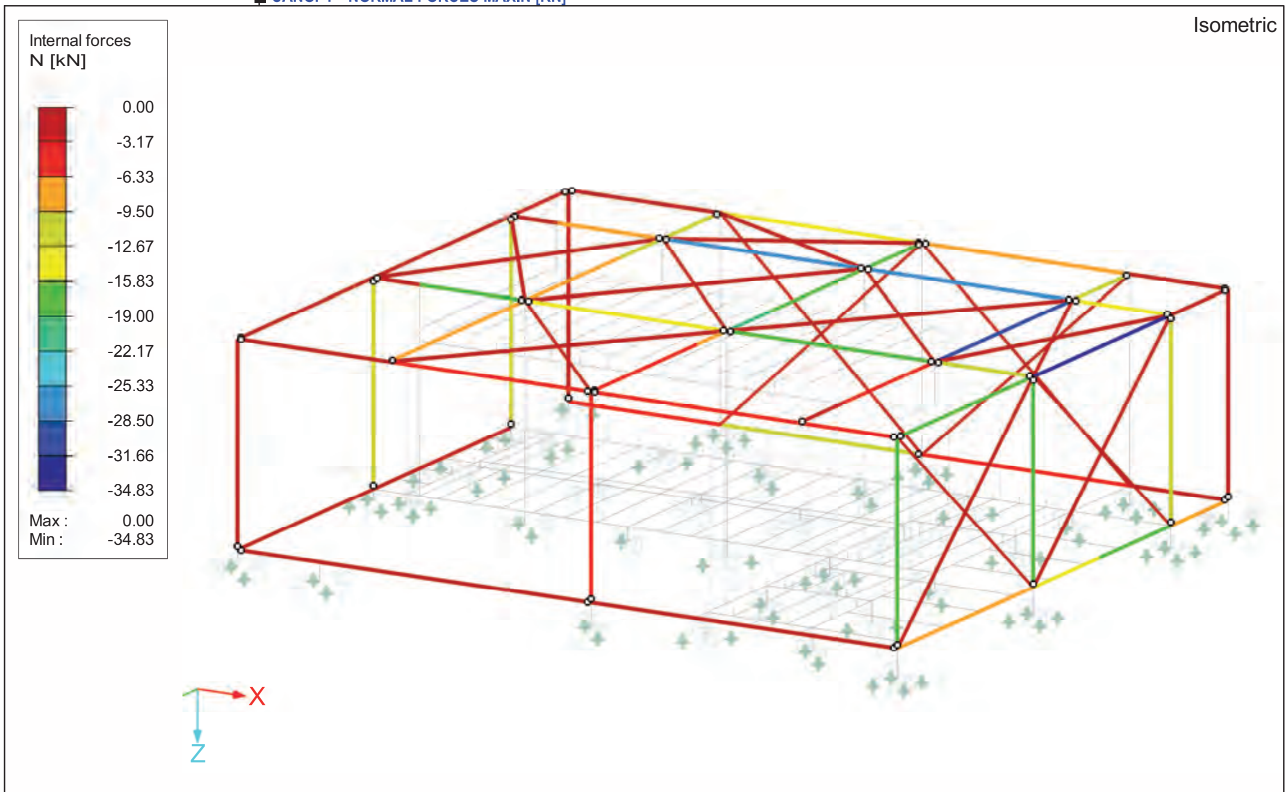
CANOPY - DEFORMATIONS U [MM]



CANOPY - NORMAL FORCE MIN. N[KN]

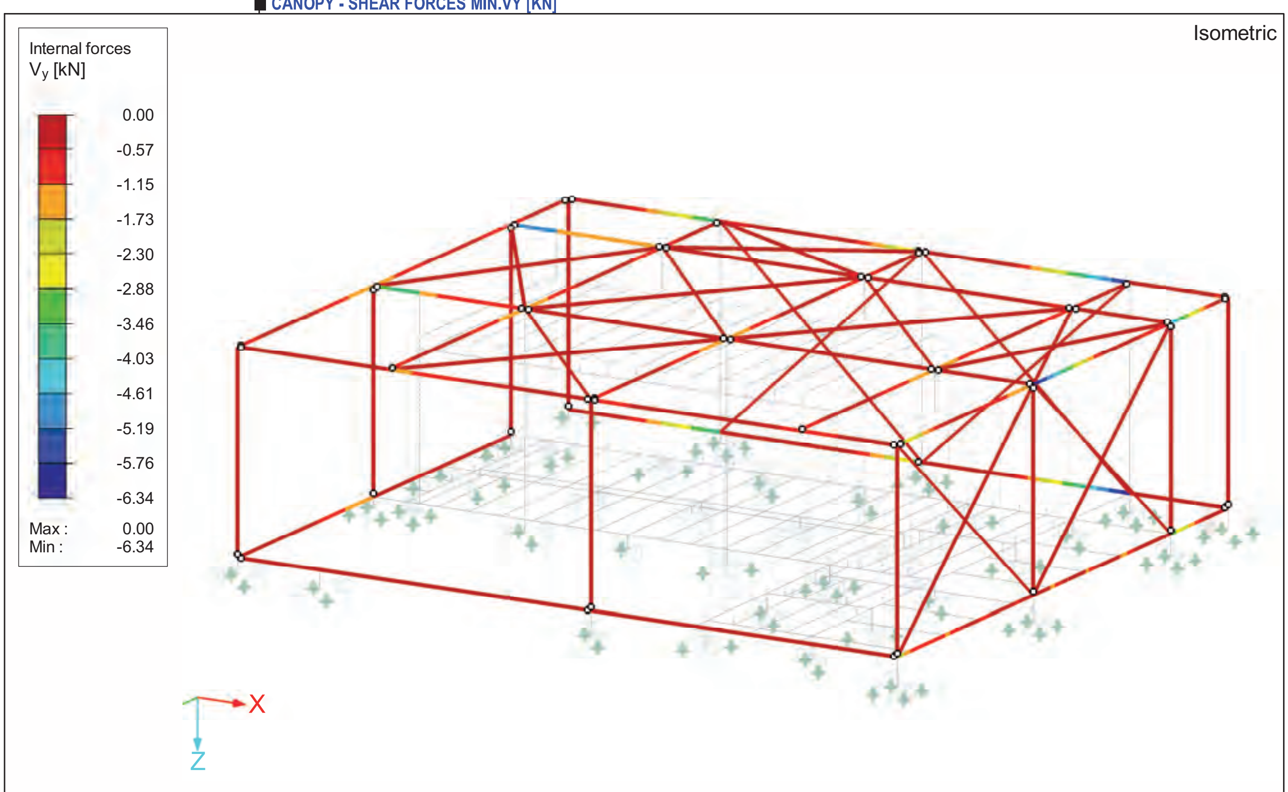


CANOPY - NORMAL FORCES MAX.N [KN]



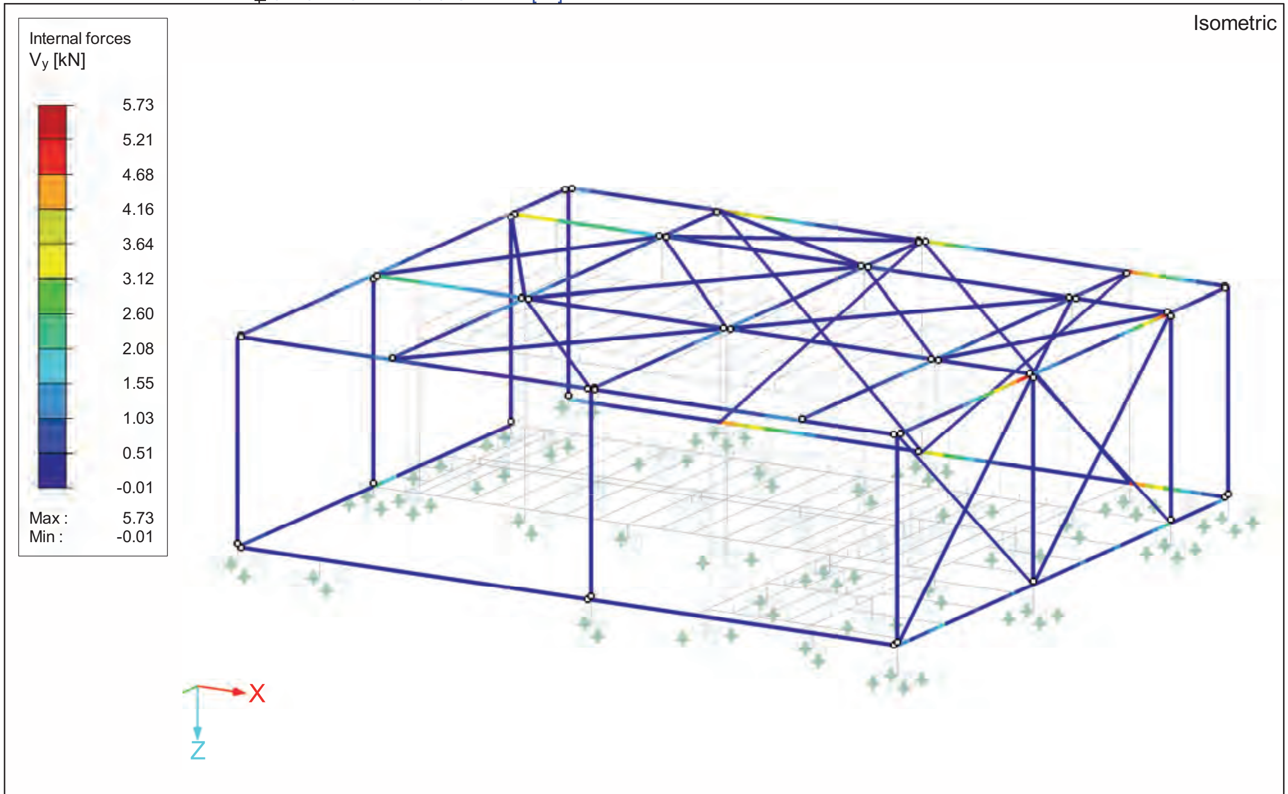
Max N: 0.00, Min N: -34.83 [kN]

CANOPY - SHEAR FORCES MIN.VY [KN]



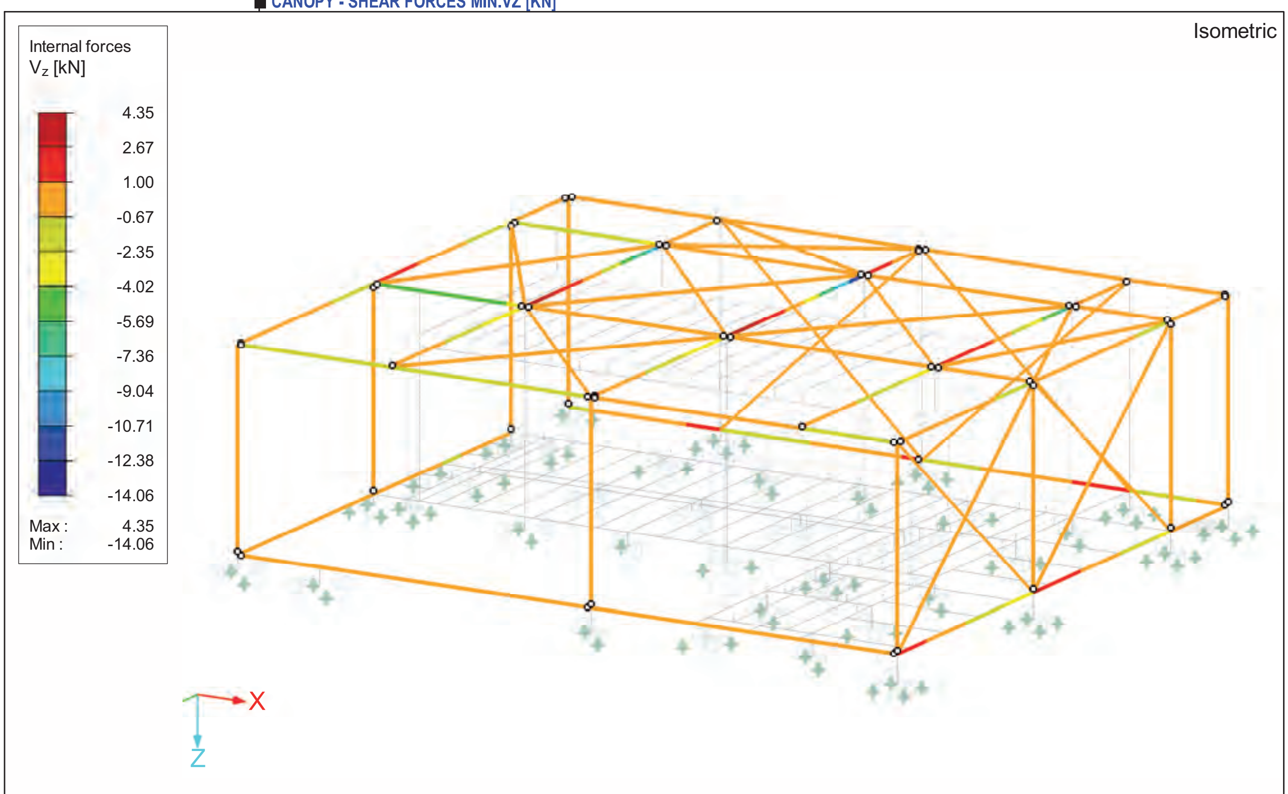
Max V-y: 0.00, Min V-y: -6.34 [kN]

CANOPY - SHEAR FORCES MAX.VY [KN]



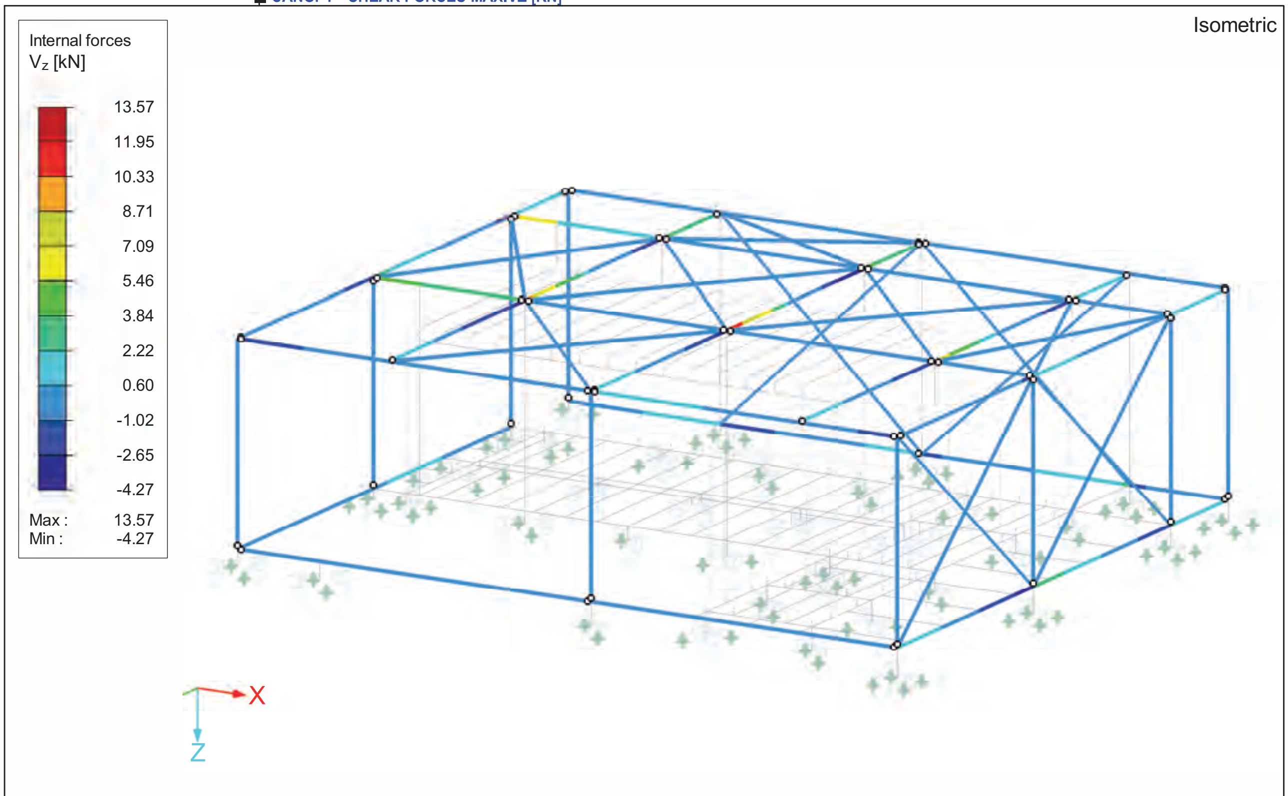
Max V-y: 5.73, Min V-y: -0.01 [kN]

CANOPY - SHEAR FORCES MIN.VZ [KN]



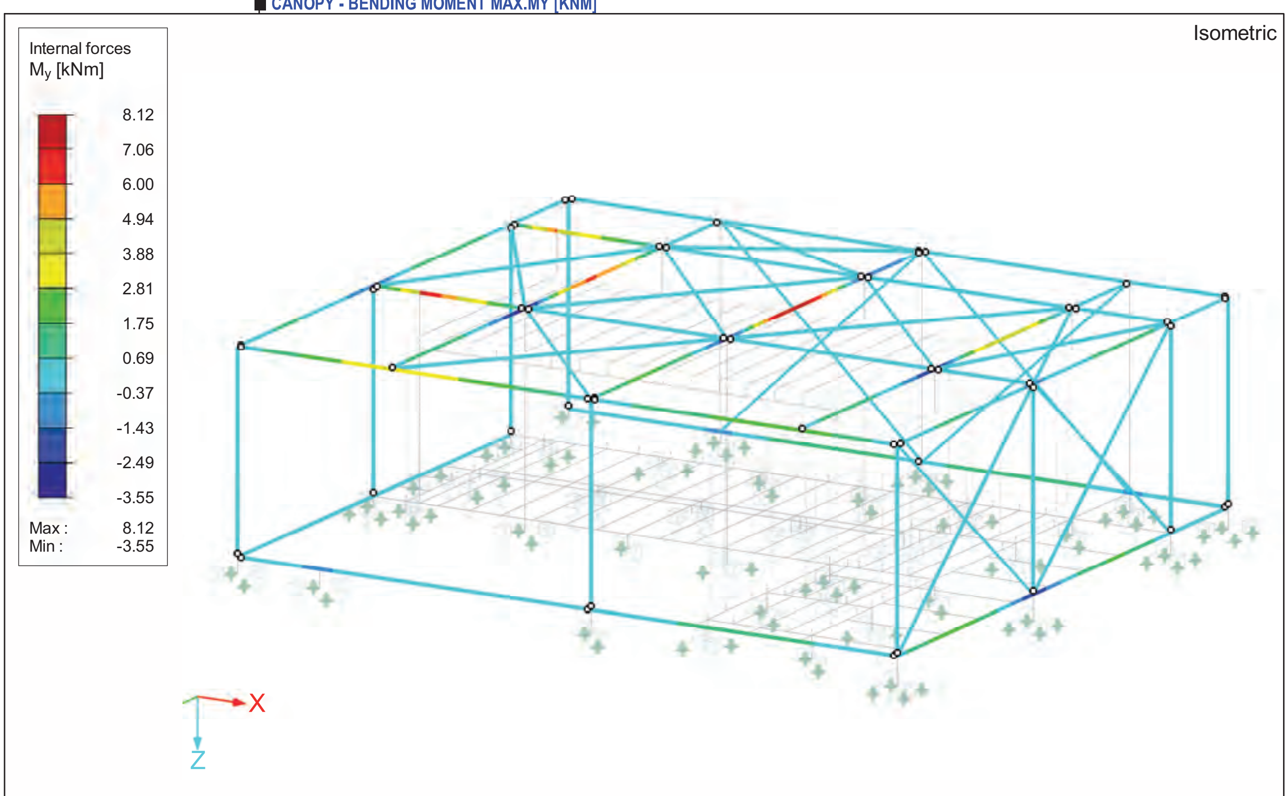
Max V-z: 4.35, Min V-z: -14.06 [kN]

CANOPY - SHEAR FORCES MAX.VZ [KN]



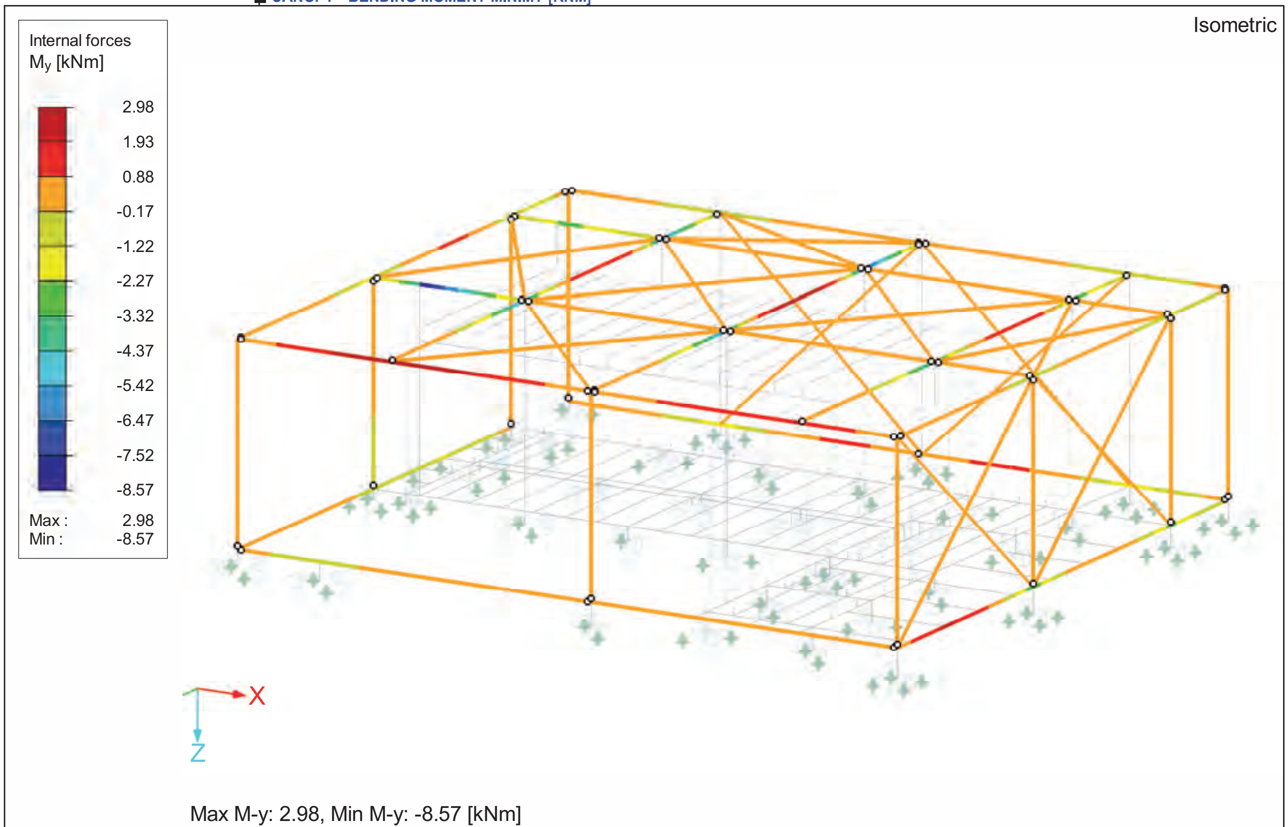
Max V-z: 13.57, Min V-z: -4.27 [kN]

CANOPY - BENDING MOMENT MAX.MY [KNM]

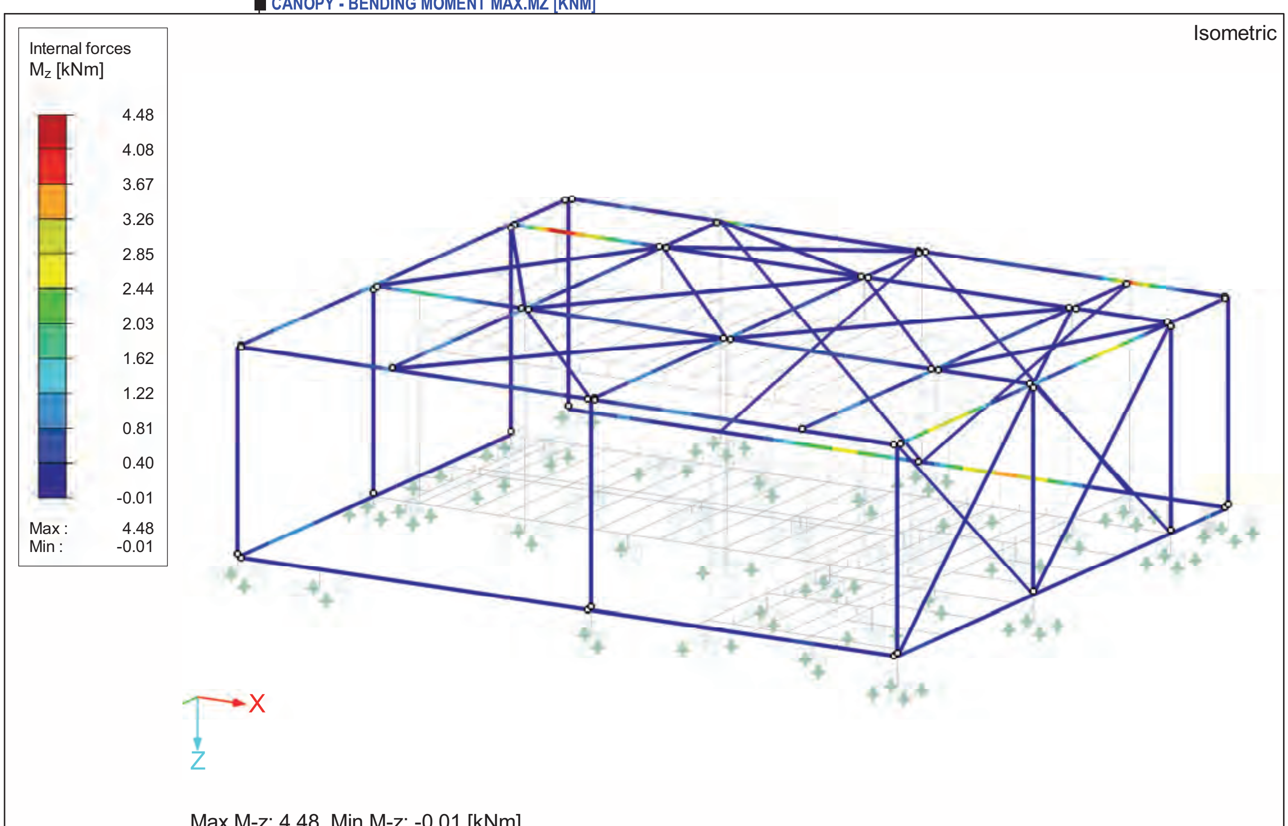


Max M-y: 8.12, Min M-y: -3.55 [kNm]

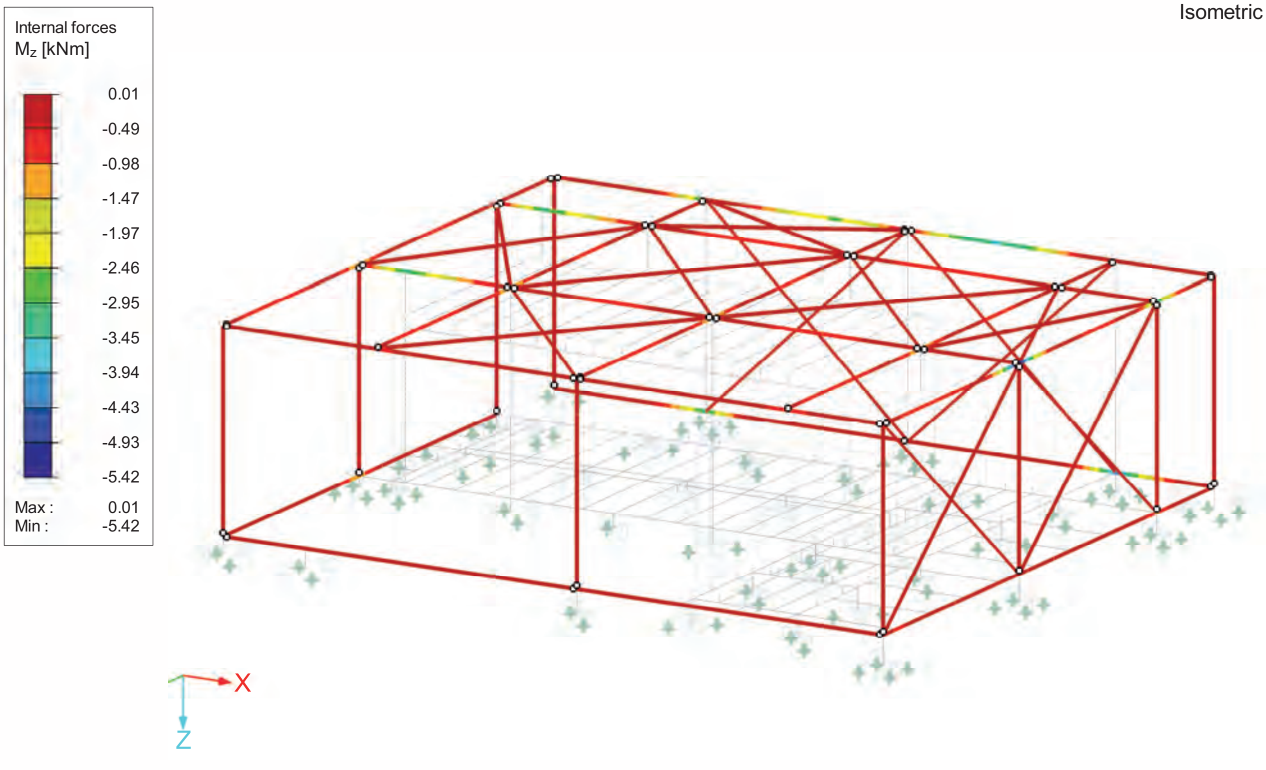
CANOPY - BENDING MOMENT MIN.MY [KNM]



CANOPY - BENDING MOMENT MAX.MZ [KNM]

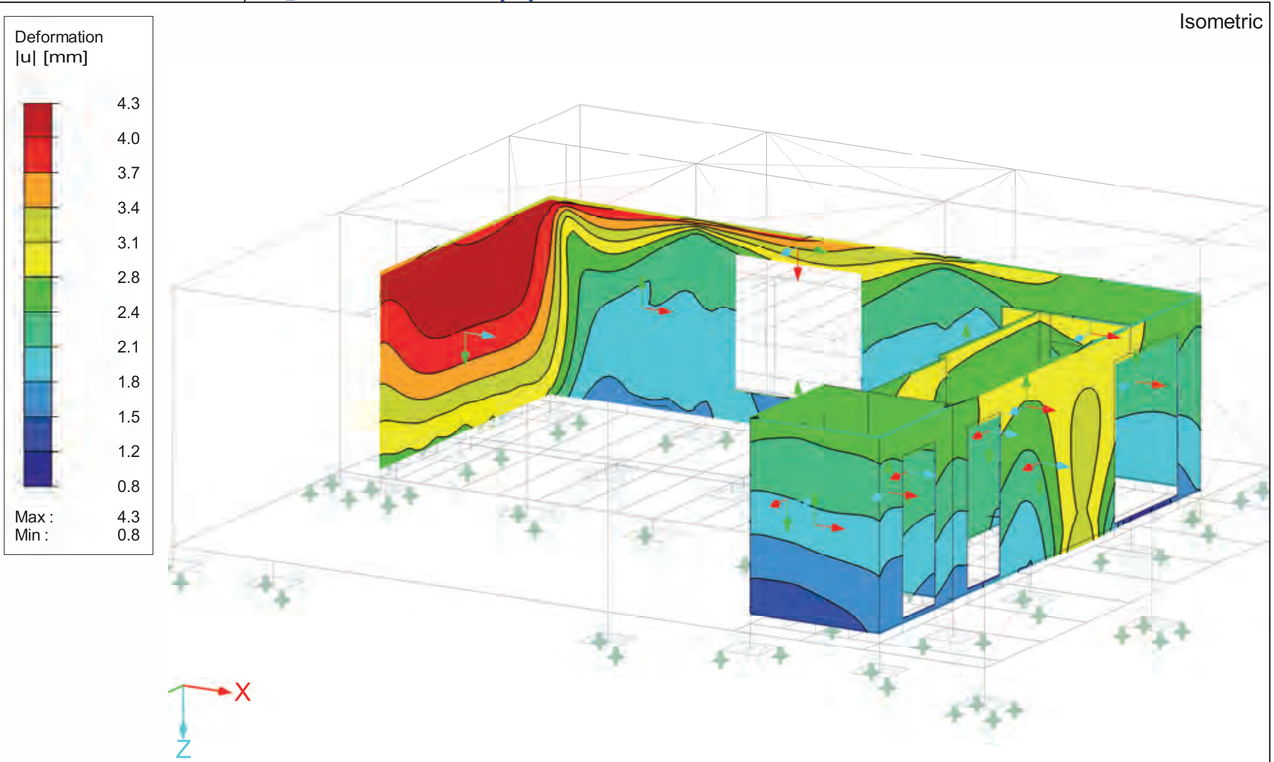


CANOPY - BENDING MOMENT MIN.MZ [KNM]



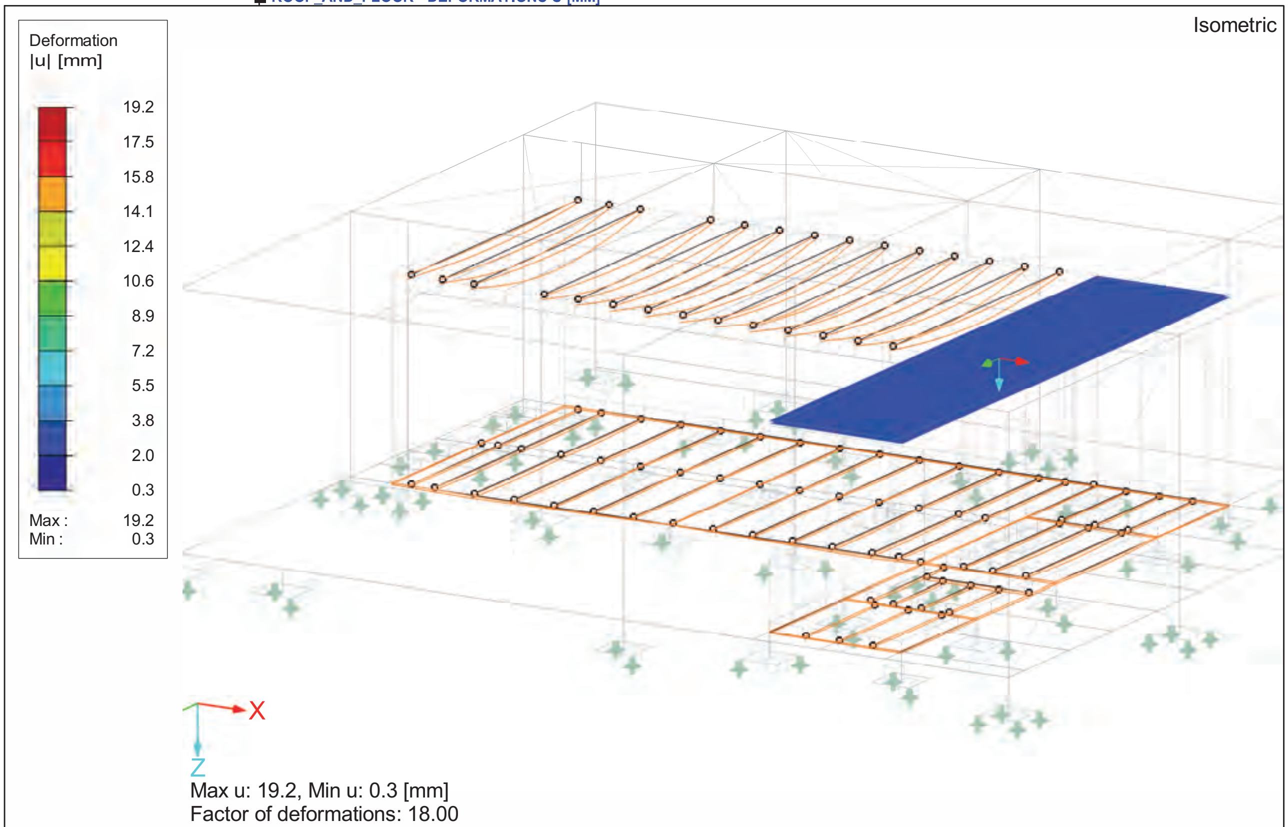
Max M-z: 0.01, Min M-z: -5.42 [kNm]

CLT_WALLS - DEFORMATIONS U [MM]

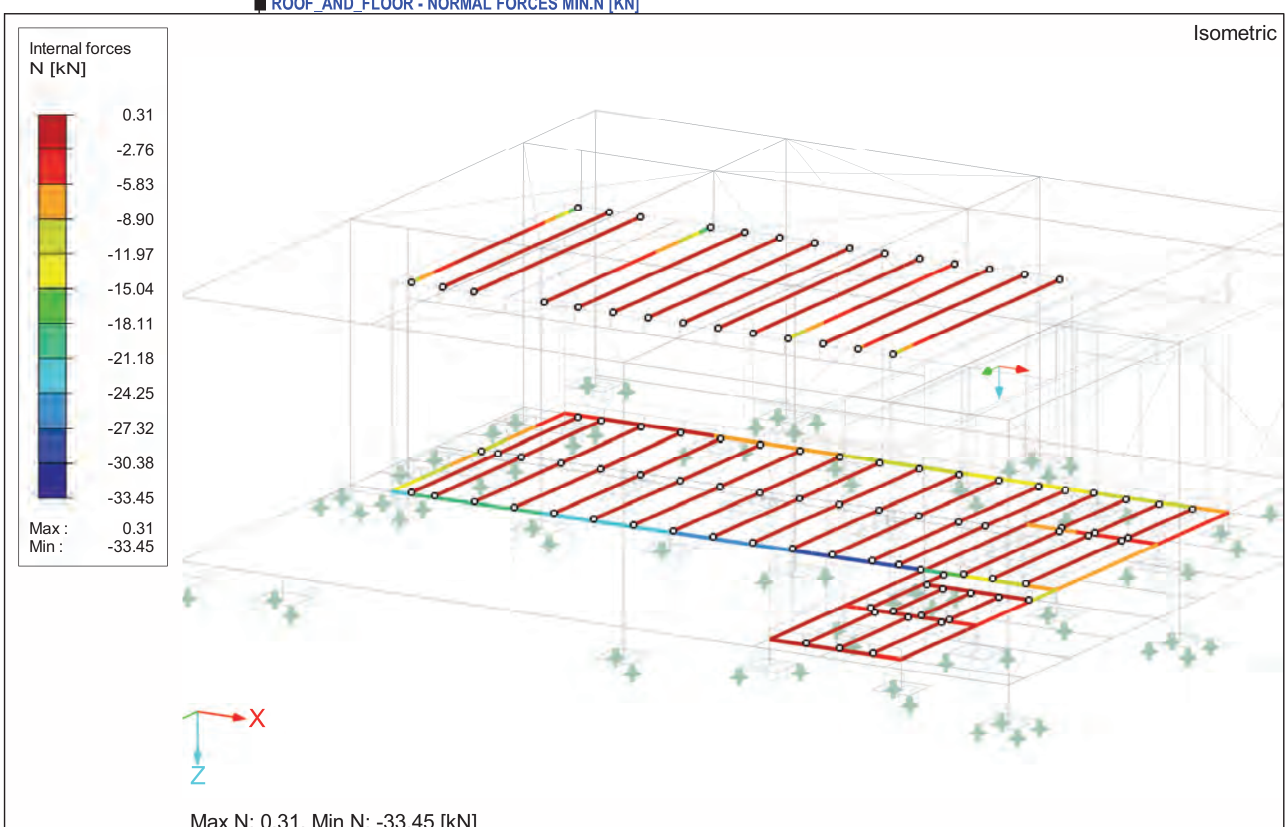


Max u: 4.3, Min u: 0.8 [mm]
Factor of deformations: 18.00

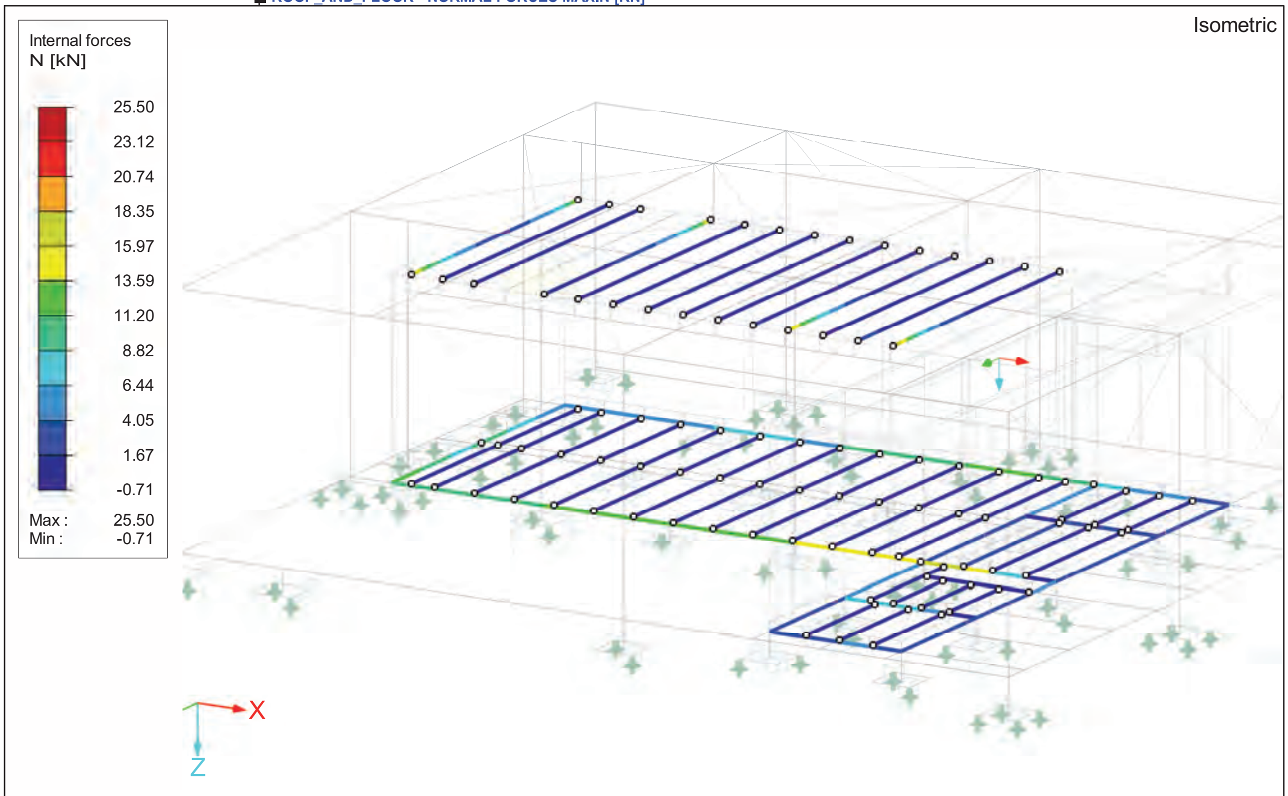
■ ROOF_AND_FLOOR - DEFORMATIONS U [MM]



■ ROOF_AND_FLOOR - NORMAL FORCES MIN.N [KN]

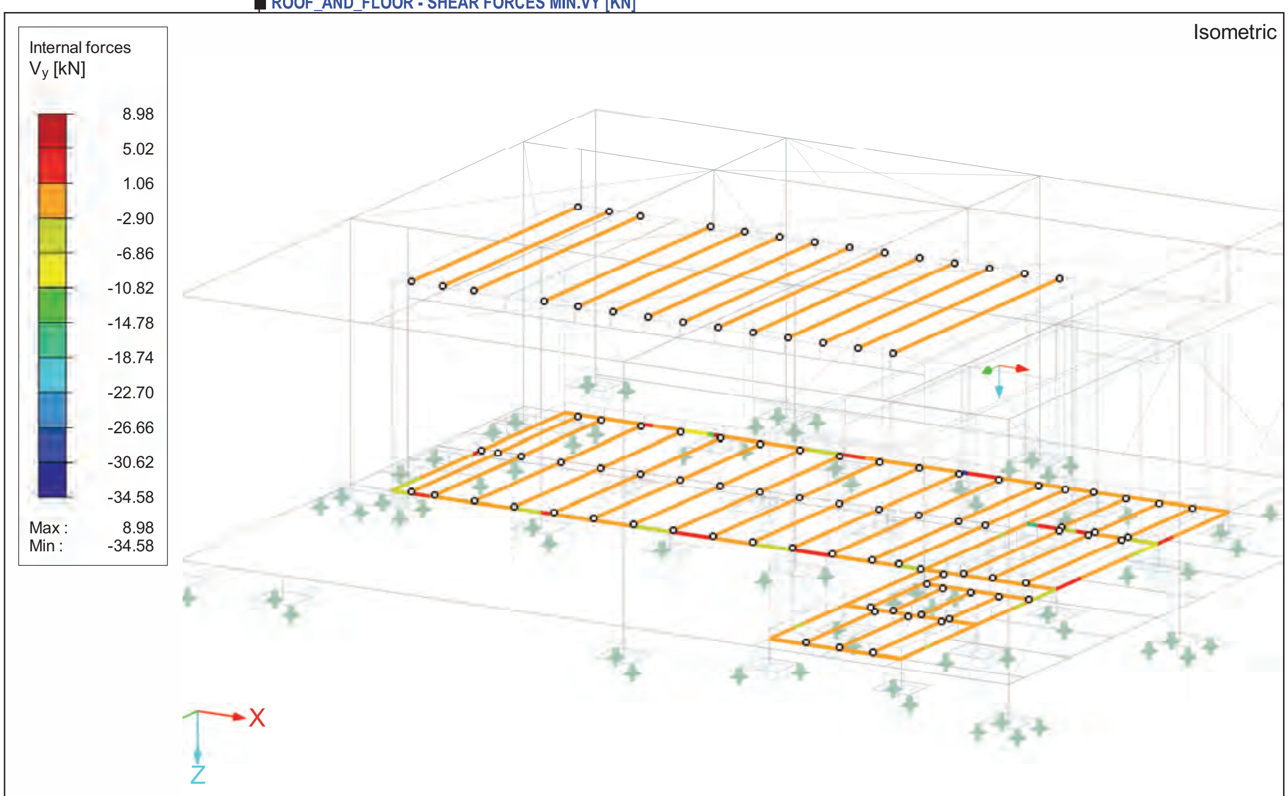


ROOF_AND_FLOOR - NORMAL FORCES MAX.N [KN]



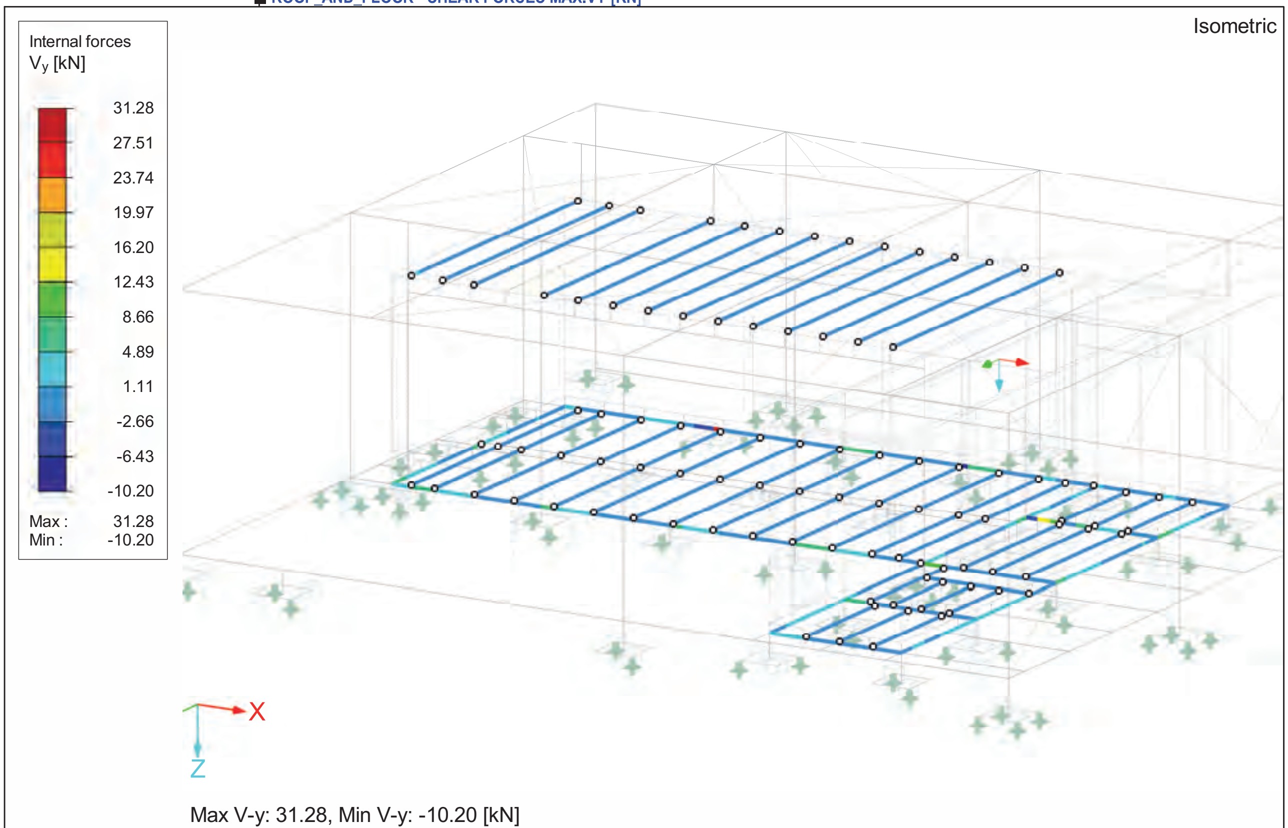
Max N: 25.50, Min N: -0.71 [kN]

ROOF_AND_FLOOR - SHEAR FORCES MIN.VY [KN]

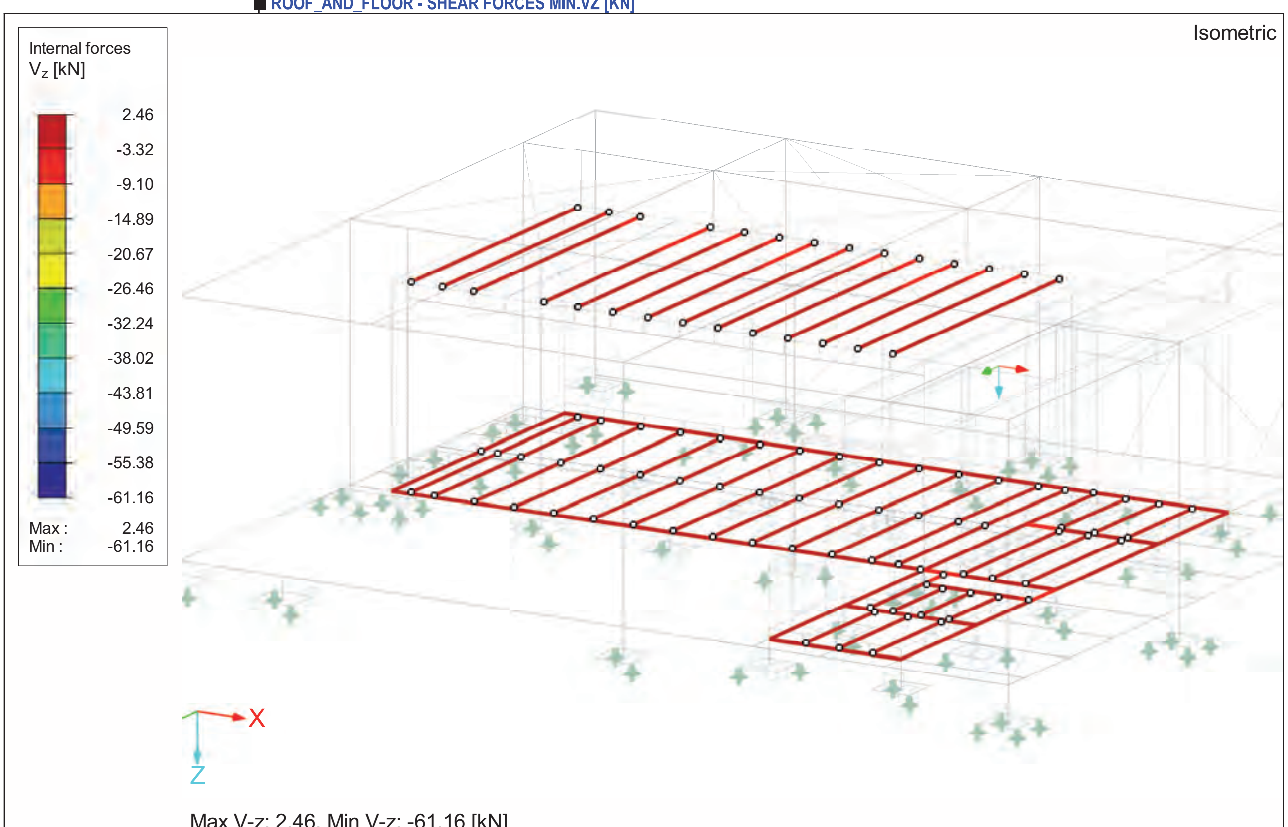


Max V-y: 8.98, Min V-y: -34.58 [kN]

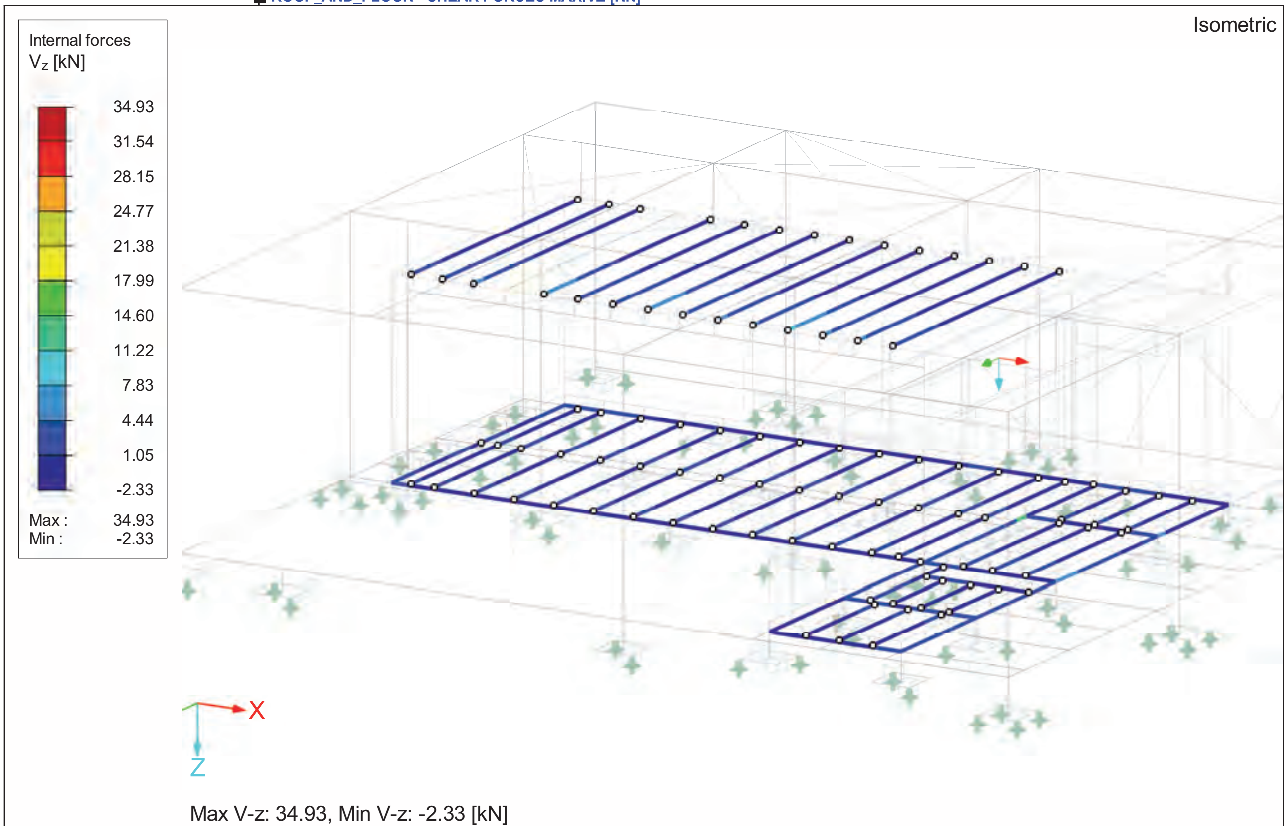
ROOF_AND_FLOOR - SHEAR FORCES MAX.VY [KN]



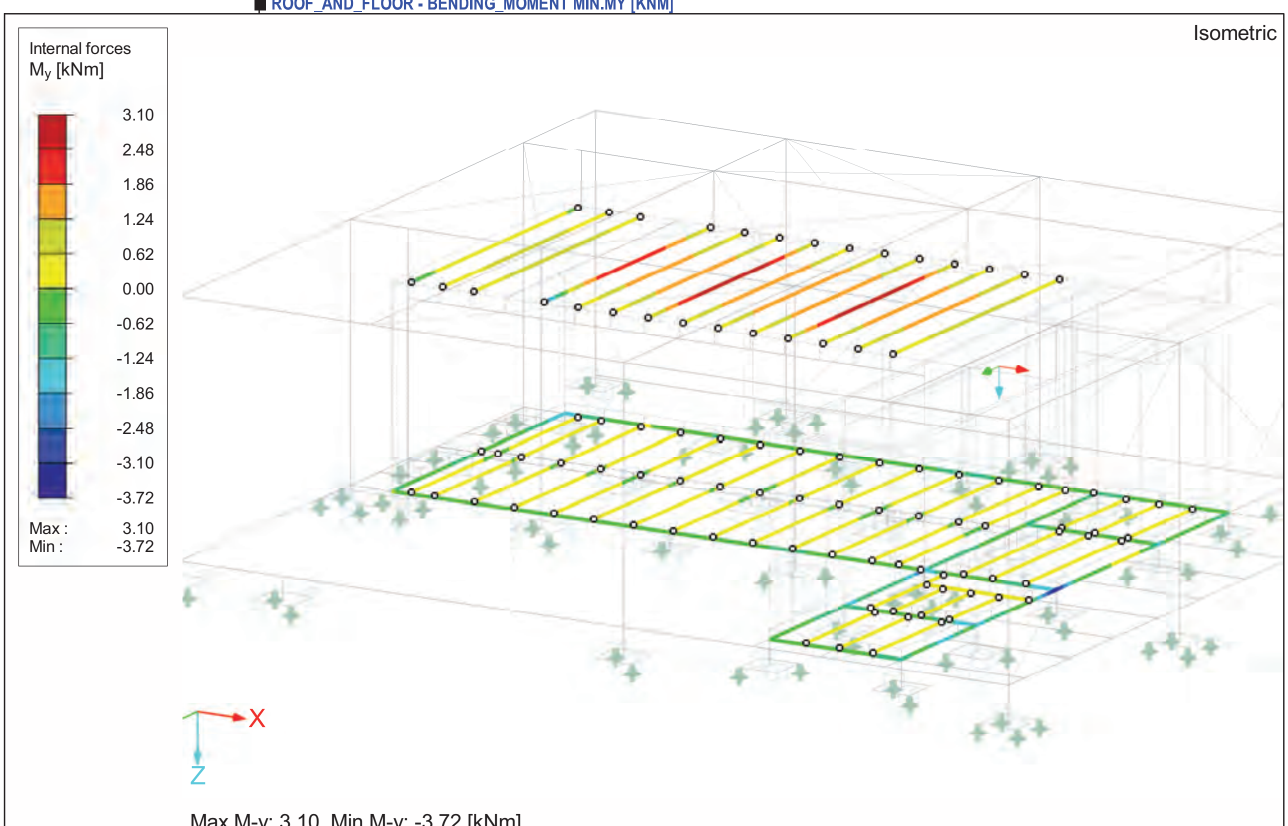
ROOF_AND_FLOOR - SHEAR FORCES MIN.VZ [KN]



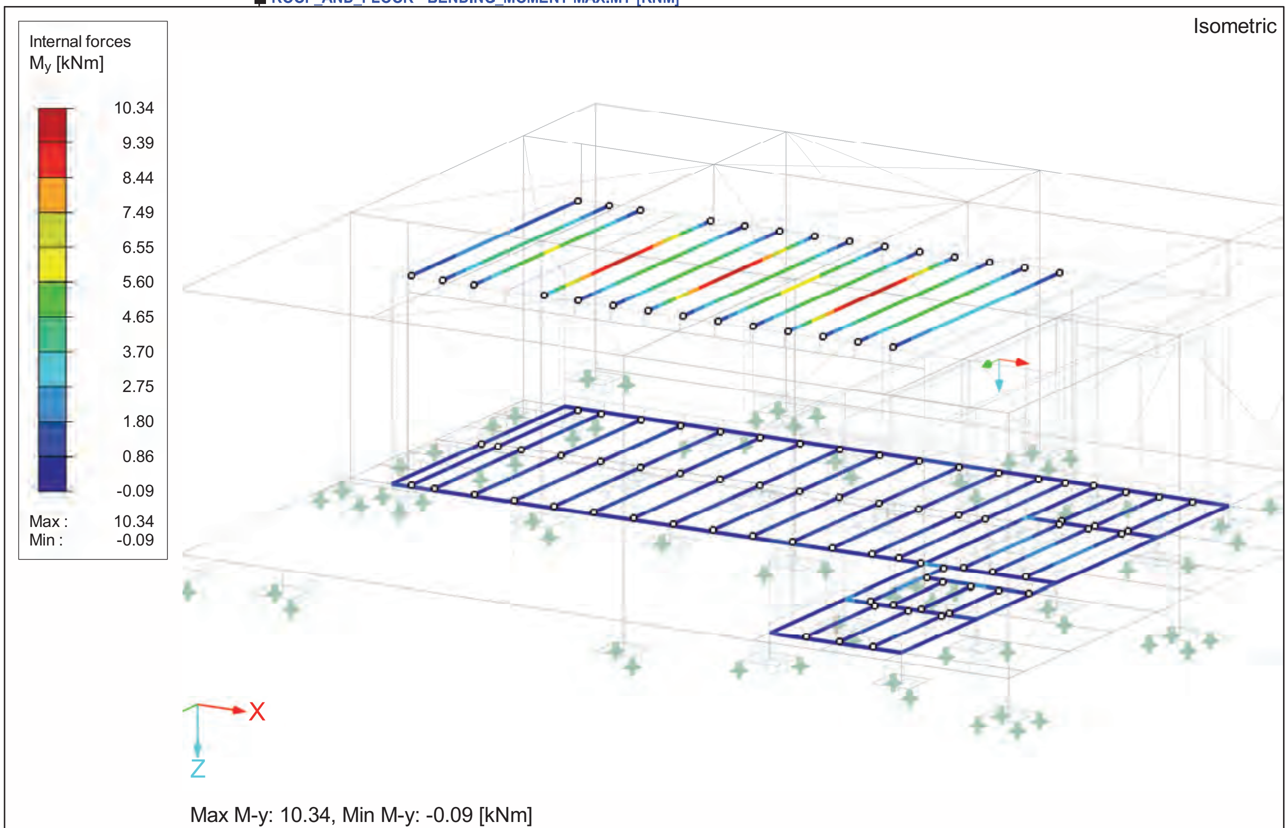
ROOF_AND_FLOOR - SHEAR FORCES MAX.VZ [KN]



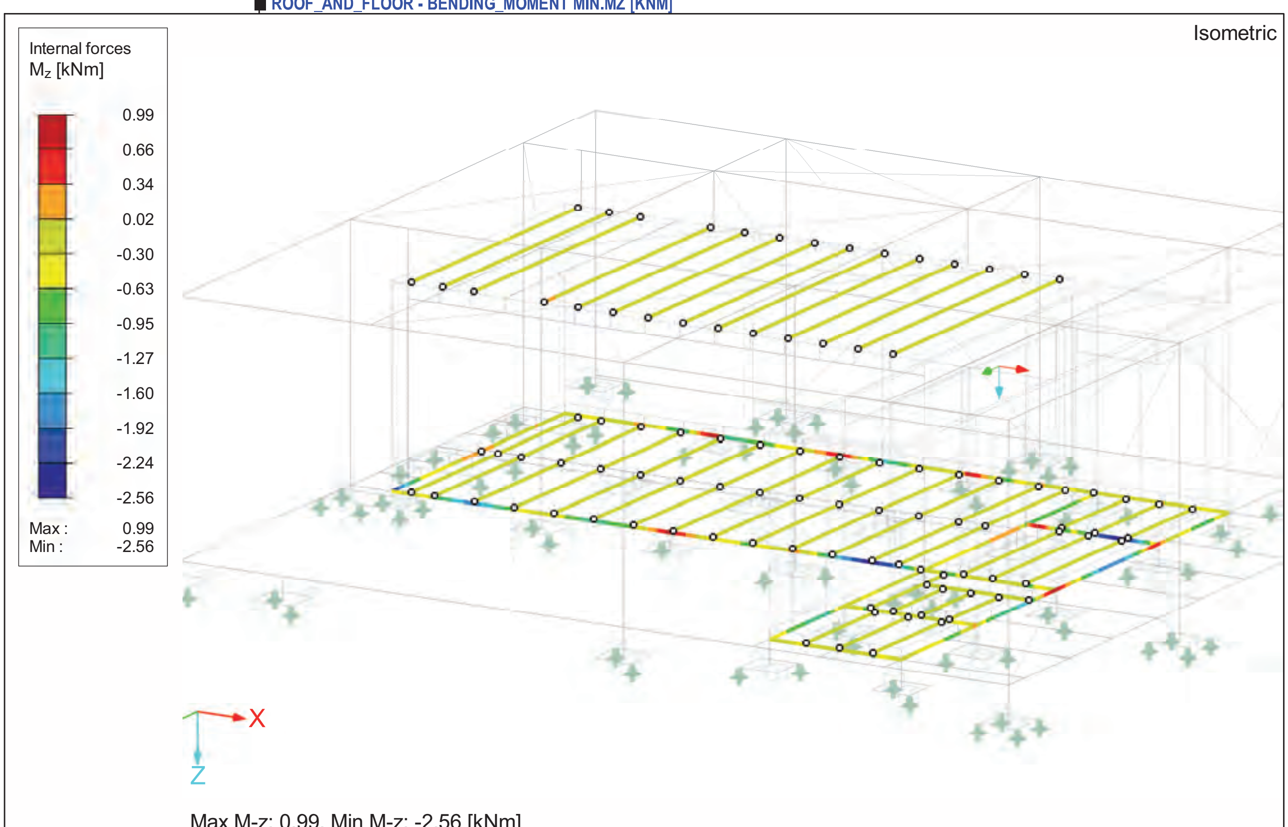
ROOF_AND_FLOOR - BENDING_MOMENT MIN.MY [KNM]



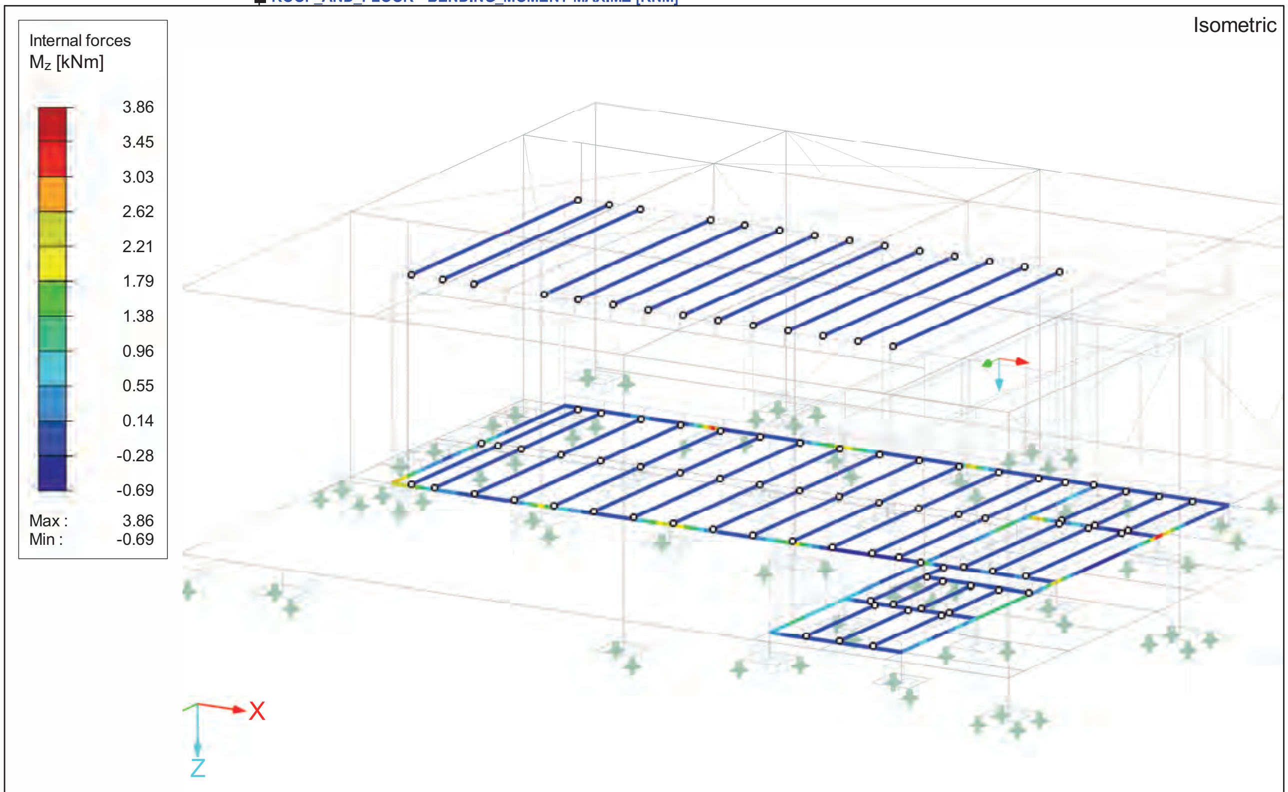
ROOF_AND_FLOOR - BENDING_MOMENT MAX.MY [KNM]



ROOF_AND_FLOOR - BENDING_MOMENT MIN.MZ [KNM]

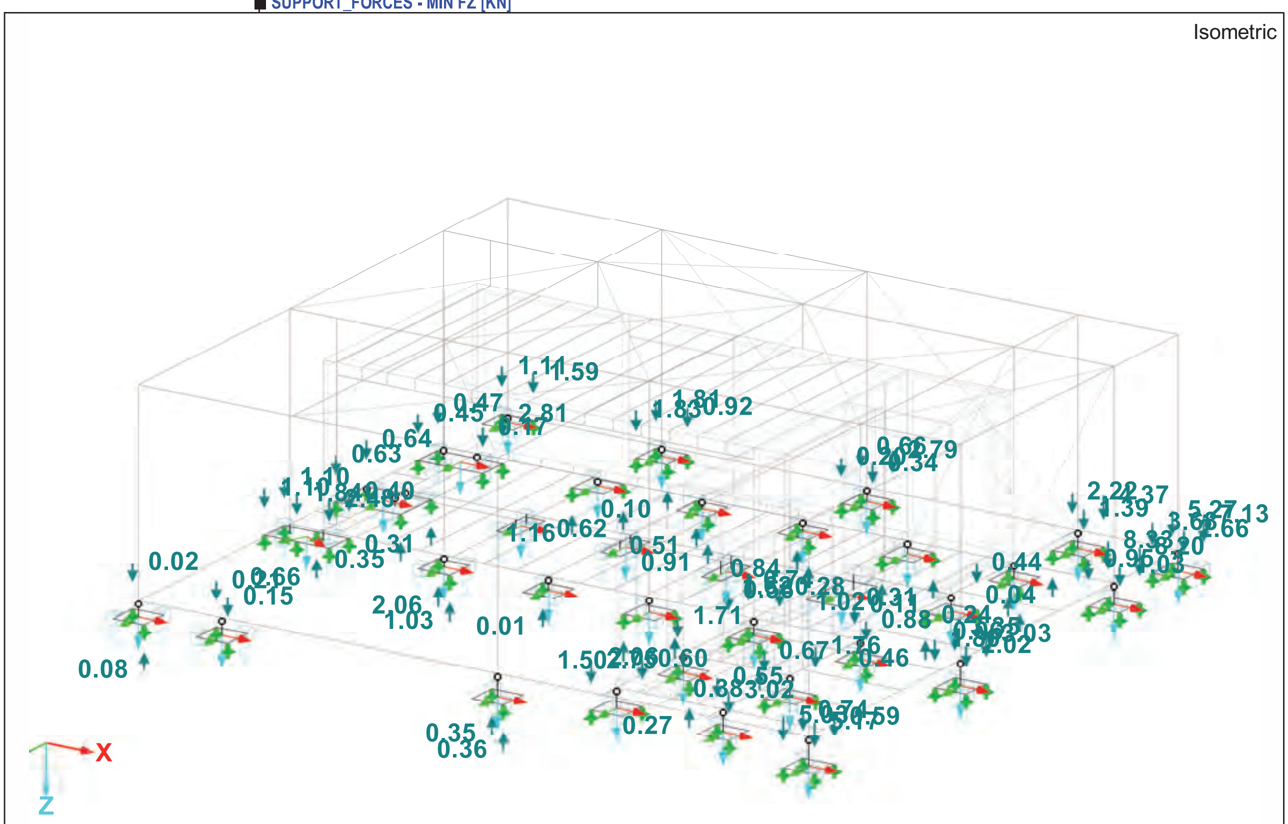


ROOF_AND_FLOOR - BENDING_MOMENT MAX.MZ [KNM]

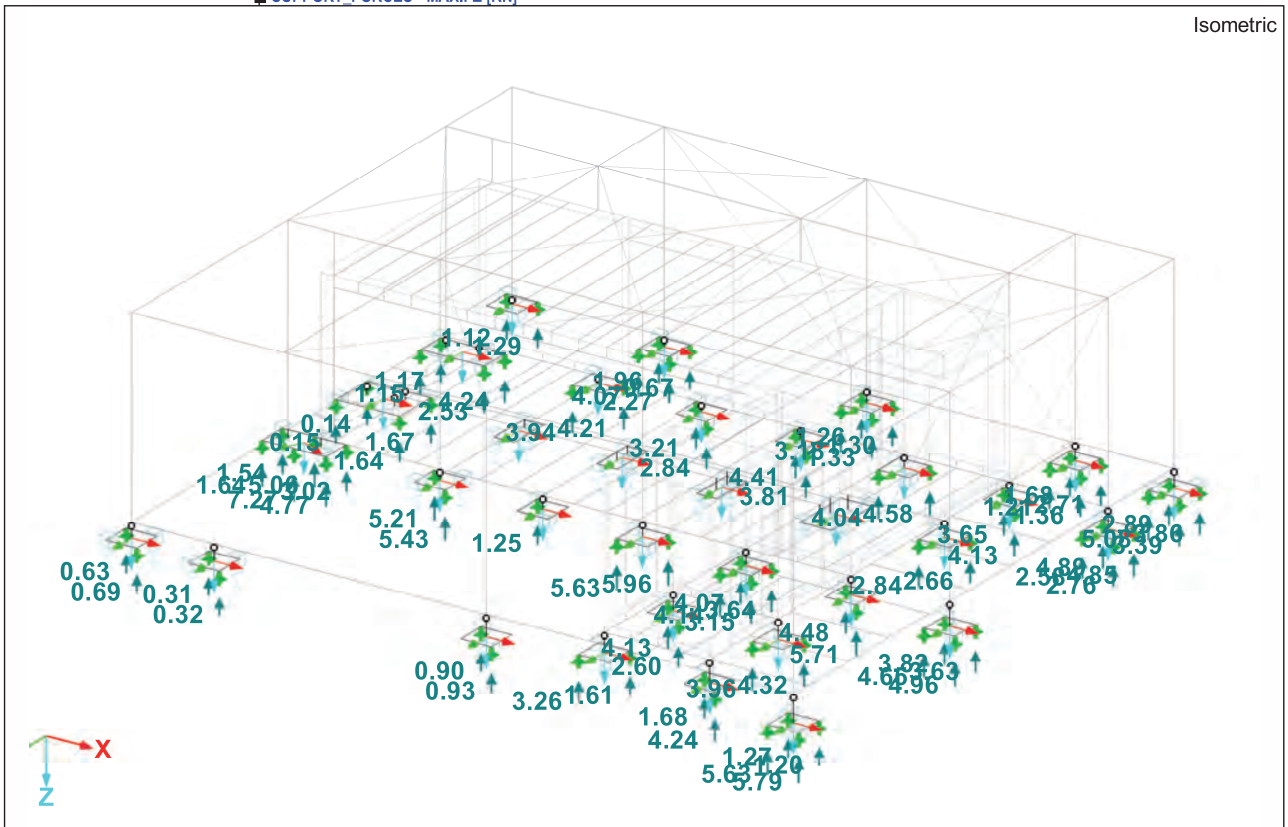


Max M-z: 3.86, Min M-z: -0.69 [kNm]

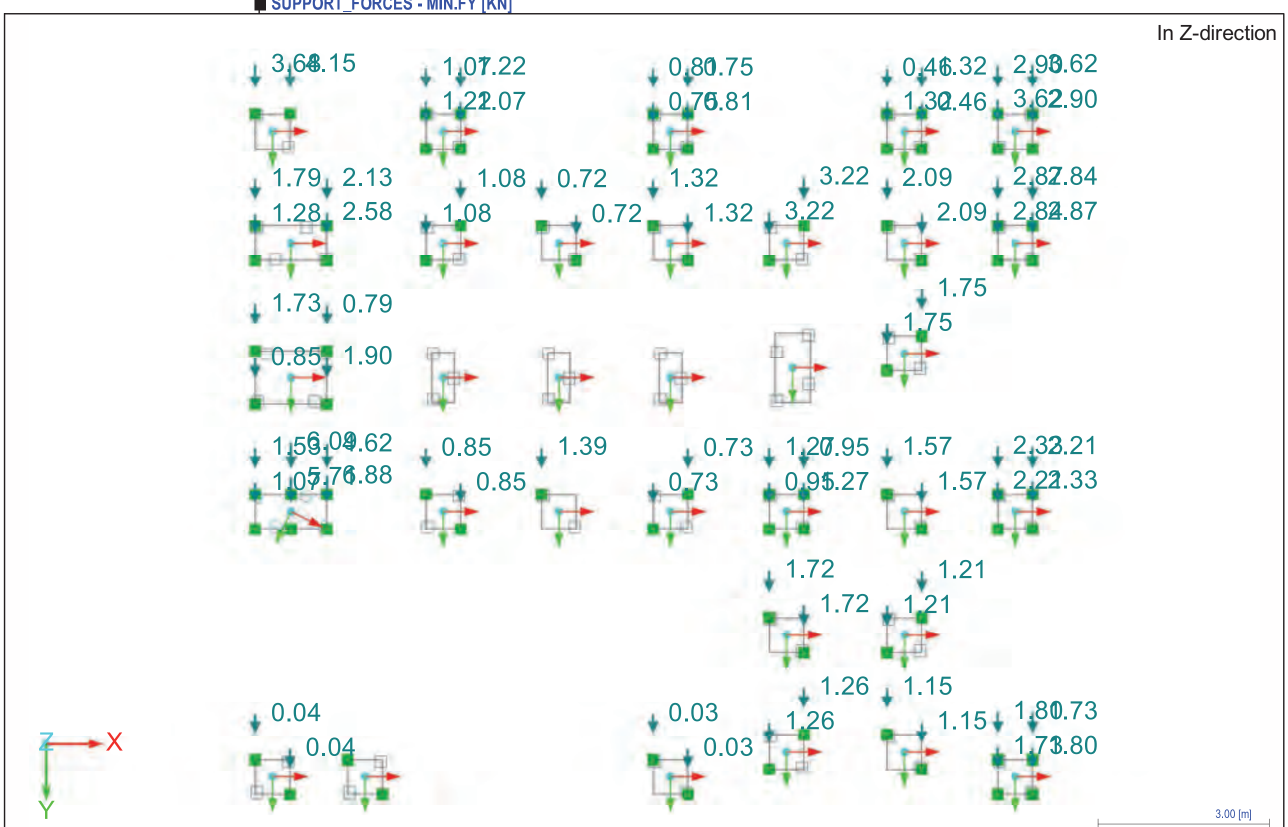
SUPPORT_FORCES - MIN FZ [KN]



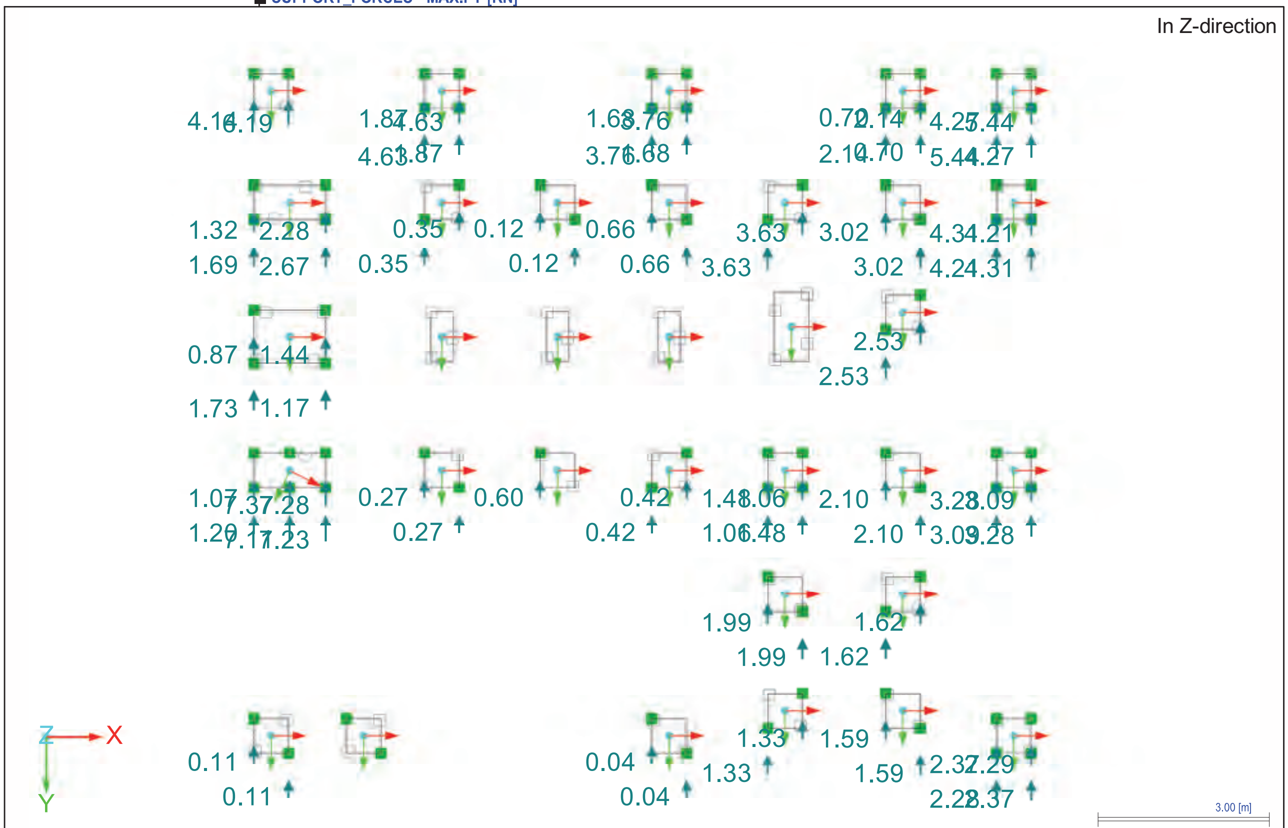
SUPPORT_FORCES - MAX.FZ [KN]



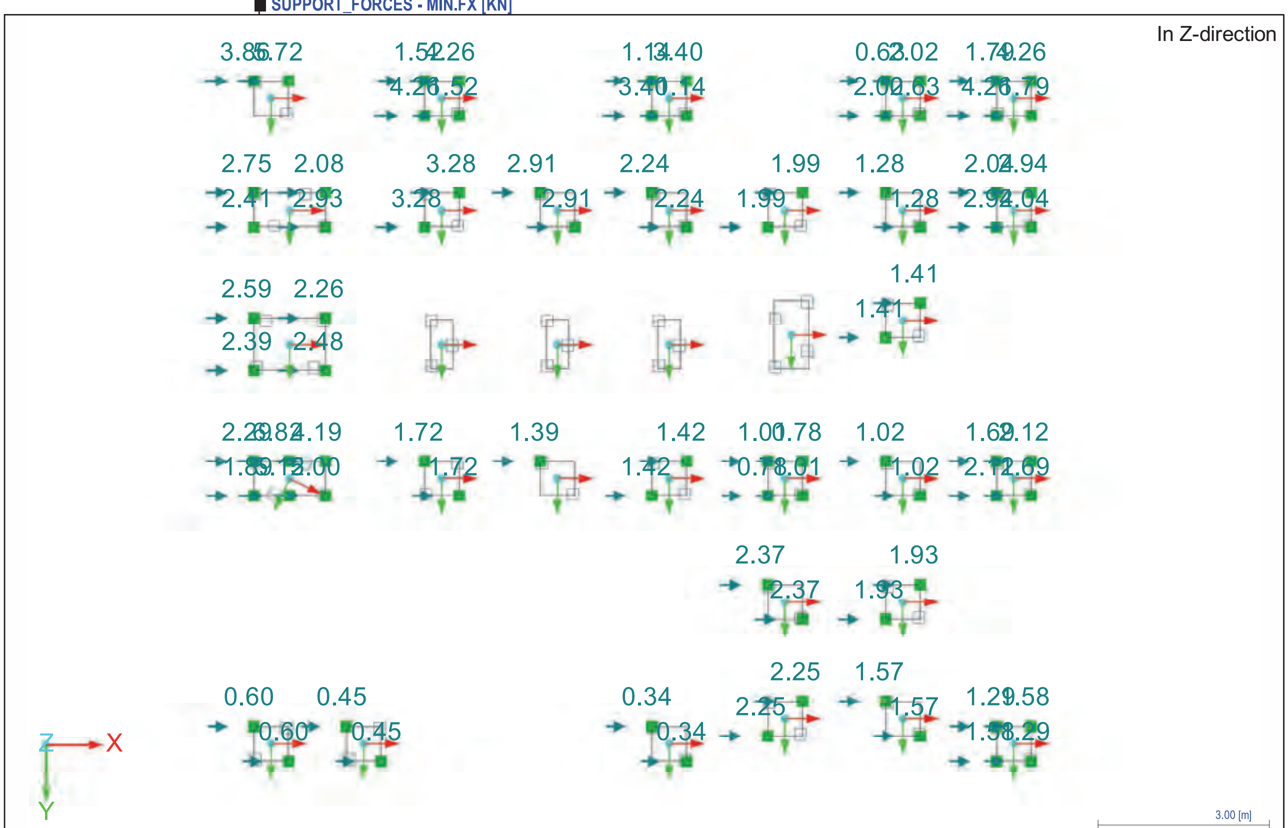
SUPPORT_FORCES - MIN.FY [KN]



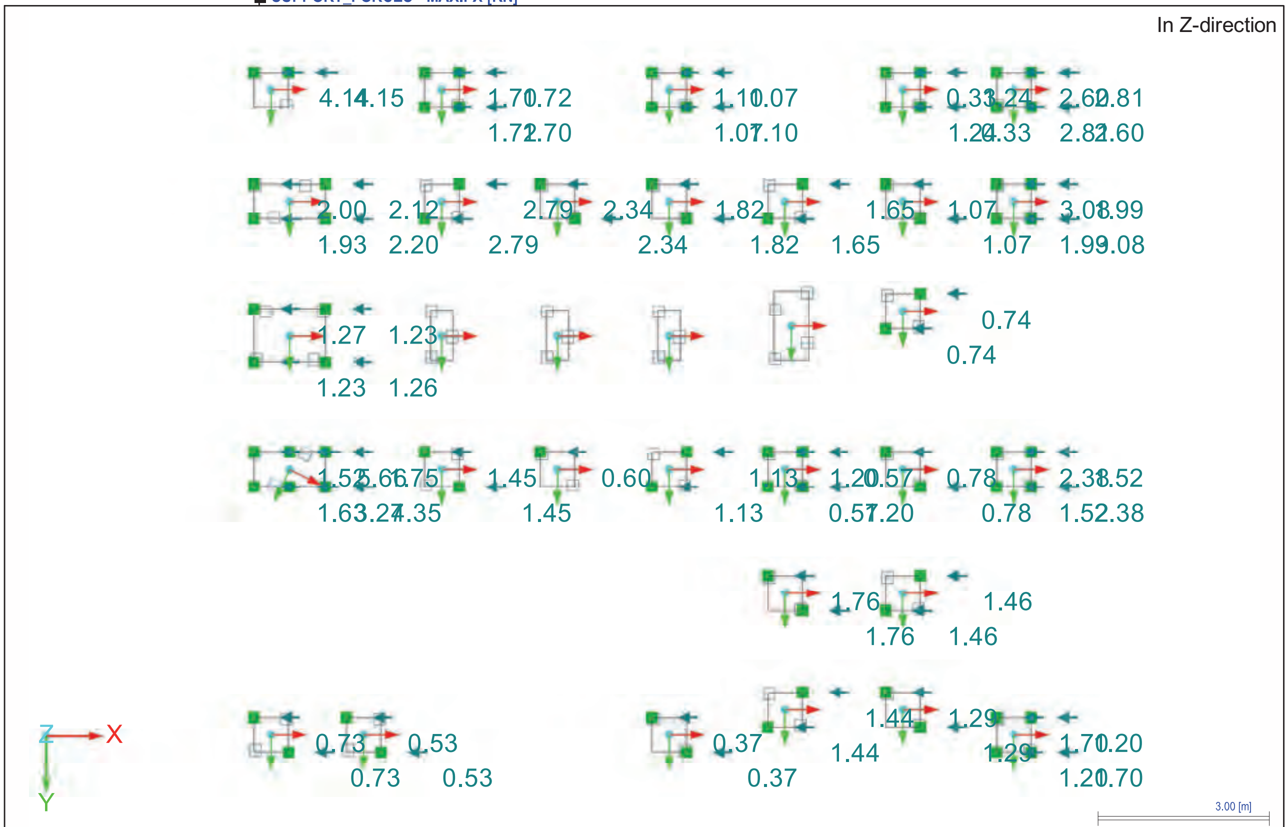
SUPPORT_FORCES - MAX.FY [KN]



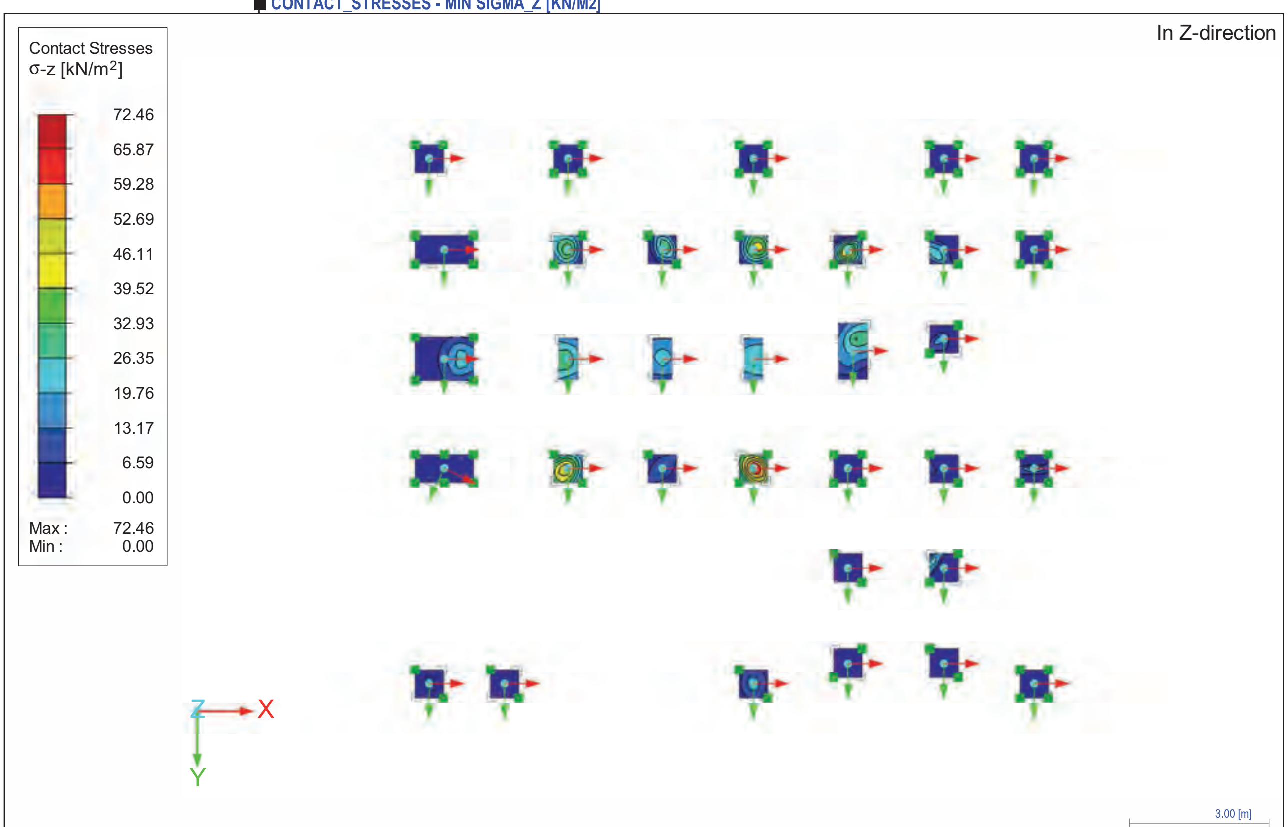
SUPPORT_FORCES - MIN.FX [KN]



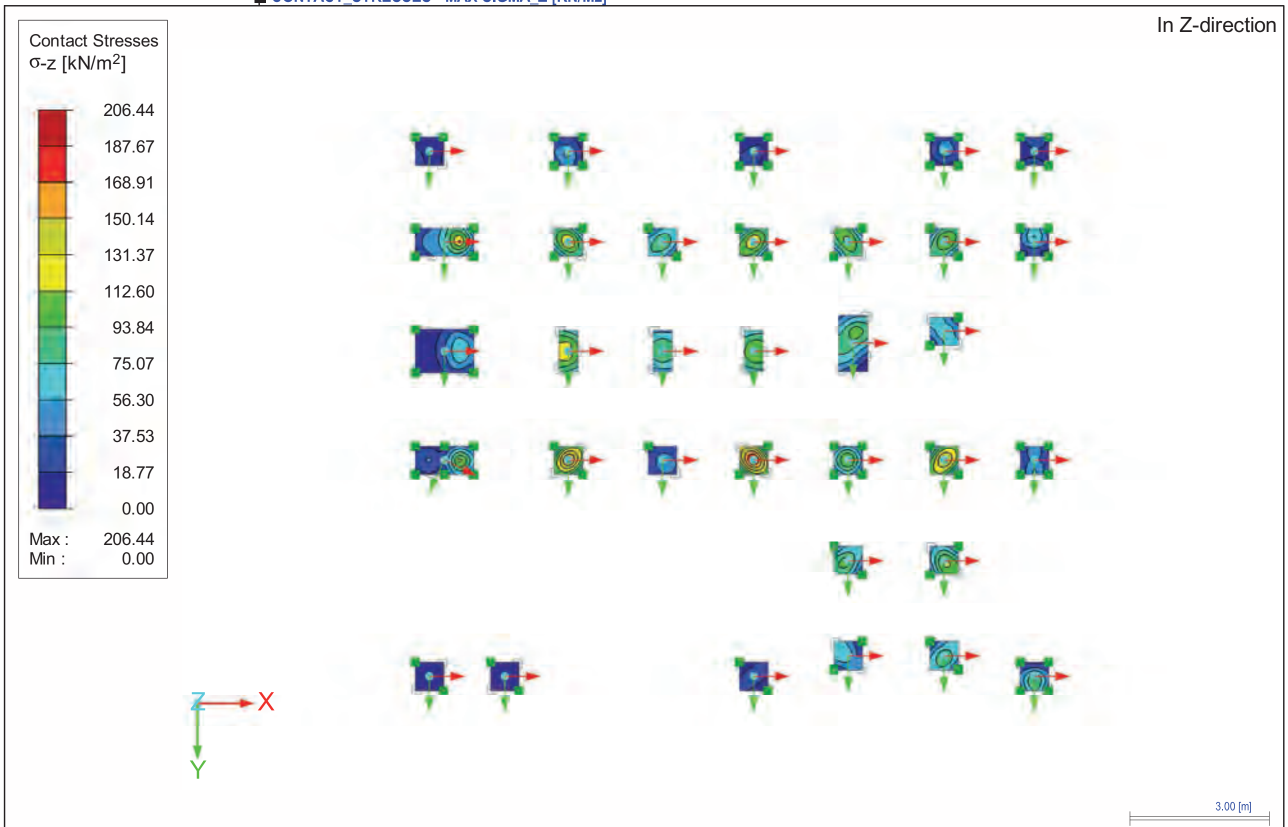
SUPPORT_FORCES - MAX.FX [KN]



CONTACT_STRESSES - MIN SIGMA_Z [KN/M2]



■ CONTACT_STRESSES - MAX SIGMA_Z [KN/M2]



RF-STEEL EC3

CA1

Columns, bracing and supports

1.1.2 DETAILS

Stability Analysis	
Stability Check	☒
Bending About the Major y-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Bending About the Minor z-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Determination of elastic critical moment for lateral-torsional buckling	
For members:	Automatically by Eigenvalue Method
Load application of positive transverse loads:	On cross-section edge directed to shear center (e.g. top flange, destabilizing effect)
Limit Load for Special Cases	
Unsymmetric cross-sections with compression and bending	
$M_{y,Ed} / M_{pl,y,Rd} \leq$	0.01
$M_{z,Ed} / M_{pl,z,Rd} \leq$	0.01
$N_{c,Ed} / N_{pl} \leq$	0.01
Non-Symmetrical Cross-Sections, Tapered Members or Sets of Members	
$M_{z,Ed} / M_{pl,z,Rd} \leq$	0.05
Cross-Sections with Torsion	
$\tau_{t,Ed} / \tau_{t,Rd} \leq$	0.05
Stability analysis method of sets of members acc. to	6.3.4 General Method
Options	
Elastic Design (also for cross-sections of Class 1 or 2)	☒
Member Slendernesses	
Members with	λ_{limit}
Tension only:	300
Compression / flexure:	200
Design of Welds	
Allow Design of Welds	☐
Fire Design Settings	
$t_{fi, requ}$ [min]	15.00
Unprotected Members Δt [s]	5.00
Protected Members Δt [s]	30.00
Temperature Curve for Determination of Temperature of Gases	
Nominal temperature curves	Standard temperature-time curve
αc [W/m^{2}K]	25.00
Thermal Actions for Temperature Analysis	
Φ	1.00
ε_m	0.70
ε_f	1.00
Fire Properties	
$\gamma_{M,fi}$	1.00

1.1.3 NATIONAL ANNEX - CSN

Partial Factors acc. to 6.1, Note 2B	
For resistance of cross-sections γ_{M0} :	1.00
For resistance of members to buckling (assessed for checks in Clause 6.3)	1.00

1.1.3 NATIONAL ANNEX - CSN

γ_{M1} :	
For resistance of cross-sections in tension to fracture γ_{M2} :	1.25
Shear acc. to 6.2.6(3) and shear buckling acc. to EN 1993-1-5	
Factor η :	1.20
Parameters for Lateral-Torsional Buckling	
Imperfection coefficients of lateral-torsional buckling curves acc. to Table 6.3	
Buckling Curve a :	0.21
Buckling Curve b :	0.34
Buckling Curve c :	0.49
Buckling Curve d :	0.76
Use factor f for modification of χ_{LT} according to 6.3.2.3(2)	☒
Parameters for Φ_{LT} acc. to 6.3.2.3(1):	
Rolled I-sections	
$\lambda_{LT,0}$:	0.40
β :	0.75
Welded I-Sections	
$\lambda_{LT,0}$:	0.40
β :	0.75
Determine lateral-torsional buckling curves:	If possible, acc. to 6.3.2.3, Eq. (6.57), otherwise acc. to 6.3.2.2, Eq. (6.56)
Determine interaction factors for 6.3.3(4) according to Method:	2 according to Annex B

Serviceability Limits (Deflections) acc. to 7.2
Combination of actions (Table A1.4 of EN 1990):

			Cantilevers
CH :	Characteristic	L / 300	L_c / 150
FR :	Frequent	L / 200	L_c / 100
QP :	Quasi-permanent	L / 200	L_c / 100

General Method according to 6.3.4	
Use General Method also for non-I-sections	☒
Always use General Method for stability design according to 6.3.4	☐
Use Europan lateral-torsional buckling curve according to [5]	☐
Use the method of Johannes Caspar Naumes for assessing the out-of-plane stability	☐
Partial Factors acc. to 5.1	
For resistance of cross-sections	
γ_{M0}	1.100
For resistance of members to buckling (assessed for proofs in Clause 6.3)	
γ_{M1}	1.100
For resistance of cross-sections to fracture due to tension	
γ_{M2}	1.250
Shear According to 5.6(2) and Shear Buckling	
η	1.200
Parameters for Stability Design	
Imperfection Coefficient	α
Buckling	
Cold formed open sections	0.490
Hollow sections (welded or seamless)	0.490
Welded open sections (about the major axis)	0.490
Welded open sections (about the	0.760

1.1.3 NATIONAL ANNEX - CSN

minor axis)	
Torsional and Lateral-Torsional Buckling	
All structural members	0.340
Parameter for Φ	λ_0
Buckling	
Cold formed open sections	0.400
Hollow sections (welded or seamless)	0.400
Welded open sections (about the major axis)	0.200
Welded open sections (about the minor axis)	0.200
Torsional and Lateral-Torsional Buckling	
All structural members	0.200
Imperfection Coefficient	α_{LT}
Cold formed sections and hollow sections (welded and seamless)	0.340
Welded open sections and other sections	0.760

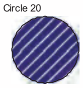
1.2.1 MATERIALS

Material No	Material Description	Comment
2	Steel S 235	
10	Steel S 355	
13	Steel S 235	

1.3.1 CROSS-SECTIONS

RO 88.9x6 (EN 10...

Circle 20



Pipe 88.9/10/K

RD 36

Pipe 88.9/8/K

Cross-s. No	Material No	Cross-section Description [mm]	Comment
17	2	RO 88.9x6 (EN 10219-2)	
21	2	Circle 20	
		Type General - only Class 3 and Class 4 possible	
24	10	Pipe 88.9/10/K	
25	15	RD 36	
		Type General - only Class 3 and Class 4 possible	
26	13	Pipe 88.9/8/K	

1.5 EFFECTIVE LENGTHS - MEMBERS

Member No	Buckling Possible	Buckling About Axis y Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Buckling About Axis z Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Lateral-Torsional Buckling Possible	k_z	k_w	L_w [m]	L_T [m]
185	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
186	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
187	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
189	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
190	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
191	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
193	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
194	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
196	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
200	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
203	☒	☒	2.00	1.560	☒	2.00	1.560	☐	1.0	1.0	0.780	0.540
204	☒	☒	2.00	1.560	☒	2.00	1.560	☐	1.0	1.0	0.780	0.540
205	☒	☒	2.00	1.560	☒	2.00	1.560	☐	1.0	1.0	0.780	0.540
206	☒	☒	2.00	1.980	☒	2.00	1.980	☐	1.0	1.0	0.990	0.750
207	☒	☒	2.00	1.560	☒	2.00	1.560	☐	1.0	1.0	0.780	0.540
208	☒	☒	2.00	1.560	☒	2.00	1.560	☐	1.0	1.0	0.780	0.540
209	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
214	☐	☐	1.00	6.173	☐	1.00	6.173	☐	1.0	1.0	6.173	6.173
	Members of this type are not allowed for stability calculation.											

1.5 EFFECTIVE LENGTHS - MEMBERS

Member No	Buckling Possible	Buckling About Axis y Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Buckling About Axis z Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Lateral-Torsional Buckling Possible	k_z	k_w	L_w [m]	L_T [m]
215	☐	☐	1.00	6.127	☐	1.00	6.127	☐	1.0	1.0	6.127	6.127
	Members of this type are not allowed for stability calculation.											
216	☐	☐	1.00	6.127	☐	1.00	6.127	☐	1.0	1.0	6.127	6.127
	Members of this type are not allowed for stability calculation.											
217	☐	☐	1.00	6.173	☐	1.00	6.173	☐	1.0	1.0	6.173	6.173
	Members of this type are not allowed for stability calculation.											
218	☐	☐	1.00	4.448	☐	1.00	4.448	☐	1.0	1.0	4.448	4.448
	Members of this type are not allowed for stability calculation.											
219	☐	☐	1.00	4.448	☐	1.00	4.448	☐	1.0	1.0	4.448	4.448
	Members of this type are not allowed for stability calculation.											
220	☐	☐	1.00	6.248	☐	1.00	6.248	☐	1.0	1.0	6.248	6.248
	Members of this type are not allowed for stability calculation.											
221	☐	☐	1.00	6.248	☐	1.00	6.248	☐	1.0	1.0	6.248	6.248
	Members of this type are not allowed for stability calculation.											
303	☒	☒	1.00	3.740	☒	1.00	3.740	☐	1.0	1.0	3.740	3.500
352	☐	☐	1.00	5.582	☐	1.00	5.582	☐	1.0	1.0	5.582	5.582
	Members of this type are not allowed for stability calculation.											
353	☐	☐	1.00	5.582	☐	1.00	5.582	☐	1.0	1.0	5.582	5.582
	Members of this type are not allowed for stability calculation.											
354	☐	☐	1.00	5.096	☐	1.00	5.096	☐	1.0	1.0	5.096	5.096
	Members of this type are not allowed for stability calculation.											
355	☐	☐	1.00	5.096	☐	1.00	5.096	☐	1.0	1.0	5.096	5.096
	Members of this type are not allowed for stability calculation.											
356	☐	☐	1.00	5.469	☐	1.00	5.469	☐	1.0	1.0	5.469	5.308
	Members of this type are not allowed for stability calculation.											
357	☐	☐	1.00	5.469	☐	1.00	5.469	☐	1.0	1.0	5.469	5.308
	Members of this type are not allowed for stability calculation.											
375	☐	☐	1.00	6.014	☐	1.00	6.014	☐	1.0	1.0	6.014	5.868
	Members of this type are not allowed for stability calculation.											
376	☐	☐	1.00	6.014	☐	1.00	6.014	☐	1.0	1.0	6.014	5.868
	Members of this type are not allowed for stability calculation.											
379	☐	☐	1.00	5.967	☐	1.00	5.967	☐	1.0	1.0	5.967	5.820
	Members of this type are not allowed for stability calculation.											
380	☐	☐	1.00	5.967	☐	1.00	5.967	☐	1.0	1.0	5.967	5.820
	Members of this type are not allowed for stability calculation.											
407	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
408	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
409	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
410	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
411	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
417	☐	☐	1.00	5.553	☐	1.00	5.553	☐	1.0	1.0	5.553	5.395
	Members of this type are not allowed for stability calculation.											
418	☐	☐	1.00	5.553	☐	1.00	5.553	☐	1.0	1.0	5.553	5.395
	Members of this type are not allowed for stability calculation.											
453	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
458	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
463	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
468	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
473	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
478	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
483	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
488	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
493	☒	☒	2.00	0.408	☒	2.00	0.408	☐	1.0	1.0	0.204	0.455
497	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
500	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
505	☒	☒	2.00	0.160	☒	2.00	0.160	☒	1.0	1.0	0.080	0.400
506	☒	☒	2.00	0.160	☒	2.00	0.160	☒	1.0	1.0	0.080	0.400
511	☒	☒	2.00	0.160	☒	2.00	0.160	☒	1.0	1.0	0.080	0.400
525	☒	☒	2.00	0.408	☒	2.00	0.408	☒	1.0	1.0	0.204	0.400
528	☒	☒	2.00	0.408	☒	2.00	0.408	☒	1.0	1.0	0.204	0.400
532	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
537	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
542	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
547	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
548	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
553	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
558	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
563	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
568	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
573	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400

■ 1.5 EFFECTIVE LENGTHS - MEMBERS

Member	Buckling	Buckling About Axis y			Buckling About Axis z			Lateral-Torsional Buckling				
No	Possible	Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Possible	k_z	k_w	L_w [m]	L_T [m]
583	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
589	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
590	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
591	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
592	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
595	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
596	☒	☒	2.00	0.200	☒	2.00	0.200	☒	1.0	1.0	0.100	0.400
598	☒	☒	2.00	0.602	☒	2.00	0.602	☐	1.0	1.0	0.301	0.495
599	☒	☒	2.00	0.536	☒	2.00	0.536	☐	1.0	1.0	0.268	0.465
600	☒	☒	2.00	0.480	☒	2.00	0.480	☐	1.0	1.0	0.240	0.435
601	☒	☒	2.00	0.406	☒	2.00	0.406	☐	1.0	1.0	0.203	0.395
602	☒	☒	2.00	0.360	☒	2.00	0.360	☐	1.0	1.0	0.180	0.375
604	☒	☒	2.00	0.692	☒	2.00	0.692	☐	1.0	1.0	0.346	0.475
605	☒	☒	2.00	0.566	☒	2.00	0.566	☐	1.0	1.0	0.283	0.405
606	☒	☒	2.00	0.512	☒	2.00	0.512	☐	1.0	1.0	0.256	0.385
607	☒	☒	2.00	0.444	☒	2.00	0.444	☐	1.0	1.0	0.222	0.345
608	☒	☒	2.00	0.302	☒	2.00	0.302	☐	1.0	1.0	0.151	0.275
609	☒	☒	2.00	0.162	☒	2.00	0.162	☐	1.0	1.0	0.081	0.215
610	☒	☒	2.00	0.060	☒	2.00	0.060	☐	1.0	1.0	0.030	0.155
611	☒	☒	2.00	0.208	☒	2.00	0.208	☐	1.0	1.0	0.104	0.205
612	☒	☒	2.00	0.073	☒	2.00	0.073	☐	1.0	1.0	0.036	0.241
613	☒	☒	2.00	0.180	☒	2.00	0.180	☐	1.0	1.0	0.090	0.273
614	☒	☒	2.00	0.312	☒	2.00	0.312	☐	1.0	1.0	0.156	0.335
615	☒	☒	2.00	0.253	☒	2.00	0.253	☐	1.0	1.0	0.126	0.303
616	☒	☒	2.00	0.318	☒	2.00	0.318	☐	1.0	1.0	0.159	0.265
618	☒	☒	2.00	0.318	☒	2.00	0.318	☐	1.0	1.0	0.159	0.265
620	☒	☒	2.00	0.198	☒	2.00	0.198	☐	1.0	1.0	0.099	0.305
621	☒	☒	2.00	0.270	☒	2.00	0.270	☐	1.0	1.0	0.135	0.335
622	☒	☒	2.00	0.336	☒	2.00	0.336	☐	1.0	1.0	0.168	0.365
623	☒	☒	2.00	0.322	☒	2.00	0.322	☐	1.0	1.0	0.161	0.365
624	☒	☒	2.00	0.406	☒	2.00	0.406	☐	1.0	1.0	0.203	0.405
625	☒	☒	2.00	0.464	☒	2.00	0.464	☐	1.0	1.0	0.232	0.425
626	☒	☒	2.00	0.520	☒	2.00	0.520	☐	1.0	1.0	0.260	0.455
627	☒	☒	2.00	0.418	☒	2.00	0.418	☐	1.0	1.0	0.209	0.425
628	☒	☒	2.00	0.606	☒	2.00	0.606	☐	1.0	1.0	0.303	0.335
632	☒	☒	2.00	0.120	☒	2.00	0.120	☐	1.0	1.0	0.060	0.305
633	☒	☒	2.00	0.120	☒	2.00	0.120	☐	1.0	1.0	0.060	0.305
634	☒	☒	2.00	0.258	☒	2.00	0.258	☐	1.0	1.0	0.129	0.305
635	☒	☒	2.00	0.258	☒	2.00	0.258	☐	1.0	1.0	0.129	0.305
636	☒	☒	2.00	0.322	☒	2.00	0.322	☐	1.0	1.0	0.161	0.375
637	☒	☒	2.00	0.322	☒	2.00	0.322	☐	1.0	1.0	0.161	0.375
638	☒	☒	2.00	0.208	☒	2.00	0.208	☐	1.0	1.0	0.104	0.205
643	☒	☒	2.00	1.560	☒	2.00	1.560	☐	1.0	1.0	0.780	0.540
645	☒	☒	2.00	1.560	☒	2.00	1.560	☐	1.0	1.0	0.780	0.540

RF-STEEL EC3

CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
Ultimate Limit State Design							
LG1	UB (1.35*LC1)	616	0.159	0.12	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-13.61 kN	$V_{z,Ed}$	-3.89 kN	$M_{y,Ed}$	0.10 kNm
$V_{y,Ed}$	-1.40 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.03 kNm

Cross-section Classification - Class 1

σ	-0.94 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.821
I_y	167.97 cm^4	ψ_y	0.144	k_{yz}	0.819
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.820	k_{zy}	0.821
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.819
A	20.33 cm^2	ψ_z	0.135	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.818	η_{Ny}	0.03
λ_y	0.118	C_{my}	0.820	η_{Nz}	0.03
χ_y	1.000	C_{mz}	0.818	$M_{y,Ed}$	0.72 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	13.61 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.08
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.26 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.028	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.03
w_y	1.000	C_{yz}	1.000	η_1	0.12
w_z	1.000	C_{zy}	1.000	η_2	0.12
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG2	UB (1.35*LC1 + 1.5*LC2)	616	0.159	0.17	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-18.11 kN	$V_{z,Ed}$	-5.46 kN	$M_{y,Ed}$	0.21 kNm
$V_{y,Ed}$	-1.69 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.06 kNm

Cross-section Classification - Class 1

σ	-1.44 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.831
I_y	167.97 cm^4	ψ_y	0.192	k_{yz}	0.831
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.830	k_{zy}	0.831
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.831
A	20.33 cm^2	ψ_z	0.194	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.831	η_{Ny}	0.04
λ_y	0.118	C_{my}	0.830	η_{Nz}	0.04
χ_y	1.000	C_{mz}	0.831	$M_{y,Ed}$	1.07 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	18.11 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.12
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.33 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.038	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.04

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	

w_y	1.000	C_{yz}	1.000	η_1	0.17
w_z	1.000	C_{zy}	1.000	η_2	0.17
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG3	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3)	616	0.159	0.18	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-19.83 kN	$V_{z,Ed}$	-5.75 kN	$M_{y,Ed}$	0.21 kNm
$V_{y,Ed}$	-1.85 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.06 kNm

Cross-section Classification - Class 1

σ	-1.54 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.830
I_y	167.97 cm^4	ψ_y	0.189	k_{yz}	0.827
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.830	k_{zy}	0.830
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.827
A	20.33 cm^2	ψ_z	0.176	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.827	η_{Ny}	0.04
λ_y	0.118	C_{my}	0.830	η_{Nz}	0.04
χ_y	1.000	C_{mz}	0.827	$M_{y,Ed}$	1.13 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	19.83 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.13
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.36 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.042	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.04
w_y	1.000	C_{yz}	1.000	η_1	0.18
w_z	1.000	C_{zy}	1.000	η_2	0.18
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG4	UB (1.35*LC1 + 1.5*LC3)	616	0.159	0.13	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-15.33 kN	$V_{z,Ed}$	-4.18 kN	$M_{y,Ed}$	0.11 kNm
$V_{y,Ed}$	-1.56 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.03 kNm

Cross-section Classification - Class 1

σ	-1.05 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.820
I_y	167.97 cm^4	ψ_y	0.143	k_{yz}	0.815
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.820	k_{zy}	0.820
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.815
A	20.33 cm^2	ψ_z	0.117	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.814	η_{Ny}	0.03
λ_y	0.118	C_{my}	0.820	η_{Nz}	0.03
χ_y	1.000	C_{mz}	0.814	$M_{y,Ed}$	0.78 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	15.33 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.09
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.28 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

μ_y	1.000	n_{pl}	0.032	$M_{z,Rk}$	8.70 kNm		
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.03		
w_y	1.000	C_{yz}	1.000	η_1	0.13		
w_z	1.000	C_{zy}	1.000	η_2	0.13		
a_{LT}	0.000	C_{zz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG5	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4)	616	0.159	0.18	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-18.58 kN	$V_{z,Ed}$	-5.76 kN	$M_{y,Ed}$	0.20 kNm
$V_{y,Ed}$	-1.75 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.06 kNm

Cross-section Classification - Class 1

σ	-1.45 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.829
I_y	167.97 cm^4	ψ_y	0.183	k_{yz}	0.829
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.828	k_{zy}	0.829
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.829
A	20.33 cm^2	ψ_z	0.185	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.829	η_{Ny}	0.04
λ_y	0.118	C_{my}	0.828	η_{Nz}	0.04
χ_y	1.000	C_{mz}	0.829	$M_{y,Ed}$	1.12 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	18.58 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.13
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.34 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.039	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.04
w_y	1.000	C_{yz}	1.000	η_1	0.18
w_z	1.000	C_{zy}	1.000	η_2	0.18
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG6	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC5)	643	0.000	0.42	≤ 1	184)	ULS

Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe

Design Internal Forces

N_{Ed}	-2.68 kN	$V_{z,Ed}$	8.81 kN	$M_{y,Ed}$	-6.34 kNm
$V_{y,Ed}$	-1.01 kN	T_{Ed}	0.04 kNm	$M_{z,Ed}$	-0.01 kNm

Cross-section Classification - Class 1

σ	-14.49 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

N_{Ed}	2.68 kN	$\sigma_{x,M,Ed}$	14.73 kN/cm^2	γ_{M0}	1.000
A	24.79 cm^2	$\sigma_{x,Ed}$	14.84 kN/cm^2	$V_{pl,Rd}$	323.43 kN
$\sigma_{x,N,Ed}$	0.11 kN/cm^2	$V_{z,Ed}$	8.81 kN	v	0.027
$M_{y,Ed}$	6.34 kNm	A_v	15.78 cm^2	$\sigma_{x,Rd}$	35.50 kN/cm^2
S_{el}	43.05 cm^3	f_y	35.50 kN/cm^2	η	0.42

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG7	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC6)	206	0.990	0.82	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-20.13 kN	$V_{z,Ed}$	8.38 kN	$M_{y,Ed}$	8.21 kNm

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$V_{y,Ed}$	-6.81	kN	T_{Ed}	-0.17	kNm	$M_{z,Ed}$	6.85	kNm

Cross-section Classification - Class 1

σ	-19.44	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.992		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.980	m	w_z	1.000		k_{yy}	0.791	
$N_{cr,y}$	1036.10	kN	a_{LT}	0.000		k_{yz}	0.797	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.791	
f_y	35.50	kN/cm^2	ψ_y	-0.026		k_{zz}	0.797	
λ_y	0.922		$C_{my,0}$	0.782		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.04	
α_y	0.490		ψ_z	0.000		η_{Nz}	0.04	
Φ_y	1.101		$C_{mz,0}$	0.788		$M_{y,Ed}$	8.21	kNm
χ_y	0.587		C_{my}	0.782		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.788		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.54	
$N_{cr,z}$	1036.10	kN	N_{Ed}	20.13	kN	$M_{z,Ed}$	6.85	kNm
λ_z	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.45	
Φ_z	1.101		n_{pl}	0.023		η_1	0.82	
χ_z	0.587		C_{yy}	1.000		η_2	0.82	
μ_y	0.992		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG8	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC7)	643	0.780	0.55	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-2.31	kN	$V_{z,Ed}$	-11.59	kN	$M_{y,Ed}$	-0.89	kNm
$V_{y,Ed}$	3.28	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-2.59	kNm

Cross-section Classification - Class 1

σ	-5.97	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	1.000		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.767	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.793	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.767	
f_y	35.50	kN/cm^2	ψ_y	-0.110		k_{zz}	0.793	
λ_y	0.726		$C_{my,0}$	0.767		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.00	
α_y	0.490		ψ_z	0.012		η_{Nz}	0.00	
Φ_y	0.892		$C_{mz,0}$	0.792		$M_{y,Ed}$	8.14	kNm
χ_y	0.708		C_{my}	0.767		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.792		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.53	
$N_{cr,z}$	1669.10	kN	N_{Ed}	2.31	kN	$M_{z,Ed}$	2.59	kNm
λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.17	

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Φ_z	0.892	n_{pl}	0.003	η_1	0.55
χ_z	0.708	C_{yy}	1.000	η_2	0.55
μ_y	1.000	C_{yz}	1.000		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG9	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC8)	643	0.000	0.79	≤ 1	149)	ULS

Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe

Design Internal Forces

N_{Ed}	0.81 kN	$V_{z,Ed}$	-17.07 kN	$M_{y,Ed}$	12.07 kNm
$V_{y,Ed}$	1.01 kN	T_{Ed}	0.09 kNm	$M_{z,Ed}$	-0.02 kNm

Cross-section Classification - Class 1

σ	-27.34 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

$M_{y,Ed}$	12.07 kNm	γ_{M0}	1.000	$V_{pl,z,T,Rd}$	322.00 kN
$S_{el,y}$	43.05 cm^3	$V_{pl,z,Rd}$	323.43 kN	v	0.053
$\sigma_{x,Ed}$	28.03 kN/cm^2	T_{Ed}	0.09 kNm	$\sigma_{x,Rd}$	35.50 kN/cm^2
$V_{z,Ed}$	17.07 kN	A_c	48.89 cm^2	η	0.79
$A_{v,z}$	15.78 cm^2	t	10.0 mm		
f_y	35.50 kN/cm^2	$\tau_{t,Ed}$	0.09 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG10	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC5)	643	0.000	0.42	≤ 1	184)	ULS

Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe

Design Internal Forces

N_{Ed}	-2.22 kN	$V_{z,Ed}$	8.88 kN	$M_{y,Ed}$	-6.39 kNm
$V_{y,Ed}$	-0.99 kN	T_{Ed}	0.04 kNm	$M_{z,Ed}$	-0.01 kNm

Cross-section Classification - Class 1

σ	-14.57 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

N_{Ed}	2.22 kN	$\sigma_{x,M,Ed}$	14.83 kN/cm^2	γ_{M0}	1.000
A	24.79 cm^2	$\sigma_{x,Ed}$	14.92 kN/cm^2	$V_{pl,Rd}$	323.43 kN
$\sigma_{x,N,Ed}$	0.09 kN/cm^2	$V_{z,Ed}$	8.88 kN	v	0.027
$M_{y,Ed}$	6.39 kNm	A_v	15.78 cm^2	$\sigma_{x,Rd}$	35.50 kN/cm^2
S_{el}	43.05 cm^3	f_y	35.50 kN/cm^2	η	0.42

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG11	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC6)	206	0.990	0.79	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-14.16 kN	$V_{z,Ed}$	8.18 kN	$M_{y,Ed}$	7.98 kNm
$V_{y,Ed}$	-6.77 kN	T_{Ed}	-0.16 kNm	$M_{z,Ed}$	6.78 kNm

Cross-section Classification - Class 1

σ	-18.66 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	μ_z	0.994	C_{zy}	1.000
I_y	195.98 cm^4	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.980 m	w_z	1.000	k_{yy}	0.789
$N_{cr,y}$	1036.10 kN	a_{LT}	0.000	k_{yz}	0.795
A	24.79 cm^2	Diagr M_y	1) Linear	k_{zy}	0.789
f_y	35.50 kN/cm^2	ψ_y	-0.026	k_{zz}	0.795
λ_y	0.922	$C_{my,0}$	0.783	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.03
α_y	0.490	ψ_z	0.000	η_{Nz}	0.03

RF-STEEL EC3

CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description			Member No	Location x [m]	Design		Acc. to Formula	
	Φ_y	1.101		$C_{mz,0}$	0.788		$M_{y,Ed}$	7.98	kNm
	χ_y	0.587		C_{my}	0.783		W_y	43.05	cm^3
	I_z	195.98	cm^4	C_{mz}	0.788		$M_{y,Rk}$	15.28	kNm
	$L_{cr,z}$	1.980	m	$\lambda_{\_max}$	0.922		η_{My}	0.52	
	$N_{cr,z}$	1036.10	kN	N_{Ed}	14.16	kN	$M_{z,Ed}$	6.78	kNm
	$\lambda_{\_z}$	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
	BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
	α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.44	
	Φ_z	1.101		n_{pl}	0.016		η_1	0.79	
	χ_z	0.587		C_{yy}	1.000		η_2	0.79	
	μ_y	0.994		C_{yz}	1.000				
LG12	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC7)			643	0.780	0.54	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
	Design Internal Forces								
	N_{Ed}	-1.90	kN	$V_{z,Ed}$	-11.33	kN	$M_{y,Ed}$	-0.87	kNm
	$V_{y,Ed}$	3.25	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-2.56	kNm
	Cross-section Classification - Class 1								
	σ	-5.89	kN/cm^2	λ_2	46.338		t	10.0	mm
	ε	0.814		λ_3	59.577		d/t	8.890	
	λ_1	33.099		d	88.9	mm	Class	1	
	Design Ratio								
	E	21000.00	kN/cm^2	μ_z	1.000		C_{zy}	1.000	
	I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
	$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.767	
	$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.793	
	A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.767	
	f_y	35.50	kN/cm^2	ψ_y	-0.110		k_{zz}	0.793	
	$\lambda_{\_y}$	0.726		$C_{my,0}$	0.767		γ_{M1}	1.000	
	BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.00	
	α_y	0.490		ψ_z	0.012		η_{Nz}	0.00	
	Φ_y	0.892		$C_{mz,0}$	0.792		$M_{y,Ed}$	7.96	kNm
	χ_y	0.708		C_{my}	0.767		W_y	43.05	cm^3
	I_z	195.98	cm^4	C_{mz}	0.792		$M_{y,Rk}$	15.28	kNm
	$L_{cr,z}$	1.560	m	$\lambda_{\_max}$	0.726		η_{My}	0.52	
	$N_{cr,z}$	1669.10	kN	N_{Ed}	1.90	kN	$M_{z,Ed}$	2.56	kNm
	$\lambda_{\_z}$	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
	BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
	α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.17	
	Φ_z	0.892		n_{pl}	0.002		η_1	0.54	
	χ_z	0.708		C_{yy}	1.000		η_2	0.54	
	μ_y	1.000		C_{yz}	1.000				
LG13	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC8)			643	0.000	0.78	≤ 1	149)	ULS
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	Design Internal Forces								
	N_{Ed}	1.24	kN	$V_{z,Ed}$	-16.87	kN	$M_{y,Ed}$	11.93	kNm
	$V_{y,Ed}$	1.00	kN	T_{Ed}	0.09	kNm	$M_{z,Ed}$	-0.02	kNm
	Cross-section Classification - Class 1								
	σ	-27.01	kN/cm^2	λ_2	46.338		t	10.0	mm
	ε	0.814		λ_3	59.577		d/t	8.890	
	λ_1	33.099		d	88.9	mm	Class	1	
	Design Ratio								
	$M_{y,Ed}$	11.93	kNm	γ_{M0}	1.000		$V_{pl,z,T,Rd}$	322.03	kN
	$S_{el,y}$	43.05	cm^3	$V_{pl,z,Rd}$	323.43	kN	v	0.052	
	$\sigma_{x,Ed}$	27.71	kN/cm^2	T_{Ed}	0.09	kNm	$\sigma_{x,Rd}$	35.50	kN/cm^2

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Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$V_{z,Ed}$	16.87	kN	A_c	48.89	cm^2	η	0.78	
$A_{v,z}$	15.78	cm^2	t	10.0	mm			
f_y	35.50	kN/cm^2	$\tau_{t,Ed}$	0.09	kN/cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG14	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC5)	206	0.990	0.41	≤ 1	224)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pi

Design Internal Forces

N_{Ed}	-13.12	kN	$V_{z,Ed}$	6.19	kN	$M_{y,Ed}$	6.09	kNm
$V_{y,Ed}$	-0.50	kN	T_{Ed}	-0.01	kNm	$M_{z,Ed}$	0.50	kNm

Cross-section Classification - Class 1

σ	-14.34	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	13.12	kN	$\sigma_{x,M,Ed}$	14.19	kN/cm^2	γ_{M0}	1.000	
A	24.79	cm^2	$\sigma_{x,Ed}$	14.72	kN/cm^2	$V_{pl,Rd}$	323.43	kN
$\sigma_{x,N,Ed}$	0.53	kN/cm^2	$V_{y,Ed}$	0.50	kN	v	0.019	
$M_{y,Ed}$	6.09	kNm	$V_{z,Ed}$	6.19	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$M_{z,Ed}$	0.50	kNm	V_{Ed}	6.21	kN	η	0.41	
M_{Ed}	6.11	kNm	A_v	15.78	cm^2			
S_{el}	43.05	cm^3	f_y	35.50	kN/cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG15	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC6)	206	0.990	0.81	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-14.05	kN	$V_{z,Ed}$	8.48	kN	$M_{y,Ed}$	8.27	kNm
$V_{y,Ed}$	-6.77	kN	T_{Ed}	-0.17	kNm	$M_{z,Ed}$	6.78	kNm

Cross-section Classification - Class 1

σ	-19.33	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.994		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.980	m	w_z	1.000		k_{yy}	0.789	
$N_{cr,y}$	1036.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.789	
f_y	35.50	kN/cm^2	ψ_y	-0.026		k_{zz}	0.795	
λ_y	0.922		$C_{my,0}$	0.783		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.03	
α_y	0.490		ψ_z	0.000		η_{Nz}	0.03	
Φ_y	1.101		$C_{mz,0}$	0.788		$M_{y,Ed}$	8.27	kNm
χ_y	0.587		C_{my}	0.783		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.788		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.54	
$N_{cr,z}$	1036.10	kN	N_{Ed}	14.05	kN	$M_{z,Ed}$	6.78	kNm
λ_z	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.44	
Φ_z	1.101		n_{pl}	0.016		η_1	0.81	
χ_z	0.587		C_{yy}	1.000		η_2	0.81	
μ_y	0.994		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG16	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC7)	643	0.780	0.55	≤ 1	354)	ULS

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-2.38	kN	$V_{z,Ed}$	-11.71	kN	$M_{y,Ed}$	-0.94	kNm
$V_{y,Ed}$	3.23	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-2.55	kNm

Cross-section Classification - Class 1

σ	-5.88	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	1.000		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.767	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.793	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.767	
f_y	35.50	kN/cm^2	ψ_y	-0.114		k_{zz}	0.793	
λ_y	0.726		$C_{my,0}$	0.766		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.00	
α_y	0.490		ψ_z	0.012		η_{Nz}	0.00	
Φ_y	0.892		$C_{mz,0}$	0.792		$M_{y,Ed}$	8.19	kNm
χ_y	0.708		C_{my}	0.766		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.792		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.54	
$N_{cr,z}$	1669.10	kN	N_{Ed}	2.38	kN	$M_{z,Ed}$	2.55	kNm
λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.17	
Φ_z	0.892		n_{pl}	0.003		η_1	0.55	
χ_z	0.708		C_{yy}	1.000		η_2	0.55	
μ_y	1.000		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG17	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC8)	643	0.000	0.80	≤ 1	149)	ULS

Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe

Design Internal Forces

N_{Ed}	0.75	kN	$V_{z,Ed}$	-17.25	kN	$M_{y,Ed}$	12.16	kNm
$V_{y,Ed}$	0.98	kN	T_{Ed}	0.09	kNm	$M_{z,Ed}$	-0.02	kNm

Cross-section Classification - Class 1

σ	-27.56	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

$M_{y,Ed}$	12.16	kNm	γ_{M0}	1.000		$V_{pl,z,T,Rd}$	321.98	kN
$S_{el,y}$	43.05	cm^3	$V_{pl,z,Rd}$	323.43	kN	v	0.054	
$\sigma_{x,Ed}$	28.25	kN/cm^2	T_{Ed}	0.09	kNm	$\sigma_{x,Rd}$	35.50	kN/cm^2
$V_{z,Ed}$	17.25	kN	A_c	48.89	cm^2	η	0.80	
$A_{v,z}$	15.78	cm^2	t	10.0	mm			
f_y	35.50	kN/cm^2	$\tau_{t,Ed}$	0.09	kN/cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG18	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC5)	643	0.000	0.41	≤ 1	184)	ULS

Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe

Design Internal Forces

N_{Ed}	-3.81	kN	$V_{z,Ed}$	8.64	kN	$M_{y,Ed}$	-6.26	kNm
$V_{y,Ed}$	-1.00	kN	T_{Ed}	0.03	kNm	$M_{z,Ed}$	-0.01	kNm

Cross-section Classification - Class 1

σ	-14.36	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	3.81	kN	$\sigma_{x,M,Ed}$	14.55	kN/cm^2	γ_{M0}	1.000	
A	24.79	cm^2	$\sigma_{x,Ed}$	14.71	kN/cm^2	$V_{pl,Rd}$	323.43	kN
$\sigma_{x,N,Ed}$	0.15	kN/cm^2	$V_{z,Ed}$	8.64	kN	v	0.027	
$M_{y,Ed}$	6.26	kNm	A_v	15.78	cm^2	$\sigma_{x,Rd}$	35.50	kN/cm^2
S_{el}	43.05	cm^3	f_y	35.50	kN/cm^2	η	0.41	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG19	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC6)	206	0.990	0.80	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-14.00	kN	$V_{z,Ed}$	8.42	kN	$M_{y,Ed}$	8.21	kNm
$V_{y,Ed}$	-6.76	kN	T_{Ed}	-0.17	kNm	$M_{z,Ed}$	6.77	kNm

Cross-section Classification - Class 1

σ	-19.19	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.994		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.980	m	w_z	1.000		k_{yy}	0.789	
$N_{cr,y}$	1036.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.789	
f_y	35.50	kN/cm^2	ψ_y	-0.026		k_{zz}	0.795	
λ_y	0.922		$C_{my,0}$	0.783		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.03	
α_y	0.490		ψ_z	0.000		η_{Nz}	0.03	
Φ_y	1.101		$C_{mz,0}$	0.788		$M_{y,Ed}$	8.21	kNm
χ_y	0.587		C_{my}	0.783		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.788		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.54	
$N_{cr,z}$	1036.10	kN	N_{Ed}	14.00	kN	$M_{z,Ed}$	6.77	kNm
λ_z	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.44	
Φ_z	1.101		n_{pl}	0.016		η_1	0.80	
χ_z	0.587		C_{yy}	1.000		η_2	0.80	
μ_y	0.994		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG20	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC7)	643	0.780	0.54	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-3.49	kN	$V_{z,Ed}$	-11.57	kN	$M_{y,Ed}$	-0.93	kNm
$V_{y,Ed}$	3.25	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-2.57	kNm

Cross-section Classification - Class 1

σ	-5.96	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.999		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.767	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.793	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.767	
f_y	35.50	kN/cm^2	ψ_y	-0.116		k_{zz}	0.793	
λ_y	0.726		$C_{my,0}$	0.765		γ_{M1}	1.000	

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■ 2.1 DESIGN BY LOAD CASE

	BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.01	
	α_y	0.490		ψ_z	0.012		η_{Nz}	0.01	
	Φ_y	0.892		$C_{mz,0}$	0.792		$M_{y,Ed}$	8.08	kNm
	χ_y	0.708		C_{my}	0.765		W_y	43.05	cm^3
	I_z	195.98	cm^4	C_{mz}	0.792		$M_{y,Rk}$	15.28	kNm
	$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.53	
	$N_{cr,z}$	1669.10	kN	N_{Ed}	3.49	kN	$M_{z,Ed}$	2.57	kNm
	λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
	BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
	α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.17	
	Φ_z	0.892		n_{pl}	0.004		η_1	0.54	
	χ_z	0.708		C_{yy}	1.000		η_2	0.54	
	μ_y	0.999		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG21	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC8)	643	0.000	0.79	≤ 1	149)	ULS

Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe

Design Internal Forces

N_{Ed}	-0.35	kN	$V_{z,Ed}$	-17.10	kN	$M_{y,Ed}$	12.05	kNm
$V_{y,Ed}$	1.00	kN	T_{Ed}	0.09	kNm	$M_{z,Ed}$	-0.02	kNm

Cross-section Classification - Class 1

σ	-27.35	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

$M_{y,Ed}$	12.05	kNm	γ_{M0}	1.000		$V_{pl,z,T,Rd}$	321.97	kN
$S_{el,y}$	43.05	cm^3	$V_{pl,z,Rd}$	323.43	kN	v	0.053	
$\sigma_{x,Ed}$	28.00	kN/cm^2	T_{Ed}	0.09	kNm	$\sigma_{x,Rd}$	35.50	kN/cm^2
$V_{z,Ed}$	17.10	kN	A_c	48.89	cm^2	η	0.79	
$A_{v,z}$	15.78	cm^2	t	10.0	mm			
f_y	35.50	kN/cm^2	$\tau_{t,Ed}$	0.09	kN/cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG22	UB (1.35*LC1 + 1.5*LC4)	616	0.159	0.13	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-14.54	kN	$V_{z,Ed}$	-4.50	kN	$M_{y,Ed}$	0.10	kNm
$V_{y,Ed}$	-1.52	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-0.98	kN/cm^2	λ_2	70.000		t	8.0	mm
ε	1.000		λ_3	90.000		d/t	11.112	
λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	Diagr M_y	1) Linear		k_{yy}	0.816	
I_y	167.97	cm^4	ψ_y	0.123		k_{yz}	0.815	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.816		k_{zy}	0.816	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.815	
A	20.33	cm^2	ψ_z	0.118		γ_{M1}	1.000	
f_y	23.50	kN/cm^2	$C_{mz,0}$	0.815		η_{Ny}	0.03	
λ_y	0.118		C_{my}	0.816		η_{Nz}	0.03	
χ_y	1.000		C_{mz}	0.815		$M_{y,Ed}$	0.81	kNm
I_z	167.97	cm^4	λ_max	0.118		W_y	37.04	cm^3
$L_{cr,z}$	0.318	m	N_{Ed}	14.54	kN	$M_{y,Rk}$	8.70	kNm
$N_{cr,z}$	34426.00	kN	A_i	20.33	cm^2	η_{My}	0.09	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.27	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm^3
μ_y	1.000		n_{pl}	0.030		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.03	

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	

w_y	1.000		C_{yz}	1.000		η_1	0.13	
w_z	1.000		C_{zy}	1.000		η_2	0.13	
a_{LT}	0.000		C_{zz}	1.000				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG23	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	616	0.159	0.17	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-17.69	kN	$V_{z,Ed}$	-5.60	kN	$M_{y,Ed}$	0.17	kNm
$V_{y,Ed}$	-1.72	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.05	kNm

Cross-section Classification - Class 1

σ	-1.32	kN/cm²	λ_2	70.000		t	8.0	mm
ε	1.000		λ_3	90.000		d/t	11.112	
λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm²	Diagr M_y	1) Linear		k_{yy}	0.824	
I_y	167.97	cm⁴	ψ_y	0.162		k_{yz}	0.825	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.824		k_{zy}	0.824	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.825	
A	20.33	cm²	ψ_z	0.163		γ_{M1}	1.000	
f_y	23.50	kN/cm²	$C_{mz,0}$	0.824		η_{Ny}	0.04	
λ_y	0.118		C_{my}	0.824		η_{Nz}	0.04	
χ_y	1.000		C_{mz}	0.824		$M_{y,Ed}$	1.06	kNm
I_z	167.97	cm⁴	λ_max	0.118		W_y	37.04	cm³
$L_{cr,z}$	0.318	m	N_{Ed}	17.69	kN	$M_{y,Rk}$	8.70	kNm
$N_{cr,z}$	34426.00	kN	A_i	20.33	cm²	η_{My}	0.12	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.33	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm³
μ_y	1.000		n_{pl}	0.037		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.04	
w_y	1.000		C_{yz}	1.000		η_1	0.17	
w_z	1.000		C_{zy}	1.000		η_2	0.17	
a_{LT}	0.000		C_{zz}	1.000				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG24	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC5)	206	0.990	0.43	≤ 1	224)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pi

Design Internal Forces

N_{Ed}	-25.15	kN	$V_{z,Ed}$	6.13	kN	$M_{y,Ed}$	6.08	kNm
$V_{y,Ed}$	-0.52	kN	T_{Ed}	-0.01	kNm	$M_{z,Ed}$	0.52	kNm

Cross-section Classification - Class 1

σ	-14.81	kN/cm²	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	25.15	kN	$\sigma_{x,M,Ed}$	14.18	kN/cm²	γ_{M0}	1.000	
A	24.79	cm²	$\sigma_{x,Ed}$	15.19	kN/cm²	$V_{pl,Rd}$	323.43	kN
$\sigma_{x,N,Ed}$	1.01	kN/cm²	$V_{y,Ed}$	0.52	kN	v	0.019	
$M_{y,Ed}$	6.08	kNm	$V_{z,Ed}$	6.13	kN	$\sigma_{x,Rd}$	35.50	kN/cm²
$M_{z,Ed}$	0.52	kNm	V_{Ed}	6.15	kN	η	0.43	
M_{Ed}	6.10	kNm	A_v	15.78	cm²			
S_{el}	43.05	cm³	f_y	35.50	kN/cm²			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG25	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC6)	206	0.990	0.85	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-26.08	kN	$V_{z,Ed}$	8.57	kN	$M_{y,Ed}$	8.44	kNm

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Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$V_{y,Ed}$	-6.84	kN	T_{Ed}	-0.18	kNm	$M_{z,Ed}$	6.92	kNm
Cross-section Classification - Class 1								
σ	-20.19	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	
Design Ratio								
E	21000.00	kN/cm^2	μ_z	0.989		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.980	m	w_z	1.000		k_{yy}	0.793	
$N_{cr,y}$	1036.10	kN	a_{LT}	0.000		k_{yz}	0.799	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.793	
f_y	35.50	kN/cm^2	ψ_y	-0.026		k_{zz}	0.799	
λ_y	0.922		$C_{my,0}$	0.781		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.05	
α_y	0.490		ψ_z	0.000		η_{Nz}	0.05	
Φ_y	1.101		$C_{mz,0}$	0.787		$M_{y,Ed}$	8.44	kNm
χ_y	0.587		C_{my}	0.781		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.787		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.55	
$N_{cr,z}$	1036.10	kN	N_{Ed}	26.08	kN	$M_{z,Ed}$	6.92	kNm
λ_z	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.45	
Φ_z	1.101		n_{pl}	0.030		η_1	0.85	
χ_z	0.587		C_{yy}	1.000		η_2	0.85	
μ_y	0.989		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG26	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC7)	643	0.780	0.56	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces								
N_{Ed}	-3.05	kN	$V_{z,Ed}$	-11.84	kN	$M_{y,Ed}$	-0.92	kNm
$V_{y,Ed}$	3.31	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-2.62	kNm
Cross-section Classification - Class 1								
σ	-6.06	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	
Design Ratio								
E	21000.00	kN/cm^2	μ_z	0.999		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.768	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.793	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.768	
f_y	35.50	kN/cm^2	ψ_y	-0.110		k_{zz}	0.793	
λ_y	0.726		$C_{my,0}$	0.767		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.00	
α_y	0.490		ψ_z	0.012		η_{Nz}	0.00	
Φ_y	0.892		$C_{mz,0}$	0.792		$M_{y,Ed}$	8.31	kNm
χ_y	0.708		C_{my}	0.767		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.792		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.54	
$N_{cr,z}$	1669.10	kN	N_{Ed}	3.05	kN	$M_{z,Ed}$	2.62	kNm
λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.17	

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Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	Φ_z 0.892 · n_{pl} 0.003 · η_1 0.56						
	χ_z 0.708 · C_{yy} 1.000 · η_2 0.56						
	μ_y 0.999 · C_{yz} 1.000						
LG27	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC8)	643	0.000	0.80	≤ 1	149)	ULS

Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe

Design Internal Forces

N_{Ed}	0.05 kN	$V_{z,Ed}$	-17.23 kN	$M_{y,Ed}$	12.18 kNm
$V_{y,Ed}$	1.02 kN	T_{Ed}	0.09 kNm	$M_{z,Ed}$	-0.02 kNm

Cross-section Classification - Class 1

σ	-27.62 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

$M_{y,Ed}$	12.18 kNm	γ_{M0}	1.000	$V_{pl,z,T,Rd}$	321.97 kN
$S_{el,y}$	43.05 cm³	$V_{pl,z,Rd}$	323.43 kN	v	0.054
$\sigma_{x,Ed}$	28.29 kN/cm²	T_{Ed}	0.09 kNm	$\sigma_{x,Rd}$	35.50 kN/cm²
$V_{z,Ed}$	17.23 kN	A_c	48.89 cm²	η	0.80
$A_{v,z}$	15.78 cm²	t	10.0 mm		
f_y	35.50 kN/cm²	$\tau_{t,Ed}$	0.09 kN/cm²		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG28	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC5)	206	0.990	0.42	≤ 1	224)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pi

Design Internal Forces

N_{Ed}	-25.11 kN	$V_{z,Ed}$	6.08 kN	$M_{y,Ed}$	6.04 kNm
$V_{y,Ed}$	-0.51 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	0.51 kNm

Cross-section Classification - Class 1

σ	-14.70 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

N_{Ed}	25.11 kN	$\sigma_{x,M,Ed}$	14.07 kN/cm²	γ_{M0}	1.000
A	24.79 cm²	$\sigma_{x,Ed}$	15.09 kN/cm²	$V_{pl,Rd}$	323.43 kN
$\sigma_{x,N,Ed}$	1.01 kN/cm²	$V_{y,Ed}$	0.51 kN	v	0.019
$M_{y,Ed}$	6.04 kNm	$V_{z,Ed}$	6.08 kN	$\sigma_{x,Rd}$	35.50 kN/cm²
$M_{z,Ed}$	0.51 kNm	V_{Ed}	6.10 kN	η	0.42
M_{Ed}	6.06 kNm	A_v	15.78 cm²		
S_{el}	43.05 cm³	f_y	35.50 kN/cm²		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG29	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC6)	206	0.990	0.85	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-26.05 kN	$V_{z,Ed}$	8.53 kN	$M_{y,Ed}$	8.39 kNm
$V_{y,Ed}$	-6.83 kN	T_{Ed}	-0.18 kNm	$M_{z,Ed}$	6.91 kNm

Cross-section Classification - Class 1

σ	-20.09 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm²	μ_z	0.989	C_{zy}	1.000
I_y	195.98 cm⁴	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.980 m	w_z	1.000	k_{yy}	0.793
$N_{cr,y}$	1036.10 kN	a_{LT}	0.000	k_{yz}	0.799
A	24.79 cm²	Diagr M_y	1) Linear	k_{zy}	0.793
f_y	35.50 kN/cm²	ψ_y	-0.026	k_{zz}	0.799
λ_y	0.922	$C_{my,0}$	0.781	γ_{M1}	1.000

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Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description		Member No	Location x [m]		Design		Acc. to Formula	
	BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.05	
	α_y	0.490		ψ_z	0.000		η_{Nz}	0.05	
	Φ_y	1.101		$C_{mz,0}$	0.787		$M_{y,Ed}$	8.39	kNm
	χ_y	0.587		C_{my}	0.781		W_y	43.05	cm^3
	I_z	195.98	cm^4	C_{mz}	0.787		$M_{y,Rk}$	15.28	kNm
	$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.55	
	$N_{cr,z}$	1036.10	kN	N_{Ed}	26.05	kN	$M_{z,Ed}$	6.91	kNm
	λ_z	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
	BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
	α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.45	
	Φ_z	1.101		n_{pl}	0.030		η_1	0.85	
	χ_z	0.587		C_{yy}	1.000		η_2	0.85	
	μ_y	0.989		C_{yz}	1.000				
LG30	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC7)		643	0.780		0.56	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
	Design Internal Forces								
	N_{Ed}	-3.82	kN	$V_{z,Ed}$	-11.75	kN	$M_{y,Ed}$	-0.92	kNm
	$V_{y,Ed}$	3.33	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-2.63	kNm
	Cross-section Classification - Class 1								
	σ	-6.12	kN/cm^2	λ_2	46.338		t	10.0	mm
	ε	0.814		λ_3	59.577		d/t	8.890	
	λ_1	33.099		d	88.9	mm	Class	1	
	Design Ratio								
	E	21000.00	kN/cm^2	μ_z	0.999		C_{zy}	1.000	
	I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
	$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.768	
	$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.794	
	A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.768	
	f_y	35.50	kN/cm^2	ψ_y	-0.111		k_{zz}	0.794	
	λ_y	0.726		$C_{my,0}$	0.766		γ_{M1}	1.000	
	BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.01	
	α_y	0.490		ψ_z	0.012		η_{Nz}	0.01	
	Φ_y	0.892		$C_{mz,0}$	0.792		$M_{y,Ed}$	8.24	kNm
	χ_y	0.708		C_{my}	0.766		W_y	43.05	cm^3
	I_z	195.98	cm^4	C_{mz}	0.792		$M_{y,Rk}$	15.28	kNm
	$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.54	
	$N_{cr,z}$	1669.10	kN	N_{Ed}	3.82	kN	$M_{z,Ed}$	2.63	kNm
	λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
	BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
	α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.17	
	Φ_z	0.892		n_{pl}	0.004		η_1	0.56	
	χ_z	0.708		C_{yy}	1.000		η_2	0.56	
	μ_y	0.999		C_{yz}	1.000				
LG31	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC8)		643	0.000		0.79	≤ 1	149)	ULS
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	Design Internal Forces								
	N_{Ed}	-0.72	kN	$V_{z,Ed}$	-17.13	kN	$M_{y,Ed}$	12.10	kNm
	$V_{y,Ed}$	1.04	kN	T_{Ed}	0.09	kNm	$M_{z,Ed}$	-0.02	kNm
	Cross-section Classification - Class 1								
	σ	-27.48	kN/cm^2	λ_2	46.338		t	10.0	mm
	ε	0.814		λ_3	59.577		d/t	8.890	
	λ_1	33.099		d	88.9	mm	Class	1	
	Design Ratio								
	$M_{y,Ed}$	12.10	kNm	γ_{M0}	1.000		$V_{pl,z,T,Rd}$	321.96	kN

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$S_{el,y}$	43.05	cm^3	$V_{pl,z,Rd}$	323.43	kN	v	0.053	
$\sigma_{x,Ed}$	28.11	kN/cm^2	T_{Ed}	0.09	kNm	$\sigma_{x,Rd}$	35.50	kN/cm^2
$V_{z,Ed}$	17.13	kN	A_c	48.89	cm^2	η	0.79	
$A_{v,z}$	15.78	cm^2	t	10.0	mm			
f_y	35.50	kN/cm^2	$\tau_{t,Ed}$	0.09	kN/cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG32	UB (1.35*LC1 + 1.5*LC5)	643	0.000	0.75	≤ 1	189)	ULS

Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - P

Design Internal Forces

N_{Ed}	-4.30	kN	$V_{z,Ed}$	15.78	kN	$M_{y,Ed}$	-11.31	kNm
$V_{y,Ed}$	-1.58	kN	T_{Ed}	0.11	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-25.83	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	4.30	kN	$V_{z,Ed}$	15.78	kN	t	10.0	mm
A	24.79	cm^2	A_v	15.78	cm^2	$\tau_{t,Ed}$	0.11	kN/cm^2
$\sigma_{x,N,Ed}$	0.17	kN/cm^2	f_y	35.50	kN/cm^2	$V_{pl,T,Rd}$	321.71	kN
$M_{y,Ed}$	11.31	kNm	γ_{M0}	1.000		v	0.049	
S_{el}	43.05	cm^3	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$\sigma_{x,M,Ed}$	26.28	kN/cm^2	T_{Ed}	0.11	kNm	η	0.75	
$\sigma_{x,Ed}$	26.45	kN/cm^2	A_c	48.89	cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG33	UB (1.35*LC1 + 1.5*LC6)	206	0.990	1.27	> 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-14.55	kN	$V_{z,Ed}$	12.99	kN	$M_{y,Ed}$	12.65	kNm
$V_{y,Ed}$	-11.26	kN	T_{Ed}	-0.43	kNm	$M_{z,Ed}$	11.29	kNm

Cross-section Classification - Class 1

σ	-29.28	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.994		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.980	m	w_z	1.000		k_{yy}	0.789	
$N_{cr,y}$	1036.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.789	
f_y	35.50	kN/cm^2	ψ_y	-0.027		k_{zz}	0.795	
λ_y	0.922		$C_{my,0}$	0.782		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.03	
α_y	0.490		ψ_z	0.000		η_{Nz}	0.03	
Φ_y	1.101		$C_{mz,0}$	0.788		$M_{y,Ed}$	12.65	kNm
χ_y	0.587		C_{my}	0.782		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.788		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.83	
$N_{cr,z}$	1036.10	kN	N_{Ed}	14.55	kN	$M_{z,Ed}$	11.29	kNm
λ_z	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.74	
Φ_z	1.101		n_{pl}	0.017		η_1	1.27	
χ_z	0.587		C_{yy}	1.000		η_2	1.27	
μ_y	0.994		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG34	UB (1.35*LC1 + 1.5*LC7)	643	0.780	0.86	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Internal Forces

N_{Ed}	-3.87	kN	$V_{z,Ed}$	-17.84	kN	$M_{y,Ed}$	-1.36	kNm
$V_{y,Ed}$	5.45	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	-4.34	kNm

Cross-section Classification - Class 1

σ	-10.01	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.999		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.768	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.768	
f_y	35.50	kN/cm^2	ψ_y	-0.108		k_{zz}	0.795	
λ_y	0.726		$C_{my,0}$	0.767		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.01	
α_y	0.490		ψ_z	0.019		η_{Nz}	0.01	
Φ_y	0.892		$C_{mz,0}$	0.794		$M_{y,Ed}$	12.54	kNm
χ_y	0.708		C_{my}	0.767		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.794		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.82	
$N_{cr,z}$	1669.10	kN	N_{Ed}	3.87	kN	$M_{z,Ed}$	4.34	kNm
λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.28	
Φ_z	0.892		n_{pl}	0.004		η_1	0.86	
χ_z	0.708		C_{yy}	1.000		η_2	0.86	
μ_y	0.999		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG35	UB (1.35*LC1 + 1.5*LC8)	643	0.000	1.25	> 1	169)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	1.30	kN	$V_{z,Ed}$	-27.09	kN	$M_{y,Ed}$	19.18	kNm
$V_{y,Ed}$	1.72	kN	T_{Ed}	0.24	kNm	$M_{z,Ed}$	-0.06	kNm

Cross-section Classification - Class 1

σ	-43.45	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

$M_{y,Ed}$	19.18	kNm	V_{Ed}	27.14	kN	t	10.0	mm
$M_{z,Ed}$	0.06	kNm	A_v	15.78	cm^2	$\tau_{t,Ed}$	0.24	kN/cm^2
M_{Ed}	19.18	kNm	f_y	35.50	kN/cm^2	$V_{pl,T,Rd}$	319.61	kN
S_{el}	43.05	cm^3	γ_{M0}	1.000		v	0.085	
$\sigma_{x,Ed}$	44.55	kN/cm^2	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$V_{y,Ed}$	1.72	kN	T_{Ed}	0.24	kNm	η	1.25	
$V_{z,Ed}$	27.09	kN	A_c	48.89	cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG36	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC5)	643	0.000	0.74	≤ 1	189)	ULS

Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - P

Design Internal Forces

N_{Ed}	-3.58	kN	$V_{z,Ed}$	15.69	kN	$M_{y,Ed}$	-11.25	kNm
$V_{y,Ed}$	-1.59	kN	T_{Ed}	0.11	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-25.65	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Ratio

N_{Ed}	3.58	kN	$V_{z,Ed}$	15.69	kN	t	10.0	mm
A	24.79	cm²	A_v	15.78	cm²	$\tau_{t,Ed}$	0.11	kN/cm²
$\sigma_{x,N,Ed}$	0.14	kN/cm²	f_y	35.50	kN/cm²	$V_{pl,T,Rd}$	321.71	kN
$M_{y,Ed}$	11.25	kNm	γ_{M0}	1.000		v	0.049	
S_{el}	43.05	cm³	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm²
$\sigma_{x,M,Ed}$	26.12	kN/cm²	T_{Ed}	0.11	kNm	η	0.74	
$\sigma_{x,Ed}$	26.26	kN/cm²	A_c	48.89	cm²			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG37	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC6)	206	0.990	1.27	> 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-14.58	kN	$V_{z,Ed}$	13.03	kN	$M_{y,Ed}$	12.69	kNm
$V_{y,Ed}$	-11.27	kN	T_{Ed}	-0.43	kNm	$M_{z,Ed}$	11.29	kNm

Cross-section Classification - Class 1

σ	-29.37	kN/cm²	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm²	μ_z	0.994		C_{zy}	1.000	
I_y	195.98	cm⁴	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.980	m	w_z	1.000		k_{yy}	0.789	
$N_{cr,y}$	1036.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm²	Diagr M_y	1) Linear		k_{zy}	0.789	
f_y	35.50	kN/cm²	ψ_y	-0.027		k_{zz}	0.795	
λ_y	0.922		$C_{my,0}$	0.782		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.03	
α_y	0.490		ψ_z	0.000		η_{Nz}	0.03	
Φ_y	1.101		$C_{mz,0}$	0.788		$M_{y,Ed}$	12.69	kNm
χ_y	0.587		C_{my}	0.782		W_y	43.05	cm³
I_z	195.98	cm⁴	C_{mz}	0.788		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.83	
$N_{cr,z}$	1036.10	kN	N_{Ed}	14.58	kN	$M_{z,Ed}$	11.29	kNm
λ_z	0.922		A_i	24.79	cm²	W_z	43.05	cm³
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.74	
Φ_z	1.101		n_{pl}	0.017		η_1	1.27	
χ_z	0.587		C_{yy}	1.000		η_2	1.27	
μ_y	0.994		C_{yz}	1.000				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG38	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC7)	643	0.780	0.86	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-2.93	kN	$V_{z,Ed}$	-17.93	kN	$M_{y,Ed}$	-1.35	kNm
$V_{y,Ed}$	5.43	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-4.33	kNm

Cross-section Classification - Class 1

σ	-9.93	kN/cm²	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm²	μ_z	0.999		C_{zy}	1.000	
I_y	195.98	cm⁴	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.768	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm²	Diagr M_y	1) Linear		k_{zy}	0.768	
f_y	35.50	kN/cm²	ψ_y	-0.107		k_{zz}	0.795	

RF-STEEL EC3

CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

λ_y	0.726		$C_{my,0}$	0.767		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.00	
α_y	0.490		ψ_z	0.019		η_{Nz}	0.00	
Φ_y	0.892		$C_{mz,0}$	0.794		$M_{y,Ed}$	12.61	kNm
χ_y	0.708		C_{my}	0.767		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.794		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.83	
$N_{cr,z}$	1669.10	kN	N_{Ed}	2.93	kN	$M_{z,Ed}$	4.33	kNm
λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.28	
Φ_z	0.892		n_{pl}	0.003		η_1	0.86	
χ_z	0.708		C_{yy}	1.000		η_2	0.86	
μ_y	0.999		C_{yz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG39	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC8)	643	0.000	1.26	> 1	229)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

Design Internal Forces

N_{Ed}	2.10	kN	$V_{z,Ed}$	-27.20	kN	$M_{y,Ed}$	19.26	kNm
$V_{y,Ed}$	1.71	kN	T_{Ed}	0.24	kNm	$M_{z,Ed}$	-0.06	kNm

Cross-section Classification - Class 1

σ	-43.59	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	2.10	kN	$\sigma_{x,Ed}$	44.82	kN/cm^2	T_{Ed}	0.24	kNm
A	24.79	cm^2	$V_{y,Ed}$	1.71	kN	A_c	48.89	cm^2
$\sigma_{x,N,Ed}$	0.08	kN/cm^2	$V_{z,Ed}$	27.20	kN	t	10.0	mm
$M_{y,Ed}$	19.26	kNm	V_{Ed}	27.25	kN	$\tau_{t,Ed}$	0.24	kN/cm^2
$M_{z,Ed}$	0.06	kNm	A_v	15.78	cm^2	$V_{pl,T,Rd}$	319.62	kN
M_{Ed}	19.26	kNm	f_y	35.50	kN/cm^2	v	0.085	
S_{el}	43.05	cm^3	γ_{M0}	1.000		$\sigma_{x,Rd}$	35.50	kN/cm^2
$\sigma_{x,M,Ed}$	44.73	kN/cm^2	$V_{pl,Rd}$	323.43	kN	η	1.26	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG40	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC5)	643	0.000	0.73	≤ 1	189)	ULS

Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - P

Design Internal Forces

N_{Ed}	-3.93	kN	$V_{z,Ed}$	15.43	kN	$M_{y,Ed}$	-11.08	kNm
$V_{y,Ed}$	-1.61	kN	T_{Ed}	0.10	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-25.29	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	3.93	kN	$V_{z,Ed}$	15.43	kN	t	10.0	mm
A	24.79	cm^2	A_v	15.78	cm^2	$\tau_{t,Ed}$	0.11	kN/cm^2
$\sigma_{x,N,Ed}$	0.16	kN/cm^2	f_y	35.50	kN/cm^2	$V_{pl,T,Rd}$	321.75	kN
$M_{y,Ed}$	11.08	kNm	γ_{M0}	1.000		v	0.048	
S_{el}	43.05	cm^3	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$\sigma_{x,M,Ed}$	25.74	kN/cm^2	T_{Ed}	0.10	kNm	η	0.73	
$\sigma_{x,Ed}$	25.90	kN/cm^2	A_c	48.89	cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG41	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC6)	206	0.990	1.28	> 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

N_{Ed}	-14.51 kN	$V_{z,Ed}$	13.24 kN	$M_{y,Ed}$	12.90 kNm
$V_{y,Ed}$	-11.27 kN	T_{Ed}	-0.44 kNm	$M_{z,Ed}$	11.29 kNm

Cross-section Classification - Class 1

σ	-29.85 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	μ_z	0.994	C_{zy}	1.000
I_y	195.98 cm^4	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.980 m	w_z	1.000	k_{yy}	0.789
$N_{cr,y}$	1036.10 kN	a_{LT}	0.000	k_{yz}	0.795
A	24.79 cm^2	Diagr M_y	1) Linear	k_{zy}	0.789
f_y	35.50 kN/cm^2	ψ_y	-0.027	k_{zz}	0.795
λ_y	0.922	$C_{my,0}$	0.783	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.03
α_y	0.490	ψ_z	0.000	η_{Nz}	0.03
Φ_y	1.101	$C_{mz,0}$	0.788	$M_{y,Ed}$	12.90 kNm
χ_y	0.587	C_{my}	0.783	W_y	43.05 cm^3
I_z	195.98 cm^4	C_{mz}	0.788	$M_{y,Rk}$	15.28 kNm
$L_{cr,z}$	1.980 m	λ_max	0.922	η_{My}	0.84
$N_{cr,z}$	1036.10 kN	N_{Ed}	14.51 kN	$M_{z,Ed}$	11.29 kNm
λ_z	0.922	A_i	24.79 cm^2	W_z	43.05 cm^3
BC_z	c	N_{Rk}	879.94 kN	$M_{z,Rk}$	15.28 kNm
α_z	0.490	γ_{M0}	1.000	η_{Mz}	0.74
Φ_z	1.101	n_{pl}	0.016	η_1	1.28
χ_z	0.587	C_{yy}	1.000	η_2	1.28
μ_y	0.994	C_{yz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG42	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC7)	643	0.780	0.87	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-3.24 kN	$V_{z,Ed}$	-18.20 kN	$M_{y,Ed}$	-1.40 kNm
$V_{y,Ed}$	5.42 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-4.32 kNm

Cross-section Classification - Class 1

σ	-9.92 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	μ_z	0.999	C_{zy}	1.000
I_y	195.98 cm^4	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.560 m	w_z	1.000	k_{yy}	0.768
$N_{cr,y}$	1669.10 kN	a_{LT}	0.000	k_{yz}	0.795
A	24.79 cm^2	Diagr M_y	1) Linear	k_{zy}	0.768
f_y	35.50 kN/cm^2	ψ_y	-0.109	k_{zz}	0.795
λ_y	0.726	$C_{my,0}$	0.767	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.01
α_y	0.490	ψ_z	0.019	η_{Nz}	0.01
Φ_y	0.892	$C_{mz,0}$	0.794	$M_{y,Ed}$	12.78 kNm
χ_y	0.708	C_{my}	0.767	W_y	43.05 cm^3
I_z	195.98 cm^4	C_{mz}	0.794	$M_{y,Rk}$	15.28 kNm
$L_{cr,z}$	1.560 m	λ_max	0.726	η_{My}	0.84
$N_{cr,z}$	1669.10 kN	N_{Ed}	3.24 kN	$M_{z,Ed}$	4.32 kNm
λ_z	0.726	A_i	24.79 cm^2	W_z	43.05 cm^3
BC_z	c	N_{Rk}	879.94 kN	$M_{z,Rk}$	15.28 kNm

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	α_z 0.490 γ_{M0} 1.000 η_{Mz} 0.28						
	Φ_z 0.892 n_{pl} 0.004 η_1 0.87						
	χ_z 0.708 C_{yy} 1.000 η_2 0.87						
	μ_y 0.999 C_{yz} 1.000						
LG43	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC8)	643	0.000	1.27	> 1	169)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	1.76	kN	$V_{z,Ed}$	-27.46	kN	$M_{y,Ed}$	19.42	kNm
$V_{y,Ed}$	1.69	kN	T_{Ed}	0.24	kNm	$M_{z,Ed}$	-0.06	kNm

Cross-section Classification - Class 1

σ	-43.98	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

$M_{y,Ed}$	19.42	kNm	V_{Ed}	27.51	kN	t	10.0	mm
$M_{z,Ed}$	0.06	kNm	A_v	15.78	cm^2	$\tau_{t,Ed}$	0.24	kN/cm^2
M_{Ed}	19.42	kNm	f_y	35.50	kN/cm^2	$V_{pl,T,Rd}$	319.57	kN
S_{el}	43.05	cm^3	γ_{M0}	1.000		v	0.086	
$\sigma_{x,Ed}$	45.11	kN/cm^2	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$V_{y,Ed}$	1.69	kN	T_{Ed}	0.24	kNm	η	1.27	
$V_{z,Ed}$	27.46	kN	A_c	48.89	cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG44	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC5)	643	0.000	0.74	≤ 1	189)	ULS

Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - P

Design Internal Forces

N_{Ed}	-4.66	kN	$V_{z,Ed}$	15.51	kN	$M_{y,Ed}$	-11.15	kNm
$V_{y,Ed}$	-1.60	kN	T_{Ed}	0.10	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-25.48	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	4.66	kN	$V_{z,Ed}$	15.51	kN	t	10.0	mm
A	24.79	cm^2	A_v	15.78	cm^2	$\tau_{t,Ed}$	0.11	kN/cm^2
$\sigma_{x,N,Ed}$	0.19	kN/cm^2	f_y	35.50	kN/cm^2	$V_{pl,T,Rd}$	321.75	kN
$M_{y,Ed}$	11.15	kNm	γ_{M0}	1.000		v	0.048	
S_{el}	43.05	cm^3	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$\sigma_{x,M,Ed}$	25.91	kN/cm^2	T_{Ed}	0.10	kNm	η	0.74	
$\sigma_{x,Ed}$	26.09	kN/cm^2	A_c	48.89	cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG45	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC6)	206	0.990	1.28	> 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-14.47	kN	$V_{z,Ed}$	13.20	kN	$M_{y,Ed}$	12.86	kNm
$V_{y,Ed}$	-11.26	kN	T_{Ed}	-0.44	kNm	$M_{z,Ed}$	11.28	kNm

Cross-section Classification - Class 1

σ	-29.75	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.994		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.980	m	w_z	1.000		k_{yy}	0.789	
$N_{cr,y}$	1036.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.789	

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

f_y	35.50	kN/cm^2	ψ_y	-0.027		k_{zz}	0.795	
λ_y	0.922		$C_{my,0}$	0.783		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.03	
α_y	0.490		ψ_z	0.000		η_{Nz}	0.03	
Φ_y	1.101		$C_{mz,0}$	0.788		$M_{y,Ed}$	12.86	kNm
χ_y	0.587		C_{my}	0.783		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.788		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.980	m	λ_max	0.922		η_{My}	0.84	
$N_{cr,z}$	1036.10	kN	N_{Ed}	14.47	kN	$M_{z,Ed}$	11.28	kNm
λ_z	0.922		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.74	
Φ_z	1.101		n_{pl}	0.016		η_1	1.28	
χ_z	0.587		C_{yy}	1.000		η_2	1.28	
μ_y	0.994		C_{yz}	1.000				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG46	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC7)	643	0.780	0.87	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-4.13	kN	$V_{z,Ed}$	-18.11	kN	$M_{y,Ed}$	-1.40	kNm
$V_{y,Ed}$	5.44	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-4.33	kNm

Cross-section Classification - Class 1

σ	-9.99	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.999		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.768	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.768	
f_y	35.50	kN/cm^2	ψ_y	-0.110		k_{zz}	0.795	
λ_y	0.726		$C_{my,0}$	0.766		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.01	
α_y	0.490		ψ_z	0.019		η_{Nz}	0.01	
Φ_y	0.892		$C_{mz,0}$	0.794		$M_{y,Ed}$	12.71	kNm
χ_y	0.708		C_{my}	0.766		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.794		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.83	
$N_{cr,z}$	1669.10	kN	N_{Ed}	4.13	kN	$M_{z,Ed}$	4.33	kNm
λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.28	
Φ_z	0.892		n_{pl}	0.005		η_1	0.87	
χ_z	0.708		C_{yy}	1.000		η_2	0.87	
μ_y	0.999		C_{yz}	1.000				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG47	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC8)	643	0.000	1.27	> 1	169)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.97	kN	$V_{z,Ed}$	-27.35	kN	$M_{y,Ed}$	19.34	kNm
$V_{y,Ed}$	1.71	kN	T_{Ed}	0.24	kNm	$M_{z,Ed}$	-0.06	kNm

Cross-section Classification - Class 1

σ	-43.83	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

RF-STEEL EC3

CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	Design Ratio						
	$M_{y,Ed}$ 19.34 kNm; $M_{z,Ed}$ 0.06 kNm; M_{Ed} 19.34 kNm; S_{el} 43.05 cm^3; $\sigma_{x,Ed}$ 44.93 kN/cm^2; $V_{y,Ed}$ 1.71 kN; $V_{z,Ed}$ 27.35 kN; V_{Ed} 27.40 kN; A_v 15.78 cm^2; f_y 35.50 kN/cm^2; γ_{M0} 1.000; $V_{pl,Rd}$ 323.43 kN; T_{Ed} 0.24 kNm; A_c 48.89 cm^2; t 10.0 mm; $\tau_{t,Ed}$ 0.25 kN/cm^2; $V_{pl,T,Rd}$ 319.55 kN; v 0.086; $\sigma_{x,Rd}$ 35.50 kN/cm^2; η 1.27						
LG48	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC5)	643	0.000	0.74	≤ 1	189)	ULS
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - P						
	Design Internal Forces						
	N_{Ed} -4.04 kN; $V_{y,Ed}$ -1.62 kN; $V_{z,Ed}$ 15.66 kN; T_{Ed} 0.11 kNm; $M_{y,Ed}$ -11.23 kNm; $M_{z,Ed}$ -0.03 kNm						
	Cross-section Classification - Class 1						
	σ -25.63 kN/cm^2; ε 0.814; λ_1 33.099; λ_2 46.338; λ_3 59.577; d 88.9 mm; t 10.0 mm; d/t 8.890; Class 1						
	Design Ratio						
	N_{Ed} 4.04 kN; A 24.79 cm^2; $\sigma_{x,N,Ed}$ 0.16 kN/cm^2; $M_{y,Ed}$ 11.23 kNm; S_{el} 43.05 cm^3; $\sigma_{x,M,Ed}$ 26.08 kN/cm^2; $\sigma_{x,Ed}$ 26.25 kN/cm^2; $V_{z,Ed}$ 15.66 kN; A_v 15.78 cm^2; f_y 35.50 kN/cm^2; γ_{M0} 1.000; $V_{pl,Rd}$ 323.43 kN; T_{Ed} 0.11 kNm; A_c 48.89 cm^2; t 10.0 mm; $\tau_{t,Ed}$ 0.11 kN/cm^2; $V_{pl,T,Rd}$ 321.69 kN; v 0.049; $\sigma_{x,Rd}$ 35.50 kN/cm^2; η 0.74						
LG49	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC6)	206	0.990	1.31	> 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1						
	Design Internal Forces						
	N_{Ed} -20.55 kN; $V_{y,Ed}$ -11.33 kN; $V_{z,Ed}$ 13.28 kN; T_{Ed} -0.45 kNm; $M_{y,Ed}$ 13.00 kNm; $M_{z,Ed}$ 11.41 kNm						
	Cross-section Classification - Class 1						
	σ -30.31 kN/cm^2; ε 0.814; λ_1 33.099; λ_2 46.338; λ_3 59.577; d 88.9 mm; t 10.0 mm; d/t 8.890; Class 1						
	Design Ratio						

E	21000.00 kN/cm^2	μ_z	0.992	C_{zy}	1.000
I_y	195.98 cm^4	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.980 m	w_z	1.000	k_{yy}	0.791
$N_{cr,y}$	1036.10 kN	a_{LT}	0.000	k_{yz}	0.797
A	24.79 cm^2	Diagr M_y	1) Linear	k_{zy}	0.791
f_y	35.50 kN/cm^2	ψ_y	-0.027	k_{zz}	0.797
λ_y	0.922	$C_{my,0}$	0.782	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.04
α_y	0.490	ψ_z	0.000	η_{Nz}	0.04
Φ_y	1.101	$C_{mz,0}$	0.788	$M_{y,Ed}$	13.00 kNm
χ_y	0.587	C_{my}	0.782	W_y	43.05 cm^3
I_z	195.98 cm^4	C_{mz}	0.788	$M_{y,Rk}$	15.28 kNm
$L_{cr,z}$	1.980 m	λ_max	0.922	η_{My}	0.85
$N_{cr,z}$	1036.10 kN	N_{Ed}	20.55 kN	$M_{z,Ed}$	11.41 kNm
λ_z	0.922	A_i	24.79 cm^2	W_z	43.05 cm^3
BC_z	c	N_{Rk}	879.94 kN	$M_{z,Rk}$	15.28 kNm
α_z	0.490	γ_{M0}	1.000	η_{Mz}	0.75

RF-STEEL EC3
CA1
Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Φ_z	1.101	n_{pl}	0.023	η_1	1.31
χ_z	0.587	C_{yy}	1.000	η_2	1.31
μ_y	0.992	C_{yz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG50	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC7)	643	0.780	0.88	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-3.30 kN	$V_{z,Ed}$	-18.30 kN	$M_{y,Ed}$	-1.38 kNm
$V_{y,Ed}$	5.49 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-4.37 kNm

Cross-section Classification - Class 1

σ	-10.04 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	μ_z	0.999	C_{zy}	1.000
I_y	195.98 cm^4	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.560 m	w_z	1.000	k_{yy}	0.768
$N_{cr,y}$	1669.10 kN	a_{LT}	0.000	k_{yz}	0.795
A	24.79 cm^2	Diagr M_y	1) Linear	k_{zy}	0.768
f_y	35.50 kN/cm^2	ψ_y	-0.107	k_{zz}	0.795
λ_y	0.726	$C_{my,0}$	0.767	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.01
α_y	0.490	ψ_z	0.019	η_{Nz}	0.01
Φ_y	0.892	$C_{mz,0}$	0.794	$M_{y,Ed}$	12.87 kNm
χ_y	0.708	C_{my}	0.767	W_y	43.05 cm^3
I_z	195.98 cm^4	C_{mz}	0.794	$M_{y,Rk}$	15.28 kNm
$L_{cr,z}$	1.560 m	λ_max	0.726	η_{My}	0.84
$N_{cr,z}$	1669.10 kN	N_{Ed}	3.30 kN	$M_{z,Ed}$	4.37 kNm
λ_z	0.726	A_i	24.79 cm^2	W_z	43.05 cm^3
BC_z	c	N_{Rk}	879.94 kN	$M_{z,Rk}$	15.28 kNm
α_z	0.490	γ_{M0}	1.000	η_{Mz}	0.29
Φ_z	0.892	n_{pl}	0.004	η_1	0.88
χ_z	0.708	C_{yy}	1.000	η_2	0.88
μ_y	0.999	C_{yz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG51	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC8)	643	0.000	1.27	> 1	169)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	1.68 kN	$V_{z,Ed}$	-27.45 kN	$M_{y,Ed}$	19.44 kNm
$V_{y,Ed}$	1.72 kN	T_{Ed}	0.24 kNm	$M_{z,Ed}$	-0.06 kNm

Cross-section Classification - Class 1

σ	-44.02 kN/cm^2	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

$M_{y,Ed}$	19.44 kNm	V_{Ed}	27.51 kN	t	10.0 mm
$M_{z,Ed}$	0.06 kNm	A_v	15.78 cm^2	$\tau_{t,Ed}$	0.25 kN/cm^2
M_{Ed}	19.44 kNm	f_y	35.50 kN/cm^2	$V_{pl,T,Rd}$	319.55 kN
S_{el}	43.05 cm^3	γ_{M0}	1.000	v	0.086
$\sigma_{x,Ed}$	45.15 kN/cm^2	$V_{pl,Rd}$	323.43 kN	$\sigma_{x,Rd}$	35.50 kN/cm^2
$V_{y,Ed}$	1.72 kN	T_{Ed}	0.24 kNm	η	1.27
$V_{z,Ed}$	27.45 kN	A_c	48.89 cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG52	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC5)	643	0.000	0.74	≤ 1	189)	ULS

Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - P

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Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Internal Forces

N_{Ed}	-4.77 kN	$V_{z,Ed}$	15.75 kN	$M_{y,Ed}$	-11.30 kNm
$V_{y,Ed}$	-1.61 kN	T_{Ed}	0.11 kNm	$M_{z,Ed}$	-0.03 kNm

Cross-section Classification - Class 1

σ	-25.82 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

N_{Ed}	4.77 kN	$V_{z,Ed}$	15.75 kN	t	10.0 mm
A	24.79 cm²	A_v	15.78 cm²	$\tau_{t,Ed}$	0.11 kN/cm²
$\sigma_{x,N,Ed}$	0.19 kN/cm²	f_y	35.50 kN/cm²	$V_{pl,T,Rd}$	321.69 kN
$M_{y,Ed}$	11.30 kNm	γ_{M0}	1.000	v	0.049
S_{el}	43.05 cm³	$V_{pl,Rd}$	323.43 kN	$\sigma_{x,Rd}$	35.50 kN/cm²
$\sigma_{x,M,Ed}$	26.25 kN/cm²	T_{Ed}	0.11 kNm	η	0.74
$\sigma_{x,Ed}$	26.44 kN/cm²	A_c	48.89 cm²		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG53	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC6)	206	0.990	1.30	> 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-20.52 kN	$V_{z,Ed}$	13.24 kN	$M_{y,Ed}$	12.96 kNm
$V_{y,Ed}$	-11.32 kN	T_{Ed}	-0.44 kNm	$M_{z,Ed}$	11.40 kNm

Cross-section Classification - Class 1

σ	-30.22 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm²	μ_z	0.992	C_{zy}	1.000
I_y	195.98 cm⁴	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.980 m	w_z	1.000	k_{yy}	0.791
$N_{cr,y}$	1036.10 kN	a_{LT}	0.000	k_{yz}	0.797
A	24.79 cm²	Diagr M_y	1) Linear	k_{zy}	0.791
f_y	35.50 kN/cm²	ψ_y	-0.027	k_{zz}	0.797
λ_y	0.922	$C_{my,0}$	0.782	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.04
α_y	0.490	ψ_z	0.000	η_{Nz}	0.04
Φ_y	1.101	$C_{mz,0}$	0.788	$M_{y,Ed}$	12.96 kNm
χ_y	0.587	C_{my}	0.782	W_y	43.05 cm³
I_z	195.98 cm⁴	C_{mz}	0.788	$M_{y,Rk}$	15.28 kNm
$L_{cr,z}$	1.980 m	λ_max	0.922	η_{My}	0.85
$N_{cr,z}$	1036.10 kN	N_{Ed}	20.52 kN	$M_{z,Ed}$	11.40 kNm
λ_z	0.922	A_i	24.79 cm²	W_z	43.05 cm³
BC_z	c	N_{Rk}	879.94 kN	$M_{z,Rk}$	15.28 kNm
α_z	0.490	γ_{M0}	1.000	η_{Mz}	0.75
Φ_z	1.101	n_{pl}	0.023	η_1	1.30
χ_z	0.587	C_{yy}	1.000	η_2	1.30
μ_y	0.992	C_{yz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG54	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC7)	643	0.780	0.88	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-4.21 kN	$V_{z,Ed}$	-18.22 kN	$M_{y,Ed}$	-1.38 kNm
$V_{y,Ed}$	5.50 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-4.38 kNm

Cross-section Classification - Class 1

σ	-10.11 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

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Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Ratio

E	21000.00	kN/cm^2	μ_z	0.999		C_{zy}	1.000	
I_y	195.98	cm^4	w_y	1.000		C_{zz}	1.000	
$L_{cr,y}$	1.560	m	w_z	1.000		k_{yy}	0.768	
$N_{cr,y}$	1669.10	kN	a_{LT}	0.000		k_{yz}	0.795	
A	24.79	cm^2	Diagr M_y	1) Linear		k_{zy}	0.768	
f_y	35.50	kN/cm^2	ψ_y	-0.108		k_{zz}	0.795	
λ_y	0.726		$C_{my,0}$	0.767		γ_{M1}	1.000	
BC_y	c		Diagr M_z	1) Linear		η_{Ny}	0.01	
α_y	0.490		ψ_z	0.019		η_{Nz}	0.01	
Φ_y	0.892		$C_{mz,0}$	0.794		$M_{y,Ed}$	12.81	kNm
χ_y	0.708		C_{my}	0.767		W_y	43.05	cm^3
I_z	195.98	cm^4	C_{mz}	0.794		$M_{y,Rk}$	15.28	kNm
$L_{cr,z}$	1.560	m	λ_max	0.726		η_{My}	0.84	
$N_{cr,z}$	1669.10	kN	N_{Ed}	4.21	kN	$M_{z,Ed}$	4.38	kNm
λ_z	0.726		A_i	24.79	cm^2	W_z	43.05	cm^3
BC_z	c		N_{Rk}	879.94	kN	$M_{z,Rk}$	15.28	kNm
α_z	0.490		γ_{M0}	1.000		η_{Mz}	0.29	
Φ_z	0.892		n_{pl}	0.005		η_1	0.88	
χ_z	0.708		C_{yy}	1.000		η_2	0.88	
μ_y	0.999		C_{yz}	1.000				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG55	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC8)	643	0.000	1.27	> 1	169)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.89	kN	$V_{z,Ed}$	-27.34	kN	$M_{y,Ed}$	19.36	kNm
$V_{y,Ed}$	1.74	kN	T_{Ed}	0.24	kNm	$M_{z,Ed}$	-0.06	kNm

Cross-section Classification - Class 1

σ	-43.88	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

$M_{y,Ed}$	19.36	kNm	V_{Ed}	27.40	kN	t	10.0	mm
$M_{z,Ed}$	0.06	kNm	A_v	15.78	cm^2	$\tau_{t,Ed}$	0.25	kN/cm^2
M_{Ed}	19.36	kNm	f_y	35.50	kN/cm^2	$V_{pl,T,Rd}$	319.54	kN
S_{el}	43.05	cm^3	γ_{M0}	1.000		v	0.086	
$\sigma_{x,Ed}$	44.97	kN/cm^2	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$V_{y,Ed}$	1.74	kN	T_{Ed}	0.24	kNm	η	1.27	
$V_{z,Ed}$	27.34	kN	A_c	48.89	cm^2			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG87	UB (LC1 + 1.5*LC5)	643	0.000	0.75	≤ 1	189)	ULS

Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - P

Design Internal Forces

N_{Ed}	-3.73	kN	$V_{z,Ed}$	15.98	kN	$M_{y,Ed}$	-11.43	kNm
$V_{y,Ed}$	-1.55	kN	T_{Ed}	0.11	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-26.07	kN/cm^2	λ_2	46.338		t	10.0	mm
ε	0.814		λ_3	59.577		d/t	8.890	
λ_1	33.099		d	88.9	mm	Class	1	

Design Ratio

N_{Ed}	3.73	kN	$V_{z,Ed}$	15.98	kN	t	10.0	mm
A	24.79	cm^2	A_v	15.78	cm^2	$\tau_{t,Ed}$	0.11	kN/cm^2
$\sigma_{x,N,Ed}$	0.15	kN/cm^2	f_y	35.50	kN/cm^2	$V_{pl,T,Rd}$	321.71	kN
$M_{y,Ed}$	11.43	kNm	γ_{M0}	1.000		v	0.050	
S_{el}	43.05	cm^3	$V_{pl,Rd}$	323.43	kN	$\sigma_{x,Rd}$	35.50	kN/cm^2
$\sigma_{x,M,Ed}$	26.55	kN/cm^2	T_{Ed}	0.11	kNm	η	0.75	

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	$\sigma_{x,Ed}$ 26.70 kN/cm² A_c 48.89 cm²						
LG88	UB (LC1 + 1.5*LC6)	206	0.990	1.24	> 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-11.12 kN	$V_{z,Ed}$	12.67 kN	$M_{y,Ed}$	12.31 kNm		
$V_{y,Ed}$	-11.22 kN	T_{Ed}	-0.41 kNm	$M_{z,Ed}$	11.21 kNm		

Cross-section Classification - Class 1

σ	-28.37 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm²	μ_z	0.996	C_{zy}	1.000
I_y	195.98 cm⁴	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.980 m	w_z	1.000	k_{yy}	0.788
$N_{cr,y}$	1036.10 kN	a_{LT}	0.000	k_{yz}	0.794
A	24.79 cm²	Diagr M_y	1) Linear	k_{zy}	0.788
f_y	35.50 kN/cm²	ψ_y	-0.028	k_{zz}	0.794
λ_y	0.922	$C_{my,0}$	0.783	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.02
α_y	0.490	ψ_z	0.000	η_{Nz}	0.02
Φ_y	1.101	$C_{mz,0}$	0.789	$M_{y,Ed}$	12.31 kNm
χ_y	0.587	C_{my}	0.783	W_y	43.05 cm³
I_z	195.98 cm⁴	C_{mz}	0.789	$M_{y,Rk}$	15.28 kNm
$L_{cr,z}$	1.980 m	λ_max	0.922	η_{My}	0.81
$N_{cr,z}$	1036.10 kN	N_{Ed}	11.12 kN	$M_{z,Ed}$	11.21 kNm
λ_z	0.922	A_i	24.79 cm²	W_z	43.05 cm³
BC_z	c	N_{Rk}	879.94 kN	$M_{z,Rk}$	15.28 kNm
α_z	0.490	γ_{M0}	1.000	η_{Mz}	0.73
Φ_z	1.101	n_{pl}	0.013	η_1	1.24
χ_z	0.587	C_{yy}	1.000	η_2	1.24
μ_y	0.996	C_{yz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG89	UB (LC1 + 1.5*LC7)	643	0.000	0.85	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-3.77 kN	$V_{z,Ed}$	-17.33 kN	$M_{y,Ed}$	12.22 kNm
$V_{y,Ed}$	5.45 kN	T_{Ed}	0.44 kNm	$M_{z,Ed}$	-0.08 kNm

Cross-section Classification - Class 1

σ	-27.88 kN/cm²	λ_2	46.338	t	10.0 mm
ε	0.814	λ_3	59.577	d/t	8.890
λ_1	33.099	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm²	μ_z	0.999	C_{zy}	1.000
I_y	195.98 cm⁴	w_y	1.000	C_{zz}	1.000
$L_{cr,y}$	1.560 m	w_z	1.000	k_{yy}	0.768
$N_{cr,y}$	1669.10 kN	a_{LT}	0.000	k_{yz}	0.795
A	24.79 cm²	Diagr M_y	1) Linear	k_{zy}	0.768
f_y	35.50 kN/cm²	ψ_y	-0.107	k_{zz}	0.795
λ_y	0.726	$C_{my,0}$	0.767	γ_{M1}	1.000
BC_y	c	Diagr M_z	1) Linear	η_{Ny}	0.01
α_y	0.490	ψ_z	0.018	η_{Nz}	0.01
Φ_y	0.892	$C_{mz,0}$	0.794	$M_{y,Ed}$	12.22 kNm
χ_y	0.708	C_{my}	0.767	W_y	43.05 cm³
I_z	195.98 cm⁴	C_{mz}	0.794	$M_{y,Rk}$	15.28 kNm
$L_{cr,z}$	1.560 m	λ_max	0.726	η_{My}	0.80

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Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description		Member No	Location x [m]	Design		Acc. to Formula	
	$N_{cr,z}$	1669.10 kN	N_{Ed}	3.77 kN	$M_{z,Ed}$	4.33 kNm		
	λ_z	0.726	A_i	24.79 cm^2	W_z	43.05 cm^3		
	BC_z	c	N_{Rk}	879.94 kN	$M_{z,Rk}$	15.28 kNm		
	α_z	0.490	γ_{M0}	1.000	η_{Mz}	0.28		
	Φ_z	0.892	n_{pl}	0.004	η_1	0.85		
	χ_z	0.708	C_{yy}	1.000	η_2	0.85		
	μ_y	0.999	C_{yz}	1.000				
LG90	UB (LC1 + 1.5*LC8)		643	0.000	1.24	> 1	169)	ULS
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3							
	Design Internal Forces							
	N_{Ed}	1.60 kN	$V_{z,Ed}$	-26.67 kN	$M_{y,Ed}$	18.90 kNm		
	$V_{y,Ed}$	1.74 kN	T_{Ed}	0.23 kNm	$M_{z,Ed}$	-0.06 kNm		
	Cross-section Classification - Class 1							
	σ	-42.80 kN/cm^2	λ_2	46.338	t	10.0 mm		
	ε	0.814	λ_3	59.577	d/t	8.890		
	λ_1	33.099	d	88.9 mm	Class	1		
	Design Ratio							
	$M_{y,Ed}$	18.90 kNm	V_{Ed}	26.72 kN	t	10.0 mm		
	$M_{z,Ed}$	0.06 kNm	A_v	15.78 cm^2	$\tau_{t,Ed}$	0.24 kN/cm^2		
	M_{Ed}	18.90 kNm	f_y	35.50 kN/cm^2	$V_{pl,T,Rd}$	319.68 kN		
	S_{el}	43.05 cm^3	γ_{M0}	1.000	v	0.084		
	$\sigma_{x,Ed}$	43.90 kN/cm^2	$V_{pl,Rd}$	323.43 kN	$\sigma_{x,Rd}$	35.50 kN/cm^2		
	$V_{y,Ed}$	1.74 kN	T_{Ed}	0.23 kNm	η	1.24		
	$V_{z,Ed}$	26.67 kN	A_c	48.89 cm^2				
LG111	US (LC1 + LC10)		616	0.159	0.09	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1							
	Design Internal Forces							
	N_{Ed}	-9.97 kN	$V_{z,Ed}$	-2.60 kN	$M_{y,Ed}$	0.10 kNm		
	$V_{y,Ed}$	-0.84 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.04 kNm		
	Cross-section Classification - Class 1							
	σ	-0.76 kN/cm^2	λ_2	70.000	t	8.0 mm		
	ε	1.000	λ_3	90.000	d/t	11.112		
	λ_1	50.000	d	88.9 mm	Class	1		
	Design Ratio							
	E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.832		
	I_y	167.97 cm^4	ψ_y	0.200	k_{yz}	0.835		
	$L_{cr,y}$	0.318 m	$C_{my,0}$	0.832	k_{zy}	0.832		
	$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.835		
	A	20.33 cm^2	ψ_z	0.213	γ_{M1}	1.000		
	f_y	23.50 kN/cm^2	$C_{mz,0}$	0.835	η_{Ny}	0.02		
	λ_y	0.118	C_{my}	0.832	η_{Nz}	0.02		
	χ_y	1.000	C_{mz}	0.835	$M_{y,Ed}$	0.52 kNm		
	I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3		
	$L_{cr,z}$	0.318 m	N_{Ed}	9.97 kN	$M_{y,Rk}$	8.70 kNm		
	$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.06		
	λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.17 kNm		
	χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3		
	μ_y	1.000	n_{pl}	0.021	$M_{z,Rk}$	8.70 kNm		
	μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.02		
	w_y	1.000	C_{yz}	1.000	η_1	0.09		
	w_z	1.000	C_{zy}	1.000	η_2	0.09		
	a_{LT}	0.000	C_{zz}	1.000				
LG112	US (LC1 + LC11)		616	0.159	0.09	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1							

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Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	Design Internal Forces						
	N_{Ed} -10.12 kN; $V_{z,Ed}$ -2.87 kN; $M_{y,Ed}$ 0.08 kNm						
	$V_{y,Ed}$ -1.06 kN; T_{Ed} 0.00 kNm; $M_{z,Ed}$ -0.02 kNm						
	Cross-section Classification - Class 1						
	σ -0.71 kN/cm^2; λ_2 70.000; t 8.0 mm						
	ε 1.000; λ_3 90.000; d/t 11.112						
	λ_1 50.000; d 88.9 mm; Class 1						
	Design Ratio						
	E 21000.00 kN/cm^2; Diagr M_y 1) Linear; k_{yy} 0.821						
	I_y 167.97 cm^4; ψ_y 0.147; k_{yz} 0.817						
	$L_{cr,y}$ 0.318 m; $C_{my,0}$ 0.821; k_{zy} 0.821						
	$N_{cr,y}$ 34426.00 kN; Diagr M_z 1) Linear; k_{zz} 0.817						
	A 20.33 cm^2; ψ_z 0.129; γ_{M1} 1.000						
	f_y 23.50 kN/cm^2; $C_{mz,0}$ 0.817; η_{Ny} 0.02						
	λ_y 0.118; C_{my} 0.821; η_{Nz} 0.02						
	χ_y 1.000; C_{mz} 0.817; $M_{y,Ed}$ 0.54 kNm						
	I_z 167.97 cm^4; λ_max 0.118; W_y 37.04 cm^3						
	$L_{cr,z}$ 0.318 m; N_{Ed} 10.12 kN; $M_{y,Rk}$ 8.70 kNm						
	$N_{cr,z}$ 34426.00 kN; A_i 20.33 cm^2; η_{My} 0.06						
	λ_z 0.118; N_{Rk} 477.81 kN; $M_{z,Ed}$ 0.19 kNm						
	χ_z 1.000; γ_{M0} 1.000; W_z 37.04 cm^3						
	μ_y 1.000; n_{pl} 0.021; $M_{z,Rk}$ 8.70 kNm						
	μ_z 1.000; C_{yy} 1.000; η_{Mz} 0.02						
	w_y 1.000; C_{yz} 1.000; η_1 0.09						
	w_z 1.000; C_{zy} 1.000; η_2 0.09						
	a_{LT} 0.000; C_{zz} 1.000						
LG113	US (LC1 + LC14)	616	0.159	0.09	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1						
	Design Internal Forces						
	N_{Ed} -10.09 kN; $V_{z,Ed}$ -2.88 kN; $M_{y,Ed}$ 0.08 kNm						
	$V_{y,Ed}$ -1.04 kN; T_{Ed} 0.00 kNm; $M_{z,Ed}$ -0.03 kNm						
	Cross-section Classification - Class 1						
	σ -0.70 kN/cm^2; λ_2 70.000; t 8.0 mm						
	ε 1.000; λ_3 90.000; d/t 11.112						
	λ_1 50.000; d 88.9 mm; Class 1						
	Design Ratio						
	E 21000.00 kN/cm^2; Diagr M_y 1) Linear; k_{yy} 0.821						
	I_y 167.97 cm^4; ψ_y 0.145; k_{yz} 0.818						
	$L_{cr,y}$ 0.318 m; $C_{my,0}$ 0.820; k_{zy} 0.821						
	$N_{cr,y}$ 34426.00 kN; Diagr M_z 1) Linear; k_{zz} 0.818						
	A 20.33 cm^2; ψ_z 0.134; γ_{M1} 1.000						
	f_y 23.50 kN/cm^2; $C_{mz,0}$ 0.818; η_{Ny} 0.02						
	λ_y 0.118; C_{my} 0.820; η_{Nz} 0.02						
	χ_y 1.000; C_{mz} 0.818; $M_{y,Ed}$ 0.54 kNm						
	I_z 167.97 cm^4; λ_max 0.118; W_y 37.04 cm^3						
	$L_{cr,z}$ 0.318 m; N_{Ed} 10.09 kN; $M_{y,Rk}$ 8.70 kNm						
	$N_{cr,z}$ 34426.00 kN; A_i 20.33 cm^2; η_{My} 0.06						
	λ_z 0.118; N_{Rk} 477.81 kN; $M_{z,Ed}$ 0.19 kNm						
	χ_z 1.000; γ_{M0} 1.000; W_z 37.04 cm^3						
	μ_y 1.000; n_{pl} 0.021; $M_{z,Rk}$ 8.70 kNm						
	μ_z 1.000; C_{yy} 1.000; η_{Mz} 0.02						
	w_y 1.000; C_{yz} 1.000; η_1 0.09						
	w_z 1.000; C_{zy} 1.000; η_2 0.09						
	a_{LT} 0.000; C_{zz} 1.000						

RF-STEEL EC3

CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG114	US (LC1 + LC17)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.10	kN	$V_{z,Ed}$	-2.89	kN	$M_{y,Ed}$	0.08	kNm
$V_{y,Ed}$	-1.04	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-0.70	kN/cm²	λ_2	70.000		t	8.0	mm
ε	1.000		λ_3	90.000		d/t	11.112	
λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm²	Diagr M_y	1) Linear		k_{yy}	0.820	
I_y	167.97	cm⁴	ψ_y	0.144		k_{yz}	0.818	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.820		k_{zy}	0.820	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.818	
A	20.33	cm²	ψ_z	0.134		γ_{M1}	1.000	
f_y	23.50	kN/cm²	$C_{mz,0}$	0.818		η_{Ny}	0.02	
λ_y	0.118		C_{my}	0.820		η_{Nz}	0.02	
χ_y	1.000		C_{mz}	0.818		$M_{y,Ed}$	0.54	kNm
I_z	167.97	cm⁴	λ_max	0.118		W_y	37.04	cm³
$L_{cr,z}$	0.318	m	N_{Ed}	10.10	kN	$M_{y,Rk}$	8.70	kNm
$N_{cr,z}$	34426.00	kN	A_i	20.33	cm²	η_{My}	0.06	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.19	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm³
μ_y	1.000		n_{pl}	0.021		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.02	
w_y	1.000		C_{yz}	1.000		η_1	0.09	
w_z	1.000		C_{zy}	1.000		η_2	0.09	
a_{LT}	0.000		C_{zz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG115	US (LC1 + LC20)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.08	kN	$V_{z,Ed}$	-2.88	kN	$M_{y,Ed}$	0.08	kNm
$V_{y,Ed}$	-1.04	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.03	kNm

Cross-section Classification - Class 1

σ	-0.70	kN/cm²	λ_2	70.000		t	8.0	mm
ε	1.000		λ_3	90.000		d/t	11.112	
λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm²	Diagr M_y	1) Linear		k_{yy}	0.821	
I_y	167.97	cm⁴	ψ_y	0.145		k_{yz}	0.818	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.820		k_{zy}	0.821	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.818	
A	20.33	cm²	ψ_z	0.134		γ_{M1}	1.000	
f_y	23.50	kN/cm²	$C_{mz,0}$	0.818		η_{Ny}	0.02	
λ_y	0.118		C_{my}	0.820		η_{Nz}	0.02	
χ_y	1.000		C_{mz}	0.818		$M_{y,Ed}$	0.54	kNm
I_z	167.97	cm⁴	λ_max	0.118		W_y	37.04	cm³
$L_{cr,z}$	0.318	m	N_{Ed}	10.08	kN	$M_{y,Rk}$	8.70	kNm
$N_{cr,z}$	34426.00	kN	A_i	20.33	cm²	η_{My}	0.06	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.19	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm³
μ_y	1.000		n_{pl}	0.021		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.02	
w_y	1.000		C_{yz}	1.000		η_1	0.09	

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Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	

w_z	1.000	C_{zy}	1.000	η_2	0.09
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG116	US (LC1 + LC21)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.08 kN	$V_{z,Ed}$	-2.88 kN	$M_{y,Ed}$	0.08 kNm
$V_{y,Ed}$	-1.04 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.03 kNm

Cross-section Classification - Class 1

σ	-0.70 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.820
I_y	167.97 cm^4	ψ_y	0.144	k_{yz}	0.819
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.820	k_{zy}	0.820
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.819
A	20.33 cm^2	ψ_z	0.135	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.818	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.820	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.818	$M_{y,Ed}$	0.54 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	10.08 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.06
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.19 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.021	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.02
w_y	1.000	C_{yz}	1.000	η_1	0.09
w_z	1.000	C_{zy}	1.000	η_2	0.09
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG117	US (LC1 + 0.6*LC2 + LC10)	616	0.159	0.11	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-11.77 kN	$V_{z,Ed}$	-3.23 kN	$M_{y,Ed}$	0.14 kNm
$V_{y,Ed}$	-0.96 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.05 kNm

Cross-section Classification - Class 1

σ	-0.96 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.836
I_y	167.97 cm^4	ψ_y	0.219	k_{yz}	0.841
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.836	k_{zy}	0.836
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.841
A	20.33 cm^2	ψ_z	0.240	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.840	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.836	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.840	$M_{y,Ed}$	0.66 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	11.77 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.08
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.20 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.025	$M_{z,Rk}$	8.70 kNm

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CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.02
w_y	1.000	C_{yz}	1.000	η_1	0.11
w_z	1.000	C_{zy}	1.000	η_2	0.11
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG118	US (LC1 + 0.6*LC2 + LC11)	616	0.159	0.11	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-11.92 kN	$V_{z,Ed}$	-3.50 kN	$M_{y,Ed}$	0.12 kNm
$V_{y,Ed}$	-1.17 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.04 kNm

Cross-section Classification - Class 1

σ	-0.90 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.827
I_y	167.97 cm^4	ψ_y	0.177	k_{yz}	0.825
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.827	k_{zy}	0.827
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.825
A	20.33 cm^2	ψ_z	0.165	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.825	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.827	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.825	$M_{y,Ed}$	0.68 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	11.92 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.08
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.22 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.025	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.03
w_y	1.000	C_{yz}	1.000	η_1	0.11
w_z	1.000	C_{zy}	1.000	η_2	0.11
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG119	US (LC1 + 0.6*LC2 + LC14)	616	0.159	0.11	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-11.89 kN	$V_{z,Ed}$	-3.51 kN	$M_{y,Ed}$	0.12 kNm
$V_{y,Ed}$	-1.15 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.04 kNm

Cross-section Classification - Class 1

σ	-0.90 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.827
I_y	167.97 cm^4	ψ_y	0.175	k_{yz}	0.826
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.827	k_{zy}	0.827
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.826
A	20.33 cm^2	ψ_z	0.169	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.826	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.827	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.826	$M_{y,Ed}$	0.68 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	11.89 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.08
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.22 kNm

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description		Member No	Location x [m]	Design			Acc. to Formula	
	χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3			
	μ_y	1.000	n_{pl}	0.025	$M_{z,Rk}$	8.70 kNm			
	μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.03			
	w_y	1.000	C_{yz}	1.000	η_1	0.11			
	w_z	1.000	C_{zy}	1.000	η_2	0.11			
	a_{LT}	0.000	C_{zz}	1.000					
LG120	US (LC1 + 0.6*LC2 + LC17)		616	0.159		0.11	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
	Design Internal Forces								
	N_{Ed}	-11.90 kN	$V_{z,Ed}$	-3.52 kN	$M_{y,Ed}$	0.12 kNm			
	$V_{y,Ed}$	-1.15 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.04 kNm			
	Cross-section Classification - Class 1								
	σ	-0.90 kN/cm^2	λ_2	70.000	t	8.0 mm			
	ε	1.000	λ_3	90.000	d/t	11.112			
	λ_1	50.000	d	88.9 mm	Class	1			
	Design Ratio								
	E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.827			
	I_y	167.97 cm^4	ψ_y	0.174	k_{yz}	0.826			
	$L_{cr,y}$	0.318 m	$C_{my,0}$	0.827	k_{zy}	0.827			
	$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.826			
	A	20.33 cm^2	ψ_z	0.170	γ_{M1}	1.000			
	f_y	23.50 kN/cm^2	$C_{mz,0}$	0.826	η_{Ny}	0.02			
	$\bar{\lambda}_y$	0.118	C_{my}	0.827	η_{Nz}	0.02			
	χ_y	1.000	C_{mz}	0.826	$M_{y,Ed}$	0.68 kNm			
	I_z	167.97 cm^4	$\bar{\lambda}_{max}$	0.118	W_y	37.04 cm^3			
	$L_{cr,z}$	0.318 m	N_{Ed}	11.90 kN	$M_{y,Rk}$	8.70 kNm			
	$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.08			
	$\bar{\lambda}_z$	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.22 kNm			
	χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3			
	μ_y	1.000	n_{pl}	0.025	$M_{z,Rk}$	8.70 kNm			
	μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.03			
	w_y	1.000	C_{yz}	1.000	η_1	0.11			
	w_z	1.000	C_{zy}	1.000	η_2	0.11			
	a_{LT}	0.000	C_{zz}	1.000					
LG121	US (LC1 + 0.6*LC2 + LC20)		616	0.159		0.11	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
	Design Internal Forces								
	N_{Ed}	-11.88 kN	$V_{z,Ed}$	-3.51 kN	$M_{y,Ed}$	0.12 kNm			
	$V_{y,Ed}$	-1.15 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.04 kNm			
	Cross-section Classification - Class 1								
	σ	-0.90 kN/cm^2	λ_2	70.000	t	8.0 mm			
	ε	1.000	λ_3	90.000	d/t	11.112			
	λ_1	50.000	d	88.9 mm	Class	1			
	Design Ratio								
	E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.827			
	I_y	167.97 cm^4	ψ_y	0.175	k_{yz}	0.826			
	$L_{cr,y}$	0.318 m	$C_{my,0}$	0.827	k_{zy}	0.827			
	$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.826			
	A	20.33 cm^2	ψ_z	0.170	γ_{M1}	1.000			
	f_y	23.50 kN/cm^2	$C_{mz,0}$	0.826	η_{Ny}	0.02			
	$\bar{\lambda}_y$	0.118	C_{my}	0.827	η_{Nz}	0.02			
	χ_y	1.000	C_{mz}	0.826	$M_{y,Ed}$	0.68 kNm			
	I_z	167.97 cm^4	$\bar{\lambda}_{max}$	0.118	W_y	37.04 cm^3			
	$L_{cr,z}$	0.318 m	N_{Ed}	11.88 kN	$M_{y,Rk}$	8.70 kNm			

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$N_{cr,z}$	34426.00	kN	A_i	20.33	cm^2	η_{My}	0.08	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.22	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm^3
μ_y	1.000		n_{pl}	0.025		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.03	
w_y	1.000		C_{yz}	1.000		η_1	0.11	
w_z	1.000		C_{zy}	1.000		η_2	0.11	
a_{LT}	0.000		C_{zz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG122	US (LC1 + 0.6*LC2 + LC21)	616	0.159	0.11	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-11.88	kN	$V_{z,Ed}$	-3.51	kN	$M_{y,Ed}$	0.12	kNm
$V_{y,Ed}$	-1.15	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.04	kNm

Cross-section Classification - Class 1

σ	-0.90	kN/cm^2	λ_2	70.000		t	8.0	mm
ε	1.000		λ_3	90.000		d/t	11.112	
λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	Diagr M_y	1) Linear		k_{yy}	0.827	
I_y	167.97	cm^4	ψ_y	0.174		k_{yz}	0.826	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.827		k_{zy}	0.827	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.826	
A	20.33	cm^2	ψ_z	0.170		γ_{M1}	1.000	
f_y	23.50	kN/cm^2	$C_{mz,0}$	0.826		η_{Ny}	0.02	
λ_y	0.118		C_{my}	0.827		η_{Nz}	0.02	
χ_y	1.000		C_{mz}	0.826		$M_{y,Ed}$	0.68	kNm
I_z	167.97	cm^4	λ_max	0.118		W_y	37.04	cm^3
$L_{cr,z}$	0.318	m	N_{Ed}	11.88	kN	$M_{y,Rk}$	8.70	kNm
$N_{cr,z}$	34426.00	kN	A_i	20.33	cm^2	η_{My}	0.08	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.22	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm^3
μ_y	1.000		n_{pl}	0.025		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.03	
w_y	1.000		C_{yz}	1.000		η_1	0.11	
w_z	1.000		C_{zy}	1.000		η_2	0.11	
a_{LT}	0.000		C_{zz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG123	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC10)	616	0.159	0.11	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-12.46	kN	$V_{z,Ed}$	-3.35	kN	$M_{y,Ed}$	0.15	kNm
$V_{y,Ed}$	-1.02	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.05	kNm

Cross-section Classification - Class 1

σ	-1.00	kN/cm^2	λ_2	70.000		t	8.0	mm
ε	1.000		λ_3	90.000		d/t	11.112	
λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	Diagr M_y	1) Linear		k_{yy}	0.836	
I_y	167.97	cm^4	ψ_y	0.216		k_{yz}	0.838	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.835		k_{zy}	0.836	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.838	
A	20.33	cm^2	ψ_z	0.226		γ_{M1}	1.000	
f_y	23.50	kN/cm^2	$C_{mz,0}$	0.837		η_{Ny}	0.03	
λ_y	0.118		C_{my}	0.835		η_{Nz}	0.03	
χ_y	1.000		C_{mz}	0.837		$M_{y,Ed}$	0.68	kNm

RF-STEEL EC3

CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description			Member No	Location x [m]		Design	Acc. to Formula	
	I_z	167.97	cm^4	λ_{max}	0.118		W_y	37.04	cm^3
	$L_{cr,z}$	0.318	m	N_{Ed}	12.46	kN	$M_{y,Rk}$	8.70	kNm
	$N_{cr,z}$	34426.00	kN	A_i	20.33	cm^2	η_{My}	0.08	
	λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.21	kNm
	χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm^3
	μ_y	1.000		n_{pl}	0.026		$M_{z,Rk}$	8.70	kNm
	μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.02	
	w_y	1.000		C_{yz}	1.000		η_1	0.11	
	w_z	1.000		C_{zy}	1.000		η_2	0.11	
	a_{LT}	0.000		C_{zz}	1.000				
LG124	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC11)			616	0.159		0.11	≤ 1	354) ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
	Design Internal Forces								
	N_{Ed}	-12.61	kN	$V_{z,Ed}$	-3.62	kN	$M_{y,Ed}$	0.12	kNm
	$V_{y,Ed}$	-1.23	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.04	kNm
	Cross-section Classification - Class 1								
	σ	-0.94	kN/cm^2	λ_2	70.000		t	8.0	mm
	ε	1.000		λ_3	90.000		d/t	11.112	
	λ_1	50.000		d	88.9	mm	Class	1	
	Design Ratio								
	E	21000.00	kN/cm^2	Diagr M_y	1) Linear		k_{yy}	0.827	
	I_y	167.97	cm^4	ψ_y	0.175		k_{yz}	0.823	
	$L_{cr,y}$	0.318	m	$C_{my,0}$	0.827		k_{zy}	0.827	
	$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.823	
	A	20.33	cm^2	ψ_z	0.155		γ_{M1}	1.000	
	f_y	23.50	kN/cm^2	$C_{mz,0}$	0.822		η_{Ny}	0.03	
	λ_y	0.118		C_{my}	0.827		η_{Nz}	0.03	
	χ_y	1.000		C_{mz}	0.822		$M_{y,Ed}$	0.70	kNm
	I_z	167.97	cm^4	λ_{max}	0.118		W_y	37.04	cm^3
	$L_{cr,z}$	0.318	m	N_{Ed}	12.61	kN	$M_{y,Rk}$	8.70	kNm
	$N_{cr,z}$	34426.00	kN	A_i	20.33	cm^2	η_{My}	0.08	
	λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.23	kNm
	χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm^3
	μ_y	1.000		n_{pl}	0.026		$M_{z,Rk}$	8.70	kNm
	μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.03	
	w_y	1.000		C_{yz}	1.000		η_1	0.11	
	w_z	1.000		C_{zy}	1.000		η_2	0.11	
	a_{LT}	0.000		C_{zz}	1.000				
LG125	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC14)			616	0.159		0.11	≤ 1	354) ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
	Design Internal Forces								
	N_{Ed}	-12.58	kN	$V_{z,Ed}$	-3.63	kN	$M_{y,Ed}$	0.12	kNm
	$V_{y,Ed}$	-1.22	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.04	kNm
	Cross-section Classification - Class 1								
	σ	-0.94	kN/cm^2	λ_2	70.000		t	8.0	mm
	ε	1.000		λ_3	90.000		d/t	11.112	
	λ_1	50.000		d	88.9	mm	Class	1	
	Design Ratio								
	E	21000.00	kN/cm^2	Diagr M_y	1) Linear		k_{yy}	0.827	
	I_y	167.97	cm^4	ψ_y	0.173		k_{yz}	0.824	
	$L_{cr,y}$	0.318	m	$C_{my,0}$	0.826		k_{zy}	0.827	
	$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.824	
	A	20.33	cm^2	ψ_z	0.159		γ_{M1}	1.000	
	f_y	23.50	kN/cm^2	$C_{mz,0}$	0.823		η_{Ny}	0.03	

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CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	λ_y 0.118 · C_{my} 0.826 · η_{Nz} 0.03						
	χ_y 1.000 · C_{mz} 0.823 · $M_{y,Ed}$ 0.70 kNm						
	I_z 167.97 cm^4 · λ_max 0.118 · W_y 37.04 cm^3						
	$L_{cr,z}$ 0.318 m · N_{Ed} 12.58 kN · $M_{y,Rk}$ 8.70 kNm						
	$N_{cr,z}$ 34426.00 kN · A_i 20.33 cm^2 · η_{My} 0.08						
	λ_z 0.118 · N_{Rk} 477.81 kN · $M_{z,Ed}$ 0.23 kNm						
	χ_z 1.000 · γ_{M0} 1.000 · W_z 37.04 cm^3						
	μ_y 1.000 · n_{pl} 0.026 · $M_{z,Rk}$ 8.70 kNm						
	μ_z 1.000 · C_{yy} 1.000 · η_{Mz} 0.03						
	w_y 1.000 · C_{yz} 1.000 · η_1 0.11						
	w_z 1.000 · C_{zy} 1.000 · η_2 0.11						
	a_{LT} 0.000 · C_{zz} 1.000						
LG126	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC17)	616	0.159	0.11	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1						
	Design Internal Forces						
	N_{Ed} -12.60 kN · $V_{z,Ed}$ -3.63 kN · $M_{y,Ed}$ 0.12 kNm						
	$V_{y,Ed}$ -1.22 kN · T_{Ed} 0.00 kNm · $M_{z,Ed}$ -0.04 kNm						
	Cross-section Classification - Class 1						
	σ -0.94 kN/cm^2 · λ_2 70.000 · t 8.0 mm						
	ε 1.000 · λ_3 90.000 · d/t 11.112						
	λ_1 50.000 · d 88.9 mm · Class 1						
	Design Ratio						
	E 21000.00 kN/cm^2 · Diagr M_y 1) Linear · k_{yy} 0.827						
	I_y 167.97 cm^4 · ψ_y 0.173 · k_{yz} 0.824						
	$L_{cr,y}$ 0.318 m · $C_{my,0}$ 0.826 · k_{zy} 0.827						
	$N_{cr,y}$ 34426.00 kN · Diagr M_z 1) Linear · k_{zz} 0.824						
	A 20.33 cm^2 · ψ_z 0.160 · γ_{M1} 1.000						
	f_y 23.50 kN/cm^2 · $C_{mz,0}$ 0.823 · η_{Ny} 0.03						
	λ_y 0.118 · C_{my} 0.826 · η_{Nz} 0.03						
	χ_y 1.000 · C_{mz} 0.823 · $M_{y,Ed}$ 0.70 kNm						
	I_z 167.97 cm^4 · λ_max 0.118 · W_y 37.04 cm^3						
	$L_{cr,z}$ 0.318 m · N_{Ed} 12.60 kN · $M_{y,Rk}$ 8.70 kNm						
	$N_{cr,z}$ 34426.00 kN · A_i 20.33 cm^2 · η_{My} 0.08						
	λ_z 0.118 · N_{Rk} 477.81 kN · $M_{z,Ed}$ 0.23 kNm						
	χ_z 1.000 · γ_{M0} 1.000 · W_z 37.04 cm^3						
	μ_y 1.000 · n_{pl} 0.026 · $M_{z,Rk}$ 8.70 kNm						
	μ_z 1.000 · C_{yy} 1.000 · η_{Mz} 0.03						
	w_y 1.000 · C_{yz} 1.000 · η_1 0.11						
	w_z 1.000 · C_{zy} 1.000 · η_2 0.11						
	a_{LT} 0.000 · C_{zz} 1.000						
LG127	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC20)	616	0.159	0.11	≤ 1	354)	ULS
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1						
	Design Internal Forces						
	N_{Ed} -12.57 kN · $V_{z,Ed}$ -3.63 kN · $M_{y,Ed}$ 0.12 kNm						
	$V_{y,Ed}$ -1.22 kN · T_{Ed} 0.00 kNm · $M_{z,Ed}$ -0.04 kNm						
	Cross-section Classification - Class 1						
	σ -0.94 kN/cm^2 · λ_2 70.000 · t 8.0 mm						
	ε 1.000 · λ_3 90.000 · d/t 11.112						
	λ_1 50.000 · d 88.9 mm · Class 1						
	Design Ratio						
	E 21000.00 kN/cm^2 · Diagr M_y 1) Linear · k_{yy} 0.827						
	I_y 167.97 cm^4 · ψ_y 0.173 · k_{yz} 0.824						
	$L_{cr,y}$ 0.318 m · $C_{my,0}$ 0.826 · k_{zy} 0.827						
	$N_{cr,y}$ 34426.00 kN · Diagr M_z 1) Linear · k_{zz} 0.824						

RF-STEEL EC3

CA1

Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

A	20.33 cm^2	ψ_z	0.160	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.824	η_{Ny}	0.03
λ_y	0.118	C_{my}	0.826	η_{Nz}	0.03
χ_y	1.000	C_{mz}	0.824	$M_{y,Ed}$	0.70 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	12.57 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.08
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.23 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.026	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.03
w_y	1.000	C_{yz}	1.000	η_1	0.11
w_z	1.000	C_{zy}	1.000	η_2	0.11
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG128	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC21)	616	0.159	0.11	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-12.57 kN	$V_{z,Ed}$	-3.63 kN	$M_{y,Ed}$	0.12 kNm
$V_{y,Ed}$	-1.22 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.04 kNm

Cross-section Classification - Class 1

σ	-0.94 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.827
I_y	167.97 cm^4	ψ_y	0.173	k_{yz}	0.824
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.826	k_{zy}	0.827
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.824
A	20.33 cm^2	ψ_z	0.160	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.824	η_{Ny}	0.03
λ_y	0.118	C_{my}	0.826	η_{Nz}	0.03
χ_y	1.000	C_{mz}	0.824	$M_{y,Ed}$	0.70 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	12.57 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.08
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.23 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.026	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.03
w_y	1.000	C_{yz}	1.000	η_1	0.11
w_z	1.000	C_{zy}	1.000	η_2	0.11
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG129	US (LC1 + 0.6*LC3 + LC10)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.66 kN	$V_{z,Ed}$	-2.72 kN	$M_{y,Ed}$	0.11 kNm
$V_{y,Ed}$	-0.91 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.04 kNm

Cross-section Classification - Class 1

σ	-0.80 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.831
I_y	167.97 cm^4	ψ_y	0.196	k_{yz}	0.832

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CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	

$L_{cr,y}$	0.318 m	$C_{my,0}$	0.831	k_{zy}	0.831
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.832
A	20.33 cm^2	ψ_z	0.198	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.832	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.831	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.832	$M_{y,Ed}$	0.54 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	10.66 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.06
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.18 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.022	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.02
w_y	1.000	C_{yz}	1.000	η_1	0.09
w_z	1.000	C_{zy}	1.000	η_2	0.09
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG130	US (LC1 + 0.6*LC3 + LC11)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.81 kN	$V_{z,Ed}$	-2.99 kN	$M_{y,Ed}$	0.08 kNm
$V_{y,Ed}$	-1.12 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.02 kNm

Cross-section Classification - Class 1

σ	-0.75 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.821
I_y	167.97 cm^4	ψ_y	0.146	k_{yz}	0.815
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.821	k_{zy}	0.821
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.815
A	20.33 cm^2	ψ_z	0.119	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.815	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.821	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.815	$M_{y,Ed}$	0.56 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	10.81 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.06
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.20 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.023	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.02
w_y	1.000	C_{yz}	1.000	η_1	0.09
w_z	1.000	C_{zy}	1.000	η_2	0.09
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG131	US (LC1 + 0.6*LC3 + LC14)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.78 kN	$V_{z,Ed}$	-3.00 kN	$M_{y,Ed}$	0.08 kNm
$V_{y,Ed}$	-1.10 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.02 kNm

Cross-section Classification - Class 1

σ	-0.74 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

RF-STEEL EC3

CA1

Columns, bracing and supports

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.820
I_y	167.97 cm^4	ψ_y	0.144	k_{yz}	0.816
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.820	k_{zy}	0.820
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.816
A	20.33 cm^2	ψ_z	0.124	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.816	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.820	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.816	$M_{y,Ed}$	0.56 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	10.78 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.06
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.20 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.023	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.02
w_y	1.000	C_{yz}	1.000	η_1	0.09
w_z	1.000	C_{zy}	1.000	η_2	0.09
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG132	US (LC1 + 0.6*LC3 + LC17)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.79 kN	$V_{z,Ed}$	-3.00 kN	$M_{y,Ed}$	0.08 kNm
$V_{y,Ed}$	-1.10 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.02 kNm

Cross-section Classification - Class 1

σ	-0.74 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112
λ_1	50.000	d	88.9 mm	Class	1

Design Ratio

E	21000.00 kN/cm^2	Diagr M_y	1) Linear	k_{yy}	0.820
I_y	167.97 cm^4	ψ_y	0.143	k_{yz}	0.816
$L_{cr,y}$	0.318 m	$C_{my,0}$	0.820	k_{zy}	0.820
$N_{cr,y}$	34426.00 kN	Diagr M_z	1) Linear	k_{zz}	0.816
A	20.33 cm^2	ψ_z	0.124	γ_{M1}	1.000
f_y	23.50 kN/cm^2	$C_{mz,0}$	0.816	η_{Ny}	0.02
λ_y	0.118	C_{my}	0.820	η_{Nz}	0.02
χ_y	1.000	C_{mz}	0.816	$M_{y,Ed}$	0.56 kNm
I_z	167.97 cm^4	λ_max	0.118	W_y	37.04 cm^3
$L_{cr,z}$	0.318 m	N_{Ed}	10.79 kN	$M_{y,Rk}$	8.70 kNm
$N_{cr,z}$	34426.00 kN	A_i	20.33 cm^2	η_{My}	0.06
λ_z	0.118	N_{Rk}	477.81 kN	$M_{z,Ed}$	0.20 kNm
χ_z	1.000	γ_{M0}	1.000	W_z	37.04 cm^3
μ_y	1.000	n_{pl}	0.023	$M_{z,Rk}$	8.70 kNm
μ_z	1.000	C_{yy}	1.000	η_{Mz}	0.02
w_y	1.000	C_{yz}	1.000	η_1	0.09
w_z	1.000	C_{zy}	1.000	η_2	0.09
a_{LT}	0.000	C_{zz}	1.000		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG133	US (LC1 + 0.6*LC3 + LC20)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.77 kN	$V_{z,Ed}$	-3.00 kN	$M_{y,Ed}$	0.08 kNm
$V_{y,Ed}$	-1.10 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.02 kNm

Cross-section Classification - Class 1

σ	-0.74 kN/cm^2	λ_2	70.000	t	8.0 mm
ε	1.000	λ_3	90.000	d/t	11.112

RF-STEEL EC3
CA1
Columns, bracing and supports

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	Diagr M_y	1) Linear		k_{yy}	0.820	
I_y	167.97	cm^4	ψ_y	0.144		k_{yz}	0.816	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.820		k_{zy}	0.820	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.816	
A	20.33	cm^2	ψ_z	0.124		γ_{M1}	1.000	
f_y	23.50	kN/cm^2	$C_{mz,0}$	0.816		η_{Ny}	0.02	
λ_y	0.118		C_{my}	0.820		η_{Nz}	0.02	
χ_y	1.000		C_{mz}	0.816		$M_{y,Ed}$	0.56	kNm
I_z	167.97	cm^4	λ_max	0.118		W_y	37.04	cm^3
$L_{cr,z}$	0.318	m	N_{Ed}	10.77	kN	$M_{y,Rk}$	8.70	kNm
$N_{cr,z}$	34426.00	kN	A_i	20.33	cm^2	η_{My}	0.06	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.20	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm^3
μ_y	1.000		n_{pl}	0.023		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.02	
w_y	1.000		C_{yz}	1.000		η_1	0.09	
w_z	1.000		C_{zy}	1.000		η_2	0.09	
a_{LT}	0.000		C_{zz}	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG134	US (LC1 + 0.6*LC3 + LC21)	616	0.159	0.09	≤ 1	354)	ULS

Stability analysis - Bending and compression acc. to 6.3.3, Method 1

Design Internal Forces

N_{Ed}	-10.77	kN	$V_{z,Ed}$	-3.00	kN	$M_{y,Ed}$	0.08	kNm
$V_{y,Ed}$	-1.10	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	-0.02	kNm

Cross-section Classification - Class 1

σ	-0.74	kN/cm^2	λ_2	70.000		t	8.0	mm
ε	1.000		λ_3	90.000		d/t	11.112	
λ_1	50.000		d	88.9	mm	Class	1	

Design Ratio

E	21000.00	kN/cm^2	Diagr M_y	1) Linear		k_{yy}	0.820	
I_y	167.97	cm^4	ψ_y	0.143		k_{yz}	0.816	
$L_{cr,y}$	0.318	m	$C_{my,0}$	0.820		k_{zy}	0.820	
$N_{cr,y}$	34426.00	kN	Diagr M_z	1) Linear		k_{zz}	0.816	
A	20.33	cm^2	ψ_z	0.125		γ_{M1}	1.000	
f_y	23.50	kN/cm^2	$C_{mz,0}$	0.816		η_{Ny}	0.02	
λ_y	0.118		C_{my}	0.820		η_{Nz}	0.02	
χ_y	1.000		C_{mz}	0.816		$M_{y,Ed}$	0.56	kNm
I_z	167.97	cm^4	λ_max	0.118		W_y	37.04	cm^3
$L_{cr,z}$	0.318	m	N_{Ed}	10.77	kN	$M_{y,Rk}$	8.70	kNm
$N_{cr,z}$	34426.00	kN	A_i	20.33	cm^2	η_{My}	0.06	
λ_z	0.118		N_{Rk}	477.81	kN	$M_{z,Ed}$	0.20	kNm
χ_z	1.000		γ_{M0}	1.000		W_z	37.04	cm^3
μ_y	1.000		n_{pl}	0.023		$M_{z,Rk}$	8.70	kNm
μ_z	1.000		C_{yy}	1.000		η_{Mz}	0.02	
w_y	1.000		C_{yz}	1.000		η_1	0.09	
w_z	1.000		C_{zy}	1.000		η_2	0.09	
a_{LT}	0.000		C_{zz}	1.000				

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
185	Cross-section No. 17 - RO 88.9x6 (EN 10219-2)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	3.740	LG46	-3.90	0.01	-0.02	0.00	-0.06	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	3.740	LG45	-3.70	-0.02	0.03	0.00	0.08	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.623	LG45	-3.18	-0.01	0.03	0.00	-0.02	-0.04	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG41	-3.07	-0.01	0.03	0.00	-0.04	-0.04	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG46	-3.90	0.01	-0.02	0.00	-0.06	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG46	-3.90	0.01	-0.02	0.00	-0.06	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
186	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	0.000	LG88	-0.42	0.00	0.12	0.00	-0.02	0.00	100)
	Negligible internal forces								
	0.000	LG87	2.12	0.00	0.04	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	3.740	LG39	-14.44	0.00	-0.08	0.00	-0.38	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	2.493	LG88	-0.73	0.00	0.12	0.00	0.27	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	2.493	LG88	-0.73	0.00	0.12	0.00	0.27	0.00	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	3.740	LG39	-14.44	0.00	-0.08	0.00	-0.38	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG38	-7.07	0.00	-0.09	0.00	0.01	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG39	-13.81	0.00	-0.11	0.00	0.00	0.00	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	0.000	LG38	-7.07	0.00	-0.09	0.00	0.01	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG39	-13.81	0.00	-0.11	0.00	0.00	0.00	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.740	LG39	-14.44	0.00	-0.08	0.00	-0.38	0.00	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
187	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	0.000	LG87	0.27	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	3.740	LG43	-14.73	0.00	0.00	0.00	0.00	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG42	-8.34	0.00	0.01	0.00	-0.03	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.117	LG54	-7.98	0.00	0.01	0.00	0.01	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG43	-14.73	0.00	0.00	0.00	0.00	0.00	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.117	LG54	-7.98	0.00	0.01	0.00	0.01	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG43	-14.73	0.00	0.00	0.00	0.00	0.00	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
189	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	0.000	LG12	-0.42	0.01	0.00	0.00	-0.01	0.02	100)
	Negligible internal forces								
	3.740	LG43	-1.32	0.01	0.01	0.00	0.00	-0.02	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG35	-0.66	0.01	0.01	0.00	-0.04	0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	3.740	LG88	-0.55	-0.03	0.00	0.00	0.00	0.06	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG35	-0.66	0.01	0.01	0.00	-0.04	0.02	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	3.740	LG88	-0.55	-0.03	0.00	0.00	0.00	0.06	154)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG90	-0.60	0.01	0.01	0.00	-0.04	0.02	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.623	LG43	-0.81	0.01	0.01	0.00	-0.03	0.01	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	3.740	LG49	-0.86	-0.03	-0.01	0.00	0.00	0.06	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG43	-1.32	0.01	0.01	0.00	0.00	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG43	-1.32	0.01	0.01	0.00	0.00	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
190	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	0.623	LG28	-0.73	0.00	-0.01	0.00	0.01	0.00	100)
	Negligible internal forces								
	0.000	LG88	1.09	0.03	0.00	0.00	0.01	0.12	101)
	Cross-section check - Tension acc. to 6.2.3								
	3.740	LG42	-2.09	-0.02	0.00	0.00	0.01	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	3.740	LG90	-0.32	0.00	0.02	0.00	0.05	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	1.247	LG33	0.72	0.03	0.00	0.00	0.00	0.08	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	3.740	LG90	-0.32	0.00	0.02	0.00	0.05	0.00	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	1.247	LG33	0.72	0.03	0.00	0.00	0.00	0.08	154)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	3.740	LG40	-1.42	0.00	-0.02	0.00	-0.03	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG88	1.09	0.03	0.00	0.00	0.01	0.12	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG42	-2.09	-0.02	0.00	0.00	0.01	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG42	-2.09	-0.02	0.00	0.00	0.01	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG49	0.96	0.03	0.00	0.00	0.01	0.12	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
191	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	3.740	LG50	-18.49	0.00	0.01	0.00	0.03	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	3.740	LG50	-18.49	0.00	0.01	0.00	0.03	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG48	-6.54	0.00	0.01	0.00	0.01	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG50	-18.49	0.00	0.01	0.00	0.03	0.00	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.740	LG48	-6.54	0.00	0.01	0.00	0.01	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG50	-18.49	0.00	0.01	0.00	0.03	0.00	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
193	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	3.740	LG53	-26.00	0.03	0.02	0.00	0.05	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	3.740	LG49	-25.99	0.03	0.02	0.00	0.05	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	1.247	LG53	-25.59	0.02	0.03	0.00	-0.01	0.07	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG53	-25.38	0.01	0.02	0.00	-0.05	0.10	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG35	-7.32	0.00	-0.02	0.00	-0.05	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG53	-26.00	0.03	0.02	0.00	0.05	0.00	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.740	LG35	-7.32	0.00	-0.02	0.00	-0.05	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG53	-26.00	0.03	0.02	0.00	0.05	0.00	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
194	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	3.740	LG53	-26.42	0.00	0.00	0.00	0.01	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	3.740	LG35	-7.36	0.00	0.01	0.00	0.02	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	3.740	LG35	-7.36	0.00	0.01	0.00	0.02	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG53	-26.42	0.00	0.00	0.00	0.01	0.00	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.740	LG35	-7.36	0.00	0.01	0.00	0.02	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG53	-26.42	0.00	0.00	0.00	0.01	0.00	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
196	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	3.740	LG42	-6.60	0.04	0.02	0.00	0.00	-0.13	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG35	-5.55	0.00	0.03	0.00	-0.11	-0.01	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG41	-6.16	-0.07	-0.03	0.00	0.00	0.21	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	2.493	LG41	-5.96	-0.07	-0.03	0.00	0.04	0.13	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG16	-6.51	0.03	0.01	0.00	0.00	-0.08	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG16	-6.51	0.03	0.01	0.00	0.00	-0.08	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG41	-6.16	-0.07	-0.03	0.00	0.00	0.21	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
200	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	1.870	LG5	-0.69	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG22	1.42	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	3.740	LG37	-14.94	-0.02	0.02	0.00	0.00	0.03	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG35	-9.12	-0.01	0.04	0.00	-0.18	-0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG37	-14.94	-0.02	0.02	0.00	0.00	0.03	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG33	-14.31	-0.01	0.01	0.00	-0.06	-0.02	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	3.740	LG32	-7.91	0.01	-0.03	0.00	0.00	-0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG37	-14.94	-0.02	0.02	0.00	0.00	0.03	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.740	LG32	-7.91	0.01	-0.03	0.00	0.00	-0.01	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG37	-14.94	-0.02	0.02	0.00	0.00	0.03	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.117	LG35	-9.64	-0.01	0.05	0.00	-0.03	0.01	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
203	**Cross-section No. 24 - Pipe 88.9/10/K**								
	0.780	LG25	-21.43	-6.64	-0.70	0.00	-0.37	5.24	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG51	-14.24	2.53	-1.62	0.00	0.12	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	-15.21	-11.15	-1.15	-0.02	0.30	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	-15.21	-11.15	-1.15	-0.02	0.30	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG22	-21.06	0.10	-0.03	0.00	-0.03	-0.08	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG49	-15.51	-11.04	-1.14	0.01	-0.60	8.68	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG23	-21.09	0.08	-0.04	0.00	-0.03	-0.06	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG23	-21.09	0.08	-0.04	0.00	-0.03	-0.06	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG49	-15.51	-11.04	-1.14	0.01	-0.60	8.68	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
204	**Cross-section No. 24 - Pipe 88.9/10/K**								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.780	LG29	-28.33	-5.04	-0.41	0.00	-0.14	3.98	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-8.30	0.68	-0.83	0.00	0.06	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG53	-21.14	-8.43	-0.74	-0.01	0.30	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG29	-28.10	-5.14	-0.41	-0.01	0.18	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG53	-21.40	-8.31	-0.74	-0.01	-0.28	6.55	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG29	-28.10	-5.14	-0.41	-0.01	0.18	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG29	-28.10	-5.14	-0.41	-0.01	0.18	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG53	-21.40	-8.31	-0.74	-0.01	-0.28	6.55	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
205	**Cross-section No. 24 - Pipe 88.9/10/K**								
	0.780	LG25	-24.58	-2.46	1.04	-0.01	0.59	1.94	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG55	-10.13	0.39	-1.85	0.00	0.28	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	-17.95	-3.94	1.73	0.02	-0.36	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	-22.63	-3.86	1.77	0.02	-0.37	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG5	-16.14	-0.37	-0.06	0.00	-0.04	0.29	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG49	-22.85	-3.81	1.75	-0.02	1.00	3.01	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG23	-20.22	-0.38	-0.06	0.00	0.00	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG23	-20.22	-0.38	-0.06	0.00	0.00	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG49	-22.85	-3.81	1.75	-0.02	1.00	3.01	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
206	**Cross-section No. 24 - Pipe 88.9/10/K**								
	0.990	LG25	-26.08	-6.84	8.57	-0.18	8.44	6.92	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG49	-19.93	-11.60	13.60	0.02	-0.35	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	-19.93	-11.60	13.60	0.02	-0.35	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.990	LG49	-20.55	-11.33	13.28	-0.45	13.00	11.40	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.990	LG49	-20.55	-11.33	13.28	-0.45	13.00	11.40	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.990	LG49	-20.55	-11.33	13.28	-0.45	13.00	11.40	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.990	LG22	-25.17	-0.04	1.12	0.00	1.12	0.04	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.990	LG90	-9.88	0.82	-12.49	-0.04	-12.24	-0.82	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.990	LG49	-20.55	-11.33	13.28	-0.45	13.00	11.40	229)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pip								
	0.000	LG23	-24.95	-0.05	1.21	0.00	-0.01	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG23	-24.95	-0.05	1.21	0.00	-0.01	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.990	LG49	-20.55	-11.33	13.28	-0.45	13.00	11.40	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
207	**Cross-section No. 24 - Pipe 88.9/10/K**								
	0.780	LG29	-15.71	-4.38	-1.08	0.00	-0.63	3.44	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG53	-12.05	-7.15	-1.74	-0.01	0.36	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG53	-12.05	-7.15	-1.74	-0.01	0.36	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG53	-12.05	-7.15	-1.74	-0.01	0.36	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG5	-11.14	-0.14	-0.02	0.00	-0.02	0.11	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG53	-12.29	-7.09	-1.73	0.00	-0.99	5.57	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG22	-15.02	-0.17	-0.07	0.00	-0.06	0.13	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG22	-15.02	-0.17	-0.07	0.00	-0.06	0.13	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG53	-12.29	-7.09	-1.73	0.00	-0.99	5.57	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
208	**Cross-section No. 24 - Pipe 88.9/10/K**								
	0.780	LG29	-16.94	-6.11	2.86	0.01	1.98	4.81	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG55	-13.41	0.04	-4.95	0.00	0.29	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG53	-13.77	-10.15	4.77	0.01	-0.43	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.780	LG55	-13.63	0.04	-4.91	0.00	-3.56	-0.03	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG23	-16.50	-0.10	-0.01	0.00	-0.02	0.08	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG49	-14.05	-10.05	4.77	0.02	3.31	7.89	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG22	-16.52	-0.09	-0.04	0.00	-0.04	0.07	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG22	-16.52	-0.09	-0.04	0.00	-0.04	0.07	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.780	LG49	-14.05	-10.05	4.77	0.02	3.31	7.89	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
209	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	1.870	LG6	-0.73	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG22	1.22	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	3.740	LG37	-14.17	0.00	0.00	0.00	0.00	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	3.740	LG51	-7.96	0.01	0.00	0.00	0.00	-0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG37	-14.17	0.00	0.00	0.00	0.00	0.00	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.740	LG51	-7.96	0.01	0.00	0.00	0.00	-0.01	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG37	-14.17	0.00	0.00	0.00	0.00	0.00	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
214	**Cross-section No. 21 - Circle 20**								
	0.000	LG32	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG90	15.65	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
215	**Cross-section No. 21 - Circle 20**								
	0.000	LG16	0.12	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG43	17.16	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
216	**Cross-section No. 21 - Circle 20**								
	0.000	LG112	0.07	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG32	11.72	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
217	**Cross-section No. 21 - Circle 20**								
	0.000	LG35	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG48	11.20	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
218	**Cross-section No. 21 - Circle 20**								
	0.000	LG33	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG50	26.26	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
219	**Cross-section No. 21 - Circle 20**								
	0.000	LG38	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG53	33.70	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
220	**Cross-section No. 21 - Circle 20**								
	0.000	LG33	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG50	27.63	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
221	**Cross-section No. 21 - Circle 20**								
	0.000	LG50	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG53	38.88	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
303	**Cross-section No. 17 - RO 88.9x6 (EN 10219-2)**								
	0.000	LG9	-0.71	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	3.740	LG42	-12.10	0.02	0.00	0.00	0.00	-0.08	102)
	Cross-section check - Compression acc. to 6.2.4								
	3.740	LG29	-0.46	-0.03	0.00	0.00	0.00	0.07	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	3.740	LG29	-0.46	-0.03	0.00	0.00	0.00	0.07	154)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	3.740	LG42	-12.10	0.02	0.00	0.00	0.00	-0.08	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	1.870	LG16	-7.98	0.02	0.00	0.00	0.00	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG42	-12.10	0.02	0.00	0.00	0.00	-0.08	302)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2								
	1.870	LG16	-7.98	0.02	0.00	0.00	0.00	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	3.740	LG42	-12.10	0.02	0.00	0.00	0.00	-0.08	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
	3.740	LG41	-2.26	-0.04	0.00	0.00	0.00	0.12	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
352	**Cross-section No. 21 - Circle 20**								
	0.000	LG23	0.14	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG48	2.73	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
353	**Cross-section No. 21 - Circle 20**								
	0.000	LG30	0.03	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG55	3.49	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
354	**Cross-section No. 21 - Circle 20**								
	0.000	LG49	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG50	34.29	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
355	**Cross-section No. 21 - Circle 20**								
	0.000	LG50	0.00	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG53	51.60	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
356	**Cross-section No. 21 - Circle 20**								
	0.000	LG34	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	5.469	LG88	20.82	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
357	**Cross-section No. 21 - Circle 20**								
	5.469	LG33	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG50	17.00	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
375	**Cross-section No. 21 - Circle 20**								
	0.000	LG53	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	6.014	LG50	26.61	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
376	**Cross-section No. 21 - Circle 20**								
	0.000	LG42	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	6.014	LG53	36.13	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
379	**Cross-section No. 21 - Circle 20**								
	0.000	LG50	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	5.967	LG53	35.90	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
380	**Cross-section No. 21 - Circle 20**								
	5.967	LG49	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG50	23.62	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
417	**Cross-section No. 21 - Circle 20**								
	0.000	LG33	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	5.553	LG50	15.89	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
418	**Cross-section No. 21 - Circle 20**								
	5.553	LG42	-0.06	0.00	0.00	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG53	21.59	0.00	0.00	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
493	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG88	5.49	-5.72	-0.02	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.204	LG42	-43.26	5.83	0.55	0.00	0.11	-1.19	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG40	-12.94	-0.09	5.26	0.00	0.00	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	-2.48	-6.08	0.90	0.00	0.00	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.204	LG37	-0.65	-6.01	0.84	0.00	0.17	1.23	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.204	LG40	-12.99	-0.09	5.26	0.00	1.07	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.204	LG89	-33.58	5.80	0.11	0.00	0.02	-1.19	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.204	LG42	-43.26	5.83	0.55	0.00	0.11	-1.19	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG42	-43.21	5.85	0.56	0.00	0.00	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG42	-43.21	5.85	0.56	0.00	0.00	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.204	LG37	-0.65	-6.01	0.84	0.00	0.17	1.23	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.204	LG42	-43.26	5.83	0.55	0.00	0.11	-1.19	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
598	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG89	3.73	1.88	-1.88	0.00	-0.19	-0.19	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.301	LG49	-29.81	-3.18	2.18	0.00	0.88	1.28	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG43	-6.50	0.13	-3.16	0.00	-0.32	-0.01	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-22.19	-3.25	2.13	0.00	0.21	0.33	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.301	LG90	-0.06	0.74	-2.64	0.00	-1.06	-0.30	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.301	LG48	-22.76	-0.04	2.61	0.00	1.05	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.301	LG41	-29.75	-3.21	2.15	0.00	0.87	1.30	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.301	LG3	-17.57	-0.04	0.29	0.00	0.12	0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.301	LG3	-17.57	-0.04	0.29	0.00	0.12	0.01	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	3.73	1.88	-1.88	0.00	-0.19	-0.19	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.301	LG49	-29.81	-3.18	2.18	0.00	0.88	1.28	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
599	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.268	LG49	-36.53	-3.21	1.25	0.00	0.46	1.19	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG47	-7.72	-1.25	-3.88	0.00	-0.39	0.13	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-24.44	-3.32	1.09	0.00	0.11	0.33	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.268	LG3	-28.47	0.07	0.34	0.00	0.12	-0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG16	-21.67	1.50	-0.19	0.00	-0.02	-0.15	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.268	LG41	-36.35	-3.25	1.22	0.00	0.45	1.21	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.268	LG2	-26.00	0.07	0.31	0.00	0.12	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.268	LG2	-26.00	0.07	0.31	0.00	0.12	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.268	LG49	-36.53	-3.21	1.25	0.00	0.46	1.19	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
600	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.240	LG48	-49.65	0.28	1.55	0.00	0.53	-0.10	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.240	LG90	-0.29	0.02	-1.48	0.00	-0.50	-0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG55	-8.39	-0.41	-2.06	0.00	-0.21	0.04	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-30.41	-4.29	1.49	0.00	0.15	0.43	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.240	LG90	-0.29	0.02	-1.48	0.00	-0.50	-0.01	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG14	-47.75	0.16	1.06	0.00	0.11	-0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.240	LG111	-19.41	0.09	0.07	0.00	0.02	-0.03	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.240	LG41	-46.45	-4.23	1.59	0.00	0.54	1.45	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.240	LG3	-39.08	0.00	0.21	0.00	0.07	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	N [kN]	Vy [kN]	Vz [kN]	MT [kNm]	My [kNm]	Mz [kNm]	Acc. to Formula
	0.240	LG3	-39.08	0.00	0.21	0.00	0.07	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.240	LG41	-46.45	-4.23	1.59	0.00	0.54	1.45	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
601	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.203	LG14	-23.58	0.47	0.62	0.00	0.19	-0.14	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG43	-12.55	-1.24	-2.83	0.00	-0.28	0.12	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	-17.54	-5.12	-0.78	0.00	-0.08	0.51	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.203	LG3	-20.78	0.00	-0.32	0.00	-0.10	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.203	LG129	-10.87	0.11	-0.07	0.00	-0.02	-0.03	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.203	LG41	-17.59	-5.11	-0.78	0.00	-0.24	1.55	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.203	LG3	-20.78	0.00	-0.32	0.00	-0.10	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.203	LG3	-20.78	0.00	-0.32	0.00	-0.10	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.203	LG41	-17.59	-5.11	-0.78	0.00	-0.24	1.55	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
602	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.180	LG48	-38.80	0.38	2.19	0.00	0.62	-0.11	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG35	-10.52	-0.59	-2.58	0.00	-0.26	0.06	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-16.11	-6.10	1.28	0.00	0.13	0.61	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	-36.87	0.24	1.44	0.00	0.15	-0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.180	LG49	-29.32	-5.98	1.41	0.00	0.40	1.68	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.180	LG23	-32.46	0.06	0.30	0.00	0.08	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.180	LG23	-32.46	0.06	0.30	0.00	0.08	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.180	LG49	-29.32	-5.98	1.41	0.00	0.40	1.68	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
604	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.346	LG3	-13.25	0.17	0.12	0.00	0.05	-0.08	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-9.71	-1.86	-1.59	0.00	-0.16	0.19	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG53	-12.63	-12.88	0.38	0.00	0.04	1.29	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG26	-12.83	5.64	-0.19	0.00	-0.02	-0.57	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.346	LG53	-12.75	-12.84	0.37	0.00	0.17	5.74	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.346	LG3	-13.25	0.17	0.12	0.00	0.05	-0.08	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.346	LG3	-13.25	0.17	0.12	0.00	0.05	-0.08	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.346	LG49	-12.75	-12.82	0.42	0.00	0.19	5.74	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
605	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG88	12.38	-16.73	-0.04	0.00	0.00	1.67	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.283	LG50	-23.44	11.57	-0.21	0.00	-0.08	-4.45	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-4.09	-2.49	-1.98	0.00	-0.20	0.25	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.283	LG53	10.04	-16.95	0.03	0.00	0.01	6.48	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	N [kN]	Vy [kN]	Vz [kN]	MT [kNm]	My [kNm]	Mz [kNm]	Acc. to Formula
	0.283	LG53	10.04	-16.95	0.03	0.00	0.01	6.48	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.283	LG50	-23.44	11.57	-0.21	0.00	-0.08	-4.45	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.283	LG23	-10.17	0.23	0.19	0.00	0.07	-0.09	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.283	LG23	-10.17	0.23	0.19	0.00	0.07	-0.09	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.141	LG25	2.23	-10.16	0.18	0.00	0.04	2.45	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.000	LG49	10.13	-16.91	0.05	0.00	0.01	1.69	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
606	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG88	2.12	-19.14	-3.64	0.00	-0.36	1.91	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.256	LG42	-4.19	12.99	1.86	0.00	0.66	-4.63	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.256	LG53	1.43	-19.34	-3.67	0.00	-1.31	6.89	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.256	LG53	1.43	-19.34	-3.67	0.00	-1.31	6.89	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.256	LG29	-0.18	-11.60	-2.07	0.00	-0.74	4.13	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG123	-1.66	0.72	0.18	0.00	0.02	-0.07	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.256	LG53	1.43	-19.34	-3.67	0.00	-1.31	6.89	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.256	LG3	-2.19	0.25	0.16	0.00	0.06	-0.09	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.256	LG3	-2.19	0.25	0.16	0.00	0.06	-0.09	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG53	1.55	-19.34	-3.67	0.00	-0.37	1.93	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.256	LG50	-4.18	13.09	1.89	0.00	0.67	-4.66	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
607	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG88	7.40	-5.64	-4.06	0.00	-0.40	0.56	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.222	LG42	-16.95	3.51	2.51	0.00	0.81	-1.13	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.222	LG53	6.52	-5.54	-4.09	0.00	-1.31	1.78	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.222	LG88	7.36	-5.65	-4.06	0.00	-1.31	1.82	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.222	LG19	0.45	-3.35	-2.34	0.00	-0.75	1.08	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.222	LG3	-7.93	0.05	0.20	0.00	0.06	-0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.222	LG88	7.36	-5.65	-4.06	0.00	-1.31	1.82	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.222	LG3	-7.93	0.05	0.20	0.00	0.06	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.222	LG3	-7.93	0.05	0.20	0.00	0.06	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	7.40	-5.64	-4.06	0.00	-0.40	0.56	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.222	LG42	-16.95	3.51	2.51	0.00	0.81	-1.13	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
608	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.151	LG42	-7.11	-0.09	4.30	0.00	1.08	0.02	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG53	-3.57	-10.86	-5.96	0.00	-0.60	1.09	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG53	-3.57	-10.86	-5.96	0.00	-0.60	1.09	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.151	LG35	-6.07	0.01	-4.45	0.00	-1.12	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Forces [kN] Vy	Forces [kN] Vz	Moments [kNm] MT	Moments [kNm] My	Moments [kNm] Mz	Acc. to Formula
	0.151	LG33	-5.14	-10.85	-5.92	0.00	-1.49	2.73	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.151	LG3	-6.37	0.00	0.33	0.00	0.08	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.151	LG3	-6.37	0.00	0.33	0.00	0.08	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.151	LG33	-5.14	-10.85	-5.92	0.00	-1.49	2.73	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
609	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG89	3.54	0.05	6.48	0.00	0.65	-0.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.081	LG37	-19.17	-13.01	-7.81	0.00	-1.42	2.36	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.081	LG48	0.16	-0.01	4.70	0.00	0.85	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG53	-17.90	-13.03	-7.95	0.00	-0.80	1.31	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG53	-17.90	-13.03	-7.95	0.00	-0.80	1.31	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.081	LG48	0.16	-0.01	4.70	0.00	0.85	0.00	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.081	LG35	-14.58	-0.02	-5.98	0.00	-1.09	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.081	LG33	-19.13	-13.01	-7.88	0.00	-1.43	2.36	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.081	LG2	-6.66	0.00	0.49	0.00	0.09	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.081	LG2	-6.66	0.00	0.49	0.00	0.09	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.081	LG33	-19.13	-13.01	-7.88	0.00	-1.43	2.36	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
610	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.030	LG43	-2.76	0.01	-7.12	0.00	-0.93	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG53	-2.36	-2.80	-9.59	0.00	-0.96	0.28	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-1.76	-2.81	-9.49	0.00	-0.95	0.28	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.030	LG50	-2.08	0.01	8.29	0.00	1.08	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.030	LG53	-2.36	-2.80	-9.59	0.00	-1.25	0.36	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.030	LG3	-2.22	0.00	0.68	0.00	0.09	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.030	LG3	-2.22	0.00	0.68	0.00	0.09	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.030	LG53	-2.36	-2.80	-9.59	0.00	-1.25	0.36	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
611	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.104	LG43	-14.27	-0.26	-5.77	0.00	-1.18	0.05	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.104	LG87	-0.49	0.01	3.30	0.00	0.67	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG43	-14.24	-0.26	-5.77	0.00	-0.58	0.03	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-4.23	0.46	0.94	0.00	0.09	-0.05	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.104	LG87	-0.49	0.01	3.30	0.00	0.67	0.00	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG90	-11.58	-0.23	-5.40	0.00	-0.54	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.104	LG41	-7.14	0.21	0.09	0.00	0.02	-0.04	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.104	LG43	-14.27	-0.26	-5.77	0.00	-1.18	0.05	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.104	LG15	-7.79	0.08	-0.43	0.00	-0.09	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.104	LG15	-7.79	0.08	-0.43	0.00	-0.09	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.104	LG43	-14.27	-0.26	-5.77	0.00	-1.18	0.05	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
612	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.036	LG16	-42.47	1.45	-0.04	0.00	0.00	-0.20	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-12.92	-0.70	-6.58	0.00	-0.66	0.07	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG42	-42.34	2.19	-0.37	0.00	-0.04	-0.22	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.018	LG17	-33.80	-0.20	-3.62	0.00	-0.43	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.036	LG16	-42.47	1.45	-0.04	0.00	0.00	-0.20	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.036	LG40	-35.50	2.15	5.62	0.00	0.77	-0.30	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.036	LG3	-37.20	0.31	0.45	0.00	0.06	-0.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.036	LG3	-37.20	0.31	0.45	0.00	0.06	-0.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.036	LG40	-35.50	2.15	5.62	0.00	0.77	-0.30	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
613	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.090	LG16	-30.44	0.55	-0.20	0.00	-0.03	-0.09	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-15.80	-0.20	-5.86	0.00	-0.47	0.02	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-10.83	1.45	0.30	0.00	0.02	-0.12	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.090	LG21	-22.04	-0.12	-3.24	0.00	-0.55	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG16	-30.42	0.55	-0.20	0.00	-0.02	-0.04	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.090	LG43	-27.36	-0.23	-5.63	0.00	-0.96	0.04	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.090	LG16	-30.44	0.55	-0.20	0.00	-0.03	-0.09	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.090	LG16	-30.44	0.55	-0.20	0.00	-0.03	-0.09	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.090	LG43	-27.36	-0.23	-5.63	0.00	-0.96	0.04	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
614	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.156	LG26	-37.86	3.85	0.64	0.00	0.15	-0.91	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-16.50	-1.00	-4.01	0.00	-0.32	0.08	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-15.73	-7.31	-0.70	0.00	-0.06	0.59	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.078	LG23	-35.39	0.11	0.43	0.00	0.07	-0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.156	LG25	-34.27	-4.11	-0.05	0.00	-0.01	0.97	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.156	LG49	-30.46	-7.00	-0.42	0.00	-0.10	1.66	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.156	LG23	-35.41	0.11	0.42	0.00	0.10	-0.03	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.156	LG23	-35.41	0.11	0.42	0.00	0.10	-0.03	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.156	LG42	-36.01	6.49	0.82	0.00	0.19	-1.54	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
615	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.126	LG16	-42.29	1.53	-0.26	0.00	-0.05	-0.32	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-24.57	-0.06	-4.53	0.00	-0.36	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG89	-25.51	2.67	-0.96	0.00	-0.08	-0.21	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.126	LG51	-40.21	-0.08	-4.32	0.00	-0.90	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG16	-42.26	1.54	-0.26	0.00	-0.02	-0.12	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.126	LG42	-41.08	2.61	-0.76	0.00	-0.16	-0.54	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.126	LG3	-38.29	-0.07	0.45	0.00	0.09	0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.126	LG3	-38.29	-0.07	0.45	0.00	0.09	0.01	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.126	LG51	-40.21	-0.08	-4.32	0.00	-0.90	0.02	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
616	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG89	4.93	23.62	-8.56	0.00	1.00	2.35	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.159	LG41	-42.81	-29.71	0.07	0.00	0.65	1.54	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.079	LG51	-10.05	5.18	-20.53	0.00	0.63	-0.03	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.079	LG41	-42.79	-29.72	0.08	0.00	0.65	-0.82	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG48	-17.14	-2.62	7.04	-0.20	-0.02	-0.40	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG87	-10.08	-2.26	9.60	-0.20	-0.51	-0.30	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG40	-17.87	-2.67	7.12	-0.20	-0.02	-0.41	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG46	0.74	23.06	-9.65	0.00	1.19	2.26	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.079	LG47	-7.63	5.38	-19.33	0.00	0.47	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.159	LG40	-17.91	-2.68	7.12	-0.20	1.11	0.02	189)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG40	-17.87	-2.67	7.12	-0.20	-0.02	-0.41	209)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG41	-42.79	-29.70	0.09	-0.01	0.64	-3.18	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.159	LG44	-14.80	-2.57	8.28	-0.20	1.04	0.04	229)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pip								
	0.000	LG54	1.42	23.05	-9.80	0.00	1.21	2.26	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.159	LG41	-42.81	-29.71	0.07	0.00	0.65	1.54	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
618	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.159	LG39	-14.14	0.35	-3.26	0.01	-0.97	0.08	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-11.84	0.27	-3.95	0.01	-0.42	0.11	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.159	LG34	-7.43	0.36	-0.19	0.00	-0.35	0.05	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG52	-0.52	0.27	4.95	0.19	0.21	0.06	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG40	-1.15	0.29	5.48	0.19	0.17	0.06	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.159	LG32	-0.84	0.28	5.02	0.19	1.00	0.01	149)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.079	LG52	-0.54	0.27	4.95	0.19	0.60	0.03	169)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.159	LG49	-3.25	0.10	0.36	0.00	0.52	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.159	LG36	-1.34	0.29	5.47	0.19	1.05	0.01	189)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG1	-6.16	0.29	0.38	0.00	-0.01	0.09	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.159	LG35	-13.57	0.34	-3.76	0.01	-1.03	0.08	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.159	LG10	-3.69	0.30	3.87	0.12	0.70	0.02	229)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pip								
	0.159	LG23	-6.23	0.29	0.81	0.00	0.10	0.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.159	LG23	-6.23	0.29	0.81	0.00	0.10	0.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.079	LG32	-0.82	0.28	5.02	0.19	0.60	0.04	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.159	LG35	-13.57	0.34	-3.76	0.01	-1.03	0.08	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
620	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.099	LG15	-54.49	-0.27	1.45	0.00	0.29	0.05	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-16.07	0.60	-3.46	0.00	-0.35	-0.06	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG46	-43.86	1.72	-1.34	0.00	-0.14	-0.17	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG24	-47.76	0.22	1.90	0.00	0.19	-0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.099	LG40	-46.13	0.35	2.94	0.00	0.59	-0.07	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.099	LG3	-48.90	0.07	0.51	0.00	0.10	-0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.099	LG3	-48.90	0.07	0.51	0.00	0.10	-0.01	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.099	LG40	-46.13	0.35	2.94	0.00	0.59	-0.07	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
621	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.135	LG16	-13.58	0.69	-0.69	0.00	-0.16	-0.16	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG51	-10.81	1.40	-1.40	0.00	-0.14	-0.14	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG51	-10.81	1.40	-1.40	0.00	-0.14	-0.14	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.135	LG51	-10.84	1.40	-1.40	0.00	-0.33	-0.33	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.135	LG3	-13.22	0.18	-0.18	0.00	-0.04	-0.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.135	LG3	-13.22	0.18	-0.18	0.00	-0.04	-0.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.135	LG51	-10.84	1.40	-1.40	0.00	-0.33	-0.33	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
622	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.168	LG42	-60.52	1.50	-0.50	0.00	-0.13	-0.41	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-28.15	-0.85	-2.88	0.00	-0.29	0.09	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG42	-60.49	1.51	-0.50	0.00	-0.05	-0.15	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.168	LG3	-51.92	0.04	0.27	0.00	0.07	-0.01	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG16	-60.25	0.93	-0.16	0.00	-0.02	-0.09	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.168	LG43	-49.48	-0.80	-2.67	0.00	-0.72	0.22	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.168	LG3	-51.92	0.04	0.27	0.00	0.07	-0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.168	LG3	-51.92	0.04	0.27	0.00	0.07	-0.01	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.168	LG43	-49.48	-0.80	-2.67	0.00	-0.72	0.22	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
623	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.161	LG16	-28.35	0.82	0.43	0.00	0.14	-0.34	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG15	-25.65	1.43	0.59	0.00	0.08	-0.05	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG41	-21.27	1.50	0.59	-0.01	0.08	0.02	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	-21.27	1.50	0.59	-0.01	0.08	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG43	-24.82	1.22	0.57	-0.01	0.01	-0.16	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.161	LG17	-27.81	1.26	0.58	-0.01	0.13	-0.36	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG19	-16.63	1.12	0.44	0.00	0.05	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG19	-16.63	1.12	0.44	0.00	0.05	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.161	LG16	-28.35	0.82	0.43	0.00	0.14	-0.34	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
624	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.203	LG43	-41.41	-0.17	-2.78	0.00	-0.85	0.05	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.203	LG87	0.13	0.08	2.09	0.00	0.63	-0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG90	-27.00	-0.25	-2.98	0.00	-0.30	0.02	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG88	-5.48	-5.11	1.19	0.00	0.12	0.51	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.203	LG87	0.13	0.08	2.09	0.00	0.63	-0.02	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.101	LG17	-39.79	-0.09	-1.55	0.00	-0.31	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.203	LG42	-34.07	4.40	-0.78	0.00	-0.24	-1.34	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.203	LG3	-31.19	0.01	0.23	0.00	0.07	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.203	LG3	-31.19	0.01	0.23	0.00	0.07	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.203	LG41	-20.03	-4.95	1.32	0.00	0.40	1.50	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
625	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.232	LG43	-31.86	0.52	-4.53	0.00	-1.51	-0.17	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-21.34	0.52	-4.82	0.00	-0.48	-0.05	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG45	-6.30	-3.99	2.58	0.00	0.26	0.40	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.232	LG87	0.16	-1.18	2.72	0.00	0.90	0.39	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.232	LG3	-22.65	-0.06	0.36	0.00	0.12	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.232	LG43	-31.86	0.52	-4.53	0.00	-1.51	-0.17	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.232	LG3	-22.65	-0.06	0.36	0.00	0.12	0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.232	LG3	-22.65	-0.06	0.36	0.00	0.12	0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG87	0.20	-1.18	2.72	0.00	0.27	0.12	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.232	LG49	-11.47	-3.97	2.65	0.00	0.88	1.32	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
626	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.000	LG87	2.96	1.51	2.19	0.00	0.22	-0.15	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.260	LG43	-21.81	-0.79	-4.26	0.00	-1.54	0.28	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-15.18	-0.87	-4.56	0.00	-0.46	0.09	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	-8.87	-2.68	1.51	0.00	0.15	0.27	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.260	LG52	0.61	1.22	2.53	0.00	0.91	-0.44	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Forces [kN] V_y	Forces [kN] V_z	Moments [kNm] M_T	Moments [kNm] M_y	Moments [kNm] M_z	Acc. to Formula
	0.260	LG3	-13.04	0.03	0.34	0.00	0.12	-0.01	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.260	LG43	-21.81	-0.79	-4.26	0.00	-1.54	0.28	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.260	LG3	-13.04	0.03	0.34	0.00	0.12	-0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.260	LG3	-13.04	0.03	0.34	0.00	0.12	-0.01	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG52	0.67	1.22	2.53	0.00	0.25	-0.12	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.260	LG43	-21.81	-0.79	-4.26	0.00	-1.54	0.28	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
627	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.209	LG47	-1.37	0.00	-0.90	0.00	-0.28	0.00	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG52	-1.30	0.00	1.07	0.00	0.11	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.209	LG52	-1.35	0.00	1.07	0.00	0.33	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.209	LG42	-1.37	0.00	-0.33	0.00	-0.10	0.00	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.209	LG42	-1.37	0.00	-0.33	0.00	-0.10	0.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.209	LG52	-1.35	0.00	1.07	0.00	0.33	0.00	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
628	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.303	LG42	-7.88	0.06	-0.23	0.00	-0.09	-0.02	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG87	-5.50	-0.01	0.74	0.00	0.07	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.303	LG44	-7.55	-0.01	0.73	0.00	0.29	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.303	LG45	-7.41	-0.06	0.30	0.00	0.12	0.03	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.303	LG42	-7.88	0.06	-0.23	0.00	-0.09	-0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.303	LG42	-7.88	0.06	-0.23	0.00	-0.09	-0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.303	LG44	-7.55	-0.01	0.73	0.00	0.29	0.00	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
632	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.060	LG10	-12.69	1.64	0.00	0.00	0.00	0.08	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.060	LG16	-12.49	1.82	0.00	0.00	0.00	0.07	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG10	-12.68	1.64	0.00	0.00	0.00	0.18	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.060	LG117	-6.36	0.88	0.00	0.00	0.00	0.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.060	LG117	-6.36	0.88	0.00	0.00	0.00	0.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.060	LG10	-12.69	1.64	0.00	0.00	0.00	0.08	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
633	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.060	LG16	-13.16	-1.82	0.00	0.00	0.01	-0.08	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.060	LG16	-13.16	-1.82	0.00	0.00	0.01	-0.08	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG16	-13.15	-1.82	0.00	0.00	0.01	-0.19	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.060	LG124	-6.74	-0.91	0.00	0.00	0.00	-0.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.060	LG124	-6.74	-0.91	0.00	0.00	0.00	-0.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.060	LG17	-13.14	-1.77	0.00	0.00	0.01	-0.08	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
634	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.129	LG16	-16.31	-0.34	0.01	0.00	0.07	0.26	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG10	-16.12	-0.52	0.01	0.00	0.07	0.21	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.129	LG32	-5.41	-0.07	0.00	0.00	0.02	0.08	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.129	LG10	-16.15	-0.52	0.01	0.00	0.07	0.28	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.129	LG46	-5.60	0.16	0.00	0.00	0.03	0.07	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.129	LG46	-5.60	0.16	0.00	0.00	0.03	0.07	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.129	LG14	-16.23	-0.45	0.01	0.00	0.07	0.27	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
635	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.129	LG13	-15.64	0.45	0.01	0.00	0.06	-0.26	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG10	-15.50	0.52	0.01	0.00	0.06	-0.20	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG31	-5.00	-0.12	0.00	0.00	0.02	-0.08	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.129	LG10	-15.53	0.52	0.01	0.00	0.06	-0.27	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.129	LG35	-5.11	-0.04	0.00	0.00	0.02	-0.07	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.129	LG35	-5.11	-0.04	0.00	0.00	0.02	-0.07	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.129	LG13	-15.64	0.45	0.01	0.00	0.06	-0.26	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
636	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.161	LG17	-11.10	-0.68	-0.20	0.00	-0.04	0.21	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG15	-10.27	-0.70	-0.28	0.00	-0.01	0.10	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.161	LG16	-11.10	-0.48	-0.09	0.00	-0.01	0.18	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.161	LG17	-11.10	-0.68	-0.20	0.00	-0.04	0.21	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.161	LG50	-9.22	-0.25	0.03	0.00	0.02	0.12	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.161	LG50	-9.22	-0.25	0.03	0.00	0.02	0.12	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.161	LG17	-11.10	-0.68	-0.20	0.00	-0.04	0.21	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
637	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.161	LG17	-9.67	-0.57	-0.38	0.00	-0.11	0.02	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG43	-9.37	-0.57	-0.39	0.00	-0.06	-0.08	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	-5.31	-0.82	-0.26	0.00	-0.02	-0.03	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.161	LG43	-9.40	-0.57	-0.39	0.00	-0.12	0.01	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG14	-6.97	-0.44	-0.23	0.00	-0.02	-0.04	204)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG43	-9.37	-0.57	-0.39	0.00	-0.06	-0.08	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.161	LG17	-9.67	-0.57	-0.38	0.00	-0.11	0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.161	LG17	-9.67	-0.57	-0.38	0.00	-0.11	0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
638	**Cross-section No. 26 - Pipe 88.9/8/K**								
	0.104	LG39	-2.51	-0.26	-6.14	0.00	-1.25	0.05	102)
	Cross-section check - Compression acc. to 6.2.4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.104	LG87	-0.16	0.00	2.86	0.00	0.58	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG43	-2.48	-0.26	-6.26	0.00	-0.63	0.03	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.104	LG87	-0.16	0.00	2.86	0.00	0.58	0.00	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG90	-2.09	-0.23	-5.55	0.00	-0.56	0.02	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.104	LG43	-2.50	-0.26	-6.26	0.00	-1.28	0.05	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.104	LG43	-2.50	-0.26	-6.26	0.00	-1.28	0.05	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
643	**Cross-section No. 24 - Pipe 88.9/10/K**								
	0.780	LG39	2.34	1.71	-27.16	0.00	-1.94	-1.39	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.780	LG52	-4.82	-1.61	15.80	0.01	1.01	1.23	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-1.02	-0.13	-1.69	0.00	1.09	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.780	LG43	2.00	1.70	-27.43	0.00	-1.98	-1.38	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.780	LG49	0.81	-8.58	22.05	0.04	1.29	6.53	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG53	0.02	-8.57	22.16	0.88	-15.96	-0.17	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG53	0.02	-8.57	22.16	0.88	-15.96	-0.17	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG53	0.02	-8.57	22.16	0.88	-15.96	-0.17	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG3	-1.02	-0.13	-1.69	0.00	1.09	0.00	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG27	0.05	1.02	-17.23	0.09	12.18	-0.02	149)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.780	LG53	0.07	-8.58	22.16	0.04	1.30	6.53	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG51	1.68	1.72	-27.45	0.24	19.44	-0.06	169)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG28	-4.24	-1.01	8.88	0.04	-6.41	-0.01	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG87	-3.73	-1.55	15.98	0.11	-11.43	-0.03	189)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG54	-4.21	5.50	-18.22	0.00	-1.38	-4.38	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG39	2.10	1.71	-27.20	0.24	19.26	-0.06	229)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pip								
	0.000	LG53	0.02	-8.57	22.16	0.88	-15.96	-0.17	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.780	LG50	-3.30	5.49	-18.30	0.00	-1.38	-4.37	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								
645	**Cross-section No. 24 - Pipe 88.9/10/K**								
	0.000	LG43	9.53	2.52	-14.13	0.11	9.77	0.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.780	LG87	-3.42	-1.80	6.59	0.00	0.51	1.41	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG40	-1.38	-1.81	5.98	0.04	-4.23	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.780	LG111	1.19	0.07	-0.20	0.00	-0.04	-0.05	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.780	LG51	9.09	2.54	-14.11	0.00	-1.19	-1.96	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.780	LG49	-1.47	-11.45	-7.43	0.01	-0.96	8.95	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	-1.19	-11.45	-7.42	-0.25	4.83	0.01	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG51	9.18	2.52	-14.18	0.11	9.83	0.01	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG49	-1.19	-11.45	-7.42	-0.25	4.83	0.01	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								

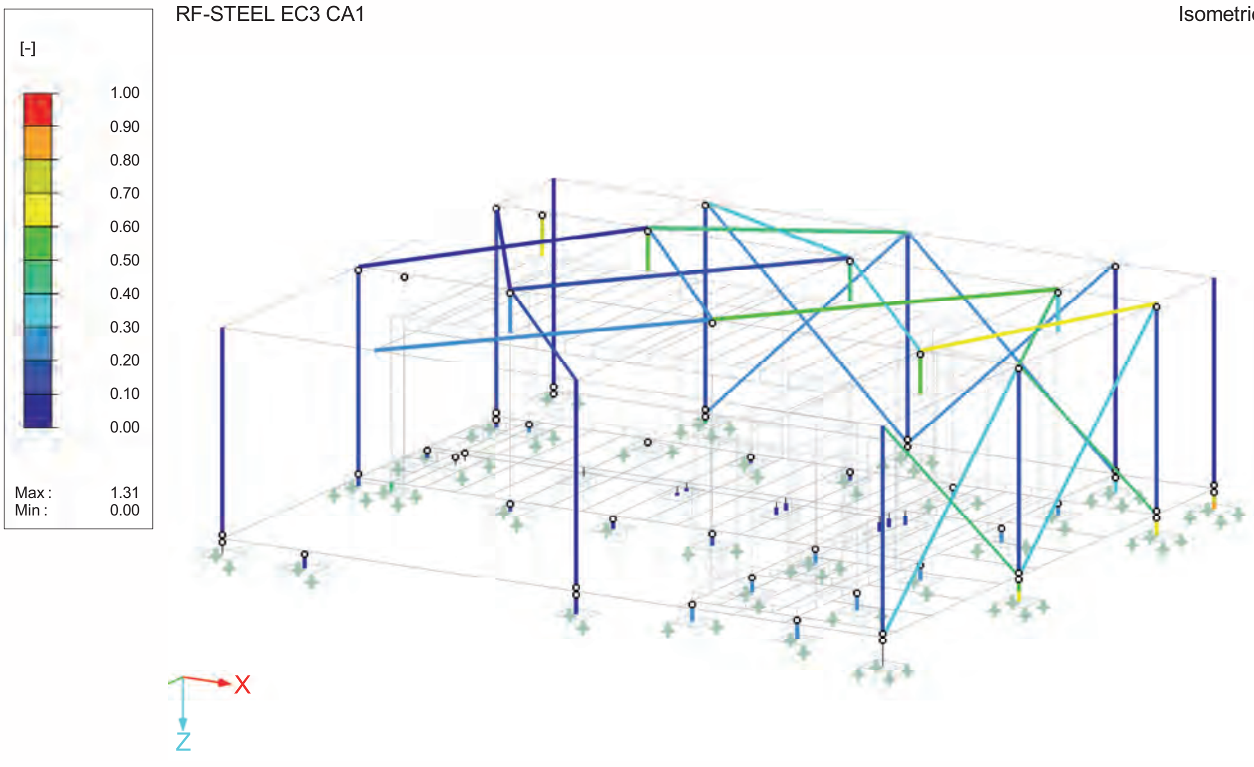
■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG40	-1.38	-1.81	5.98	0.04	-4.23	0.00	144)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG49	-1.19	-11.45	-7.42	-0.25	4.83	0.01	149)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.780	LG111	1.19	0.07	-0.20	0.00	-0.04	-0.05	154)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.780	LG49	-1.47	-11.45	-7.43	0.01	-0.96	8.95	164)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3 - Pipe								
	0.000	LG44	-2.32	-1.80	6.20	0.04	-4.39	0.00	184)
	Cross-section check - Bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.000	LG51	9.18	2.52	-14.18	0.11	9.83	0.01	189)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG53	-2.50	-11.45	-7.20	0.01	-0.95	8.95	224)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3 - Pipe								
	0.780	LG49	-1.47	-11.45	-7.43	0.01	-0.96	8.95	353)
	Stability analysis - Biaxial bending acc. to 6.3.3, Method 1								
	0.000	LG49	-1.19	-11.45	-7.42	-0.25	4.83	0.01	354)
	Stability analysis - Bending and compression acc. to 6.3.3, Method 1								

■ **STEEL_CROSS_SECTION_CHECK - ULTIMATE_LIMIT_STATES - CANOPY**

RF-STEEL EC3 CA1

Isometric



Max Design Ratio: 1.31

RF-STEEL EC3

CA2

Supporting frame

1.1.2 DETAILS

Stability Analysis	
Stability Check	☒
Bending About the Major y-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Bending About the Minor z-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Determination of elastic critical moment for lateral-torsional buckling	
For members:	Automatically by Eigenvalue Method
Load application of positive transverse loads:	On cross-section edge directed to shear center (e.g. top flange, destabilizing effect)
Limit Load for Special Cases	
Unsymmetric cross-sections with compression and bending	
$M_{y,Ed} / M_{pl,y,Rd} \leq$	0.15
$M_{z,Ed} / M_{pl,z,Rd} \leq$	0.20
$N_{c,Ed} / N_{pl} \leq$	0.01
Non-Symmetrical Cross-Sections, Tapered Members or Sets of Members	
$M_{z,Ed} / M_{pl,z,Rd} \leq$	0.10
Cross-Sections with Torsion	
$\tau_{t,Ed} / \tau_{t,Rd} \leq$	0.10
Stability analysis method of sets of members acc. to	6.3.4 General Method
Options	
Elastic Design (also for cross-sections of Class 1 or 2)	☒
Member Slendernesses	
Members with	λ_{limit}
Tension only:	300
Compression / flexure:	200
Design of Welds	
Allow Design of Welds	☐
Fire Design Settings	
$t_{fi, requ}$ [min]	15.00
Unprotected Members Δt [s]	5.00
Protected Members Δt [s]	30.00
Temperature Curve for Determination of Temperature of Gases	
Nominal temperature curves	Standard temperature-time curve
αc [W/m^{2}K]	25.00
Thermal Actions for Temperature Analysis	
Φ	1.00
ε_m	0.70
ε_f	1.00
Fire Properties	
$\gamma_{M,fi}$	1.00

1.1.3 NATIONAL ANNEX - CSN

Partial Factors acc. to 6.1, Note 2B	
For resistance of cross-sections γ_{M0} :	1.00
For resistance of members to buckling (assessed for checks in Clause 6.3)	1.00

1.1.3 NATIONAL ANNEX - CSN

γ_{M1} :	
For resistance of cross-sections in tension to fracture γ_{M2} :	1.25
Shear acc. to 6.2.6(3) and shear buckling acc. to EN 1993-1-5	
Factor η :	1.20
Parameters for Lateral-Torsional Buckling	
Imperfection coefficients of lateral-torsional buckling curves acc. to Table 6.3	
Buckling Curve a :	0.21
Buckling Curve b :	0.34
Buckling Curve c :	0.49
Buckling Curve d :	0.76
Use factor f for modification of χ_{LT} according to 6.3.2.3(2)	☒
Parameters for Φ_{LT} acc. to 6.3.2.3(1):	
Rolled I-sections	
$\lambda_{LT,0}$:	0.40
β :	0.75
Welded I-Sections	
$\lambda_{LT,0}$:	0.40
β :	0.75
Determine lateral-torsional buckling curves:	If possible, acc. to 6.3.2.3, Eq. (6.57), otherwise acc. to 6.3.2.2, Eq. (6.56)
Determine interaction factors for 6.3.3(4) according to Method:	2 according to Annex B

Serviceability Limits (Deflections) acc. to 7.2
Combination of actions (Table A1.4 of EN 1990):

			Cantilevers
CH :	Characteristic	L / 300	L_c / 150
FR :	Frequent	L / 200	L_c / 100
QP :	Quasi-permanent	L / 200	L_c / 100

General Method according to 6.3.4	
Use General Method also for non-I-sections	☒
Always use General Method for stability design according to 6.3.4	☐
Use Europan lateral-torsional buckling curve according to [5]	☐
Use the method of Johannes Caspar Naumes for assessing the out-of-plane stability	☐
Partial Factors acc. to 5.1	
For resistance of cross-sections	
γ_{M0}	1.100
For resistance of members to buckling (assessed for proofs in Clause 6.3)	
γ_{M1}	1.100
For resistance of cross-sections to fracture due to tension	
γ_{M2}	1.250
Shear According to 5.6(2) and Shear Buckling	
η	1.200
Parameters for Stability Design	
Imperfection Coefficient	α
Buckling	
Cold formed open sections	0.490
Hollow sections (welded or seamless)	0.490
Welded open sections (about the major axis)	0.490
Welded open sections (about the	0.760

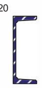
■ 1.1.3 NATIONAL ANNEX - CSN

minor axis)	
Torsional and Lateral-Torsional Buckling	
All structural members	0.340
Parameter for Φ	λ_0
Buckling	
Cold formed open sections	0.400
Hollow sections (welded or seamless)	0.400
Welded open sections (about the major axis)	0.200
Welded open sections (about the minor axis)	0.200
Torsional and Lateral-Torsional Buckling	
All structural members	0.200
Imperfection Coefficient	α_{LT}
Cold formed sections and hollow sections (welded and seamless)	0.340
Welded open sections and other sections	0.760

■ **1.2.1 MATERIALS**

Material No	Material Description	Comment
10	Steel S 355	

U 220



■ **1.3.1 CROSS-SECTIONS**

Cross-s. No	Material No	Cross-section Description [mm]	Comment
20	10	U 220	

■ **1.5 EFFECTIVE LENGTHS - MEMBERS**

Member	Buckling	Buckling About Axis y			Buckling About Axis z			Lateral-Torsional Buckling				
No	Possible	Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Possible	k_z	k_w	L_w [m]	L_T [m]
1	☒	☒	2.80	2.195	☒	2.80	2.195	☒	1.0	1.0	2.195	2.195
2	☒	☒	1.00	2.195	☒	1.00	2.195	☒	1.0	1.0	2.195	2.195
4	☒	☒	2.00	0.320	☒	2.00	0.320	☒	1.0	1.0	0.160	0.320
5	☒	☒	2.00	0.320	☒	2.00	0.320	☒	1.0	1.0	0.320	0.320
6	☒	☒	9.02	2.345	☒	9.02	2.345	☒	1.0	1.0	2.345	2.345
7	☒	☒	9.02	2.345	☒	9.02	2.345	☒	1.0	1.0	2.345	2.345
11	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
12	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
16	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
17	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
21	☒	☒	4.99	2.345	☒	4.99	2.345	☒	1.0	1.0	2.345	2.345
22	☒	☒	4.99	2.345	☒	4.99	2.345	☒	1.0	1.0	2.345	2.345
26	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
27	☒	☒	4.41	2.030	☒	4.41	2.030	☒	1.0	1.0	2.030	2.030
31	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
32	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
36	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
37	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
41	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
42	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
46	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
47	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
51	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
52	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
56	☒	☒	23.06	1.960	☒	23.06	1.960	☒	1.0	1.0	1.960	1.960
57	☒	☒	23.06	1.960	☒	23.06	1.960	☒	1.0	1.0	1.960	1.960
61	☒	☒	3.26	2.035	☒	3.26	2.035	☒	1.0	1.0	2.035	2.035
62	☒	☒	3.26	2.035	☒	3.26	2.035	☒	1.0	1.0	2.035	2.035
65	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
66	☒	☒	4.85	2.035	☒	4.85	2.035	☒	1.0	1.0	2.035	2.035

■ 1.5 EFFECTIVE LENGTHS - MEMBERS

Member	Buckling	Buckling About Axis y			Buckling About Axis z			Lateral-Torsional Buckling				
No	Possible	Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Possible	k_z	k_w	L_w [m]	L_T [m]
67	☒	☒	4.85	2.035	☒	4.85	2.035	☒	1.0	1.0	2.035	2.035
70	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
71	☒	☒	4.52	2.035	☒	4.52	2.035	☒	1.0	1.0	2.035	2.035
72	☒	☒	3.06	1.930	☒	3.06	1.930	☒	1.0	1.0	1.930	1.930
73	☒	☒	4.11	2.070	☒	4.11	2.070	☒	1.0	1.0	2.070	2.070
74	☒	☒	12.18	2.070	☒	12.18	2.070	☒	1.0	1.0	2.070	2.070
75	☒	☒	1.77	2.195	☒	1.77	2.195	☒	1.0	1.0	2.195	2.195
76	☒	☒	5.80	2.070	☒	5.80	2.070	☒	1.0	1.0	2.070	2.070
77	☒	☒	5.80	2.070	☒	5.80	2.070	☒	1.0	1.0	2.070	2.070
78	☒	☒	3.94	2.070	☒	3.94	2.070	☒	1.0	1.0	2.070	2.070
79	☒	☒	4.09	2.045	☒	4.09	2.045	☒	1.0	1.0	2.045	2.045
81	☒	☒	10.95	2.070	☒	10.95	2.070	☒	1.0	1.0	2.070	2.070
82	☒	☒	3.94	2.070	☒	3.94	2.070	☒	1.0	1.0	2.070	2.070
84	☒	☒	19.90	2.070	☒	19.90	2.070	☒	1.0	1.0	2.070	2.070
85	☒	☒	3.94	2.070	☒	3.94	2.070	☒	1.0	1.0	2.070	2.070
87	☒	☒	108.95	2.070	☒	108.95	2.070	☒	1.0	1.0	2.070	2.070
88	☒	☒	4.18	2.070	☒	4.18	2.070	☒	1.0	1.0	2.070	2.070
89	☒	☒	4.09	2.045	☒	4.09	2.045	☒	1.0	1.0	2.045	2.045
90	☒	☒	1.00	2.165	☒	1.00	2.165	☒	1.0	1.0	2.165	2.165
91	☒	☒	6.10	2.165	☒	6.10	2.165	☒	1.0	1.0	2.165	2.165
93	☒	☒	9.72	2.070	☒	9.72	2.070	☒	1.0	1.0	2.070	2.070
94	☒	☒	12.32	2.070	☒	12.32	2.070	☒	1.0	1.0	2.070	2.070
95	☒	☒	72.17	2.165	☒	72.17	2.165	☒	1.0	1.0	2.165	2.165
99	☒	☒	6.16	2.070	☒	6.16	2.070	☒	1.0	1.0	2.070	2.070
102	☒	☒	4.92	2.070	☒	4.92	2.070	☒	1.0	1.0	2.070	2.070
105	☒	☒	4.35	2.070	☒	4.35	2.070	☒	1.0	1.0	2.070	2.070
107	☒	☒	4.77	2.815	☒	4.77	2.815	☒	1.0	1.0	2.815	2.815
108	☒	☒	9.19	1.930	☒	9.19	1.930	☒	1.0	1.0	1.930	1.930
110	☒	☒	9.86	2.070	☒	9.86	2.070	☒	1.0	1.0	2.070	2.070
111	☒	☒	4.54	2.070	☒	4.54	2.070	☒	1.0	1.0	2.070	2.070
113	☒	☒	3.97	2.070	☒	3.97	2.070	☒	1.0	1.0	2.070	2.070
114	☒	☒	3.97	2.070	☒	3.97	2.070	☒	1.0	1.0	2.070	2.070
116	☒	☒	3.97	2.070	☒	3.97	2.070	☒	1.0	1.0	2.070	2.070
117	☒	☒	3.97	2.070	☒	3.97	2.070	☒	1.0	1.0	2.070	2.070
119	☒	☒	3.97	2.070	☒	3.97	2.070	☒	1.0	1.0	2.070	2.070
121	☒	☒	3.97	2.070	☒	3.97	2.070	☒	1.0	1.0	2.070	2.070
123	☒	☒	3.97	2.070	☒	3.97	2.070	☒	1.0	1.0	2.070	2.070
124	☒	☒	31.36	2.070	☒	31.36	2.070	☒	1.0	1.0	2.070	2.070
149	☒	☒	13.10	6.155	☒	13.10	6.155	☒	1.0	1.0	0.470	2.030
152	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
179	☒	☒	3.77	2.035	☒	3.77	2.035	☒	1.0	1.0	2.035	2.035
258	☒	☒	6.42	2.345	☒	6.42	2.345	☒	1.0	1.0	2.345	2.345
259	☒	☒	2.80	2.195	☒	2.80	2.195	☒	1.0	1.0	2.195	2.195
260	☒	☒	3.51	2.195	☒	3.51	2.195	☒	1.0	1.0	2.195	2.195
261	☒	☒	2.80	2.195	☒	2.80	2.195	☒	1.0	1.0	2.195	2.195
262	☒	☒	2.80	2.195	☒	2.80	2.195	☒	1.0	1.0	2.195	2.195
270	☒	☒	13.10	2.030	☒	13.10	2.030	☒	1.0	1.0	2.030	2.030
272	☒	☒	3.77	2.035	☒	3.77	2.035	☒	1.0	1.0	2.035	2.035
286	☒	☒	4.52	2.035	☒	4.52	2.035	☒	1.0	1.0	2.035	2.035
295	☒	☒	6.12	2.815	☒	6.12	2.815	☒	1.0	1.0	2.815	2.815
297	☒	☒	9.62	2.165	☒	9.62	2.165	☒	1.0	1.0	2.165	2.165
299	☒	☒	13.10	6.155	☒	13.10	6.155	☒	1.0	1.0	0.470	2.030
300	☒	☒	2.41	2.165	☒	2.41	2.165	☒	1.0	1.0	2.165	2.165
301	☒	☒	6.42	2.345	☒	6.42	2.345	☒	1.0	1.0	2.345	2.345
302	☒	☒	5.93	2.045	☒	5.93	2.045	☒	1.0	1.0	2.045	2.045
304	☒	☒	3.17	2.045	☒	3.17	2.045	☒	1.0	1.0	2.045	2.045
328	☒	☒	13.10	2.030	☒	13.10	2.030	☒	1.0	1.0	2.030	2.030
329	☒	☒	3.17	2.045	☒	3.17	2.045	☒	1.0	1.0	2.045	2.045
330	☒	☒	3.77	2.035	☒	3.77	2.035	☒	1.0	1.0	2.035	2.035
331	☒	☒	2.27	2.045	☒	2.27	2.045	☒	1.0	1.0	2.045	2.045
333	☒	☒	3.18	2.195	☒	3.18	2.195	☒	1.0	1.0	2.195	2.195
335	☒	☒	8.41	2.070	☒	8.41	2.070	☒	1.0	1.0	2.070	2.070
337	☒	☒	12.30	2.030	☒	12.30	2.030	☒	1.0	1.0	2.030	2.030
338	☒	☒	2.00	0.320	☒	2.00	0.320	☒	1.0	1.0	0.320	0.320
339	☒	☒	3.51	2.195	☒	3.51	2.195	☒	1.0	1.0	0.625	2.195
346	☒	☒	3.68	2.045	☒	3.68	2.045	☒	1.0	1.0	2.045	2.045
358	☒	☒	6.20	2.070	☒	6.20	2.070	☒	1.0	1.0	2.070	2.070
361	☒	☒	2.00	0.320	☒	2.00	0.320	☒	1.0	1.0	0.320	0.320
362	☒	☒	8.28	2.195	☒	8.28	2.195	☒	1.0	1.0	2.195	2.195
371	☒	☒	6.42	2.345	☒	6.42	2.345	☒	1.0	1.0	2.345	2.345

■ 1.5 EFFECTIVE LENGTHS - MEMBERS

Member	Buckling	Buckling About Axis y			Buckling About Axis z			Lateral-Torsional Buckling				
No	Possible	Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Possible	k_z	k_w	L_w [m]	L_T [m]
372	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
373	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
374	☒	☒	4.99	0.773	☒	4.99	0.773	☒	1.0	1.0	0.155	2.345
377	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
378	☒	☒	3.77	2.035	☒	3.77	2.035	☒	1.0	1.0	2.035	2.035
381	☒	☒	6.42	2.345	☒	6.42	2.345	☒	1.0	1.0	2.345	2.345
383	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
384	☒	☒	3.75	2.345	☒	3.75	2.345	☒	1.0	1.0	2.345	2.345
385	☒	☒	4.99	0.773	☒	4.99	0.773	☒	1.0	1.0	0.155	2.345
386	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
387	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
388	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
389	☒	☒	3.26	2.035	☒	3.26	2.035	☒	1.0	1.0	2.035	2.035
390	☒	☒	4.85	2.035	☒	4.85	2.035	☒	1.0	1.0	2.035	2.035
391	☒	☒	4.52	2.035	☒	4.52	2.035	☒	1.0	1.0	2.035	2.035
392	☒	☒	3.26	2.035	☒	3.26	2.035	☒	1.0	1.0	2.035	2.035
393	☒	☒	4.85	2.035	☒	4.85	2.035	☒	1.0	1.0	2.035	2.035
394	☒	☒	4.52	2.035	☒	4.52	2.035	☒	1.0	1.0	2.035	2.035
396	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
397	☒	☒	3.14	1.960	☒	3.14	1.960	☒	1.0	1.0	1.960	1.960
399	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
400	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
401	☒	☒	3.25	2.030	☒	3.25	2.030	☒	1.0	1.0	2.030	2.030
433	☒	☒	48.11	2.165	☒	48.11	2.165	☒	1.0	1.0	2.165	2.165
437	☒	☒	3.55	2.165	☒	3.55	2.165	☒	1.0	1.0	2.165	2.165
440	☒	☒	2.35	2.815	☒	2.35	2.815	☒	1.0	1.0	2.815	2.815
443	☒	☒	5.31	2.815	☒	5.31	2.815	☒	1.0	1.0	2.815	2.815
446	☒	☒	1.77	1.930	☒	1.77	1.930	☒	1.0	1.0	1.930	1.930
586	☒	☒	23.06	1.960	☒	23.06	1.960	☒	1.0	1.0	1.960	1.960
640	☒	☒	9.02	2.345	☒	9.02	2.345	☒	1.0	1.0	2.345	2.345
641	☒	☒	9.02	2.345	☒	9.02	2.345	☒	1.0	1.0	2.345	2.345
642	☒	☒	23.06	1.960	☒	23.06	1.960	☒	1.0	1.0	1.960	1.960

RF-STEEL EC3
CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
Ultimate Limit State Design							
LG1	UB (1.35*LC1)	108	0.000	0.20	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.45 kN	$V_{z,Ed}$	-0.46 kN	$M_{y,Ed}$	0.44 kNm
$V_{y,Ed}$	5.39 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	2.36 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.36 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.64 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.44 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.46 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.18 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	2.36 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.012	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	7.02 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	7.20 kN/cm^2	η_f	0.20		
$V_{y,Ed}$	5.39 kN	$\sigma_{x,w,Ed}$	0.16 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG2	UB (1.35*LC1 + 1.5*LC2)	299	0.470	0.31	≤ 1	157)	ULS

Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Cl

Design Internal Forces

N_{Ed}	-1.06 kN	$V_{z,Ed}$	0.22 kN	$M_{y,Ed}$	0.10 kNm
$V_{y,Ed}$	-9.04 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.74 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.29 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.36 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{z,Ed}$	3.74 kNm	γ_{M0}	1.000	$V_{pl,y,T,Rd}$	445.83 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$v_{y,T}$	0.020
$\sigma_{x,f,Ed}$	11.12 kN/cm^2	T_{Ed}	0.02 kNm	$\sigma_{x,Rd}$	35.50 kN/cm^2
$V_{y,Ed}$	9.04 kN	I_t	16.00 cm^4	η	0.31
$A_{v,y}$	21.94 cm^2	$t_{v,y}$	12.5 mm		
f_y	35.50 kN/cm^2	$\tau_{t,f,Ed}$	0.17 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG3	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3)	299	0.470	0.31	≤ 1	157)	ULS

Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Cl

Design Internal Forces

N_{Ed}	-1.20 kN	$V_{z,Ed}$	0.20 kN	$M_{y,Ed}$	0.10 kNm
$V_{y,Ed}$	-9.06 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.75 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.30 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.36 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{z,Ed}$	3.75 kNm	γ_{M0}	1.000	$V_{pl,y,T,Rd}$	445.42 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$v_{y,T}$	0.020
$\sigma_{x,f,Ed}$	11.16 kN/cm^2	T_{Ed}	0.02 kNm	$\sigma_{x,Rd}$	35.50 kN/cm^2

RF-STEEL EC3
CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	

$V_{y,Ed}$	9.06 kN	I_t	16.00 cm^4	η	0.31
$A_{v,y}$	21.94 cm^2	$t_{V,y}$	12.5 mm		
f_y	35.50 kN/cm^2	$\tau_{t,f,Ed}$	0.19 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG4	UB (1.35*LC1 + 1.5*LC3)	108	0.000	0.22	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.51 kN	$V_{z,Ed}$	-0.55 kN	$M_{y,Ed}$	0.54 kNm
$V_{y,Ed}$	5.65 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	2.60 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.48 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.82 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.54 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.20 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.55 kN
$\sigma_{x,My,f,Ed}$	0.22 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	2.60 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	7.74 kN/cm^2	$\tau_{t,f,Ed}$	0.04 kN/cm^2	$\tau_{t,w,Ed}$	0.03 kN/cm^2
$\sigma_{x,f,Ed}$	7.96 kN/cm^2	$V_{pl,y,T,Rd}$	448.61 kN	$V_{pl,z,T,Rd}$	411.08 kN
$V_{y,Ed}$	5.65 kN	$v_{y,T}$	0.013	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.22	η_w	0.01

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG5	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4)	299	0.470	0.31	≤ 1	157)	ULS

Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Cl

Design Internal Forces

N_{Ed}	-1.08 kN	$V_{z,Ed}$	0.21 kN	$M_{y,Ed}$	0.10 kNm
$V_{y,Ed}$	-9.04 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.74 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.30 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.36 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{z,Ed}$	3.74 kNm	γ_{M0}	1.000	$V_{pl,y,T,Rd}$	445.60 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$v_{y,T}$	0.020
$\sigma_{x,f,Ed}$	11.13 kN/cm^2	T_{Ed}	0.02 kNm	$\sigma_{x,Rd}$	35.50 kN/cm^2
$V_{y,Ed}$	9.04 kN	I_t	16.00 cm^4	η	0.31
$A_{v,y}$	21.94 cm^2	$t_{V,y}$	12.5 mm		
f_y	35.50 kN/cm^2	$\tau_{t,f,Ed}$	0.18 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG6	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC5)	108	0.000	0.32	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.07 kN	$V_{z,Ed}$	-1.15 kN	$M_{y,Ed}$	1.13 kNm
$V_{y,Ed}$	7.22 kN	T_{Ed}	0.02 kNm	$M_{z,Ed}$	3.63 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.93 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.64 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	1.13 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.41 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	1.15 kN
$\sigma_{x,My,f,Ed}$	0.46 kN/cm^2	T_{Ed}	0.02 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.63 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	10.81 kN/cm^2	$\tau_{t,f,Ed}$	0.13 kN/cm^2	$\tau_{t,w,Ed}$	0.09 kN/cm^2
$\sigma_{x,f,Ed}$	11.27 kN/cm^2	$V_{pl,y,T,Rd}$	446.80 kN	$V_{pl,z,T,Rd}$	409.88 kN
$V_{y,Ed}$	7.22 kN	$v_{y,T}$	0.016	$v_{z,T}$	0.003
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.32	η_w	0.01

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG7	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC6)	299	0.470	0.32	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-1.70 kN	$V_{z,Ed}$	0.52 kN	$M_{y,Ed}$	0.38 kNm
$V_{y,Ed}$	-9.11 kN	T_{Ed}	-0.03 kNm	$M_{z,Ed}$	3.77 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.21 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.45 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.38 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.14 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.52 kN
$\sigma_{x,My,f,Ed}$	0.16 kN/cm^2	T_{Ed}	0.03 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.77 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	11.22 kN/cm^2	$\tau_{t,f,Ed}$	0.20 kN/cm^2	$\tau_{t,w,Ed}$	0.15 kN/cm^2
$\sigma_{x,f,Ed}$	11.37 kN/cm^2	$V_{pl,y,T,Rd}$	445.09 kN	$V_{pl,z,T,Rd}$	408.75 kN
$V_{y,Ed}$	9.11 kN	$v_{y,T}$	0.020	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.32	η_w	0.00

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG8	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC7)	149	0.470	0.31	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-2.40 kN	$V_{z,Ed}$	-0.55 kN	$M_{y,Ed}$	-0.28 kNm
$V_{y,Ed}$	-8.85 kN	T_{Ed}	0.02 kNm	$M_{z,Ed}$	3.70 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.35 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.17 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.28 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.10 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.55 kN
$\sigma_{x,My,f,Ed}$	0.12 kN/cm^2	T_{Ed}	0.02 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.70 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	10.99 kN/cm^2	$\tau_{t,f,Ed}$	0.16 kN/cm^2	$\tau_{t,w,Ed}$	0.11 kN/cm^2

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$\sigma_{x,f,Ed}$	11.11 kN/cm^2	$V_{pl,y,T,Rd}$	446.13 kN	$V_{pl,z,T,Rd}$	409.44 kN
$V_{y,Ed}$	8.85 kN	$v_{y,T}$	0.020	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.31	η_w	0.00

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG9	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC8)	299	0.470	0.32	≤ 1	207)	ULS

Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3

Design Internal Forces

N_{Ed}	-3.26 kN	$V_{z,Ed}$	0.09 kN	$M_{y,Ed}$	0.08 kNm
$V_{y,Ed}$	-9.03 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.74 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.24 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.29 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-3.26 kN	$V_{y,Ed}$	9.03 kN	$t_{V,y}$	12.5 mm
A	37.40 cm^2	$A_{v,y}$	21.94 cm^2	$\tau_{t,f,Ed}$	0.15 kN/cm^2
$\sigma_{x,N,Ed}$	0.09 kN/cm^2	f_y	35.50 kN/cm^2	$V_{pl,y,T,Rd}$	446.19 kN
$M_{z,Ed}$	3.74 kNm	γ_{M0}	1.000	$v_{y,T}$	0.020
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$\sigma_{x,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	11.12 kN/cm^2	T_{Ed}	0.02 kNm	η	0.32
$\sigma_{x,f,Ed}$	11.21 kN/cm^2	I_t	16.00 cm^4		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG10	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC5)	299	0.470	0.31	≤ 1	157)	ULS

Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Cl

Design Internal Forces

N_{Ed}	-0.70 kN	$V_{z,Ed}$	0.24 kN	$M_{y,Ed}$	0.13 kNm
$V_{y,Ed}$	-9.04 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.73 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.29 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.37 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{z,Ed}$	3.73 kNm	γ_{M0}	1.000	$V_{pl,y,T,Rd}$	445.54 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$v_{y,T}$	0.020
$\sigma_{x,f,Ed}$	11.11 kN/cm^2	T_{Ed}	0.02 kNm	$\sigma_{x,Rd}$	35.50 kN/cm^2
$V_{y,Ed}$	9.04 kN	I_t	16.00 cm^4	η	0.31
$A_{v,y}$	21.94 cm^2	$t_{V,y}$	12.5 mm		
f_y	35.50 kN/cm^2	$\tau_{t,f,Ed}$	0.18 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG11	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC6)	299	0.470	0.32	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-1.68 kN	$V_{z,Ed}$	0.53 kN	$M_{y,Ed}$	0.39 kNm
$V_{y,Ed}$	-9.11 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.77 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.20 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.45 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

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Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Ratio

$M_{y,Ed}$	0.39 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.14 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.53 kN
$\sigma_{x,My,f,Ed}$	0.16 kN/cm^2	T_{Ed}	0.02 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.77 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	11.21 kN/cm^2	$\tau_{t,f,Ed}$	0.19 kN/cm^2	$\tau_{t,w,Ed}$	0.14 kN/cm^2
$\sigma_{x,f,Ed}$	11.37 kN/cm^2	$V_{pl,y,T,Rd}$	445.32 kN	$V_{pl,z,T,Rd}$	408.91 kN
$V_{y,Ed}$	9.11 kN	$v_{y,T}$	0.020	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.32	η_w	0.00

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG12	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC7)	299	0.470	0.31	≤ 1	157)	ULS

Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Cl

Design Internal Forces

N_{Ed}	-0.11 kN	$V_{z,Ed}$	-0.06 kN	$M_{y,Ed}$	-0.11 kNm
$V_{y,Ed}$	-9.01 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.73 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.38 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.31 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{z,Ed}$	3.73 kNm	γ_{M0}	1.000	$V_{pl,y,T,Rd}$	445.87 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$v_{y,T}$	0.020
$\sigma_{x,f,Ed}$	11.10 kN/cm^2	T_{Ed}	0.02 kNm	$\sigma_{x,Rd}$	35.50 kN/cm^2
$V_{y,Ed}$	9.01 kN	I_t	16.00 cm^4	η	0.31
$A_{v,y}$	21.94 cm^2	$t_{V,y}$	12.5 mm		
f_y	35.50 kN/cm^2	$\tau_{t,f,Ed}$	0.17 kN/cm^2		

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG13	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC8)	299	0.470	0.32	≤ 1	207)	ULS

Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3

Design Internal Forces

N_{Ed}	-3.23 kN	$V_{z,Ed}$	0.11 kN	$M_{y,Ed}$	0.09 kNm
$V_{y,Ed}$	-9.02 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	3.74 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.24 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.29 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-3.23 kN	$V_{y,Ed}$	9.02 kN	$t_{V,y}$	12.5 mm
A	37.40 cm^2	$A_{v,y}$	21.94 cm^2	$\tau_{t,f,Ed}$	0.14 kN/cm^2
$\sigma_{x,N,Ed}$	0.09 kN/cm^2	f_y	35.50 kN/cm^2	$V_{pl,y,T,Rd}$	446.42 kN
$M_{z,Ed}$	3.74 kNm	γ_{M0}	1.000	$v_{y,T}$	0.020
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$\sigma_{x,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	11.11 kN/cm^2	T_{Ed}	0.02 kNm	η	0.32
$\sigma_{x,f,Ed}$	11.20 kN/cm^2	I_t	16.00 cm^4		

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG14	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC5)	108	0.000	0.32	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.14 kN	$V_{z,Ed}$	-1.21 kN	$M_{y,Ed}$	1.19 kNm

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Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$V_{y,Ed}$	7.22	kN	T_{Ed}	0.02	kNm	$M_{z,Ed}$	3.68	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.95	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	2.70	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	1.19	kNm	γ_{M0}	1.000		$\sigma_{x,w,Ed}$	0.43	kN/cm²
$S_{el,y,min}$	244.55	cm³	$V_{pl,y,Rd}$	449.58	kN	$V_{z,Ed}$	1.21	kN
$\sigma_{x,My,f,Ed}$	0.49	kN/cm²	T_{Ed}	0.02	kNm	$A_{v,z}$	20.09	cm²
$M_{z,Ed}$	3.68	kNm	I_t	16.00	cm⁴	$V_{pl,z,Rd}$	411.71	kN
$S_{el,z,min}$	33.62	cm³	$t_{V,y}$	12.5	mm	$t_{V,z}$	9.0	mm
$\sigma_{x,Mz,f,Ed}$	10.96	kN/cm²	$\tau_{t,f,Ed}$	0.13	kN/cm²	$\tau_{t,w,Ed}$	0.09	kN/cm²
$\sigma_{x,f,Ed}$	11.44	kN/cm²	$V_{pl,y,T,Rd}$	446.71	kN	$V_{pl,z,T,Rd}$	409.82	kN
$V_{y,Ed}$	7.22	kN	$v_{y,T}$	0.016		$v_{z,T}$	0.003	
$A_{v,y}$	21.94	cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	$\sigma_{x,w,Rd}$	35.50	kN/cm²
f_y	35.50	kN/cm²	η_f	0.32		η_w	0.01	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG15	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC6)	299	0.470	0.32	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-1.83	kN	$V_{z,Ed}$	0.51	kN	$M_{y,Ed}$	0.39	kNm
$V_{y,Ed}$	-9.13	kN	T_{Ed}	-0.03	kNm	$M_{z,Ed}$	3.78	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	2.21	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	2.45	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	0.39	kNm	γ_{M0}	1.000		$\sigma_{x,w,Ed}$	0.14	kN/cm²
$S_{el,y,min}$	244.55	cm³	$V_{pl,y,Rd}$	449.58	kN	$V_{z,Ed}$	0.51	kN
$\sigma_{x,My,f,Ed}$	0.16	kN/cm²	T_{Ed}	0.03	kNm	$A_{v,z}$	20.09	cm²
$M_{z,Ed}$	3.78	kNm	I_t	16.00	cm⁴	$V_{pl,z,Rd}$	411.71	kN
$S_{el,z,min}$	33.62	cm³	$t_{V,y}$	12.5	mm	$t_{V,z}$	9.0	mm
$\sigma_{x,Mz,f,Ed}$	11.24	kN/cm²	$\tau_{t,f,Ed}$	0.21	kN/cm²	$\tau_{t,w,Ed}$	0.15	kN/cm²
$\sigma_{x,f,Ed}$	11.40	kN/cm²	$V_{pl,y,T,Rd}$	444.91	kN	$V_{pl,z,T,Rd}$	408.63	kN
$V_{y,Ed}$	9.13	kN	$v_{y,T}$	0.021		$v_{z,T}$	0.001	
$A_{v,y}$	21.94	cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	$\sigma_{x,w,Rd}$	35.50	kN/cm²
f_y	35.50	kN/cm²	η_f	0.32		η_w	0.00	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG16	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC7)	299	0.470	0.31	≤ 1	157)	ULS

Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Cl

Design Internal Forces

N_{Ed}	-0.25	kN	$V_{z,Ed}$	-0.09	kN	$M_{y,Ed}$	-0.11	kNm
$V_{y,Ed}$	-9.04	kN	T_{Ed}	-0.02	kNm	$M_{z,Ed}$	3.74	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	2.38	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	2.32	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

RF-STEEL EC3
CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	$M_{z,Ed}$ 3.74 kNm; γ_{M0} 1.000; $V_{pl,y,T,Rd}$ 445.45 kN						
	$S_{el,z,min}$ 33.62 cm³; $V_{pl,y,Rd}$ 449.58 kN; $v_{y,T}$ 0.020						
	$\sigma_{x,f,Ed}$ 11.13 kN/cm²; T_{Ed} 0.02 kNm; $\sigma_{x,Rd}$ 35.50 kN/cm²						
	$V_{y,Ed}$ 9.04 kN; I_t 16.00 cm⁴; η 0.31						
	$A_{v,y}$ 21.94 cm²; $t_{V,y}$ 12.5 mm						
	f_y 35.50 kN/cm²; $\tau_{t,f,Ed}$ 0.19 kN/cm²						
LG17	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC8)	299	0.470	0.32	≤ 1	207)	ULS
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3						
	Design Internal Forces						
	N_{Ed} -3.38 kN; $V_{z,Ed}$ 0.08 kN; $M_{y,Ed}$ 0.09 kNm						
	$V_{y,Ed}$ -9.04 kN; T_{Ed} -0.02 kNm; $M_{z,Ed}$ 3.75 kNm						
	Cross-section Classification - Class 1						
	$\lambda_{f,2}$ 8.136; $\sigma_{w,A}$ 2.24 kN/cm²						
	c_f 58.5 mm; $\lambda_{f,3}$ 11.391; $\sigma_{w,B}$ 2.30 kN/cm²						
	t_f 12.5 mm; $(c/t)_f$ 4.680; Class 1						
	ε_f 0.814; $Class_f$ 1						
	$\lambda_{f,1}$ 7.323						
	Design Ratio						
	N_{Ed} -3.38 kN; $V_{y,Ed}$ 9.04 kN; $t_{V,y}$ 12.5 mm						
	A 37.40 cm²; $A_{v,y}$ 21.94 cm²; $\tau_{t,f,Ed}$ 0.16 kN/cm²						
	$\sigma_{x,N,Ed}$ 0.09 kN/cm²; f_y 35.50 kN/cm²; $V_{pl,y,T,Rd}$ 446.01 kN						
	$M_{z,Ed}$ 3.75 kNm; γ_{M0} 1.000; $v_{y,T}$ 0.020						
	$S_{el,z,min}$ 33.62 cm³; $V_{pl,y,Rd}$ 449.58 kN; $\sigma_{x,Rd}$ 35.50 kN/cm²						
	$\sigma_{x,Mz,f,Ed}$ 11.15 kN/cm²; T_{Ed} 0.02 kNm; η 0.32						
	$\sigma_{x,f,Ed}$ 11.24 kN/cm²; I_t 16.00 cm⁴						
LG18	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC5)	108	0.000	0.27	≤ 1	167)	ULS
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3						
	Design Internal Forces						
	N_{Ed} 0.18 kN; $V_{z,Ed}$ -0.95 kN; $M_{y,Ed}$ 0.91 kNm						
	$V_{y,Ed}$ 6.22 kN; T_{Ed} 0.01 kNm; $M_{z,Ed}$ 3.15 kNm						
	Cross-section Classification - Class 1						
	$\lambda_{f,2}$ 8.136; $\sigma_{w,A}$ 1.70 kN/cm²						
	c_f 58.5 mm; $\lambda_{f,3}$ 11.391; $\sigma_{w,B}$ 2.28 kN/cm²						
	t_f 12.5 mm; $(c/t)_f$ 4.680; Class 1						
	ε_f 0.814; $Class_f$ 1						
	$\lambda_{f,1}$ 7.323						
	Design Ratio						
	$M_{y,Ed}$ 0.91 kNm; γ_{M0} 1.000; $\sigma_{x,w,Ed}$ 0.33 kN/cm²						
	$S_{el,y,min}$ 244.55 cm³; $V_{pl,y,Rd}$ 449.58 kN; $V_{z,Ed}$ 0.95 kN						
	$\sigma_{x,My,f,Ed}$ 0.37 kN/cm²; T_{Ed} 0.01 kNm; $A_{v,z}$ 20.09 cm²						
	$M_{z,Ed}$ 3.15 kNm; I_t 16.00 cm⁴; $V_{pl,z,Rd}$ 411.71 kN						
	$S_{el,z,min}$ 33.62 cm³; $t_{V,y}$ 12.5 mm; $t_{V,z}$ 9.0 mm						
	$\sigma_{x,Mz,f,Ed}$ 9.38 kN/cm²; $\tau_{t,f,Ed}$ 0.05 kN/cm²; $\tau_{t,w,Ed}$ 0.04 kN/cm²						
	$\sigma_{x,f,Ed}$ 9.75 kN/cm²; $V_{pl,y,T,Rd}$ 448.44 kN; $V_{pl,z,T,Rd}$ 410.96 kN						
	$V_{y,Ed}$ 6.22 kN; $v_{y,T}$ 0.014; $v_{z,T}$ 0.002						
	$A_{v,y}$ 21.94 cm²; $\sigma_{x,f,Rd}$ 35.50 kN/cm²; $\sigma_{x,w,Rd}$ 35.50 kN/cm²						
	f_y 35.50 kN/cm²; η_f 0.27; η_w 0.01						
LG19	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC6)	108	0.000	0.22	≤ 1	227)	ULS
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas						
	Design Internal Forces						
	N_{Ed} -2.85 kN; $V_{z,Ed}$ -0.34 kN; $M_{y,Ed}$ 0.35 kNm						
	$V_{y,Ed}$ 5.75 kN; T_{Ed} 0.01 kNm; $M_{z,Ed}$ 2.54 kNm						

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	Cross-section Classification - Class 1						
	$\lambda_{f,2}$ 8.136; $\sigma_{w,A}$ 1.41 kN/cm^2						
	c_f 58.5 mm; $\lambda_{f,3}$ 11.391; $\sigma_{w,B}$ 1.63 kN/cm^2						
	t_f 12.5 mm; $(c/t)_f$ 4.680; Class 1						
	ε_f 0.814; $Class_f$ 1						
	$\lambda_{f,1}$ 7.323						
	Design Ratio						
	N_{Ed} -2.85 kN; f_y 35.50 kN/cm^2; $\sigma_{x,w,Ed}$ 0.20 kN/cm^2						
	A 37.40 cm^2; γ_{M0} 1.000; $V_{z,Ed}$ 0.34 kN						
	$\sigma_{x,N,Ed}$ 0.08 kN/cm^2; $V_{pl,y,Rd}$ 449.58 kN; $A_{v,z}$ 20.09 cm^2						
	$M_{y,Ed}$ 0.35 kNm; T_{Ed} 0.01 kNm; $V_{pl,z,Rd}$ 411.71 kN						
	$S_{el,y,min}$ 244.55 cm^3; I_t 16.00 cm^4; $t_{V,z}$ 9.0 mm						
	$\sigma_{x,My,f,Ed}$ 0.14 kN/cm^2; $t_{V,y}$ 12.5 mm; $\tau_{t,w,Ed}$ 0.04 kN/cm^2						
	$M_{z,Ed}$ 2.54 kNm; $\tau_{t,f,Ed}$ 0.05 kN/cm^2; $V_{pl,z,T,Rd}$ 410.97 kN						
	$S_{el,z,min}$ 33.62 cm^3; $V_{pl,y,T,Rd}$ 448.46 kN; $v_{z,T}$ 0.001						
	$\sigma_{x,Mz,f,Ed}$ 7.56 kN/cm^2; $v_{y,T}$ 0.013; $\sigma_{x,w,Rd}$ 35.50 kN/cm^2						
	$\sigma_{x,f,Ed}$ 7.78 kN/cm^2; $\sigma_{x,f,Rd}$ 35.50 kN/cm^2; η_w 0.01						
	$V_{y,Ed}$ 5.75 kN; η_f 0.22						
	$A_{v,y}$ 21.94 cm^2; $\sigma_{x,My,w,Ed}$ 0.13 kN/cm^2						
LG20	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC7)	22	0.470	0.26	≤ 1	222)	ULS
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3						
	Design Internal Forces						
	N_{Ed} 2.67 kN; $V_{z,Ed}$ -0.77 kN; $M_{y,Ed}$ -0.39 kNm						
	$V_{y,Ed}$ -9.13 kN; T_{Ed} 0.00 kNm; $M_{z,Ed}$ 2.97 kNm						
	Cross-section Classification - Class 1						
	$\lambda_{f,2}$ 8.136; $\sigma_{w,A}$ 2.07 kN/cm^2						
	c_f 58.5 mm; $\lambda_{f,3}$ 11.391; $\sigma_{w,B}$ 1.82 kN/cm^2						
	t_f 12.5 mm; $(c/t)_f$ 4.680; Class 1						
	ε_f 0.814; $Class_f$ 1						
	$\lambda_{f,1}$ 7.323						
	Design Ratio						
	N_{Ed} 2.67 kN; $\sigma_{x,f,Ed}$ 9.07 kN/cm^2; $\sigma_{x,My,w,Ed}$ 0.14 kN/cm^2						
	A 37.40 cm^2; $V_{y,Ed}$ 9.13 kN; $\sigma_{x,w,Ed}$ 0.21 kN/cm^2						
	$\sigma_{x,N,Ed}$ 0.07 kN/cm^2; $A_{v,y}$ 21.94 cm^2; $V_{z,Ed}$ 0.77 kN						
	$M_{y,Ed}$ 0.39 kNm; f_y 35.50 kN/cm^2; $A_{v,z}$ 20.09 cm^2						
	$S_{el,y,min}$ 244.55 cm^3; γ_{M0} 1.000; $V_{pl,z,Rd}$ 411.71 kN						
	$\sigma_{x,My,f,Ed}$ 0.16 kN/cm^2; $V_{pl,y,Rd}$ 449.58 kN; v_z 0.002						
	$M_{z,Ed}$ 2.97 kNm; v_y 0.020; $\sigma_{x,w,Rd}$ 35.50 kN/cm^2						
	$S_{el,z,min}$ 33.62 cm^3; $\sigma_{x,f,Rd}$ 35.50 kN/cm^2; η_w 0.01						
	$\sigma_{x,Mz,f,Ed}$ 8.84 kN/cm^2; η_f 0.26						
LG21	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC8)	22	0.470	0.19	≤ 1	117)	ULS
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3						
	Design Internal Forces						
	N_{Ed} 1.35 kN; $V_{z,Ed}$ -0.04 kN; $M_{y,Ed}$ 0.06 kNm						
	$V_{y,Ed}$ -6.98 kN; T_{Ed} 0.00 kNm; $M_{z,Ed}$ 2.22 kNm						
	Cross-section Classification - Class 1						
	$\lambda_{f,2}$ 8.136; $\sigma_{w,A}$ 1.41 kN/cm^2						
	c_f 58.5 mm; $\lambda_{f,3}$ 11.391; $\sigma_{w,B}$ 1.45 kN/cm^2						
	t_f 12.5 mm; $(c/t)_f$ 4.680; Class 1						
	ε_f 0.814; $Class_f$ 1						
	$\lambda_{f,1}$ 7.323						
	Design Ratio						
	$M_{z,Ed}$ 2.22 kNm; γ_{M0} 1.000; η 0.19						
	$S_{el,z,min}$ 33.62 cm^3; $M_{el,z,Rd}$ 11.93 kNm						

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

f_y	35.50 kN/cm^2	$M_{c,z,Rd}$	11.93 kNm		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG22	UB (1.35*LC1 + 1.5*LC4)	108	0.000	0.24	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.43 kN	$V_{z,Ed}$	-0.53 kN	$M_{y,Ed}$	0.51 kNm
$V_{y,Ed}$	5.90 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	2.74 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.58 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.90 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.51 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.53 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.21 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	2.74 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	8.16 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,f,Ed}$	8.37 kN/cm^2	η_f	0.24		
$V_{y,Ed}$	5.90 kN	$\sigma_{x,w,Ed}$	0.18 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG23	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	108	0.000	0.27	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.40 kN	$V_{z,Ed}$	-0.72 kN	$M_{y,Ed}$	0.71 kNm
$V_{y,Ed}$	6.60 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.12 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.75 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.20 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.71 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.26 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.72 kN
$\sigma_{x,My,f,Ed}$	0.29 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.12 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	9.27 kN/cm^2	$\tau_{t,f,Ed}$	0.09 kN/cm^2	$\tau_{t,w,Ed}$	0.07 kN/cm^2
$\sigma_{x,f,Ed}$	9.56 kN/cm^2	$V_{pl,y,T,Rd}$	447.51 kN	$V_{pl,z,T,Rd}$	410.35 kN
$V_{y,Ed}$	6.60 kN	$v_{y,T}$	0.015	$v_{z,T}$	0.002
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.27	η_w	0.01

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG24	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC5)	108	0.000	0.32	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.08 kN	$V_{z,Ed}$	-1.11 kN	$M_{y,Ed}$	1.08 kNm
$V_{y,Ed}$	7.17 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.67 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.97 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.65 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	1.08	kNm	γ_{M0}	1.000		$\sigma_{x,w,Ed}$	0.39	kN/cm²
$S_{el,y,min}$	244.55	cm³	$V_{pl,y,Rd}$	449.58	kN	$V_{z,Ed}$	1.11	kN
$\sigma_{x,My,f,Ed}$	0.44	kN/cm²	T_{Ed}	0.01	kNm	$A_{v,z}$	20.09	cm²
$M_{z,Ed}$	3.67	kNm	I_t	16.00	cm⁴	$V_{pl,z,Rd}$	411.71	kN
$S_{el,z,min}$	33.62	cm³	$t_{V,y}$	12.5	mm	$t_{V,z}$	9.0	mm
$\sigma_{x,Mz,f,Ed}$	10.91	kN/cm²	$\tau_{t,f,Ed}$	0.10	kN/cm²	$\tau_{t,w,Ed}$	0.07	kN/cm²
$\sigma_{x,f,Ed}$	11.35	kN/cm²	$V_{pl,y,T,Rd}$	447.35	kN	$V_{pl,z,T,Rd}$	410.24	kN
$V_{y,Ed}$	7.17	kN	$v_{y,T}$	0.016		$v_{z,T}$	0.003	
$A_{v,y}$	21.94	cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	$\sigma_{x,w,Rd}$	35.50	kN/cm²
f_y	35.50	kN/cm²	η_f	0.32		η_w	0.01	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG25	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC6)	108	0.000	0.27	≤ 1	227)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

Design Internal Forces

N_{Ed}	-3.04	kN	$V_{z,Ed}$	-0.52	kN	$M_{y,Ed}$	0.52	kNm
$V_{y,Ed}$	6.72	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	3.08	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.69	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	2.02	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

N_{Ed}	-3.04	kN	f_y	35.50	kN/cm²	$\sigma_{x,w,Ed}$	0.27	kN/cm²
A	37.40	cm²	γ_{M0}	1.000		$V_{z,Ed}$	0.52	kN
$\sigma_{x,N,Ed}$	0.08	kN/cm²	$V_{pl,y,Rd}$	449.58	kN	$A_{v,z}$	20.09	cm²
$M_{y,Ed}$	0.52	kNm	T_{Ed}	0.01	kNm	$V_{pl,z,Rd}$	411.71	kN
$S_{el,y,min}$	244.55	cm³	I_t	16.00	cm⁴	$t_{V,z}$	9.0	mm
$\sigma_{x,My,f,Ed}$	0.21	kN/cm²	$t_{V,y}$	12.5	mm	$\tau_{t,w,Ed}$	0.07	kN/cm²
$M_{z,Ed}$	3.08	kNm	$\tau_{t,f,Ed}$	0.10	kN/cm²	$V_{pl,z,T,Rd}$	410.24	kN
$S_{el,z,min}$	33.62	cm³	$V_{pl,y,T,Rd}$	447.34	kN	$v_{z,T}$	0.001	
$\sigma_{x,Mz,f,Ed}$	9.15	kN/cm²	$v_{y,T}$	0.015		$\sigma_{x,w,Rd}$	35.50	kN/cm²
$\sigma_{x,f,Ed}$	9.44	kN/cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	η_w	0.01	
$V_{y,Ed}$	6.72	kN	η_f	0.27				
$A_{v,y}$	21.94	cm²	$\sigma_{x,My,w,Ed}$	0.19	kN/cm²			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG26	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC7)	22	0.470	0.31	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	3.08	kN	$V_{z,Ed}$	-0.76	kN	$M_{y,Ed}$	-0.40	kNm
$V_{y,Ed}$	-11.06	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	3.60	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	2.47	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	2.22	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

N_{Ed}	3.08	kN	$\sigma_{x,f,Ed}$	10.95	kN/cm²	$\sigma_{x,My,w,Ed}$	0.15	kN/cm²
A	37.40	cm²	$V_{y,Ed}$	11.06	kN	$\sigma_{x,w,Ed}$	0.23	kN/cm²
$\sigma_{x,N,Ed}$	0.08	kN/cm²	$A_{v,y}$	21.94	cm²	$V_{z,Ed}$	0.76	kN
$M_{y,Ed}$	0.40	kNm	f_y	35.50	kN/cm²	$A_{v,z}$	20.09	cm²

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$S_{el,y,min}$	244.55 cm^3	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.16 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	v_z	0.002
$M_{z,Ed}$	3.60 kNm	v_y	0.025	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$S_{el,z,min}$	33.62 cm^3	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,Mz,f,Ed}$	10.70 kN/cm^2	η_f	0.31		

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG27	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC8)	299	0.470	0.25	≤ 1	207)	ULS

Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3

Design Internal Forces

N_{Ed}	-3.17 kN	$V_{z,Ed}$	0.02 kN	$M_{y,Ed}$	0.05 kNm
$V_{y,Ed}$	-7.21 kN	T_{Ed}	-0.02 kNm	$M_{z,Ed}$	2.99 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.78 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.82 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-3.17 kN	$V_{y,Ed}$	7.21 kN	$t_{V,y}$	12.5 mm
A	37.40 cm^2	$A_{v,y}$	21.94 cm^2	$\tau_{t,f,Ed}$	0.14 kN/cm^2
$\sigma_{x,N,Ed}$	0.08 kN/cm^2	f_y	35.50 kN/cm^2	$V_{pl,y,T,Rd}$	446.45 kN
$M_{z,Ed}$	2.99 kNm	γ_{M0}	1.000	$v_{y,T}$	0.016
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$\sigma_{x,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	8.90 kN/cm^2	T_{Ed}	0.02 kNm	η	0.25
$\sigma_{x,f,Ed}$	8.98 kN/cm^2	I_t	16.00 cm^4		

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG28	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC5)	108	0.000	0.29	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.10 kN	$V_{z,Ed}$	-0.93 kN	$M_{y,Ed}$	0.89 kNm
$V_{y,Ed}$	6.47 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.30 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.80 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.36 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.89 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.32 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.93 kN
$\sigma_{x,My,f,Ed}$	0.36 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.30 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	9.81 kN/cm^2	$\tau_{t,f,Ed}$	0.05 kN/cm^2	$\tau_{t,w,Ed}$	0.03 kN/cm^2
$\sigma_{x,f,Ed}$	10.17 kN/cm^2	$V_{pl,y,T,Rd}$	448.57 kN	$V_{pl,z,T,Rd}$	411.05 kN
$V_{y,Ed}$	6.47 kN	$v_{y,T}$	0.014	$v_{z,T}$	0.002
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.29	η_w	0.01

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG29	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC6)	108	0.000	0.23	≤ 1	227)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

Design Internal Forces

N_{Ed}	-3.02 kN	$V_{z,Ed}$	-0.34 kN	$M_{y,Ed}$	0.33 kNm
$V_{y,Ed}$	6.02 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	2.70 kNm

Cross-section Classification - Class 1

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CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.52 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.73 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-3.02 kN	f_y	35.50 kN/cm^2	$\sigma_{x,w,Ed}$	0.20 kN/cm^2
A	37.40 cm^2	γ_{M0}	1.000	$V_{z,Ed}$	0.34 kN
$\sigma_{x,N,Ed}$	0.08 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	$A_{v,z}$	20.09 cm^2
$M_{y,Ed}$	0.33 kNm	T_{Ed}	0.01 kNm	$V_{pl,z,Rd}$	411.71 kN
$S_{el,y,min}$	244.55 cm^3	I_t	16.00 cm^4	$t_{V,z}$	9.0 mm
$\sigma_{x,My,f,Ed}$	0.13 kN/cm^2	$t_{V,y}$	12.5 mm	$\tau_{t,w,Ed}$	0.03 kN/cm^2
$M_{z,Ed}$	2.70 kNm	$\tau_{t,f,Ed}$	0.04 kN/cm^2	$V_{pl,z,T,Rd}$	411.06 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,T,Rd}$	448.60 kN	$v_{z,T}$	0.001
$\sigma_{x,Mz,f,Ed}$	8.04 kN/cm^2	$v_{y,T}$	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,f,Ed}$	8.26 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$V_{y,Ed}$	6.02 kN	η_f	0.23		
$A_{v,y}$	21.94 cm^2	$\sigma_{x,My,w,Ed}$	0.12 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG30	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC7)	22	0.470	0.27	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	2.74 kN	$V_{z,Ed}$	-0.73 kN	$M_{y,Ed}$	-0.39 kNm
$V_{y,Ed}$	-9.61 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.13 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.17 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.92 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	2.74 kN	$\sigma_{x,f,Ed}$	9.55 kN/cm^2	$\sigma_{x,My,w,Ed}$	0.14 kN/cm^2
A	37.40 cm^2	$V_{y,Ed}$	9.61 kN	$\sigma_{x,w,Ed}$	0.22 kN/cm^2
$\sigma_{x,N,Ed}$	0.07 kN/cm^2	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.73 kN
$M_{y,Ed}$	0.39 kNm	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$S_{el,y,min}$	244.55 cm^3	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.16 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	v_z	0.002
$M_{z,Ed}$	3.13 kNm	v_y	0.021	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$S_{el,z,min}$	33.62 cm^3	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,Mz,f,Ed}$	9.32 kN/cm^2	η_f	0.27		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG31	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC8)	22	0.470	0.20	≤ 1	117)	ULS

Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3

Design Internal Forces

N_{Ed}	1.42 kN	$V_{z,Ed}$	-0.01 kN	$M_{y,Ed}$	0.06 kNm
$V_{y,Ed}$	-7.47 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	2.38 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.52 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.56 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{z,Ed}$	2.38 kNm	γ_{M0}	1.000	η	0.20
$S_{el,z,min}$	33.62 cm^3	$M_{el,z,Rd}$	11.93 kNm		
f_y	35.50 kN/cm^2	$M_{c,z,Rd}$	11.93 kNm		

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CA2

Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG32	UB (1.35*LC1 + 1.5*LC5)	108	0.000	0.29	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-0.15 kN	$V_{z,Ed}$	-1.17 kN	$M_{y,Ed}$	1.12 kNm
$V_{y,Ed}$	6.36 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.30 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.72 kN/cm²
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.43 kN/cm²
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	1.12 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.40 kN/cm²
$S_{el,y,min}$	244.55 cm³	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	1.17 kN
$\sigma_{x,My,f,Ed}$	0.46 kN/cm²	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm²
$M_{z,Ed}$	3.30 kNm	I_t	16.00 cm⁴	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm³	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	9.82 kN/cm²	$\tau_{t,f,Ed}$	0.05 kN/cm²	$\tau_{t,w,Ed}$	0.04 kN/cm²
$\sigma_{x,f,Ed}$	10.28 kN/cm²	$V_{pl,y,T,Rd}$	448.42 kN	$V_{pl,z,T,Rd}$	410.95 kN
$V_{y,Ed}$	6.36 kN	$v_{y,T}$	0.014	$v_{z,T}$	0.003
$A_{v,y}$	21.94 cm²	$\sigma_{x,f,Rd}$	35.50 kN/cm²	$\sigma_{x,w,Rd}$	35.50 kN/cm²
f_y	35.50 kN/cm²	η_f	0.29	η_w	0.01

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG33	UB (1.35*LC1 + 1.5*LC6)	1	0.000	0.27	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	-12.52 kN	$V_{z,Ed}$	1.01 kN	$M_{y,Ed}$	-0.27 kNm
$V_{y,Ed}$	5.73 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.10 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.70 kN/cm²
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.53 kN/cm²
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-12.52 kN	$\sigma_{x,f,Ed}$	9.68 kN/cm²	$\sigma_{x,My,w,Ed}$	0.10 kN/cm²
A	37.40 cm²	$V_{y,Ed}$	5.73 kN	$\sigma_{x,w,Ed}$	0.43 kN/cm²
$\sigma_{x,N,Ed}$	0.33 kN/cm²	$A_{v,y}$	21.94 cm²	$V_{z,Ed}$	1.01 kN
$M_{y,Ed}$	0.27 kNm	f_y	35.50 kN/cm²	$A_{v,z}$	20.09 cm²
$S_{el,y,min}$	244.55 cm³	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.11 kN/cm²	$V_{pl,y,Rd}$	449.58 kN	v_z	0.002
$M_{z,Ed}$	3.10 kNm	v_y	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm²
$S_{el,z,min}$	33.62 cm³	$\sigma_{x,f,Rd}$	35.50 kN/cm²	η_w	0.01
$\sigma_{x,Mz,f,Ed}$	9.23 kN/cm²	η_f	0.27		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG34	UB (1.35*LC1 + 1.5*LC7)	22	0.470	0.25	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	2.07 kN	$V_{z,Ed}$	-1.16 kN	$M_{y,Ed}$	-0.66 kNm
$V_{y,Ed}$	-8.90 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	2.90 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.09 kN/cm²
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.67 kN/cm²
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Ratio

$M_{y,Ed}$	0.66 kNm	$A_{v,y}$	21.94 cm²	$V_{z,Ed}$	1.16 kN
$S_{el,y,min}$	244.55 cm³	f_y	35.50 kN/cm²	$A_{v,z}$	20.09 cm²
$\sigma_{x,My,f,Ed}$	0.27 kN/cm²	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	2.90 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.003
$S_{el,z,min}$	33.62 cm³	v_y	0.020	$\sigma_{x,w,Rd}$	35.50 kN/cm²
$\sigma_{x,Mz,f,Ed}$	8.64 kN/cm²	$\sigma_{x,f,Rd}$	35.50 kN/cm²	η_w	0.01
$\sigma_{x,f,Ed}$	8.91 kN/cm²	η_f	0.25		
$V_{y,Ed}$	8.90 kN	$\sigma_{x,w,Ed}$	0.24 kN/cm²		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG35	UB (1.35*LC1 + 1.5*LC8)	7	0.000	0.19	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	-20.90 kN	$V_{z,Ed}$	-0.20 kN	$M_{y,Ed}$	0.65 kNm
$V_{y,Ed}$	1.83 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.95 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	0.46 kN/cm²
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	0.87 kN/cm²
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-20.90 kN	$\sigma_{x,f,Ed}$	6.62 kN/cm²	$\sigma_{x,My,w,Ed}$	0.24 kN/cm²
A	37.40 cm²	$V_{y,Ed}$	1.83 kN	$\sigma_{x,w,Ed}$	0.79 kN/cm²
$\sigma_{x,N,Ed}$	0.56 kN/cm²	$A_{v,y}$	21.94 cm²	$V_{z,Ed}$	0.20 kN
$M_{y,Ed}$	0.65 kNm	f_y	35.50 kN/cm²	$A_{v,z}$	20.09 cm²
$S_{el,y,min}$	244.55 cm³	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.27 kN/cm²	$V_{pl,y,Rd}$	449.58 kN	v_z	0.000
$M_{z,Ed}$	1.95 kNm	v_y	0.004	$\sigma_{x,w,Rd}$	35.50 kN/cm²
$S_{el,z,min}$	33.62 cm³	$\sigma_{x,f,Rd}$	35.50 kN/cm²	η_w	0.02
$\sigma_{x,Mz,f,Ed}$	5.80 kN/cm²	η_f	0.19		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG36	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC5)	108	0.000	0.32	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-0.13 kN	$V_{z,Ed}$	-1.33 kN	$M_{y,Ed}$	1.28 kNm
$V_{y,Ed}$	7.05 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.66 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.89 kN/cm²
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.70 kN/cm²
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	1.28 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.47 kN/cm²
$S_{el,y,min}$	244.55 cm³	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	1.33 kN
$\sigma_{x,My,f,Ed}$	0.53 kN/cm²	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm²
$M_{z,Ed}$	3.66 kNm	I_t	16.00 cm⁴	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm³	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	10.88 kN/cm²	$\tau_{t,f,Ed}$	0.11 kN/cm²	$\tau_{t,w,Ed}$	0.08 kN/cm²
$\sigma_{x,f,Ed}$	11.40 kN/cm²	$V_{pl,y,T,Rd}$	447.22 kN	$V_{pl,z,T,Rd}$	410.15 kN
$V_{y,Ed}$	7.05 kN	$v_{y,T}$	0.016	$v_{z,T}$	0.003
$A_{v,y}$	21.94 cm²	$\sigma_{x,f,Rd}$	35.50 kN/cm²	$\sigma_{x,w,Rd}$	35.50 kN/cm²
f_y	35.50 kN/cm²	η_f	0.32	η_w	0.01

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG37	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC6)	1	0.000	0.28	≤ 1	227)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Internal Forces

N_{Ed}	-12.27 kN	$V_{z,Ed}$	1.14 kN	$M_{y,Ed}$	-0.39 kNm
$V_{y,Ed}$	5.94 kN	T_{Ed}	0.02 kNm	$M_{z,Ed}$	3.15 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.78 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.53 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-12.27 kN	f_y	35.50 kN/cm^2	$\sigma_{x,w,Ed}$	0.47 kN/cm^2
A	37.40 cm^2	γ_{M0}	1.000	$V_{z,Ed}$	1.14 kN
$\sigma_{x,N,Ed}$	0.33 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	$A_{v,z}$	20.09 cm^2
$M_{y,Ed}$	0.39 kNm	T_{Ed}	0.02 kNm	$V_{pl,z,Rd}$	411.71 kN
$S_{el,y,min}$	244.55 cm^3	I_t	16.00 cm^4	$t_{V,z}$	9.0 mm
$\sigma_{x,My,f,Ed}$	0.16 kN/cm^2	$t_{V,y}$	12.5 mm	$\tau_{t,w,Ed}$	0.11 kN/cm^2
$M_{z,Ed}$	3.15 kNm	$\tau_{t,f,Ed}$	0.15 kN/cm^2	$V_{pl,z,T,Rd}$	409.50 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,T,Rd}$	446.22 kN	$v_{z,T}$	0.003
$\sigma_{x,Mz,f,Ed}$	9.36 kN/cm^2	$v_{y,T}$	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,f,Ed}$	9.84 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$V_{y,Ed}$	5.94 kN	η_f	0.28		
$A_{v,y}$	21.94 cm^2	$\sigma_{x,My,w,Ed}$	0.14 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG38	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC7)	22	0.470	0.29	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	2.43 kN	$V_{z,Ed}$	-1.19 kN	$M_{y,Ed}$	-0.67 kNm
$V_{y,Ed}$	-10.34 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.37 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.40 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.97 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.67 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	1.19 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.27 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	3.37 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.003
$S_{el,z,min}$	33.62 cm^3	v_y	0.023	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	10.02 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,f,Ed}$	10.29 kN/cm^2	η_f	0.29		
$V_{y,Ed}$	10.34 kN	$\sigma_{x,w,Ed}$	0.24 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG39	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC8)	299	0.470	0.25	≤ 1	207)	ULS

Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3

Design Internal Forces

N_{Ed}	-4.57 kN	$V_{z,Ed}$	-0.04 kN	$M_{y,Ed}$	0.05 kNm
$V_{y,Ed}$	-7.20 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	2.99 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.74 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.77 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

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CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Design Ratio

N_{Ed}	-4.57 kN	$V_{y,Ed}$	7.20 kN	$t_{V,y}$	12.5 mm
A	37.40 cm^2	$A_{v,y}$	21.94 cm^2	$\tau_{t,f,Ed}$	0.10 kN/cm^2
$\sigma_{x,N,Ed}$	0.12 kN/cm^2	f_y	35.50 kN/cm^2	$V_{pl,y,T,Rd}$	447.31 kN
$M_{z,Ed}$	2.99 kNm	γ_{M0}	1.000	$v_{y,T}$	0.016
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$\sigma_{x,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	8.88 kN/cm^2	T_{Ed}	0.01 kNm	η	0.25
$\sigma_{x,f,Ed}$	9.00 kN/cm^2	I_t	16.00 cm^4		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG40	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC5)	108	0.000	0.34	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-0.08 kN	$V_{z,Ed}$	-1.39 kN	$M_{y,Ed}$	1.34 kNm
$V_{y,Ed}$	7.23 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.82 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.98 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.83 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	Class$_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	1.34 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.49 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	1.39 kN
$\sigma_{x,My,f,Ed}$	0.55 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.82 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	11.38 kN/cm^2	$\tau_{t,f,Ed}$	0.11 kN/cm^2	$\tau_{t,w,Ed}$	0.08 kN/cm^2
$\sigma_{x,f,Ed}$	11.93 kN/cm^2	$V_{pl,y,T,Rd}$	447.18 kN	$V_{pl,z,T,Rd}$	410.13 kN
$V_{y,Ed}$	7.23 kN	$v_{y,T}$	0.016	$v_{z,T}$	0.003
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.34	η_w	0.01

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG41	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC6)	1	0.000	0.28	≤ 1	227)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

Design Internal Forces

N_{Ed}	-12.23 kN	$V_{z,Ed}$	1.16 kN	$M_{y,Ed}$	-0.41 kNm
$V_{y,Ed}$	5.96 kN	T_{Ed}	0.02 kNm	$M_{z,Ed}$	3.16 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.79 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.53 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	Class$_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-12.23 kN	f_y	35.50 kN/cm^2	$\sigma_{x,w,Ed}$	0.47 kN/cm^2
A	37.40 cm^2	γ_{M0}	1.000	$V_{z,Ed}$	1.16 kN
$\sigma_{x,N,Ed}$	0.33 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	$A_{v,z}$	20.09 cm^2
$M_{y,Ed}$	0.41 kNm	T_{Ed}	0.02 kNm	$V_{pl,z,Rd}$	411.71 kN
$S_{el,y,min}$	244.55 cm^3	I_t	16.00 cm^4	$t_{V,z}$	9.0 mm
$\sigma_{x,My,f,Ed}$	0.17 kN/cm^2	$t_{V,y}$	12.5 mm	$\tau_{t,w,Ed}$	0.11 kN/cm^2
$M_{z,Ed}$	3.16 kNm	$\tau_{t,f,Ed}$	0.15 kN/cm^2	$V_{pl,z,T,Rd}$	409.53 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,T,Rd}$	446.26 kN	$v_{z,T}$	0.003
$\sigma_{x,Mz,f,Ed}$	9.40 kN/cm^2	$v_{y,T}$	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,f,Ed}$	9.89 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$V_{y,Ed}$	5.96 kN	η_f	0.28			
$A_{v,y}$	21.94 cm^2	$\sigma_{x,My,w,Ed}$	0.15 kN/cm^2			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG42	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC7)	22	0.470	0.31	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	2.84 kN	$V_{z,Ed}$	-1.22 kN	$M_{y,Ed}$	-0.66 kNm
$V_{y,Ed}$	-11.12 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.63 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.57 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.15 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	2.84 kN	$\sigma_{x,f,Ed}$	11.15 kN/cm^2	$\sigma_{x,My,w,Ed}$	0.24 kN/cm^2
A	37.40 cm^2	$V_{y,Ed}$	11.12 kN	$\sigma_{x,w,Ed}$	0.32 kN/cm^2
$\sigma_{x,N,Ed}$	0.08 kN/cm^2	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	1.22 kN
$M_{y,Ed}$	0.66 kNm	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$S_{el,y,min}$	244.55 cm^3	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.27 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	v_z	0.003
$M_{z,Ed}$	3.63 kNm	v_y	0.025	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$S_{el,z,min}$	33.62 cm^3	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,Mz,f,Ed}$	10.80 kN/cm^2	η_f	0.31		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG43	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC8)	299	0.470	0.25	≤ 1	207)	ULS

Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3

Design Internal Forces

N_{Ed}	-4.67 kN	$V_{z,Ed}$	-0.05 kN	$M_{y,Ed}$	0.05 kNm
$V_{y,Ed}$	-7.21 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	2.99 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.74 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.78 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-4.67 kN	$V_{y,Ed}$	7.21 kN	$t_{V,y}$	12.5 mm
A	37.40 cm^2	$A_{v,y}$	21.94 cm^2	$\tau_{t,f,Ed}$	0.12 kN/cm^2
$\sigma_{x,N,Ed}$	0.12 kN/cm^2	f_y	35.50 kN/cm^2	$V_{pl,y,T,Rd}$	447.02 kN
$M_{z,Ed}$	2.99 kNm	γ_{M0}	1.000	$v_{y,T}$	0.016
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,Rd}$	449.58 kN	$\sigma_{x,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	8.90 kN/cm^2	T_{Ed}	0.01 kNm	η	0.25
$\sigma_{x,f,Ed}$	9.03 kN/cm^2	I_t	16.00 cm^4		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG44	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC5)	108	0.000	0.30	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-0.09 kN	$V_{z,Ed}$	-1.23 kN	$M_{y,Ed}$	1.18 kNm
$V_{y,Ed}$	6.54 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.47 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.81 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.55 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1

RF-STEEL EC3
CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	1.18 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.43 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	1.23 kN
$\sigma_{x,My,f,Ed}$	0.48 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.47 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	10.31 kN/cm^2	$\tau_{t,f,Ed}$	0.05 kN/cm^2	$\tau_{t,w,Ed}$	0.04 kN/cm^2
$\sigma_{x,f,Ed}$	10.79 kN/cm^2	$V_{pl,y,T,Rd}$	448.38 kN	$V_{pl,z,T,Rd}$	410.92 kN
$V_{y,Ed}$	6.54 kN	$v_{y,T}$	0.015	$v_{z,T}$	0.003
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.30	η_w	0.01

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG45	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC6)	1	0.000	0.27	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	-12.46 kN	$V_{z,Ed}$	1.03 kN	$M_{y,Ed}$	-0.29 kNm
$V_{y,Ed}$	5.74 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.12 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.72 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.54 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-12.46 kN	$\sigma_{x,f,Ed}$	9.72 kN/cm^2	$\sigma_{x,My,w,Ed}$	0.10 kN/cm^2
A	37.40 cm^2	$V_{y,Ed}$	5.74 kN	$\sigma_{x,w,Ed}$	0.44 kN/cm^2
$\sigma_{x,N,Ed}$	0.33 kN/cm^2	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	1.03 kN
$M_{y,Ed}$	0.29 kNm	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$S_{el,y,min}$	244.55 cm^3	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.12 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	v_z	0.003
$M_{z,Ed}$	3.12 kNm	v_y	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$S_{el,z,min}$	33.62 cm^3	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,Mz,f,Ed}$	9.27 kN/cm^2	η_f	0.27		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG46	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC7)	22	0.470	0.27	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	2.49 kN	$V_{z,Ed}$	-1.18 kN	$M_{y,Ed}$	-0.66 kNm
$V_{y,Ed}$	-9.68 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.17 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.27 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.85 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.66 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	1.18 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.27 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	3.17 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.003
$S_{el,z,min}$	33.62 cm^3	v_y	0.022	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	9.42 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,f,Ed}$	9.69 kN/cm^2	η_f	0.27		
$V_{y,Ed}$	9.68 kN	$\sigma_{x,w,Ed}$	0.24 kN/cm^2		

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG47	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC8)	74	0.170	0.20	≤ 1	227)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

Design Internal Forces

N_{Ed}	-7.63 kN	$V_{z,Ed}$	-4.35 kN	$M_{y,Ed}$	1.57 kNm
$V_{y,Ed}$	-9.55 kN	T_{Ed}	0.02 kNm	$M_{z,Ed}$	2.06 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	0.60 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.59 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-7.63 kN	f_y	35.50 kN/cm^2	$\sigma_{x,w,Ed}$	0.77 kN/cm^2
A	37.40 cm^2	γ_{M0}	1.000	$V_{z,Ed}$	4.35 kN
$\sigma_{x,N,Ed}$	0.20 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	$A_{v,z}$	20.09 cm^2
$M_{y,Ed}$	1.57 kNm	T_{Ed}	0.02 kNm	$V_{pl,z,Rd}$	411.71 kN
$S_{el,y,min}$	244.55 cm^3	I_t	16.00 cm^4	$t_{V,z}$	9.0 mm
$\sigma_{x,My,f,Ed}$	0.64 kN/cm^2	$t_{V,y}$	12.5 mm	$\tau_{t,w,Ed}$	0.10 kN/cm^2
$M_{z,Ed}$	2.06 kNm	$\tau_{t,f,Ed}$	0.14 kN/cm^2	$V_{pl,z,T,Rd}$	409.72 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,T,Rd}$	446.56 kN	$v_{z,T}$	0.011
$\sigma_{x,Mz,f,Ed}$	6.13 kN/cm^2	$v_{y,T}$	0.021	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,f,Ed}$	6.98 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.02
$V_{y,Ed}$	9.55 kN	η_f	0.20		
$A_{v,y}$	21.94 cm^2	$\sigma_{x,My,w,Ed}$	0.57 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG48	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC5)	108	0.000	0.34	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-0.14 kN	$V_{z,Ed}$	-1.36 kN	$M_{y,Ed}$	1.31 kNm
$V_{y,Ed}$	7.31 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.85 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.00 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.83 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	1.31 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.48 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	1.36 kN
$\sigma_{x,My,f,Ed}$	0.54 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	3.85 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	11.45 kN/cm^2	$\tau_{t,f,Ed}$	0.11 kN/cm^2	$\tau_{t,w,Ed}$	0.08 kN/cm^2
$\sigma_{x,f,Ed}$	11.99 kN/cm^2	$V_{pl,y,T,Rd}$	447.25 kN	$V_{pl,z,T,Rd}$	410.18 kN
$V_{y,Ed}$	7.31 kN	$v_{y,T}$	0.016	$v_{z,T}$	0.003
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.34	η_w	0.01

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG49	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC6)	1	0.000	0.28	≤ 1	227)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

Design Internal Forces

N_{Ed}	-12.23 kN	$V_{z,Ed}$	1.14 kN	$M_{y,Ed}$	-0.39 kNm
$V_{y,Ed}$	5.93 kN	T_{Ed}	0.02 kNm	$M_{z,Ed}$	3.15 kNm

Cross-section Classification - Class 1

RF-STEEL EC3
CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.78 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.53 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-12.23 kN	f_y	35.50 kN/cm^2	$\sigma_{x,w,Ed}$	0.47 kN/cm^2
A	37.40 cm^2	γ_{M0}	1.000	$V_{z,Ed}$	1.14 kN
$\sigma_{x,N,Ed}$	0.33 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	$A_{v,z}$	20.09 cm^2
$M_{y,Ed}$	0.39 kNm	T_{Ed}	0.02 kNm	$V_{pl,z,Rd}$	411.71 kN
$S_{el,y,min}$	244.55 cm^3	I_t	16.00 cm^4	$t_{V,z}$	9.0 mm
$\sigma_{x,My,f,Ed}$	0.16 kN/cm^2	$t_{V,y}$	12.5 mm	$\tau_{t,w,Ed}$	0.11 kN/cm^2
$M_{z,Ed}$	3.15 kNm	$\tau_{t,f,Ed}$	0.15 kN/cm^2	$V_{pl,z,T,Rd}$	409.52 kN
$S_{el,z,min}$	33.62 cm^3	$V_{pl,y,T,Rd}$	446.26 kN	$v_{z,T}$	0.003
$\sigma_{x,Mz,f,Ed}$	9.36 kN/cm^2	$v_{y,T}$	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,f,Ed}$	9.84 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$V_{y,Ed}$	5.93 kN	η_f	0.28		
$A_{v,y}$	21.94 cm^2	$\sigma_{x,My,w,Ed}$	0.14 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG50	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC7)	22	0.470	0.31	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	2.76 kN	$V_{z,Ed}$	-1.19 kN	$M_{y,Ed}$	-0.66 kNm
$V_{y,Ed}$	-11.14 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.64 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	2.57 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.15 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	2.76 kN	$\sigma_{x,f,Ed}$	11.16 kN/cm^2	$\sigma_{x,My,w,Ed}$	0.24 kN/cm^2
A	37.40 cm^2	$V_{y,Ed}$	11.14 kN	$\sigma_{x,w,Ed}$	0.31 kN/cm^2
$\sigma_{x,N,Ed}$	0.07 kN/cm^2	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	1.19 kN
$M_{y,Ed}$	0.66 kNm	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$S_{el,y,min}$	244.55 cm^3	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.27 kN/cm^2	$V_{pl,y,Rd}$	449.58 kN	v_z	0.003
$M_{z,Ed}$	3.64 kNm	v_y	0.025	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$S_{el,z,min}$	33.62 cm^3	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.01
$\sigma_{x,Mz,f,Ed}$	10.82 kN/cm^2	η_f	0.31		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG51	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC8)	299	0.470	0.25	≤ 1	207)	ULS

Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3

Design Internal Forces

N_{Ed}	-4.60 kN	$V_{z,Ed}$	-0.05 kN	$M_{y,Ed}$	0.05 kNm
$V_{y,Ed}$	-7.20 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	2.99 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.74 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.77 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

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CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

N_{Ed}	-4.60 kN	$V_{y,Ed}$	7.20 kN	$t_{V,y}$	12.5 mm
A	37.40 cm²	$A_{v,y}$	21.94 cm²	$\tau_{t,f,Ed}$	0.11 kN/cm²
$\sigma_{x,N,Ed}$	0.12 kN/cm²	f_y	35.50 kN/cm²	$V_{pl,y,T,Rd}$	447.08 kN
$M_{z,Ed}$	2.99 kNm	γ_{M0}	1.000	$v_{y,T}$	0.016
$S_{el,z,min}$	33.62 cm³	$V_{pl,y,Rd}$	449.58 kN	$\sigma_{x,Rd}$	35.50 kN/cm²
$\sigma_{x,Mz,f,Ed}$	8.88 kN/cm²	T_{Ed}	0.01 kNm	η	0.25
$\sigma_{x,f,Ed}$	9.01 kN/cm²	I_t	16.00 cm⁴		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG52	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC5)	108	0.000	0.31	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-0.14 kN	$V_{z,Ed}$	-1.21 kN	$M_{y,Ed}$	1.15 kNm
$V_{y,Ed}$	6.61 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	3.49 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.83 kN/cm²
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	2.56 kN/cm²
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	1.15 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.42 kN/cm²
$S_{el,y,min}$	244.55 cm³	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	1.21 kN
$\sigma_{x,My,f,Ed}$	0.47 kN/cm²	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm²
$M_{z,Ed}$	3.49 kNm	I_t	16.00 cm⁴	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm³	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	10.39 kN/cm²	$\tau_{t,f,Ed}$	0.05 kN/cm²	$\tau_{t,w,Ed}$	0.04 kN/cm²
$\sigma_{x,f,Ed}$	10.85 kN/cm²	$V_{pl,y,T,Rd}$	448.45 kN	$V_{pl,z,T,Rd}$	410.97 kN
$V_{y,Ed}$	6.61 kN	$v_{y,T}$	0.015	$v_{z,T}$	0.003
$A_{v,y}$	21.94 cm²	$\sigma_{x,f,Rd}$	35.50 kN/cm²	$\sigma_{x,w,Rd}$	35.50 kN/cm²
f_y	35.50 kN/cm²	η_f	0.31	η_w	0.01

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG53	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC6)	1	0.000	0.27	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	-12.47 kN	$V_{z,Ed}$	1.02 kN	$M_{y,Ed}$	-0.27 kNm
$V_{y,Ed}$	5.72 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	3.10 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.71 kN/cm²
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.53 kN/cm²
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

N_{Ed}	-12.47 kN	$\sigma_{x,f,Ed}$	9.67 kN/cm²	$\sigma_{x,My,w,Ed}$	0.10 kN/cm²
A	37.40 cm²	$V_{y,Ed}$	5.72 kN	$\sigma_{x,w,Ed}$	0.43 kN/cm²
$\sigma_{x,N,Ed}$	0.33 kN/cm²	$A_{v,y}$	21.94 cm²	$V_{z,Ed}$	1.02 kN
$M_{y,Ed}$	0.27 kNm	f_y	35.50 kN/cm²	$A_{v,z}$	20.09 cm²
$S_{el,y,min}$	244.55 cm³	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$\sigma_{x,My,f,Ed}$	0.11 kN/cm²	$V_{pl,y,Rd}$	449.58 kN	v_z	0.002
$M_{z,Ed}$	3.10 kNm	v_y	0.013	$\sigma_{x,w,Rd}$	35.50 kN/cm²
$S_{el,z,min}$	33.62 cm³	$\sigma_{x,f,Rd}$	35.50 kN/cm²	η_w	0.01
$\sigma_{x,Mz,f,Ed}$	9.23 kN/cm²	η_f	0.27		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG54	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC7)	22	0.470	0.27	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	2.41 kN	$V_{z,Ed}$	-1.16 kN	$M_{y,Ed}$	-0.66 kNm

RF-STEEL EC3

CA2

Supporting frame

■ 2.1 DESIGN BY LOAD CASE

$V_{y,Ed}$	-9.70	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	3.17	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	2.27	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.85	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	0.66	kNm	$A_{v,y}$	21.94	cm²	$V_{z,Ed}$	1.16	kN
$S_{el,y,min}$	244.55	cm³	f_y	35.50	kN/cm²	$A_{v,z}$	20.09	cm²
$\sigma_{x,My,f,Ed}$	0.27	kN/cm²	γ_{M0}	1.000		$V_{pl,z,Rd}$	411.71	kN
$M_{z,Ed}$	3.17	kNm	$V_{pl,y,Rd}$	449.58	kN	v_z	0.003	
$S_{el,z,min}$	33.62	cm³	v_y	0.022		$\sigma_{x,w,Rd}$	35.50	kN/cm²
$\sigma_{x,Mz,f,Ed}$	9.44	kN/cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	η_w	0.01	
$\sigma_{x,f,Ed}$	9.71	kN/cm²	η_f	0.27				
$V_{y,Ed}$	9.70	kN	$\sigma_{x,w,Ed}$	0.24	kN/cm²			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG55	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC8)	330	0.000	0.19	≤ 1	202)	ULS

Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3

Design Internal Forces

N_{Ed}	-13.52	kN	$V_{z,Ed}$	0.04	kN	$M_{y,Ed}$	-0.02	kNm
$V_{y,Ed}$	6.21	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	2.20	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.03	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.01	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

N_{Ed}	-13.52	kN	$\sigma_{x,Mz,f,Ed}$	6.53	kN/cm²	γ_{M0}	1.000	
A	37.40	cm²	$\sigma_{x,f,Ed}$	6.90	kN/cm²	$V_{pl,y,Rd}$	449.58	kN
$\sigma_{x,N,Ed}$	0.36	kN/cm²	$V_{y,Ed}$	6.21	kN	v_y	0.014	
$M_{z,Ed}$	2.20	kNm	$A_{v,y}$	21.94	cm²	$\sigma_{x,Rd}$	35.50	kN/cm²
$S_{el,z,min}$	33.62	cm³	f_y	35.50	kN/cm²	η	0.19	

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG87	UB (LC1 + 1.5*LC5)	108	0.000	0.24	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	-0.32	kN	$V_{z,Ed}$	-1.07	kN	$M_{y,Ed}$	1.02	kNm
$V_{y,Ed}$	4.97	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	2.70	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.37	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	2.01	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	1.02	kNm	γ_{M0}	1.000		$\sigma_{x,w,Ed}$	0.37	kN/cm²
$S_{el,y,min}$	244.55	cm³	$V_{pl,y,Rd}$	449.58	kN	$V_{z,Ed}$	1.07	kN
$\sigma_{x,My,f,Ed}$	0.42	kN/cm²	T_{Ed}	0.01	kNm	$A_{v,z}$	20.09	cm²
$M_{z,Ed}$	2.70	kNm	I_t	16.00	cm⁴	$V_{pl,z,Rd}$	411.71	kN
$S_{el,z,min}$	33.62	cm³	$t_{v,y}$	12.5	mm	$t_{v,z}$	9.0	mm
$\sigma_{x,Mz,f,Ed}$	8.04	kN/cm²	$\tau_{t,f,Ed}$	0.04	kN/cm²	$\tau_{t,w,Ed}$	0.03	kN/cm²
$\sigma_{x,f,Ed}$	8.46	kN/cm²	$V_{pl,y,T,Rd}$	448.60	kN	$V_{pl,z,T,Rd}$	411.07	kN
$V_{y,Ed}$	4.97	kN	$v_{y,T}$	0.011		$v_{z,T}$	0.003	
$A_{v,y}$	21.94	cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	$\sigma_{x,w,Rd}$	35.50	kN/cm²

RF-STEEL EC3

CA2

Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

f_y	35.50	kN/cm^2	η_f	0.24		η_w	0.01	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG88	UB (LC1 + 1.5*LC6)	1	0.000	0.27	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	-12.53	kN	$V_{z,Ed}$	0.95	kN	$M_{y,Ed}$	-0.21	kNm
$V_{y,Ed}$	5.38	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	3.04	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.64	kN/cm^2
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.51	kN/cm^2
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

N_{Ed}	-12.53	kN	$\sigma_{x,f,Ed}$	9.45	kN/cm^2	$\sigma_{x,My,w,Ed}$	0.08	kN/cm^2
A	37.40	cm^2	$V_{y,Ed}$	5.38	kN	$\sigma_{x,w,Ed}$	0.41	kN/cm^2
$\sigma_{x,N,Ed}$	0.34	kN/cm^2	$A_{v,y}$	21.94	cm^2	$V_{z,Ed}$	0.95	kN
$M_{y,Ed}$	0.21	kNm	f_y	35.50	kN/cm^2	$A_{v,z}$	20.09	cm^2
$S_{el,y,min}$	244.55	cm^3	γ_{M0}	1.000		$V_{pl,z,Rd}$	411.71	kN
$\sigma_{x,My,f,Ed}$	0.09	kN/cm^2	$V_{pl,y,Rd}$	449.58	kN	v_z	0.002	
$M_{z,Ed}$	3.04	kNm	v_y	0.012		$\sigma_{x,w,Rd}$	35.50	kN/cm^2
$S_{el,z,min}$	33.62	cm^3	$\sigma_{x,f,Rd}$	35.50	kN/cm^2	η_w	0.01	
$\sigma_{x,Mz,f,Ed}$	9.03	kN/cm^2	η_f	0.27				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG89	UB (LC1 + 1.5*LC7)	1	0.000	0.21	≤ 1	227)	ULS

Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Clas

Design Internal Forces

N_{Ed}	12.35	kN	$V_{z,Ed}$	1.31	kN	$M_{y,Ed}$	-0.79	kNm
$V_{y,Ed}$	-2.92	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	-2.32	kNm

Cross-section Classification - Class 1

			t_w	9.0	mm	ε_w	0.814	
$\sigma_{f,A}$	0.02	kN/cm^2	$f_{yd,w}$	35.50	kN/cm^2	$\lambda_{w,1}$	72.344	
$\sigma_{f,B}$	6.92	kN/cm^2	N_{Ed}	12.35	kN	$\lambda_{w,2}$	83.397	
			α_w	0.405		$\lambda_{w,3}$	36.643	
$\sigma_{w,A}$	-1.94	kN/cm^2	$\sigma_{f\text{-}yd,1}$	35.50	kN/cm^2	$(c/t)_w$	18.889	
$\sigma_{w,B}$	-2.44	kN/cm^2	$\sigma_{f\text{-}yd,2}$	28.24	kN/cm^2	$Class_w$	1	
c_w	170.0	mm	ψ_w	0.796		Class	1	

Design Ratio

N_{Ed}	12.35	kN	f_y	35.50	kN/cm^2	$\sigma_{x,w,Ed}$	0.62	kN/cm^2
A	37.40	cm^2	γ_{M0}	1.000		$V_{z,Ed}$	1.31	kN
$\sigma_{x,N,Ed}$	0.33	kN/cm^2	$V_{pl,y,Rd}$	449.58	kN	$A_{v,z}$	20.09	cm^2
$M_{y,Ed}$	0.79	kNm	T_{Ed}	0.01	kNm	$V_{pl,z,Rd}$	411.71	kN
$S_{el,y,min}$	244.55	cm^3	I_t	16.00	cm^4	$t_{V,z}$	9.0	mm
$\sigma_{x,My,f,Ed}$	0.32	kN/cm^2	$t_{V,y}$	12.5	mm	$\tau_{t,w,Ed}$	0.05	kN/cm^2
$M_{z,Ed}$	2.32	kNm	$\tau_{t,f,Ed}$	0.06	kN/cm^2	$V_{pl,z,T,Rd}$	410.77	kN
$S_{el,z,min}$	33.62	cm^3	$V_{pl,y,T,Rd}$	448.16	kN	$v_{z,T}$	0.003	
$\sigma_{x,Mz,f,Ed}$	6.91	kN/cm^2	$v_{y,T}$	0.007		$\sigma_{x,w,Rd}$	35.50	kN/cm^2
$\sigma_{x,f,Ed}$	7.57	kN/cm^2	$\sigma_{x,f,Rd}$	35.50	kN/cm^2	η_w	0.02	
$V_{y,Ed}$	2.92	kN	η_f	0.21				
$A_{v,y}$	21.94	cm^2	$\sigma_{x,My,w,Ed}$	0.29	kN/cm^2			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG90	UB (LC1 + 1.5*LC8)	7	0.000	0.17	≤ 1	222)	ULS

Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3

Design Internal Forces

N_{Ed}	-20.46	kN	$V_{z,Ed}$	-0.11	kN	$M_{y,Ed}$	0.60	kNm
$V_{y,Ed}$	1.73	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	1.77	kNm

Cross-section Classification - Class 1

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Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	0.38	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	0.76	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

N_{Ed}	-20.46	kN	$\sigma_{x,f,Ed}$	6.06	kN/cm²	$\sigma_{x,My,w,Ed}$	0.22	kN/cm²
A	37.40	cm²	$V_{y,Ed}$	1.73	kN	$\sigma_{x,w,Ed}$	0.77	kN/cm²
$\sigma_{x,N,Ed}$	0.55	kN/cm²	$A_{v,y}$	21.94	cm²	$V_{z,Ed}$	0.11	kN
$M_{y,Ed}$	0.60	kNm	f_y	35.50	kN/cm²	$A_{v,z}$	20.09	cm²
$S_{el,y,min}$	244.55	cm³	γ_{M0}	1.000		$V_{pl,z,Rd}$	411.71	kN
$\sigma_{x,My,f,Ed}$	0.25	kN/cm²	$V_{pl,y,Rd}$	449.58	kN	v_z	0.000	
$M_{z,Ed}$	1.77	kNm	v_y	0.004		$\sigma_{x,w,Rd}$	35.50	kN/cm²
$S_{el,z,min}$	33.62	cm³	$\sigma_{x,f,Rd}$	35.50	kN/cm²	η_w	0.02	
$\sigma_{x,Mz,f,Ed}$	5.27	kN/cm²	η_f	0.17				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG111	US (LC1 + LC10)	108	0.000	0.15	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.21	kN	$V_{z,Ed}$	-0.38	kN	$M_{y,Ed}$	0.37	kNm
$V_{y,Ed}$	4.04	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	1.80	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.02	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.25	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	0.37	kNm	$A_{v,y}$	21.94	cm²	$V_{z,Ed}$	0.38	kN
$S_{el,y,min}$	244.55	cm³	f_y	35.50	kN/cm²	$A_{v,z}$	20.09	cm²
$\sigma_{x,My,f,Ed}$	0.15	kN/cm²	γ_{M0}	1.000		$V_{pl,z,Rd}$	411.71	kN
$M_{z,Ed}$	1.80	kNm	$V_{pl,y,Rd}$	449.58	kN	v_z	0.001	
$S_{el,z,min}$	33.62	cm³	v_y	0.009		$\sigma_{x,w,Rd}$	35.50	kN/cm²
$\sigma_{x,Mz,f,Ed}$	5.34	kN/cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	η_w	0.00	
$\sigma_{x,f,Ed}$	5.49	kN/cm²	η_f	0.15				
$V_{y,Ed}$	4.04	kN	$\sigma_{x,w,Ed}$	0.13	kN/cm²			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG112	US (LC1 + LC11)	108	0.000	0.15	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.33	kN	$V_{z,Ed}$	-0.34	kN	$M_{y,Ed}$	0.33	kNm
$V_{y,Ed}$	3.99	kN	T_{Ed}	0.00	kNm	$M_{z,Ed}$	1.75	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.01	kN/cm²
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.21	kN/cm²
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	0.33	kNm	$A_{v,y}$	21.94	cm²	$V_{z,Ed}$	0.34	kN
$S_{el,y,min}$	244.55	cm³	f_y	35.50	kN/cm²	$A_{v,z}$	20.09	cm²
$\sigma_{x,My,f,Ed}$	0.14	kN/cm²	γ_{M0}	1.000		$V_{pl,z,Rd}$	411.71	kN
$M_{z,Ed}$	1.75	kNm	$V_{pl,y,Rd}$	449.58	kN	v_z	0.001	
$S_{el,z,min}$	33.62	cm³	v_y	0.009		$\sigma_{x,w,Rd}$	35.50	kN/cm²
$\sigma_{x,Mz,f,Ed}$	5.20	kN/cm²	$\sigma_{x,f,Rd}$	35.50	kN/cm²	η_w	0.00	
$\sigma_{x,f,Ed}$	5.34	kN/cm²	η_f	0.15				

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$V_{y,Ed}$	3.99 kN	$\sigma_{x,w,Ed}$	0.12 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG113	US (LC1 + LC14)	108	0.000	0.15	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.33 kN	$V_{z,Ed}$	-0.34 kN	$M_{y,Ed}$	0.33 kNm
$V_{y,Ed}$	3.99 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.75 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.00 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.21 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.33 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.34 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.13 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.75 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.20 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.33 kN/cm^2	η_f	0.15		
$V_{y,Ed}$	3.99 kN	$\sigma_{x,w,Ed}$	0.12 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG114	US (LC1 + LC17)	108	0.000	0.15	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.33 kN	$V_{z,Ed}$	-0.34 kN	$M_{y,Ed}$	0.33 kNm
$V_{y,Ed}$	3.99 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.75 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.00 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.21 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.33 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.34 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.13 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.75 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.19 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.33 kN/cm^2	η_f	0.15		
$V_{y,Ed}$	3.99 kN	$\sigma_{x,w,Ed}$	0.12 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG115	US (LC1 + LC20)	108	0.000	0.15	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.33 kN	$V_{z,Ed}$	-0.34 kN	$M_{y,Ed}$	0.33 kNm
$V_{y,Ed}$	3.99 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.75 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.00 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.21 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.33 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.34 kN

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2.1 DESIGN BY LOAD CASE

$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2		
$\sigma_{x,My,f,Ed}$	0.13 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN		
$M_{z,Ed}$	1.75 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001		
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2		
$\sigma_{x,Mz,f,Ed}$	5.20 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00		
$\sigma_{x,f,Ed}$	5.33 kN/cm^2	η_f	0.15				
$V_{y,Ed}$	3.99 kN	$\sigma_{x,w,Ed}$	0.12 kN/cm^2				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG116	US (LC1 + LC21)	108	0.000	0.15	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.33 kN	$V_{z,Ed}$	-0.34 kN	$M_{y,Ed}$	0.33 kNm
$V_{y,Ed}$	3.99 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.75 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.00 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.21 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.33 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.34 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.13 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.75 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.20 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.33 kN/cm^2	η_f	0.15		
$V_{y,Ed}$	3.99 kN	$\sigma_{x,w,Ed}$	0.12 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG117	US (LC1 + 0.6*LC2 + LC10)	108	0.000	0.17	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.19 kN	$V_{z,Ed}$	-0.49 kN	$M_{y,Ed}$	0.48 kNm
$V_{y,Ed}$	4.44 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	2.01 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.12 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.42 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.48 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.17 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.49 kN
$\sigma_{x,My,f,Ed}$	0.20 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	2.01 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{v,y}$	12.5 mm	$t_{v,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	5.97 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.17 kN/cm^2	$V_{pl,y,T,Rd}$	448.19 kN	$V_{pl,z,T,Rd}$	410.80 kN
$V_{y,Ed}$	4.44 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.17	η_w	0.00

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG118	US (LC1 + 0.6*LC2 + LC11)	108	0.000	0.17	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.31 kN	$V_{z,Ed}$	-0.45 kN	$M_{y,Ed}$	0.44 kNm
$V_{y,Ed}$	4.40 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	1.96 kNm

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CA2

Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.10 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.38 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.44 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.16 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.45 kN
$\sigma_{x,My,f,Ed}$	0.18 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	1.96 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	5.84 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.02 kN/cm^2	$V_{pl,y,T,Rd}$	448.20 kN	$V_{pl,z,T,Rd}$	410.80 kN
$V_{y,Ed}$	4.40 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.17	η_w	0.00

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG119	US (LC1 + 0.6*LC2 + LC14)	108	0.000	0.17	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.32 kN	$V_{z,Ed}$	-0.45 kN	$M_{y,Ed}$	0.44 kNm
$V_{y,Ed}$	4.39 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	1.96 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.10 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.38 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.44 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.16 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.45 kN
$\sigma_{x,My,f,Ed}$	0.18 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	1.96 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	5.83 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.01 kN/cm^2	$V_{pl,y,T,Rd}$	448.20 kN	$V_{pl,z,T,Rd}$	410.80 kN
$V_{y,Ed}$	4.39 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.17	η_w	0.00

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG120	US (LC1 + 0.6*LC2 + LC17)	108	0.000	0.17	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.31 kN	$V_{z,Ed}$	-0.45 kN	$M_{y,Ed}$	0.44 kNm
$V_{y,Ed}$	4.39 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	1.96 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.10 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.38 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.44 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.16 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.45 kN
$\sigma_{x,My,f,Ed}$	0.18 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2

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CA2
Supporting frame

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$M_{z,Ed}$	1.96 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	5.83 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.01 kN/cm^2	$V_{pl,y,T,Rd}$	448.20 kN	$V_{pl,z,T,Rd}$	410.80 kN
$V_{y,Ed}$	4.39 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.17	η_w	0.00

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG121	US (LC1 + 0.6*LC2 + LC20)	108	0.000	0.17	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.31 kN	$V_{z,Ed}$	-0.45 kN	$M_{y,Ed}$	0.44 kNm
$V_{y,Ed}$	4.39 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	1.96 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.10 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.38 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.44 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.16 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.45 kN
$\sigma_{x,My,f,Ed}$	0.18 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	1.96 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	5.83 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.01 kN/cm^2	$V_{pl,y,T,Rd}$	448.20 kN	$V_{pl,z,T,Rd}$	410.80 kN
$V_{y,Ed}$	4.39 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.17	η_w	0.00

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG122	US (LC1 + 0.6*LC2 + LC21)	108	0.000	0.17	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.32 kN	$V_{z,Ed}$	-0.45 kN	$M_{y,Ed}$	0.44 kNm
$V_{y,Ed}$	4.39 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	1.96 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.10 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.38 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.44 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.16 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.45 kN
$\sigma_{x,My,f,Ed}$	0.18 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	1.96 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	5.83 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.01 kN/cm^2	$V_{pl,y,T,Rd}$	448.20 kN	$V_{pl,z,T,Rd}$	410.80 kN
$V_{y,Ed}$	4.39 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.17	η_w	0.00

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG123	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC10)	108	0.000	0.18	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

N_{Ed}	0.21	kN	$V_{z,Ed}$	-0.53	kN	$M_{y,Ed}$	0.52	kNm
$V_{y,Ed}$	4.54	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	2.11	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.17	kN/cm^2
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.49	kN/cm^2
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	0.52	kNm	γ_{M0}	1.000		$\sigma_{x,w,Ed}$	0.19	kN/cm^2
$S_{el,y,min}$	244.55	cm^3	$V_{pl,y,Rd}$	449.58	kN	$V_{z,Ed}$	0.53	kN
$\sigma_{x,My,f,Ed}$	0.21	kN/cm^2	T_{Ed}	0.01	kNm	$A_{v,z}$	20.09	cm^2
$M_{z,Ed}$	2.11	kNm	I_t	16.00	cm^4	$V_{pl,z,Rd}$	411.71	kN
$S_{el,z,min}$	33.62	cm^3	$t_{V,y}$	12.5	mm	$t_{V,z}$	9.0	mm
$\sigma_{x,Mz,f,Ed}$	6.26	kN/cm^2	$\tau_{t,f,Ed}$	0.07	kN/cm^2	$\tau_{t,w,Ed}$	0.05	kN/cm^2
$\sigma_{x,f,Ed}$	6.48	kN/cm^2	$V_{pl,y,T,Rd}$	448.15	kN	$V_{pl,z,T,Rd}$	410.77	kN
$V_{y,Ed}$	4.54	kN	$v_{y,T}$	0.010		$v_{z,T}$	0.001	
$A_{v,y}$	21.94	cm^2	$\sigma_{x,f,Rd}$	35.50	kN/cm^2	$\sigma_{x,w,Rd}$	35.50	kN/cm^2
f_y	35.50	kN/cm^2	η_f	0.18		η_w	0.01	

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG124	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC11)	108	0.000	0.18	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.34	kN	$V_{z,Ed}$	-0.49	kN	$M_{y,Ed}$	0.48	kNm
$V_{y,Ed}$	4.50	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	2.06	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.15	kN/cm^2
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.46	kN/cm^2
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	0.48	kNm	γ_{M0}	1.000		$\sigma_{x,w,Ed}$	0.17	kN/cm^2
$S_{el,y,min}$	244.55	cm^3	$V_{pl,y,Rd}$	449.58	kN	$V_{z,Ed}$	0.49	kN
$\sigma_{x,My,f,Ed}$	0.20	kN/cm^2	T_{Ed}	0.01	kNm	$A_{v,z}$	20.09	cm^2
$M_{z,Ed}$	2.06	kNm	I_t	16.00	cm^4	$V_{pl,z,Rd}$	411.71	kN
$S_{el,z,min}$	33.62	cm^3	$t_{V,y}$	12.5	mm	$t_{V,z}$	9.0	mm
$\sigma_{x,Mz,f,Ed}$	6.12	kN/cm^2	$\tau_{t,f,Ed}$	0.06	kN/cm^2	$\tau_{t,w,Ed}$	0.05	kN/cm^2
$\sigma_{x,f,Ed}$	6.32	kN/cm^2	$V_{pl,y,T,Rd}$	448.16	kN	$V_{pl,z,T,Rd}$	410.78	kN
$V_{y,Ed}$	4.50	kN	$v_{y,T}$	0.010		$v_{z,T}$	0.001	
$A_{v,y}$	21.94	cm^2	$\sigma_{x,f,Rd}$	35.50	kN/cm^2	$\sigma_{x,w,Rd}$	35.50	kN/cm^2
f_y	35.50	kN/cm^2	η_f	0.18		η_w	0.00	

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG125	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC14)	108	0.000	0.18	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.34	kN	$V_{z,Ed}$	-0.49	kN	$M_{y,Ed}$	0.48	kNm
$V_{y,Ed}$	4.50	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	2.06	kNm

Cross-section Classification - Class 1

			$\lambda_{f,2}$	8.136		$\sigma_{w,A}$	1.15	kN/cm^2
c_f	58.5	mm	$\lambda_{f,3}$	11.391		$\sigma_{w,B}$	1.46	kN/cm^2
t_f	12.5	mm	$(c/t)_f$	4.680		Class	1	
ε_f	0.814		$Class_f$	1				
$\lambda_{f,1}$	7.323							

Design Ratio

$M_{y,Ed}$	0.48	kNm	γ_{M0}	1.000		$\sigma_{x,w,Ed}$	0.17	kN/cm^2

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CA2
Supporting frame

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.49 kN
$\sigma_{x,My,f,Ed}$	0.20 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	2.06 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	6.12 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.32 kN/cm^2	$V_{pl,y,T,Rd}$	448.16 kN	$V_{pl,z,T,Rd}$	410.78 kN
$V_{y,Ed}$	4.50 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.18	η_w	0.00

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG126	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC17)	108	0.000	0.18	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.34 kN	$V_{z,Ed}$	-0.49 kN	$M_{y,Ed}$	0.48 kNm
$V_{y,Ed}$	4.50 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	2.06 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.15 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.45 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.48 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.17 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.49 kN
$\sigma_{x,My,f,Ed}$	0.20 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	2.06 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	6.12 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.31 kN/cm^2	$V_{pl,y,T,Rd}$	448.16 kN	$V_{pl,z,T,Rd}$	410.78 kN
$V_{y,Ed}$	4.50 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.18	η_w	0.00

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG127	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC20)	108	0.000	0.18	≤ 1	167)	ULS

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.34 kN	$V_{z,Ed}$	-0.49 kN	$M_{y,Ed}$	0.48 kNm
$V_{y,Ed}$	4.50 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	2.06 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.15 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.46 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.48 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.17 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.49 kN
$\sigma_{x,My,f,Ed}$	0.20 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	2.06 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	6.12 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.32 kN/cm^2	$V_{pl,y,T,Rd}$	448.16 kN	$V_{pl,z,T,Rd}$	410.78 kN
$V_{y,Ed}$	4.50 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.18	η_w	0.00

LC/LG/CO	Description	Member No	Location x [m]	Design		Acc. to Formula	
LG128	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC21)	108	0.000	0.18	≤ 1	167)	ULS

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LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.34 kN	$V_{z,Ed}$	-0.49 kN	$M_{y,Ed}$	0.48 kNm
$V_{y,Ed}$	4.50 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	2.06 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.15 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.46 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.48 kNm	γ_{M0}	1.000	$\sigma_{x,w,Ed}$	0.17 kN/cm^2
$S_{el,y,min}$	244.55 cm^3	$V_{pl,y,Rd}$	449.58 kN	$V_{z,Ed}$	0.49 kN
$\sigma_{x,My,f,Ed}$	0.20 kN/cm^2	T_{Ed}	0.01 kNm	$A_{v,z}$	20.09 cm^2
$M_{z,Ed}$	2.06 kNm	I_t	16.00 cm^4	$V_{pl,z,Rd}$	411.71 kN
$S_{el,z,min}$	33.62 cm^3	$t_{V,y}$	12.5 mm	$t_{V,z}$	9.0 mm
$\sigma_{x,Mz,f,Ed}$	6.12 kN/cm^2	$\tau_{t,f,Ed}$	0.06 kN/cm^2	$\tau_{t,w,Ed}$	0.05 kN/cm^2
$\sigma_{x,f,Ed}$	6.31 kN/cm^2	$V_{pl,y,T,Rd}$	448.16 kN	$V_{pl,z,T,Rd}$	410.78 kN
$V_{y,Ed}$	4.50 kN	$v_{y,T}$	0.010	$v_{z,T}$	0.001
$A_{v,y}$	21.94 cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
f_y	35.50 kN/cm^2	η_f	0.18	η_w	0.00

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG129	US (LC1 + 0.6*LC3 + LC10)	108	0.000	0.16	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.23 kN	$V_{z,Ed}$	-0.42 kN	$M_{y,Ed}$	0.40 kNm
$V_{y,Ed}$	4.14 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.89 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.07 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.33 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.40 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.42 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.17 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.89 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.63 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.80 kN/cm^2	η_f	0.16		
$V_{y,Ed}$	4.14 kN	$\sigma_{x,w,Ed}$	0.15 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG130	US (LC1 + 0.6*LC3 + LC11)	108	0.000	0.16	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.35 kN	$V_{z,Ed}$	-0.38 kN	$M_{y,Ed}$	0.37 kNm
$V_{y,Ed}$	4.10 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.85 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.06 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.29 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.37 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.38 kN

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LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.15 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.85 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.49 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.64 kN/cm^2	η_f	0.16		
$V_{y,Ed}$	4.10 kN	$\sigma_{x,w,Ed}$	0.13 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG131	US (LC1 + 0.6*LC3 + LC14)	108	0.000	0.16	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.36 kN	$V_{z,Ed}$	-0.38 kN	$M_{y,Ed}$	0.37 kNm
$V_{y,Ed}$	4.10 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.84 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.05 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.29 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.37 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.38 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.15 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.84 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.49 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.64 kN/cm^2	η_f	0.16		
$V_{y,Ed}$	4.10 kN	$\sigma_{x,w,Ed}$	0.13 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG132	US (LC1 + 0.6*LC3 + LC17)	108	0.000	0.16	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.35 kN	$V_{z,Ed}$	-0.38 kN	$M_{y,Ed}$	0.37 kNm
$V_{y,Ed}$	4.09 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.84 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.05 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.29 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.37 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.38 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.15 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.84 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.48 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.63 kN/cm^2	η_f	0.16		
$V_{y,Ed}$	4.09 kN	$\sigma_{x,w,Ed}$	0.13 kN/cm^2		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG133	US (LC1 + 0.6*LC3 + LC20)	108	0.000	0.16	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.35 kN	$V_{z,Ed}$	-0.38 kN	$M_{y,Ed}$	0.37 kNm
$V_{y,Ed}$	4.10 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.84 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.05 kN/cm^2

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.29 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.37 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.38 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.15 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.84 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.49 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.64 kN/cm^2	η_f	0.16		
$V_{y,Ed}$	4.10 kN	$\sigma_{x,w,Ed}$	0.13 kN/cm^2		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG134	US (LC1 + 0.6*LC3 + LC21)	108	0.000	0.16	≤ 1	162)	ULS

Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3

Design Internal Forces

N_{Ed}	0.36 kN	$V_{z,Ed}$	-0.38 kN	$M_{y,Ed}$	0.37 kNm
$V_{y,Ed}$	4.09 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	1.84 kNm

Cross-section Classification - Class 1

		$\lambda_{f,2}$	8.136	$\sigma_{w,A}$	1.05 kN/cm^2
c_f	58.5 mm	$\lambda_{f,3}$	11.391	$\sigma_{w,B}$	1.29 kN/cm^2
t_f	12.5 mm	$(c/t)_f$	4.680	Class	1
ε_f	0.814	$Class_f$	1		
$\lambda_{f,1}$	7.323				

Design Ratio

$M_{y,Ed}$	0.37 kNm	$A_{v,y}$	21.94 cm^2	$V_{z,Ed}$	0.38 kN
$S_{el,y,min}$	244.55 cm^3	f_y	35.50 kN/cm^2	$A_{v,z}$	20.09 cm^2
$\sigma_{x,My,f,Ed}$	0.15 kN/cm^2	γ_{M0}	1.000	$V_{pl,z,Rd}$	411.71 kN
$M_{z,Ed}$	1.84 kNm	$V_{pl,y,Rd}$	449.58 kN	v_z	0.001
$S_{el,z,min}$	33.62 cm^3	v_y	0.009	$\sigma_{x,w,Rd}$	35.50 kN/cm^2
$\sigma_{x,Mz,f,Ed}$	5.48 kN/cm^2	$\sigma_{x,f,Rd}$	35.50 kN/cm^2	η_w	0.00
$\sigma_{x,f,Ed}$	5.63 kN/cm^2	η_f	0.16		
$V_{y,Ed}$	4.09 kN	$\sigma_{x,w,Ed}$	0.13 kN/cm^2		

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
1	**Cross-section No. 20 - U 220**								
	0.785	LG42	12.43	-4.67	1.50	0.03	0.21	0.56	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	-12.53	5.38	0.95	0.00	-0.21	3.04	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.785	LG87	-0.16	-0.39	0.59	0.00	0.62	-0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG44	-0.12	1.55	0.66	0.00	0.10	0.37	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.785	LG45	-12.44	3.62	1.04	0.00	0.53	-0.57	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG45	-12.46	5.74	1.03	0.00	-0.29	3.12	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.18	1.34	0.20	0.01	-0.18	0.26	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.785	LG13	2.06	-1.50	0.63	0.04	-0.14	0.12	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.785	LG12	7.49	-3.14	1.07	0.03	0.10	0.33	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG37	-12.27	5.94	1.14	0.02	-0.39	3.15	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Forces [kN] V_y	Forces [kN] V_z	Moments [kNm] M_T	Moments [kNm] M_y	Moments [kNm] M_z	Acc. to Formula
	0.785	LG87	-0.16	-0.39	0.59	0.00	0.62	-0.02	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG48	0.04	-0.64	0.76	0.02	0.59	-0.03	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG44	-0.12	1.55	0.66	0.00	0.10	0.37	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG40	0.07	1.76	0.78	0.02	-0.02	0.41	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	0.11	1.80	0.67	0.03	-0.20	0.40	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG30	7.21	-3.10	0.89	0.01	0.13	0.38	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG45	-12.46	5.74	1.03	0.00	-0.29	3.12	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG41	-12.23	5.96	1.16	0.02	-0.41	3.16	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG88	-12.53	5.38	0.95	0.00	-0.21	3.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-12.53	5.38	0.95	0.00	-0.21	3.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-12.53	5.38	0.95	0.00	-0.21	3.04	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
2	**Cross-section No. 20 - U 220**								
	0.000	LG34	0.16	0.65	-0.12	0.00	0.00	0.04	100)
	Negligible internal forces								
	1.646	LG40	3.74	-1.34	-0.08	-0.01	0.22	-0.02	101)
	Cross-section check - Tension acc. to 6.2.3								
	2.195	LG8	1.18	-3.27	0.03	-0.01	-0.09	1.53	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	2.195	LG88	3.03	-0.89	1.16	0.00	1.33	0.39	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	2.195	LG9	0.73	-3.34	0.10	0.00	-0.29	1.59	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	1.71	2.42	0.11	-0.01	-0.18	0.56	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	3.65	1.98	1.28	-0.01	-1.41	0.47	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	3.65	1.98	1.28	-0.01	-1.41	0.47	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	2.195	LG15	3.10	-3.18	0.86	-0.01	0.90	1.39	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	2.195	LG8	1.18	-3.27	0.03	-0.01	-0.09	1.53	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	2.195	LG16	1.41	-3.32	0.09	-0.01	-0.05	1.60	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	2.195	LG9	0.73	-3.34	0.10	0.00	-0.29	1.59	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	2.195	LG17	0.96	-3.38	0.15	-0.01	-0.26	1.66	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	1.646	LG88	3.03	-0.49	1.16	0.00	0.69	0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	1.646	LG41	3.65	-1.43	1.28	-0.01	0.71	0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	2.195	LG87	2.95	-0.80	-0.21	0.00	0.09	0.31	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	2.195	LG14	3.09	-3.13	0.05	-0.01	0.16	1.35	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	2.195	LG88	3.03	-0.89	1.16	0.00	1.33	0.39	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	2.195	LG15	3.10	-3.18	0.86	-0.01	0.90	1.39	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
4	**Cross-section No. 20 - U 220**								
	0.000	LG42	7.42	-8.11	2.10	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.160	LG88	-7.68	-3.51	-1.92	0.00	-0.31	0.54	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.160	LG3	0.58	-7.01	0.92	0.00	0.15	1.08	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.160	LG43	2.66	-7.49	3.29	0.00	0.53	1.16	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.160	LG42	7.42	-8.57	2.10	0.00	0.34	1.33	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	0.51	-5.60	0.84	0.00	0.00	0.00	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.160	LG3	0.58	-7.01	0.92	0.00	0.15	1.08	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.160	LG17	1.90	-7.51	2.42	0.00	0.39	1.16	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.160	LG15	-3.92	-6.84	-0.40	0.00	-0.06	1.06	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.160	LG42	7.42	-8.57	2.10	0.00	0.34	1.33	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.160	LG88	-7.68	-3.51	-1.92	0.00	-0.31	0.54	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.160	LG88	-7.68	-3.51	-1.92	0.00	-0.31	0.54	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.160	LG88	-7.68	-3.51	-1.92	0.00	-0.31	0.54	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
5	**Cross-section No. 20 - U 220**								
	0.080	LG40	3.21	1.36	-0.27	0.02	0.11	0.65	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG39	-0.88	1.81	2.18	0.00	-0.18	1.18	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG46	0.67	1.24	2.37	0.00	0.12	0.81	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG39	-0.88	1.81	2.18	0.00	-0.18	1.18	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.74	0.78	0.38	0.01	0.03	0.63	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.160	LG14	2.46	1.60	0.13	0.02	0.21	0.73	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.160	LG41	1.97	0.91	-2.42	0.02	0.63	0.75	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG14	2.46	1.93	0.13	0.02	0.18	1.01	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG39	-0.88	1.81	2.18	0.00	-0.18	1.18	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	0.19	2.16	1.59	0.01	-0.01	1.31	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG51	-0.85	1.79	2.18	0.00	-0.20	1.22	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	1.17	2.26	1.73	0.01	0.22	1.22	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG40	3.21	1.49	-0.27	0.02	0.13	0.76	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
6	**Cross-section No. 20 - U 220**								
	0.000	LG41	4.67	1.75	2.42	0.00	-1.81	-0.02	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.130	LG90	-3.44	0.55	0.25	0.00	0.01	-0.10	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	2.55	2.04	0.48	0.00	-0.31	-0.03	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.260	LG16	2.35	1.27	0.42	0.00	-0.13	-0.47	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.260	LG41	4.67	0.96	2.42	0.00	-1.18	-0.37	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG16	2.35	2.10	0.42	0.00	-0.24	-0.03	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG7	3.78	1.97	1.62	0.00	-1.19	-0.03	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG3	2.55	2.04	0.48	0.00	-0.31	-0.03	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.260	LG16	2.35	1.27	0.42	0.00	-0.13	-0.47	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.130	LG3	2.55	1.63	0.48	0.00	-0.25	-0.27	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG41	4.67	1.75	2.42	0.00	-1.81	-0.02	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.260	LG14	3.31	1.23	0.15	0.00	-0.14	-0.45	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.260	LG15	3.97	1.18	1.68	0.00	-0.80	-0.44	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.130	LG90	-3.44	0.55	0.25	0.00	0.01	-0.10	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.130	LG90	-3.44	0.55	0.25	0.00	0.01	-0.10	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.130	LG90	-3.44	0.55	0.25	0.00	0.01	-0.10	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
7	**Cross-section No. 20 - U 220**								
	0.000	LG87	9.07	-1.24	-0.50	0.00	0.03	-0.50	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG51	-21.21	0.02	-0.35	0.00	0.77	2.23	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.260	LG15	0.59	-2.60	-1.99	0.00	-0.08	1.45	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG41	2.68	-0.58	-2.89	0.00	0.41	0.62	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.260	LG14	3.89	-4.08	-0.69	0.00	0.14	1.44	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG7	0.37	-1.63	-1.95	0.00	0.41	0.88	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.260	LG15	0.59	-2.60	-1.99	0.00	-0.08	1.45	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.260	LG3	-2.45	-3.20	-0.54	0.00	0.24	1.82	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG40	8.17	-3.06	-0.72	0.00	0.22	-0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.260	LG14	3.89	-4.08	-0.69	0.00	0.14	1.44	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.260	LG43	-20.96	-0.82	-0.38	0.00	0.69	2.33	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG51	-21.21	0.02	-0.35	0.00	0.77	2.23	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG51	-21.21	0.02	-0.35	0.00	0.77	2.23	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG51	-21.21	0.02	-0.35	0.00	0.77	2.23	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
11	**Cross-section No. 20 - U 220**								
	0.000	LG87	8.98	0.54	0.13	0.00	-0.10	-0.53	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG51	-20.82	1.94	-0.41	0.00	0.21	-1.05	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG15	0.77	1.55	0.23	0.00	-0.14	-1.82	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG42	-4.65	2.01	-1.17	0.00	0.32	-1.20	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG16	-3.65	3.28	-0.40	0.00	0.57	0.10	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG38	-4.69	2.92	-0.55	0.01	0.85	0.32	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG42	-4.64	3.00	-0.55	0.01	0.86	0.36	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG42	-4.64	3.00	-0.55	0.01	0.86	0.36	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG15	0.77	1.55	0.23	0.00	-0.14	-1.82	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG49	2.51	1.04	0.49	0.00	-0.26	-1.61	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG14	4.10	1.55	-0.04	0.00	0.01	-1.83	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG41	2.70	1.06	0.49	0.00	-0.25	-1.61	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG46	-4.61	1.91	-0.50	0.01	0.82	0.51	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN]			Moments [kNm]			Acc. to Formula
			N	V_y	V_z	M_T	M_y	M_z	
	0.625	LG51	-20.82	1.94	-0.41	0.00	0.21	-1.05	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG51	-20.82	1.94	-0.41	0.00	0.21	-1.05	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG51	-20.82	1.94	-0.41	0.00	0.21	-1.05	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
12	**Cross-section No. 20 - U 220**								
	0.000	LG13	0.12	0.83	0.08	0.00	0.07	-0.05	100)
	Negligible internal forces								
	0.000	LG41	5.00	0.76	1.20	0.00	-0.69	-0.06	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG8	2.45	-1.74	0.08	0.00	0.16	0.21	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG41	5.00	-1.46	1.20	0.00	0.06	0.15	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG16	2.68	-1.77	0.12	0.00	0.18	0.20	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG33	4.42	0.64	1.14	0.00	-0.68	-0.05	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG8	2.45	-1.74	0.08	0.00	0.16	0.21	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG50	2.23	-1.70	0.01	0.00	0.21	0.21	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG37	4.67	0.80	1.17	0.00	-0.68	-0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG16	2.68	-1.77	0.12	0.00	0.18	0.20	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG41	5.00	0.76	1.20	0.00	-0.69	-0.06	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
16	**Cross-section No. 20 - U 220**								
	0.625	LG87	8.98	-0.92	0.08	0.00	0.03	-0.29	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG51	-20.82	-0.26	-0.26	0.00	0.21	-1.04	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG15	0.76	-1.24	0.43	0.00	-0.14	-1.82	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG38	-4.69	-1.27	-1.05	0.00	-0.15	-0.70	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG11	0.69	-2.53	0.43	0.00	0.12	-0.59	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG34	-4.67	-0.16	-1.05	0.00	-0.16	-0.57	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG15	0.76	-1.24	0.43	0.00	-0.14	-1.82	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG49	2.50	-1.15	0.73	0.00	-0.26	-1.60	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	4.10	-1.24	0.03	0.00	0.01	-1.82	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG41	2.70	-1.13	0.73	0.00	-0.25	-1.60	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG51	-20.82	-0.26	-0.26	0.00	0.21	-1.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG51	-20.82	-0.26	-0.26	0.00	0.21	-1.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG51	-20.82	-0.26	-0.26	0.00	0.21	-1.04	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
17	**Cross-section No. 20 - U 220**								
	0.000	LG41	5.28	2.64	0.66	0.00	0.06	0.16	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG50	2.52	1.17	-0.51	0.00	-0.11	-1.21	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG16	2.94	3.46	-0.31	0.00	0.18	0.21	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG50	2.52	1.17	-0.51	0.00	-0.11	-1.21	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG50	2.52	3.38	-0.51	0.00	0.21	0.21	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.625	LG26	2.84	1.17	-0.31	0.00	-0.04	-1.21	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG25	4.44	0.73	0.39	0.00	0.30	-0.97	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
21	**Cross-section No. 20 - U 220**								
	0.235	LG87	8.98	-1.67	-0.09	0.00	0.01	0.08	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.470	LG51	-20.82	-4.20	-0.34	0.00	-0.11	1.25	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.235	LG53	2.54	-2.04	0.62	0.00	0.35	0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.470	LG2	-2.20	-5.95	-0.01	0.00	0.00	2.01	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.470	LG46	-4.61	-1.31	-1.13	0.00	-0.57	-0.11	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.470	LG10	4.02	-6.18	-0.06	0.00	-0.01	2.11	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.235	LG34	-4.66	-1.17	-0.89	0.00	-0.34	-0.31	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.235	LG53	2.54	-2.04	0.62	0.00	0.35	0.02	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG2	-2.20	-5.95	-0.01	0.00	0.00	2.01	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG11	0.69	-6.18	0.38	0.00	0.30	2.12	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG34	-4.66	-1.40	-1.12	0.00	-0.57	-0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.470	LG10	4.02	-6.18	-0.06	0.00	-0.01	2.11	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.470	LG12	-3.72	-5.62	-0.67	0.00	-0.34	1.75	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.470	LG51	-20.82	-4.20	-0.34	0.00	-0.11	1.25	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.470	LG51	-20.82	-4.20	-0.34	0.00	-0.11	1.25	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.470	LG51	-20.82	-4.20	-0.34	0.00	-0.11	1.25	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
22	**Cross-section No. 20 - U 220**								
	0.235	LG41	5.48	-6.67	0.32	0.00	0.54	0.68	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.470	LG14	2.47	-10.14	-0.58	0.00	-0.17	3.27	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.470	LG42	2.84	-11.12	-1.22	0.00	-0.66	3.63	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.470	LG16	3.15	-11.19	-0.82	0.00	-0.41	3.64	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG34	2.08	-7.53	-1.16	0.00	-0.11	-0.96	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.470	LG14	2.47	-10.14	-0.58	0.00	-0.17	3.27	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG38	2.43	-10.34	-1.19	0.00	-0.67	3.37	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG3	3.12	-9.87	-0.19	0.00	-0.02	3.17	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.470	LG50	2.76	-11.14	-1.19	0.00	-0.66	3.64	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
26	**Cross-section No. 20 - U 220**								
	0.000	LG130	-1.41	0.76	0.00	0.00	0.00	0.04	100)
	Negligible internal forces								
	0.000	LG87	11.71	0.94	0.07	0.00	0.02	0.26	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-24.15	0.93	0.04	0.00	-0.07	-0.15	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG3	-1.62	2.49	0.00	0.00	0.01	-1.08	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG10	5.99	3.88	0.03	0.00	0.02	1.07	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.625	LG3	-1.62	2.49	0.00	0.00	0.01	-1.08	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG11	2.10	3.86	-0.01	0.00	0.31	1.08	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG17	-14.78	2.44	0.01	0.00	-0.03	-1.16	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG16	-4.08	2.28	-0.03	0.00	-0.19	-1.17	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-24.15	0.93	0.04	0.00	-0.07	-0.15	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-24.15	0.93	0.04	0.00	-0.07	-0.15	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-24.15	0.93	0.04	0.00	-0.07	-0.15	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
27	**Cross-section No. 20 - U 220**								
	0.000	LG40	6.89	0.52	0.44	0.00	-0.06	-0.97	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-6.66	-0.27	-0.28	0.00	0.00	-0.33	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG27	-1.52	-0.17	-0.17	0.00	0.00	-0.92	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.460	LG17	-1.44	-2.01	-0.17	0.00	-0.08	-0.38	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG27	-1.52	-0.17	-0.17	0.00	0.00	-0.92	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG50	2.48	-0.18	0.33	0.00	-0.52	-1.16	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG24	5.71	0.36	0.27	0.00	-0.04	-1.07	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG26	3.09	-0.07	0.20	0.00	-0.31	-1.18	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-6.66	-0.27	-0.28	0.00	0.00	-0.33	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-6.66	-0.27	-0.28	0.00	0.00	-0.33	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-6.66	-0.27	-0.28	0.00	0.00	-0.33	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
31	**Cross-section No. 20 - U 220**								
	0.625	LG1	-1.98	-0.88	-0.01	0.00	0.00	-0.03	100)
	Negligible internal forces								
	0.000	LG87	11.71	-0.09	0.06	0.00	0.07	-0.20	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-24.14	-0.48	-0.14	0.00	-0.05	-0.54	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-1.62	-0.30	-0.03	0.00	0.01	-1.08	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG16	-4.07	-1.68	-0.23	0.00	-0.22	-0.49	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	-1.62	-0.30	-0.03	0.00	0.01	-1.08	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	2.21	-0.25	-0.04	0.00	0.31	-1.01	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG88	4.97	-0.55	-0.02	0.00	0.51	0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG17	-14.78	-0.36	-0.11	0.00	-0.03	-1.16	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	-4.07	-0.51	0.14	0.00	-0.19	-1.17	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-24.14	-0.48	-0.14	0.00	-0.05	-0.54	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-24.14	-0.48	-0.14	0.00	-0.05	-0.54	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-24.14	-0.48	-0.14	0.00	-0.05	-0.54	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
32	**Cross-section No. 20 - U 220**								
	0.625	LG40	6.46	-1.87	-0.05	0.00	0.12	-0.26	101)
	Cross-section check - Tension acc. to 6.2.3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG90	-6.33	0.64	-0.07	0.00	-0.16	0.07	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG89	0.97	-1.21	0.01	0.00	-0.29	0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG30	2.54	0.04	0.00	0.00	-0.17	-0.52	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG24	5.39	-1.93	-0.03	0.00	0.06	-0.21	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG89	0.97	-1.21	0.01	0.00	-0.29	0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG30	2.54	0.04	0.00	0.00	-0.17	-0.52	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG50	2.39	0.37	0.01	0.00	-0.29	-0.54	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG29	4.78	-1.66	-0.12	0.00	0.26	-0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG48	6.37	0.33	-0.05	0.00	0.15	-0.75	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG25	5.21	0.42	-0.12	0.00	0.33	-0.59	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG90	-6.33	-0.70	-0.07	0.00	-0.21	0.09	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-6.33	0.64	-0.07	0.00	-0.16	0.07	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-6.33	0.64	-0.07	0.00	-0.16	0.07	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
36	**Cross-section No. 20 - U 220**								
	0.000	LG87	11.71	-1.12	0.20	0.00	0.10	-0.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG55	-24.14	-2.46	-0.45	0.00	-0.42	1.31	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG3	-1.62	-5.43	-0.09	0.00	-0.07	2.50	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG16	-4.07	-5.63	-0.45	0.00	-0.39	2.67	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG3	-1.62	-5.43	-0.09	0.00	-0.07	2.50	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG15	2.21	-5.37	-0.01	0.00	0.28	2.50	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG88	4.97	-1.15	0.09	0.00	0.51	0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG14	6.11	-5.36	0.05	0.00	0.08	2.46	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG16	-4.07	-5.63	-0.45	0.00	-0.39	2.67	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG55	-24.14	-2.46	-0.45	0.00	-0.42	1.31	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG55	-24.14	-2.46	-0.45	0.00	-0.42	1.31	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG55	-24.14	-2.46	-0.45	0.00	-0.42	1.31	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
37	**Cross-section No. 20 - U 220**								
	0.000	LG40	5.97	-1.93	-0.30	0.00	0.12	-0.26	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG90	-6.31	-2.30	0.06	0.00	-0.17	1.11	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG89	0.77	-1.48	-0.32	0.00	-0.29	0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.625	LG17	-1.53	-4.73	0.05	0.00	-0.10	2.09	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG16	2.74	-5.05	-0.18	0.00	-0.29	2.26	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG89	0.77	-1.48	-0.32	0.00	-0.29	0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG17	-1.53	-4.73	0.05	0.00	-0.10	2.09	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG42	2.14	-4.77	-0.31	0.00	-0.48	2.21	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG29	4.46	-1.71	-0.22	0.00	0.26	-0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG3	3.16	-4.75	0.02	0.00	0.00	2.03	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG16	2.74	-5.05	-0.18	0.00	-0.29	2.26	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-6.31	-0.96	0.06	0.00	-0.21	0.09	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG90	-6.31	-2.30	0.06	0.00	-0.17	1.11	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG90	-6.31	-2.30	0.06	0.00	-0.17	1.11	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
41	**Cross-section No. 20 - U 220**								
	0.625	LG87	12.31	1.14	-0.13	0.00	0.15	-0.02	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-25.48	2.22	0.41	0.00	-0.42	1.31	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-1.80	5.09	0.07	0.00	-0.07	2.50	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG16	-4.76	5.24	0.36	0.00	-0.39	2.67	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	-1.80	5.09	0.07	0.00	-0.07	2.50	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	2.16	5.11	0.13	0.00	0.28	2.50	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG88	5.12	1.18	0.13	0.00	0.65	0.02	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG14	6.31	5.09	-0.01	0.00	0.08	2.46	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	-4.76	5.24	0.36	0.00	-0.39	2.67	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-25.48	2.22	0.41	0.00	-0.42	1.31	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-25.48	2.22	0.41	0.00	-0.42	1.31	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-25.48	2.22	0.41	0.00	-0.42	1.31	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
42	**Cross-section No. 20 - U 220**								
	0.625	LG40	10.47	1.94	0.36	0.00	0.16	-0.27	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG90	-11.72	2.77	0.01	0.00	-0.16	-1.04	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	2.53	4.02	-0.01	0.00	0.00	1.35	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG16	2.74	6.65	0.12	0.00	-0.29	2.26	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	2.53	4.02	-0.01	0.00	0.00	1.35	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG42	1.71	6.58	0.23	0.00	-0.48	2.21	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-4.35	6.57	-0.02	0.00	-0.10	2.09	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	2.74	6.65	0.12	0.00	-0.29	2.26	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG90	-11.72	2.77	0.01	0.00	-0.16	-1.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG90	-11.72	2.77	0.01	0.00	-0.16	-1.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG90	-11.72	2.77	0.01	0.00	-0.16	-1.04	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
46	**Cross-section No. 20 - U 220**								
	0.000	LG1	-2.07	0.77	0.01	0.00	-0.01	0.03	100)
	Negligible internal forces								
	0.000	LG87	12.31	0.55	-0.04	0.00	0.15	-0.02	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG55	-25.48	0.24	0.17	0.00	-0.06	-0.24	102)
	Cross-section check - Compression acc. to 6.2.4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.625	LG3	-1.80	-0.03	0.02	0.00	-0.01	-0.67	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG16	-4.76	1.28	0.14	0.00	-0.28	-0.25	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG3	-1.80	-0.03	0.02	0.00	-0.01	-0.67	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG15	2.16	-0.02	0.15	0.00	0.46	-0.68	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG88	5.12	0.59	0.22	0.00	0.65	0.02	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG17	-15.69	-0.06	0.11	0.00	-0.05	-0.64	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG16	-4.76	0.11	-0.22	0.00	-0.31	-0.68	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG55	-25.48	0.24	0.17	0.00	-0.06	-0.24	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG55	-25.48	0.24	0.17	0.00	-0.06	-0.24	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG55	-25.48	0.24	0.17	0.00	-0.06	-0.24	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
47	**Cross-section No. 20 - U 220**								
	0.000	LG40	10.36	0.96	0.06	0.00	0.16	-0.27	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-11.19	-0.76	0.10	0.00	-0.16	-1.04	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG124	2.56	0.12	0.00	0.00	-0.01	-0.57	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG43	-9.47	-2.97	0.10	0.00	-0.12	-0.25	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG124	2.56	0.12	0.00	0.00	-0.01	-0.57	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG42	2.11	-0.37	-0.20	0.00	-0.34	-1.21	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG43	-9.47	-0.74	0.10	0.00	-0.18	-1.41	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	3.11	-0.19	-0.12	0.00	-0.21	-1.15	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-11.19	-0.76	0.10	0.00	-0.16	-1.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-11.19	-0.76	0.10	0.00	-0.16	-1.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-11.19	-0.76	0.10	0.00	-0.16	-1.04	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
51	**Cross-section No. 20 - U 220**								
	0.000	LG87	12.31	-0.48	-0.22	0.00	0.12	-0.22	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-25.48	-0.56	0.25	0.00	-0.06	-0.24	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG2	-1.90	-4.14	0.00	0.00	-0.01	1.58	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG13	-15.79	-4.16	0.15	0.00	0.05	1.62	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG2	-1.90	-4.14	0.00	0.00	-0.01	1.58	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG11	2.06	-4.13	0.13	0.00	0.54	1.56	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG13	-15.79	-4.16	0.15	0.00	0.05	1.62	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG12	-4.87	-3.99	-0.40	0.00	-0.44	1.48	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-25.48	-0.56	0.25	0.00	-0.06	-0.24	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-25.48	-0.56	0.25	0.00	-0.06	-0.24	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-25.48	-0.56	0.25	0.00	-0.06	-0.24	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
52	**Cross-section No. 20 - U 220**								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.625	LG40	9.80	-1.16	-0.20	0.00	0.07	-0.15	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-10.80	0.64	0.12	0.00	-0.09	-0.14	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	2.62	0.87	0.01	0.00	-0.01	-0.16	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG16	2.99	-1.30	-0.40	0.00	-0.54	-0.22	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	2.62	0.87	0.01	0.00	-0.01	-0.16	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG50	1.92	-1.18	-0.68	0.00	-0.88	-0.23	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG43	-9.15	1.05	0.12	0.00	-0.12	-0.25	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG49	6.40	-1.13	0.39	0.00	1.11	-0.21	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-10.80	0.64	0.12	0.00	-0.09	-0.14	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-10.80	0.64	0.12	0.00	-0.09	-0.14	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-10.80	0.64	0.12	0.00	-0.09	-0.14	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
56	**Cross-section No. 20 - U 220**								
	0.000	LG87	12.31	-1.49	-0.60	0.00	-0.02	0.21	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-25.48	-1.91	0.56	0.00	0.10	0.30	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.085	LG2	-1.91	-7.01	-0.02	0.00	-0.01	2.17	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.085	LG10	6.19	-7.03	-0.37	0.00	-0.05	2.16	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.085	LG2	-1.91	-7.01	-0.02	0.00	-0.01	2.17	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG11	2.06	-7.00	0.11	0.00	0.55	2.15	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG13	-15.79	-7.02	0.32	0.00	0.08	2.22	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.085	LG12	-4.87	-6.85	-0.31	0.00	-0.47	2.06	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-25.48	-1.91	0.56	0.00	0.10	0.30	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-25.48	-1.91	0.56	0.00	0.10	0.30	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-25.48	-1.91	0.56	0.00	0.10	0.30	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
57	**Cross-section No. 20 - U 220**								
	0.000	LG40	9.12	-22.67	-0.41	0.00	0.07	-0.15	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.085	LG90	-10.29	-20.12	0.09	0.00	-0.01	1.58	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.085	LG1	2.50	-20.65	0.02	0.00	0.00	1.61	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.085	LG89	0.37	-20.90	-1.52	0.00	-1.03	1.64	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.085	LG16	2.88	-34.58	-0.86	0.00	-0.61	2.70	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG8	2.62	-33.14	-0.85	0.00	-0.53	-0.23	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.085	LG1	2.50	-20.65	0.02	0.00	0.00	1.61	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG42	1.97	-33.62	-1.49	0.00	-1.02	2.63	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG17	-3.54	-34.10	0.08	0.00	-0.03	2.66	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.085	LG16	2.88	-34.58	-0.86	0.00	-0.61	2.70	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.085	LG90	-10.29	-20.12	0.09	0.00	-0.01	1.58	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.085	LG90	-10.29	-20.12	0.09	0.00	-0.01	1.58	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.085	LG90	-10.29	-20.12	0.09	0.00	-0.01	1.58	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
61	**Cross-section No. 20 - U 220**								
	0.000	LG87	14.49	0.65	0.08	0.00	0.11	-0.42	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG55	-28.28	0.28	-0.05	0.00	-0.03	-0.97	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG3	-1.52	1.42	0.05	0.00	0.04	-2.38	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG13	-17.24	2.71	0.00	0.00	0.00	-1.02	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG25	2.49	2.03	-0.19	-0.01	0.44	-1.02	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG53	5.61	0.25	-0.36	-0.01	0.51	-0.98	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG49	5.79	2.06	-0.35	-0.01	0.73	-0.97	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG3	-1.52	1.42	0.05	0.00	0.04	-2.38	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG25	2.49	1.04	-0.19	-0.01	0.32	-1.98	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG17	-17.13	1.43	0.00	0.00	0.01	-2.39	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG11	2.91	1.48	-0.19	0.00	0.32	-2.33	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG15	3.04	1.41	-0.18	-0.01	0.33	-2.38	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG55	-28.28	0.28	-0.05	0.00	-0.03	-0.97	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG55	-28.28	0.28	-0.05	0.00	-0.03	-0.97	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG55	-28.28	0.28	-0.05	0.00	-0.03	-0.97	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
62	**Cross-section No. 20 - U 220**								
	0.000	LG40	11.90	0.01	-0.07	0.00	0.11	-0.57	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-14.16	-0.27	-0.02	0.00	0.01	-0.52	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG124	2.49	-0.14	-0.02	0.00	-0.01	-0.50	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG16	2.46	-2.83	0.30	0.00	-0.08	0.13	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG124	2.49	-0.14	-0.02	0.00	-0.01	-0.50	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG26	2.32	-0.55	0.30	0.00	-0.25	-0.90	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG51	-12.53	-0.46	-0.02	0.00	-0.01	-0.85	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG25	5.84	-0.37	-0.44	0.00	0.44	-0.80	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-14.16	-0.27	-0.02	0.00	0.01	-0.52	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-14.16	-0.27	-0.02	0.00	0.01	-0.52	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-14.16	-0.27	-0.02	0.00	0.01	-0.52	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
65	**Cross-section No. 20 - U 220**								
	0.625	LG88	3.59	0.90	0.14	0.00	0.59	-0.13	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG43	-6.45	4.20	-0.25	0.00	0.01	1.82	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-1.70	5.25	-0.03	0.00	0.02	2.25	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG16	-2.85	5.27	-0.08	0.00	-0.19	2.26	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG3	-1.70	5.25	-0.03	0.00	0.02	2.25	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	0.78	5.24	0.06	0.00	0.31	2.24	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-4.70	5.24	-0.16	0.00	0.02	2.26	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	-2.85	5.27	-0.08	0.00	-0.19	2.26	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-6.45	4.20	-0.25	0.00	0.01	1.82	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-6.45	4.20	-0.25	0.00	0.01	1.82	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-6.45	4.20	-0.25	0.00	0.01	1.82	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
66	**Cross-section No. 20 - U 220**								
	0.420	LG87	14.49	-0.56	-0.07	0.00	0.14	-0.52	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-28.29	-0.44	0.01	0.00	-0.03	-0.97	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-1.52	-1.01	0.03	0.00	0.04	-2.38	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.420	LG16	-4.92	-1.72	0.05	0.00	0.01	-1.85	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG7	2.76	-0.98	-0.25	-0.01	0.32	-2.36	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.420	LG49	5.80	-1.37	-0.44	-0.01	0.33	-1.49	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.420	LG49	5.80	-1.37	-0.44	-0.01	0.33	-1.49	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG3	-1.52	-1.01	0.03	0.00	0.04	-2.38	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG25	2.50	-0.86	-0.25	-0.01	0.32	-1.98	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-17.13	-1.00	0.03	0.00	0.01	-2.39	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG11	2.92	-0.94	-0.25	0.00	0.32	-2.33	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG15	3.05	-1.01	-0.25	-0.01	0.33	-2.38	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-28.29	-0.44	0.01	0.00	-0.03	-0.97	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-28.29	-0.44	0.01	0.00	-0.03	-0.97	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-28.29	-0.44	0.01	0.00	-0.03	-0.97	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
67	**Cross-section No. 20 - U 220**								
	0.000	LG40	10.85	1.59	-0.11	0.00	0.07	0.11	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-13.43	1.03	-0.05	0.00	0.00	0.08	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.420	LG16	2.26	0.42	0.16	0.00	-0.01	-0.35	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG16	2.26	1.88	0.16	0.00	-0.08	0.13	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.420	LG16	2.26	0.42	0.16	0.00	-0.01	-0.35	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.420	LG51	-11.93	0.37	-0.04	0.00	-0.04	-0.32	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG49	6.40	1.67	-0.57	0.00	0.30	0.11	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-13.43	1.03	-0.05	0.00	0.00	0.08	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-13.43	1.03	-0.05	0.00	0.00	0.08	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-13.43	1.03	-0.05	0.00	0.00	0.08	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
70	**Cross-section No. 20 - U 220**								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG88	3.85	0.29	-0.07	0.00	0.54	-0.13	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG43	-6.81	-0.32	-0.29	0.00	-0.26	-0.61	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG14	-1.22	-0.43	-0.08	0.00	0.00	-0.78	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG17	-4.95	0.96	-0.24	0.00	-0.04	-0.60	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG14	-1.22	-0.43	-0.08	0.00	0.00	-0.78	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG15	0.86	-0.41	-0.15	0.00	0.24	-0.77	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG27	-4.58	-0.33	-0.21	0.00	-0.18	-0.62	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG16	-3.05	-0.41	-0.13	0.00	-0.29	-0.77	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG43	-6.81	-0.32	-0.29	0.00	-0.26	-0.61	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-6.81	-0.32	-0.29	0.00	-0.26	-0.61	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-6.81	-0.32	-0.29	0.00	-0.26	-0.61	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
71	**Cross-section No. 20 - U 220**								
	0.225	LG87	14.50	-1.15	-0.30	0.00	0.07	-0.28	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-28.28	-1.38	0.06	0.00	-0.03	-0.71	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-1.51	-3.70	-0.10	0.00	0.05	-1.82	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.450	LG16	-4.91	-4.48	-0.15	0.00	0.00	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG7	2.78	-3.69	-0.48	-0.01	0.22	-1.82	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG49	5.82	-3.00	-0.74	-0.01	0.33	-1.49	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.450	LG15	3.08	-4.41	-0.49	-0.01	0.00	0.00	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG3	-1.51	-3.70	-0.10	0.00	0.05	-1.82	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.225	LG25	2.51	-3.34	-0.47	-0.01	0.11	-0.79	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG25	2.51	-3.04	-0.47	-0.01	0.21	-1.51	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-17.12	-3.71	-0.04	0.00	0.02	-1.83	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.225	LG15	3.08	-4.05	-0.49	-0.01	0.11	-0.95	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG11	2.94	-3.65	-0.48	-0.01	0.22	-1.80	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG15	3.07	-3.70	-0.49	-0.01	0.22	-1.82	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-28.28	-1.38	0.06	0.00	-0.03	-0.71	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-28.28	-1.38	0.06	0.00	-0.03	-0.71	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-28.28	-1.38	0.06	0.00	-0.03	-0.71	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
72	**Cross-section No. 20 - U 220**								
	0.000	LG35	2.08	0.86	0.37	0.00	0.18	-0.02	100)
	Negligible internal forces								
	0.630	LG89	-5.48	-0.55	-0.25	0.00	-0.19	-0.01	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.630	LG90	2.11	-0.48	0.55	0.00	0.59	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG31	1.38	0.14	-0.03	0.00	0.02	-0.47	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.630	LG88	-5.14	-1.76	0.17	0.00	0.28	0.02	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG1	0.47	0.18	-0.40	0.01	-0.12	-0.45	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.630	LG14	0.21	-2.52	-1.01	0.02	-0.97	0.01	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.630	LG14	0.21	-2.52	-1.01	0.02	-0.97	0.01	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.630	LG14	0.21	-2.52	-1.01	0.02	-0.97	0.01	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.630	LG90	2.11	-0.48	0.55	0.00	0.59	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.630	LG40	-0.02	-2.55	-1.12	0.02	-1.11	0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG31	1.38	0.14	-0.03	0.00	0.02	-0.47	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG22	0.51	-0.27	-0.47	0.01	-0.15	-0.73	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG90	2.11	0.85	0.55	0.00	0.24	0.12	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG48	-0.06	-0.53	-1.10	0.02	-0.41	-1.00	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.630	LG46	-5.19	-1.09	-0.40	0.00	-0.33	-0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.630	LG42	-5.13	-1.41	-0.56	0.01	-0.47	-0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG88	-5.15	-0.43	0.17	0.01	0.17	-0.67	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG49	-5.17	-0.56	-0.13	0.01	0.10	-1.00	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.630	LG89	-5.48	-0.55	-0.25	0.00	-0.19	-0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-5.48	0.78	-0.25	0.00	-0.04	0.06	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.630	LG89	-5.48	-0.55	-0.25	0.00	-0.19	-0.01	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
73	**Cross-section No. 20 - U 220**								
	0.000	LG40	6.63	1.30	1.22	0.00	-1.16	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-10.92	0.75	0.21	0.00	0.19	0.01	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG42	2.45	1.35	2.27	0.00	-1.25	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.504	LG26	2.55	-0.30	1.64	0.00	-0.18	-0.27	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG42	2.45	1.35	2.27	0.00	-1.25	0.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG16	2.65	1.46	1.70	0.00	-1.06	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	5.03	1.42	1.03	0.00	-0.96	0.00	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG42	2.45	1.35	2.27	0.00	-1.25	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.504	LG26	2.55	-0.30	1.64	0.00	-0.18	-0.27	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.252	LG16	2.65	0.55	1.70	0.00	-0.63	-0.25	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG40	6.63	1.30	1.22	0.00	-1.16	0.00	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.504	LG51	-9.74	-0.39	0.61	0.00	0.11	-0.23	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.252	LG48	6.60	0.46	1.21	0.00	-0.84	-0.22	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-10.92	0.75	0.21	0.00	0.19	0.01	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.252	LG90	-10.92	0.22	0.21	0.00	0.24	-0.12	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-10.92	0.75	0.21	0.00	0.19	0.01	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
74	**Cross-section No. 20 - U 220**								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.170	LG39	-8.79	-12.49	-4.60	0.03	1.59	2.49	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-0.72	-7.75	-0.55	0.02	0.02	0.23	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	-0.64	-11.94	-3.97	0.13	1.52	0.10	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	-0.64	-11.94	-3.97	0.13	1.52	0.10	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.170	LG41	-0.64	-12.30	-3.95	0.13	0.85	2.15	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG37	-0.69	-10.98	-3.81	0.13	1.49	0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.170	LG16	-1.81	-15.36	-0.14	-0.01	-0.07	2.99	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.170	LG14	-2.28	-14.47	-0.37	0.04	-0.42	2.66	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.170	LG17	-6.41	-15.28	-3.53	0.04	0.96	2.97	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.170	LG39	-8.79	-12.49	-4.60	0.03	1.59	2.49	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.170	LG39	-8.79	-12.49	-4.60	0.03	1.59	2.49	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.170	LG39	-8.79	-12.49	-4.60	0.03	1.59	2.49	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
75	**Cross-section No. 20 - U 220**								
	1.240	LG111	0.60	-0.55	-0.42	0.00	-0.07	-0.04	100)
	Negligible internal forces								
	0.000	LG41	4.48	2.10	0.53	0.00	-0.44	0.37	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG40	2.11	1.25	-1.35	0.00	1.34	-0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	1.240	LG29	2.31	0.14	0.16	0.00	0.09	-0.66	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.620	LG42	-0.08	-1.43	-1.51	0.00	0.71	-0.54	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	1.240	LG42	-0.08	-2.63	-1.51	0.00	-0.23	0.72	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	2.15	1.04	-0.85	0.00	0.94	-0.43	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG51	2.96	0.44	-0.48	0.01	0.80	-0.75	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG42	-0.08	-0.24	-1.51	0.01	1.65	-1.05	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	1.240	LG43	3.22	-2.10	-0.50	0.01	0.21	0.25	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG40	2.11	1.25	-1.35	0.00	1.34	-0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	1.240	LG29	2.31	0.14	0.16	0.00	0.09	-0.66	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG46	-0.75	-0.80	-1.35	0.00	1.46	-1.06	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG42	-0.08	-0.24	-1.51	0.01	1.65	-1.05	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.620	LG15	3.74	0.33	-0.08	0.00	0.13	-0.64	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	1.240	LG53	3.56	0.58	0.70	0.00	0.22	-0.92	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	3.22	0.28	-0.50	0.01	0.83	-0.88	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
76	**Cross-section No. 20 - U 220**								
	0.000	LG40	16.81	2.41	-2.08	0.02	1.33	0.34	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-19.60	7.18	2.76	-0.05	-1.68	1.29	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG52	14.32	0.73	-1.85	0.00	1.19	0.09	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	6.51	6.88	-0.43	0.00	0.32	1.14	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG1	2.65	4.06	-0.11	-0.02	0.15	0.70	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG54	-0.73	6.28	2.15	-0.25	-0.80	1.11	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	11.55	4.12	-4.78	0.24	3.00	0.65	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG54	-0.73	6.28	2.15	-0.25	-0.80	1.11	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.178	LG89	-1.62	4.69	2.24	-0.25	-0.45	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.357	LG42	1.86	7.15	1.92	-0.23	0.02	-1.34	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG42	1.86	7.86	1.87	-0.23	-0.66	1.34	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.178	LG52	14.32	0.57	-1.85	0.00	0.86	-0.03	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.178	LG45	9.72	2.52	-4.60	0.22	2.07	-0.03	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.357	LG3	6.51	6.03	-0.43	0.00	0.17	-1.17	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.357	LG16	4.39	7.12	0.92	-0.14	0.09	-1.36	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG3	6.51	6.88	-0.43	0.00	0.32	1.14	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-15.80	10.26	2.54	-0.04	-1.58	1.79	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-19.60	7.18	2.76	-0.05	-1.68	1.29	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-19.60	7.18	2.76	-0.05	-1.68	1.29	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-19.60	7.18	2.76	-0.05	-1.68	1.29	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
77	**Cross-section No. 20 - U 220**								
	0.000	LG48	6.76	1.69	-1.26	-0.02	1.10	0.20	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-3.78	3.53	1.55	0.01	-1.19	0.58	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.357	LG129	2.17	1.40	-0.11	0.00	0.09	-0.29	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG14	6.25	3.03	-0.77	0.00	0.70	0.41	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	2.58	2.09	-0.14	0.01	0.17	0.32	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	5.75	2.44	-2.81	0.21	2.23	0.33	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	5.75	2.44	-2.81	0.21	2.23	0.33	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG41	5.75	2.44	-2.81	0.21	2.23	0.33	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.178	LG89	0.61	2.24	1.92	-0.17	-0.79	-0.03	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.357	LG129	2.17	1.40	-0.11	0.00	0.09	-0.29	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.357	LG120	2.54	1.76	-0.07	0.01	0.07	-0.38	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.357	LG43	-1.45	4.83	1.59	0.02	-0.65	-0.98	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.178	LG45	4.67	1.14	-2.86	0.20	1.75	-0.05	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.357	LG22	3.26	2.23	-0.15	0.00	0.12	-0.46	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.357	LG3	4.60	3.26	-0.05	0.02	0.09	-0.71	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.357	LG14	6.24	2.23	-0.77	0.00	0.43	-0.53	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.357	LG16	3.92	3.76	1.23	-0.08	-0.25	-0.81	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-3.78	3.53	1.55	0.01	-1.19	0.58	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG90	-3.78	3.53	1.55	0.01	-1.19	0.58	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-3.78	3.53	1.55	0.01	-1.19	0.58	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
78	**Cross-section No. 20 - U 220**								
	0.262	LG22	1.70	0.74	0.12	0.00	0.00	-0.01	100)
	Negligible internal forces								
	0.000	LG15	3.19	1.28	-0.38	0.00	0.52	0.26	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	1.67	0.12	-0.82	0.00	0.96	0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG3	2.58	1.60	0.13	0.00	-0.04	0.34	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG88	1.67	0.12	-0.82	0.00	0.96	0.01	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	2.58	1.60	0.13	0.00	-0.04	0.34	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	2.52	0.98	0.40	0.07	-0.30	0.18	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.525	LG38	1.62	1.11	0.86	-0.11	-0.04	-0.37	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.525	LG38	1.62	1.11	0.86	-0.11	-0.04	-0.37	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG38	1.62	1.76	0.86	-0.11	-0.49	0.39	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG88	1.67	0.12	-0.82	0.00	0.96	0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG52	1.11	0.00	0.58	0.11	-0.45	-0.03	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	2.58	1.60	0.13	0.00	-0.04	0.34	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.525	LG43	0.66	1.62	-1.04	0.08	0.08	-0.49	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG19	2.23	0.58	-0.44	0.00	0.57	0.12	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG43	0.66	2.26	-1.04	0.08	0.62	0.53	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.262	LG41	3.15	0.52	-0.74	0.00	0.72	-0.02	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.262	LG25	2.94	0.76	-0.33	0.01	0.40	-0.02	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG15	3.19	1.28	-0.38	0.00	0.52	0.26	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG25	2.94	1.09	-0.33	0.01	0.48	0.22	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
79	**Cross-section No. 20 - U 220**								
	0.250	LG132	0.88	0.88	0.01	0.00	0.01	0.02	100)
	Negligible internal forces								
	0.250	LG43	3.86	2.77	0.77	0.00	-0.92	-0.10	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	1.88	2.48	0.66	0.00	-0.68	0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.500	LG15	2.19	2.42	0.34	0.00	-0.17	-0.99	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG90	2.94	2.05	0.85	0.00	-1.19	0.40	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	2.27	3.46	0.61	0.00	-0.62	0.26	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG90	2.94	2.05	0.85	0.00	-1.19	0.40	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG88	1.88	2.48	0.66	0.00	-0.68	0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.500	LG15	2.19	2.42	0.34	0.00	-0.17	-0.99	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.500	LG41	2.27	2.85	0.61	0.00	-0.31	-1.31	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.500	LG43	3.86	2.47	0.77	0.00	-0.73	-0.76	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
81	**Cross-section No. 20 - U 220**								
	0.000	LG15	8.38	-0.49	-1.69	0.10	0.41	-0.20	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG2	6.69	-0.78	-0.19	0.01	0.02	-0.21	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	8.01	-0.13	-2.67	0.16	0.68	-0.14	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	8.01	-0.13	-2.67	0.16	0.68	-0.14	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.189	LG54	3.69	-0.96	1.59	-0.14	0.18	-0.02	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.189	LG89	1.89	-0.83	1.59	-0.14	0.19	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG89	1.89	-0.71	1.59	-0.14	-0.11	-0.14	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG47	1.70	-0.10	0.55	0.00	-0.46	-0.18	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG88	4.72	0.32	-2.59	0.16	0.68	-0.03	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG22	5.23	-0.31	-0.15	0.00	0.06	-0.14	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	6.88	-1.10	0.87	-0.07	-0.10	-0.27	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG51	3.47	-0.46	0.57	0.00	-0.49	-0.25	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG17	5.67	-0.69	0.24	0.01	-0.29	-0.26	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
82	**Cross-section No. 20 - U 220**								
	0.262	LG132	1.56	-0.14	-0.05	0.00	0.02	-0.04	100)
	Negligible internal forces								
	0.000	LG16	4.02	0.14	0.24	-0.02	-0.02	-0.12	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.262	LG33	1.47	-0.37	-0.95	0.00	0.28	-0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.525	LG37	2.58	-0.79	-0.92	0.00	0.03	0.09	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG45	1.73	-0.22	-0.96	0.00	0.53	-0.13	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	2.76	0.09	0.01	0.02	-0.09	-0.10	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.525	LG43	2.79	-0.68	-0.31	0.04	-0.08	0.01	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.262	LG33	1.47	-0.37	-0.95	0.00	0.28	-0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.525	LG37	2.58	-0.79	-0.92	0.00	0.03	0.09	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG39	2.55	-0.01	-0.31	0.04	0.08	-0.17	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG37	2.58	-0.15	-0.92	0.00	0.52	-0.15	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	3.64	0.04	-0.03	0.00	0.03	-0.14	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG17	3.47	0.00	-0.20	0.02	0.06	-0.18	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG41	2.81	-0.17	-0.93	0.00	0.52	-0.16	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
84	**Cross-section No. 20 - U 220**								
	0.000	LG114	2.48	-0.36	-0.09	0.00	-0.01	-0.03	100)
	Negligible internal forces								
	0.000	LG15	6.80	-1.07	-0.82	-0.07	-0.12	-0.08	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	1.61	-0.36	1.11	0.00	-0.16	-0.04	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.104	LG14	5.40	-1.42	-0.34	0.00	-0.16	0.05	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	5.48	-0.85	-0.04	-0.01	-0.03	-0.06	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.104	LG41	6.43	-1.22	-1.38	-0.11	-0.31	0.05	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.104	LG41	6.43	-1.22	-1.38	-0.11	-0.31	0.05	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.104	LG41	6.43	-1.22	-1.38	-0.11	-0.31	0.05	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.104	LG89	1.55	-0.26	0.16	0.09	0.29	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG52	2.45	-0.95	-0.62	0.01	-0.16	-0.06	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.052	LG40	4.07	-1.30	-0.57	0.00	-0.21	-0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.052	LG41	6.43	-1.13	-1.38	-0.11	-0.24	-0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG14	5.40	-1.18	-0.34	0.00	-0.12	-0.08	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG15	6.80	-1.07	-0.82	-0.07	-0.12	-0.08	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.104	LG40	4.07	-1.40	-0.57	0.00	-0.23	0.06	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.104	LG41	6.43	-1.22	-1.38	-0.11	-0.31	0.05	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
85	**Cross-section No. 20 - U 220**								
	0.525	LG4	1.88	-0.14	-0.04	0.00	-0.01	-0.04	100)
	Negligible internal forces								
	0.525	LG42	4.10	-0.28	0.38	0.04	0.38	-0.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.262	LG15	2.32	0.01	-0.67	0.00	-0.15	-0.12	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG33	0.17	0.17	-1.18	0.00	0.03	-0.07	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	1.76	0.38	0.30	-0.03	-0.09	-0.05	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG44	-0.55	0.14	0.43	-0.05	-0.15	-0.05	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.525	LG90	1.32	-0.06	-0.56	-0.04	-0.38	-0.02	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.262	LG15	2.32	0.01	-0.67	0.00	-0.15	-0.12	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.262	LG14	1.86	-0.01	0.29	-0.03	-0.01	-0.10	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.262	LG41	1.32	-0.01	-1.15	-0.01	-0.27	-0.12	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.525	LG50	4.09	-0.28	0.40	0.04	0.38	-0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.262	LG3	3.06	0.04	0.02	0.00	0.02	-0.09	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.262	LG17	3.37	0.07	-0.28	-0.02	-0.12	-0.08	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.262	LG43	3.08	0.08	-0.49	-0.04	-0.21	-0.06	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
87	**Cross-section No. 20 - U 220**								
	0.000	LG16	4.05	-1.25	0.28	0.05	0.22	-0.08	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.019	LG90	0.00	-0.21	2.71	0.00	0.47	0.03	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG22	2.17	-0.86	-0.17	0.00	-0.08	-0.14	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG90	0.00	-0.20	2.71	0.00	0.42	0.02	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.019	LG24	1.74	-1.62	-0.66	0.00	-0.31	-0.16	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	3.60	-1.29	-0.05	-0.01	-0.05	-0.12	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.009	LG41	3.43	-1.51	-2.20	-0.12	-0.90	-0.21	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.009	LG41	3.43	-1.51	-2.20	-0.12	-0.90	-0.21	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.019	LG41	3.43	-1.52	-2.20	-0.12	-0.92	-0.19	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.019	LG90	0.00	-0.21	2.71	0.00	0.47	0.03	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.019	LG43	2.24	-0.91	2.75	-0.01	0.50	-0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG22	2.17	-0.86	-0.17	0.00	-0.08	-0.14	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG30	2.34	-0.70	0.15	0.06	0.18	-0.08	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG52	-0.89	-1.27	-1.11	0.00	-0.46	-0.19	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG53	2.11	-1.07	-2.30	-0.11	-0.90	-0.22	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.019	LG42	3.54	-0.96	0.45	0.09	0.39	-0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG23	3.40	-1.29	-0.09	0.00	-0.06	-0.15	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG3	3.90	-1.41	-0.04	-0.01	-0.05	-0.14	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG27	2.77	-1.10	1.60	0.00	0.24	-0.09	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG49	3.36	-1.50	-2.22	-0.11	-0.88	-0.22	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
88	**Cross-section No. 20 - U 220**								
	0.495	LG115	-0.01	-0.53	0.02	-0.01	0.00	0.00	100)
	Negligible internal forces								
	0.495	LG42	3.46	-0.52	-0.32	0.12	0.22	0.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG87	-3.81	-0.55	1.33	-0.09	0.08	-0.38	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG111	-0.09	-0.29	0.06	0.00	0.00	-0.21	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG1	-0.01	-0.39	0.03	-0.01	-0.01	-0.28	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.495	LG89	3.34	0.00	-0.45	0.12	0.07	0.01	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG48	-3.49	-0.87	1.35	-0.10	0.09	-0.61	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.495	LG40	-3.47	-1.47	1.32	-0.10	0.74	-0.02	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.495	LG90	1.85	-0.08	-1.82	-0.09	-1.29	0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG111	-0.09	-0.29	0.06	0.00	0.00	-0.21	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	-1.90	-0.83	0.83	-0.07	0.06	-0.59	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	-1.93	-1.06	-0.06	-0.02	-0.33	-0.69	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.495	LG52	-3.71	-1.07	1.35	-0.10	0.75	-0.04	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG48	-3.49	-0.87	1.35	-0.10	0.09	-0.61	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG41	-3.46	-1.28	-0.16	-0.02	-0.57	-0.77	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.248	LG87	-3.81	-0.67	1.33	-0.09	0.41	-0.23	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG87	-3.81	-0.55	1.33	-0.09	0.08	-0.38	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG87	-3.81	-0.55	1.33	-0.09	0.08	-0.38	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
89	**Cross-section No. 20 - U 220**								
	0.500	LG129	0.62	0.40	0.06	0.00	0.05	-0.04	100)
	Negligible internal forces								
	0.250	LG48	2.82	2.30	0.04	0.00	0.67	0.21	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.500	LG90	-0.43	-0.35	-2.88	0.00	-0.86	0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.500	LG49	1.32	2.78	1.22	0.00	-0.07	-0.88	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG51	-0.37	1.82	-2.91	0.00	0.67	0.43	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	1.32	4.47	1.22	0.00	-0.68	0.93	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG9	0.29	2.33	-1.74	0.00	0.43	0.59	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.500	LG90	-0.43	-0.35	-2.88	0.00	-0.86	0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.500	LG49	1.32	2.78	1.22	0.00	-0.07	-0.88	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG41	1.23	4.44	1.24	0.00	-0.71	0.93	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG48	2.82	3.14	0.04	0.00	0.66	0.89	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
90	**Cross-section No. 20 - U 220**								
	0.722	LG130	0.80	0.23	0.12	0.00	-0.05	-0.05	100)
	Negligible internal forces								
	0.722	LG41	4.41	0.71	1.48	0.00	-0.54	0.18	101)
	Cross-section check - Tension acc. to 6.2.3								
	2.165	LG35	2.31	-0.41	-2.15	0.00	-2.32	-0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	2.165	LG2	1.47	-1.32	0.12	0.00	0.10	0.57	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	2.165	LG90	2.01	-0.26	-2.20	0.00	-2.38	-0.06	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	2.165	LG12	-0.20	-1.49	-0.38	0.00	-0.48	0.67	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	1.61	1.15	1.01	0.00	-1.13	0.37	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	2.165	LG35	2.31	-0.41	-2.15	0.00	-2.32	-0.02	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	2.165	LG2	1.47	-1.32	0.12	0.00	0.10	0.57	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG47	2.45	0.92	-2.14	0.00	2.32	0.53	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	2.165	LG29	2.79	-0.37	1.02	0.00	1.11	0.00	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG41	4.41	1.44	1.48	0.00	-1.61	0.95	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
91	**Cross-section No. 20 - U 220**								
	0.177	LG48	3.12	1.77	1.68	0.00	-1.31	0.53	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.355	LG88	-3.32	-1.20	1.27	0.00	-0.72	1.04	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.355	LG35	1.22	0.32	1.21	0.00	1.58	-0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG3	1.74	2.12	0.07	0.00	-0.10	0.78	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG52	2.68	2.11	1.75	0.00	-1.66	0.77	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG42	1.37	3.72	-0.69	0.00	0.45	0.36	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	2.70	2.29	1.03	0.00	-1.01	0.88	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.355	LG35	1.22	0.32	1.21	0.00	1.58	-0.02	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	1.74	2.12	0.07	0.00	-0.10	0.78	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.355	LG49	-2.34	-0.86	1.35	0.00	-0.81	1.15	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.355	LG53	-2.81	-0.94	1.40	0.00	-0.82	1.08	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.355	LG88	-3.32	-1.20	1.27	0.00	-0.72	1.04	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.355	LG88	-3.32	-1.20	1.27	0.00	-0.72	1.04	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.355	LG88	-3.32	-1.20	1.27	0.00	-0.72	1.04	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
93	**Cross-section No. 20 - U 220**								
	0.000	LG40	16.35	-1.54	-1.49	0.00	0.58	-0.46	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-15.12	-1.01	3.03	0.00	-0.70	-0.58	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	-15.12	-1.01	3.03	0.00	-0.70	-0.58	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.213	LG24	12.53	-2.10	-0.93	0.00	0.21	-0.16	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	7.66	-1.68	-0.15	0.02	0.15	-0.68	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	12.48	-1.52	-4.14	0.21	1.29	-0.57	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	12.48	-1.52	-4.14	0.21	1.29	-0.57	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.213	LG41	12.48	-2.02	-4.13	0.20	0.41	-0.20	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.106	LG17	-1.59	-2.38	1.68	0.02	-0.15	-0.70	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-1.59	-2.09	1.68	0.02	-0.33	-0.93	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.213	LG44	14.04	-1.32	-1.41	-0.01	0.25	-0.03	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG4	5.85	-1.34	-0.06	0.00	0.13	-0.55	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	7.62	-2.26	0.89	-0.09	0.09	-0.89	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG47	-12.53	-1.50	3.01	0.00	-0.68	-0.77	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-10.19	-1.92	2.94	0.01	-0.67	-0.94	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-15.12	-1.01	3.03	0.00	-0.70	-0.58	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-15.12	-1.01	3.03	0.00	-0.70	-0.58	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-15.12	-1.01	3.03	0.00	-0.70	-0.58	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
94	**Cross-section No. 20 - U 220**								
	0.000	LG15	8.06	0.11	-2.11	0.14	0.77	-0.26	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.168	LG40	7.34	-0.84	-1.86	0.00	0.35	-0.09	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	6.49	-0.17	-0.38	0.02	0.09	-0.30	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	7.66	0.33	-3.21	0.21	1.22	-0.16	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	7.66	0.33	-3.21	0.21	1.22	-0.16	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.168	LG50	5.31	-0.93	1.89	-0.17	-0.17	-0.28	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.168	LG89	1.82	-0.64	1.99	-0.18	-0.11	-0.15	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG47	0.65	0.14	0.99	0.00	-0.62	-0.32	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG43	2.47	0.07	0.96	0.01	-0.65	-0.41	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG33	5.38	0.42	-3.14	0.20	1.23	-0.04	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG22	4.91	-0.09	-0.34	0.00	0.12	-0.22	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.084	LG16	6.66	-0.65	0.94	-0.09	-0.18	-0.36	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG24	7.38	-0.40	-1.25	0.00	0.43	-0.26	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG42	5.32	-0.63	1.88	-0.17	-0.48	-0.41	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
95	Cross-section No. 20 - U 220								
	0.030	LG41	4.99	-2.55	1.13	-0.01	0.47	-0.40	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG89	-10.23	-2.40	-0.44	0.00	-0.31	-0.61	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG2	0.51	-3.14	0.08	-0.01	-0.01	-0.71	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG90	2.80	-0.33	-1.91	0.00	-0.64	0.13	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.030	LG16	-5.33	-3.87	-0.23	0.00	-0.24	-0.79	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	0.68	-3.30	0.08	-0.01	-0.02	-0.74	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.030	LG49	4.74	-2.61	1.17	-0.01	0.49	-0.44	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.030	LG49	4.74	-2.61	1.17	-0.01	0.49	-0.44	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.030	LG48	-0.07	-4.13	1.51	-0.01	0.71	-0.90	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG2	0.51	-3.14	0.08	-0.01	-0.01	-0.71	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG5	0.48	-3.28	0.11	-0.01	0.00	-0.75	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG52	-0.28	-3.42	1.56	0.00	0.71	-0.85	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG48	-0.07	-4.03	1.51	-0.01	0.66	-1.02	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.030	LG47	2.99	-1.15	-1.87	0.00	-0.69	0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG30	-5.63	-2.95	-0.12	0.00	-0.15	-0.71	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG50	-9.56	-3.76	-0.39	0.00	-0.34	-0.96	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG7	3.09	-2.97	0.74	-0.01	0.26	-0.66	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG89	-10.23	-2.40	-0.44	0.00	-0.31	-0.61	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-10.23	-2.40	-0.44	0.00	-0.31	-0.61	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-10.23	-2.40	-0.44	0.00	-0.31	-0.61	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
99	Cross-section No. 20 - U 220								
	0.000	LG15	7.76	-0.26	-0.63	-0.05	0.09	-0.16	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG2	6.15	-0.03	-0.06	-0.01	-0.01	-0.11	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.336	LG41	7.43	-1.04	-1.02	-0.07	-0.17	0.07	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.336	LG41	7.43	-1.04	-1.02	-0.07	-0.17	0.07	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.336	LG41	7.43	-1.04	-1.02	-0.07	-0.17	0.07	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.336	LG89	1.68	-0.20	0.23	0.06	0.27	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG87	1.98	-0.48	-0.98	0.03	0.16	-0.10	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG47	1.88	-0.17	0.58	-0.01	-0.35	-0.12	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.336	LG42	5.03	-0.57	0.33	0.05	0.25	0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG22	4.84	-0.35	-0.14	0.00	0.03	-0.13	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG41	7.43	-0.41	-1.03	-0.07	0.18	-0.17	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG53	5.78	-0.55	-1.07	-0.07	0.21	-0.16	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
102	Cross-section No. 20 - U 220								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.421	LG1	2.65	-0.42	-0.12	0.00	-0.08	0.01	100)
	Negligible internal forces								
	0.000	LG15	5.39	0.10	-0.80	-0.08	-0.21	-0.16	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.421	LG90	-0.08	-0.21	1.10	0.00	0.42	0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG28	2.13	-0.32	-0.40	0.00	-0.15	-0.16	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG47	1.25	0.02	1.10	0.00	-0.05	-0.06	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.421	LG48	2.28	-1.02	-0.50	0.00	-0.44	0.06	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	4.42	0.22	-0.04	-0.01	-0.04	-0.11	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.421	LG41	5.02	-0.80	-1.34	-0.12	-0.88	0.01	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.421	LG41	5.02	-0.80	-1.34	-0.12	-0.88	0.01	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.421	LG14	3.77	-1.01	-0.30	-0.01	-0.28	0.04	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.421	LG90	-0.08	-0.21	1.10	0.00	0.42	0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.421	LG39	2.16	-0.56	1.17	-0.01	0.45	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG28	2.13	-0.32	-0.40	0.00	-0.15	-0.16	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG51	2.47	0.19	1.17	-0.01	-0.05	-0.08	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG48	2.28	-0.22	-0.50	0.00	-0.23	-0.20	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.211	LG51	2.47	-0.21	1.17	-0.01	0.20	-0.07	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.421	LG41	5.02	-0.80	-1.34	-0.12	-0.88	0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG24	3.37	-0.14	-0.33	0.00	-0.15	-0.18	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG14	3.77	-0.03	-0.30	-0.01	-0.16	-0.18	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.211	LG24	3.37	-0.54	-0.33	0.00	-0.22	-0.11	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG49	4.96	-0.01	-1.36	-0.11	-0.31	-0.16	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
105	**Cross-section No. 20 - U 220**								
	0.476	LG1	0.27	-0.89	-0.15	0.00	-0.16	0.00	100)
	Negligible internal forces								
	0.000	LG87	-3.77	-0.76	-1.07	-0.01	-0.46	-0.44	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.476	LG90	-0.44	-0.24	2.76	-0.01	1.78	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG22	0.26	-0.62	-0.15	0.00	-0.09	-0.40	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG90	-0.44	0.08	2.76	0.00	0.47	-0.04	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.476	LG28	-2.00	-1.32	-0.72	0.00	-0.67	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	0.51	-0.56	-0.03	-0.01	-0.05	-0.53	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	-0.04	-1.02	-2.19	-0.12	-0.93	-0.69	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	-0.04	-1.02	-2.19	-0.12	-0.93	-0.69	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.476	LG41	-0.04	-1.92	-2.19	-0.12	-1.97	0.00	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.476	LG90	-0.44	-0.24	2.76	-0.01	1.78	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.476	LG53	-0.32	-1.38	-2.29	-0.11	-2.03	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG22	0.26	-0.62	-0.15	0.00	-0.09	-0.40	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG3	0.58	-0.67	-0.02	-0.01	-0.05	-0.58	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG28	-2.00	-0.88	-0.72	-0.01	-0.33	-0.52	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG49	-0.13	-1.03	-2.20	-0.12	-0.92	-0.69	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.476	LG32	-3.64	-1.32	-1.10	-0.01	-1.00	0.00	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG48	-3.35	-1.05	-1.01	-0.01	-0.46	-0.71	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG87	-3.77	-0.76	-1.07	-0.01	-0.46	-0.44	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG87	-3.77	-0.76	-1.07	-0.01	-0.46	-0.44	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG87	-3.77	-0.76	-1.07	-0.01	-0.46	-0.44	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
107	**Cross-section No. 20 - U 220**								
	0.295	LG90	3.58	2.11	5.10	0.00	-1.83	0.23	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG89	-7.68	3.48	0.13	0.00	-0.38	1.42	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	0.25	4.39	0.15	-0.01	-0.13	1.79	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG47	3.28	3.97	5.15	0.00	-3.36	1.47	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG46	-7.37	4.70	0.22	0.00	-0.46	1.94	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	0.24	5.57	0.37	-0.01	-0.37	2.29	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG14	-0.75	5.90	0.55	-0.01	-0.23	2.53	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG43	3.10	4.79	5.30	-0.01	-3.51	1.82	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG14	-0.75	5.90	0.55	-0.01	-0.23	2.53	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG1	0.25	4.39	0.15	-0.01	-0.13	1.79	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG6	-0.91	5.85	0.47	-0.01	-0.13	2.50	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG21	1.97	4.20	3.18	-0.01	-2.09	1.64	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	-0.75	5.90	0.55	-0.01	-0.23	2.53	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.590	LG30	-4.31	2.93	0.14	0.00	-0.17	-0.31	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG46	-7.37	4.70	0.22	0.00	-0.46	1.94	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG16	-4.19	5.81	0.46	-0.01	-0.62	2.43	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG89	-7.68	3.48	0.13	0.00	-0.38	1.42	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-7.68	3.48	0.13	0.00	-0.38	1.42	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-7.68	3.48	0.13	0.00	-0.38	1.42	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
108	**Cross-section No. 20 - U 220**								
	0.000	LG89	-5.32	3.74	-0.37	0.00	0.48	1.82	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.210	LG90	2.14	1.98	5.64	0.00	-0.49	0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.210	LG31	1.33	4.21	2.98	0.00	-0.01	1.05	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG90	2.14	2.68	5.64	0.00	-1.68	0.49	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG22	0.43	5.90	-0.53	0.00	0.51	2.74	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	0.41	6.39	-0.73	0.02	0.73	2.89	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.210	LG14	0.15	6.12	-1.21	0.02	0.93	2.28	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG39	1.97	4.84	5.23	0.01	-1.27	1.54	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG14	0.14	7.22	-1.21	0.02	1.19	3.68	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.210	LG90	2.14	1.98	5.64	0.00	-0.49	0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.210	LG31	1.33	4.21	2.98	0.00	-0.01	1.05	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.105	LG17	1.36	5.35	2.70	0.02	-0.04	1.83	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG22	0.43	5.90	-0.53	0.00	0.51	2.74	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG48	-0.14	7.31	-1.36	0.01	1.31	3.85	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG88	-5.25	4.19	-0.02	0.01	0.03	1.67	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG53	-5.30	5.84	-0.18	0.01	0.19	2.48	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG30	-2.78	5.75	-0.53	0.00	0.58	2.79	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG16	-2.80	6.51	-0.82	0.01	0.90	3.19	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG89	-5.32	3.74	-0.37	0.00	0.48	1.82	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG49	-5.32	6.53	-0.35	0.01	0.37	2.84	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-5.32	3.74	-0.37	0.00	0.48	1.82	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
110	**Cross-section No. 20 - U 220**								
	0.210	LG90	-6.09	-3.55	-0.79	0.01	0.16	0.45	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	0.52	-1.85	0.11	0.01	-0.03	-0.48	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG54	1.69	-3.14	0.52	0.10	0.46	-0.64	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.210	LG88	1.07	-0.32	-1.22	-0.08	-0.36	-0.22	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.210	LG42	1.93	-4.93	0.44	0.09	0.54	0.46	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.210	LG54	1.69	-3.34	0.52	0.10	0.57	0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG18	0.37	-1.11	0.37	0.02	-0.14	-0.70	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG46	1.82	-3.28	0.48	0.10	0.47	-0.72	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.105	LG35	-5.94	-3.97	-0.68	0.01	0.21	0.00	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.210	LG39	-5.84	-5.53	-0.67	0.01	0.10	0.90	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG47	-5.79	-4.08	-0.67	0.01	0.27	-0.54	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-6.09	-3.41	-0.79	0.01	0.32	-0.28	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.210	LG90	-6.09	-3.55	-0.79	0.01	0.16	0.45	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.210	LG90	-6.09	-3.55	-0.79	0.01	0.16	0.45	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
111	**Cross-section No. 20 - U 220**								
	0.000	LG40	13.74	-1.41	-0.42	-0.04	0.27	-0.48	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-13.48	0.13	0.37	0.04	-0.05	-0.11	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG7	9.40	-1.07	-1.15	0.00	0.29	-0.46	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.456	LG7	9.40	-2.24	-1.14	0.00	-0.23	0.30	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG1	3.97	-0.58	-0.20	0.02	0.10	-0.26	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG50	4.18	-0.66	-0.32	0.06	0.35	-0.37	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.456	LG88	6.59	-1.17	-1.53	-0.03	-0.38	0.20	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.456	LG50	4.18	-1.62	-0.33	0.06	0.20	0.15	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.456	LG89	0.75	-0.66	-0.22	0.05	0.22	0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-1.48	-0.68	0.06	0.04	0.03	-0.43	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG54	2.18	-0.54	-0.27	0.05	0.34	-0.28	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.228	LG7	9.40	-1.66	-1.14	0.00	0.03	-0.15	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG3	8.11	-1.01	-0.29	0.02	0.13	-0.47	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG7	9.40	-1.07	-1.15	0.00	0.29	-0.46	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG14	12.23	-1.33	-0.40	-0.02	0.23	-0.51	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-13.48	0.13	0.37	0.04	-0.05	-0.11	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-13.48	0.13	0.37	0.04	-0.05	-0.11	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-13.48	0.13	0.37	0.04	-0.05	-0.11	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
113	**Cross-section No. 20 - U 220**								
	0.000	LG90	-5.80	-0.62	-0.22	0.01	-0.24	-0.42	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	0.74	-1.39	0.26	0.01	0.08	-0.84	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.522	LG54	1.99	-1.80	-0.70	0.10	-0.24	0.01	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG89	1.78	-0.91	-0.82	0.09	0.10	-0.57	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.522	LG42	2.54	-4.26	-0.75	0.09	-0.28	0.02	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.522	LG52	0.04	-2.26	1.15	0.02	0.97	0.02	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	1.56	-4.11	0.31	0.01	0.09	-2.46	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	1.13	-4.31	0.73	0.01	0.23	-2.56	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG90	-5.80	-1.00	-0.22	0.01	-0.35	0.00	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	-5.02	-2.90	0.03	0.01	-0.14	-1.78	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG90	-5.80	-0.62	-0.22	0.01	-0.24	-0.42	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-5.80	-0.62	-0.22	0.01	-0.24	-0.42	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-5.80	-0.62	-0.22	0.01	-0.24	-0.42	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-5.80	-0.62	-0.22	0.01	-0.24	-0.42	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
114	**Cross-section No. 20 - U 220**								
	0.000	LG90	-8.77	0.56	0.22	-0.02	0.22	0.19	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.522	LG14	0.70	-2.19	-1.40	0.00	-1.02	-0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.522	LG14	0.70	-2.19	-1.40	0.00	-1.02	-0.01	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.522	LG14	0.70	-2.19	-1.40	0.00	-1.02	-0.01	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.60	-0.30	-0.38	-0.01	-0.07	-0.30	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG41	0.03	-0.88	-1.79	-0.11	-1.01	-0.75	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	0.03	-0.88	-1.79	-0.11	-1.01	-0.75	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.522	LG41	0.03	-2.01	-1.79	-0.11	-1.94	0.00	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.522	LG14	0.70	-2.19	-1.40	0.00	-1.02	-0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG41	0.03	-2.01	-1.79	-0.11	-1.94	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	0.58	-0.37	-0.60	-0.02	-0.13	-0.57	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	0.70	-0.78	-1.40	0.00	-0.29	-0.79	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG40	0.79	-1.04	-1.85	0.01	-0.37	-0.85	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG90	-8.77	0.18	0.22	-0.02	0.33	0.00	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG17	-4.61	0.12	-0.24	-0.03	0.06	-0.31	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG90	-8.77	0.56	0.22	-0.02	0.22	0.19	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-8.77	0.56	0.22	-0.02	0.22	0.19	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-8.77	0.56	0.22	-0.02	0.22	0.19	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-8.77	0.56	0.22	-0.02	0.22	0.19	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
116	**Cross-section No. 20 - U 220**								
	0.522	LG90	-5.80	0.52	-0.29	0.01	-0.24	-0.42	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	0.74	0.65	0.15	0.01	0.00	-0.63	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG54	1.98	0.75	-0.37	0.10	0.33	-0.54	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG50	2.40	2.13	-0.33	0.09	0.31	-1.06	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.522	LG3	1.55	1.21	0.24	0.01	0.09	-2.45	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG14	1.12	1.01	0.44	0.01	0.23	-2.55	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG43	-5.03	1.28	-0.07	0.01	-0.14	-1.78	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.522	LG90	-5.80	0.52	-0.29	0.01	-0.24	-0.42	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.522	LG90	-5.80	0.52	-0.29	0.01	-0.24	-0.42	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.522	LG90	-5.80	0.52	-0.29	0.01	-0.24	-0.42	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.522	LG90	-5.80	0.52	-0.29	0.01	-0.24	-0.42	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
117	**Cross-section No. 20 - U 220**								
	0.261	LG129	2.51	-0.19	-0.16	0.00	-0.03	-0.04	100)
	Negligible internal forces								
	0.000	LG40	8.76	-0.66	-0.85	-0.01	0.08	-0.34	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-11.44	0.94	0.20	0.00	0.12	0.20	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG129	2.51	0.00	-0.16	0.00	0.01	-0.07	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.261	LG36	8.23	-1.13	-0.83	-0.01	-0.14	-0.09	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.522	LG48	8.52	-1.69	-0.82	0.00	-0.35	0.27	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	2.78	0.11	-0.16	-0.01	0.01	-0.06	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.522	LG41	6.60	-1.42	-1.19	-0.11	-1.00	0.20	131)
	Cross-section check - Torsion acc. to 6.2.7								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.522	LG41	6.60	-1.42	-1.19	-0.11	-1.00	0.20	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.522	LG41	6.60	-1.42	-1.19	-0.11	-1.00	0.20	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG46	1.97	0.17	-0.43	0.07	0.22	-0.03	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG129	2.51	0.00	-0.16	0.00	0.01	-0.07	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.261	LG17	-2.46	0.01	-0.01	-0.02	0.06	-0.09	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG50	2.98	0.44	-0.44	0.07	0.21	-0.03	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG48	8.52	-0.55	-0.82	0.00	0.07	-0.31	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG40	8.76	-0.66	-0.85	-0.01	0.08	-0.34	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.522	LG48	8.52	-1.69	-0.82	0.00	-0.35	0.27	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.522	LG40	8.76	-1.80	-0.86	-0.01	-0.37	0.30	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.522	LG90	-11.44	0.55	0.20	0.00	0.22	-0.19	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-11.44	0.94	0.20	0.00	0.12	0.20	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-11.44	0.94	0.20	0.00	0.12	0.20	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
119	**Cross-section No. 20 - U 220**								
	0.522	LG48	2.72	-1.47	0.99	0.00	1.10	-0.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-7.97	0.22	-0.56	0.00	-0.30	-0.16	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.522	LG36	2.56	-1.38	0.97	0.00	1.07	-0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG25	1.46	0.20	0.53	0.00	-0.02	-0.36	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.522	LG40	2.69	-1.40	1.02	0.00	1.11	-0.01	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.522	LG8	1.96	-1.62	0.29	0.00	0.56	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	2.33	0.30	0.92	0.00	0.45	-0.35	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.522	LG36	2.56	-1.38	0.97	0.00	1.07	-0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG25	1.46	0.20	0.53	0.00	-0.02	-0.36	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG26	2.04	0.16	0.23	0.00	0.41	-0.38	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG40	2.69	-1.40	1.02	0.00	1.11	-0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG27	-3.56	0.17	0.20	0.00	0.04	-0.37	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG48	2.72	0.31	0.99	0.00	0.58	-0.32	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-7.97	0.22	-0.56	0.00	-0.30	-0.16	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-7.97	0.22	-0.56	0.00	-0.30	-0.16	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-7.97	0.22	-0.56	0.00	-0.30	-0.16	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
121	**Cross-section No. 20 - U 220**								
	0.000	LG48	4.14	1.69	1.01	0.00	0.05	0.10	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-9.06	0.97	-0.67	0.00	0.05	0.06	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.522	LG25	1.86	0.00	0.28	0.00	-0.02	-0.36	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.522	LG40	4.13	-0.16	1.02	0.00	0.58	-0.29	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG8	2.15	1.83	0.35	0.00	0.23	0.10	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG14	3.38	1.76	0.84	0.00	0.01	0.10	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.522	LG25	1.86	0.00	0.28	0.00	-0.02	-0.36	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG26	2.21	0.04	0.33	0.00	0.41	-0.38	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.522	LG27	-4.00	0.02	0.03	0.00	0.04	-0.37	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.522	LG24	3.38	0.02	0.80	0.00	0.45	-0.37	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.522	LG90	-9.06	-0.14	-0.67	0.00	-0.30	-0.16	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-9.06	0.97	-0.67	0.00	0.05	0.06	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-9.06	0.97	-0.67	0.00	0.05	0.06	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
123	**Cross-section No. 20 - U 220**								
	0.000	LG40	5.35	0.25	1.13	0.00	-0.54	-0.24	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-9.97	0.24	-0.46	0.00	0.30	-0.11	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG26	2.37	0.16	0.80	0.00	-0.18	-0.28	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.522	LG48	5.34	-1.53	1.14	0.00	0.05	0.10	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.522	LG16	2.43	-1.68	0.82	0.00	0.22	0.10	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	4.15	0.24	0.89	0.00	-0.44	-0.26	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG26	2.37	0.16	0.80	0.00	-0.18	-0.28	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	2.26	0.23	0.51	0.00	-0.29	-0.27	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG51	-8.93	0.27	-0.13	0.00	0.11	-0.23	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG14	4.25	0.24	0.89	0.00	-0.45	-0.27	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-9.97	0.24	-0.46	0.00	0.30	-0.11	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-9.97	0.24	-0.46	0.00	0.30	-0.11	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-9.97	0.24	-0.46	0.00	0.30	-0.11	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
124	**Cross-section No. 20 - U 220**								
	0.000	LG39	-6.89	-4.29	-2.94	0.00	0.43	-0.68	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG4	1.04	-1.27	0.16	0.00	-0.04	-0.71	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.066	LG43	-6.60	-4.49	-2.95	0.00	0.23	-0.49	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.066	LG43	-6.60	-4.49	-2.95	0.00	0.23	-0.49	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	-0.48	-3.29	-0.01	0.01	-0.06	-0.62	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	0.87	-2.27	-1.96	0.15	0.03	-0.56	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	0.87	-2.27	-1.96	0.15	0.03	-0.56	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.066	LG41	0.87	-2.41	-1.96	0.15	-0.10	-0.41	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG4	1.04	-1.27	0.16	0.00	-0.04	-0.71	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	0.58	-3.69	0.82	-0.06	0.18	-0.87	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG28	0.59	-0.36	1.12	0.00	-0.22	-0.59	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG42	1.22	-3.24	1.46	-0.12	0.35	-0.87	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.033	LG27	-4.05	-3.72	-1.56	0.00	0.15	-0.60	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.033	LG17	-4.12	-4.44	-1.81	0.01	0.16	-0.67	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	-6.60	-4.35	-2.95	0.00	0.43	-0.79	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG17	-4.12	-4.36	-1.81	0.01	0.22	-0.82	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG39	-6.89	-4.29	-2.94	0.00	0.43	-0.68	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG39	-6.89	-4.29	-2.94	0.00	0.43	-0.68	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG39	-6.89	-4.29	-2.94	0.00	0.43	-0.68	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
149	**Cross-section No. 20 - U 220**								
	0.000	LG88	3.14	-1.71	0.47	0.00	0.27	-0.02	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.470	LG43	-6.07	-7.07	-0.47	0.01	-0.09	2.96	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.470	LG88	3.14	-2.01	0.47	0.00	0.49	0.86	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.85	-2.48	-0.07	0.01	0.02	-0.03	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.470	LG16	-2.56	-8.84	-0.55	0.02	-0.27	3.70	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.470	LG16	-2.56	-8.84	-0.55	0.02	-0.27	3.70	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.470	LG3	-1.60	-8.81	-0.30	0.02	-0.08	3.68	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG16	-2.56	-8.84	-0.55	0.02	-0.27	3.70	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG88	3.14	-1.71	0.47	0.00	0.27	-0.02	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG33	2.85	-2.36	0.45	0.01	0.28	-0.02	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.470	LG17	-4.42	-8.83	-0.45	0.02	-0.10	3.69	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.470	LG88	3.14	-2.01	0.47	0.00	0.49	0.86	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.470	LG50	-2.87	-7.09	-0.64	0.02	-0.39	2.98	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.470	LG43	-6.07	-7.07	-0.47	0.01	-0.09	2.96	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.470	LG9	-4.26	-8.84	-0.45	0.02	-0.11	3.68	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.470	LG43	-6.07	-7.07	-0.47	0.01	-0.09	2.96	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
	0.470	LG9	-4.26	-8.84	-0.45	0.02	-0.11	3.68	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
	0.470	LG43	-6.07	-7.07	-0.47	0.01	-0.09	2.96	326)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2								
152	**Cross-section No. 20 - U 220**								
	0.625	LG88	3.84	0.82	0.15	0.00	0.62	-0.21	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG43	-7.37	3.97	-0.13	-0.01	-0.15	1.44	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG52	0.16	1.65	-0.02	0.00	0.13	0.59	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG18	-0.52	1.66	-0.05	-0.01	0.08	0.59	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.99	1.66	-0.07	-0.01	0.02	0.59	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG17	-5.38	3.58	-0.18	-0.01	-0.18	-0.86	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG17	-5.38	4.93	-0.18	-0.01	-0.06	1.81	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG52	0.16	1.65	-0.02	0.00	0.13	0.59	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG6	-1.09	4.90	-0.16	-0.01	0.12	1.81	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG7	0.91	4.91	-0.07	-0.01	0.35	1.81	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-5.38	4.93	-0.18	-0.01	-0.06	1.81	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG33	3.51	1.66	0.13	-0.01	0.52	0.59	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG16	-3.22	4.93	-0.22	-0.01	-0.19	1.81	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG43	-7.37	2.86	-0.13	-0.01	-0.23	-0.69	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-7.37	3.97	-0.13	-0.01	-0.15	1.44	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-7.37	3.97	-0.13	-0.01	-0.15	1.44	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
179	**Cross-section No. 20 - U 220**								
	0.000	LG43	-7.92	5.83	0.04	-0.01	-0.02	2.29	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-1.10	2.39	0.00	-0.01	0.00	0.94	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.540	LG16	-2.71	6.07	0.35	-0.02	-0.23	-0.76	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG16	-2.72	7.24	0.35	-0.02	-0.42	2.83	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG3	-2.23	7.25	0.07	-0.02	-0.04	2.83	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	-0.58	7.24	-0.27	-0.02	0.53	2.82	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-5.85	7.27	0.07	-0.02	-0.04	2.84	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	-2.72	7.24	0.35	-0.02	-0.42	2.83	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-7.92	5.83	0.04	-0.01	-0.02	2.29	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-7.92	5.83	0.04	-0.01	-0.02	2.29	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-7.92	5.83	0.04	-0.01	-0.02	2.29	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
258	**Cross-section No. 20 - U 220**								
	0.000	LG87	8.98	1.26	-0.02	0.00	-0.10	-0.11	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG51	-20.83	5.20	-0.58	0.00	0.68	2.31	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG15	0.78	5.55	-0.53	0.00	-0.08	1.44	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG42	-4.65	5.28	-0.92	0.01	1.19	2.21	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG16	-3.65	6.12	-0.71	0.00	0.83	2.25	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG38	-4.70	5.20	-0.91	0.00	1.18	2.14	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.365	LG42	-4.64	4.83	-0.92	0.01	0.86	0.36	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.365	LG42	-4.64	4.83	-0.92	0.01	0.86	0.36	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.183	LG42	-4.65	5.06	-0.92	0.01	1.02	1.27	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG15	0.78	5.55	-0.53	0.00	-0.08	1.44	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	-2.12	5.79	-0.34	0.00	0.24	1.81	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.183	LG37	2.67	4.02	-0.60	0.00	-0.46	0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG14	4.11	5.54	-0.28	0.00	0.14	1.43	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG43	-20.57	5.22	-0.59	0.00	0.69	2.32	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.183	LG42	-4.65	5.06	-0.92	0.01	1.02	1.27	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG51	-20.83	5.20	-0.58	0.00	0.68	2.31	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG51	-20.83	5.20	-0.58	0.00	0.68	2.31	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG51	-20.83	5.20	-0.58	0.00	0.68	2.31	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
259	**Cross-section No. 20 - U 220**								
	0.000	LG42	9.95	2.34	0.67	0.03	0.21	0.56	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	-9.39	0.11	-0.52	0.00	0.53	-0.58	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG87	0.10	0.77	-1.56	0.00	0.62	-0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG87	0.10	0.77	-1.56	0.00	0.62	-0.02	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.785	LG33	-9.36	-1.67	-0.48	0.00	0.15	-0.09	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.11	1.36	0.14	0.01	-0.03	0.06	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG13	1.69	1.63	0.59	0.04	-0.14	0.13	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG36	0.28	1.18	-1.42	0.02	0.59	-0.03	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG17	1.71	1.68	0.60	0.04	-0.14	0.12	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG87	0.10	0.77	-1.56	0.00	0.62	-0.02	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG48	0.27	1.20	-1.42	0.02	0.59	-0.03	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG35	2.64	1.67	0.64	0.02	-0.16	0.25	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG18	0.09	-0.88	-0.83	0.00	-0.30	-0.14	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG47	2.65	-0.44	0.65	0.02	0.35	-0.25	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG19	-5.54	-1.26	-0.21	0.00	0.14	-0.17	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG30	5.76	1.93	0.39	0.01	0.13	0.38	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG88	-9.39	0.11	-0.52	0.00	0.53	-0.58	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG41	-9.07	0.59	-0.36	0.02	0.50	-0.59	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG88	-9.39	0.11	-0.52	0.00	0.53	-0.58	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-9.39	0.11	-0.52	0.00	0.53	-0.58	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-9.39	0.11	-0.52	0.00	0.53	-0.58	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
260	**Cross-section No. 20 - U 220**								
	0.000	LG42	8.07	-1.29	-0.26	0.03	0.74	-0.34	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG88	-7.01	-1.91	-1.67	0.00	-0.92	0.75	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG87	0.30	0.10	0.69	0.00	-0.60	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.625	LG18	0.24	-2.36	0.55	0.00	0.05	0.80	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG88	-7.01	-0.64	-1.67	0.00	0.12	-0.04	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG19	-4.06	-2.87	-0.86	0.00	-0.40	1.08	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.04	-0.75	0.19	0.01	0.08	-0.17	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.625	LG13	1.42	-2.68	0.82	0.04	0.83	0.88	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.625	LG39	2.25	-2.68	1.05	0.03	1.05	0.88	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG17	1.45	-2.97	0.84	0.04	0.86	1.01	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG87	0.30	0.10	0.69	0.00	-0.60	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG36	0.48	-0.01	0.87	0.02	-0.52	-0.03	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG18	0.24	-2.36	0.55	0.00	0.05	0.80	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG24	0.31	-2.37	0.66	0.02	0.16	0.78	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG18	0.24	-0.65	0.55	0.00	-0.30	-0.14	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG17	1.45	-2.97	0.84	0.04	0.86	1.01	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG19	-4.06	-1.16	-0.86	0.00	0.14	-0.18	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG25	-3.98	-0.99	-0.76	0.02	0.19	-0.15	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG45	-6.88	-2.85	-1.59	0.00	-0.84	1.11	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG41	-6.67	-2.98	-1.46	0.02	-0.69	1.14	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG88	-7.01	-1.91	-1.67	0.00	-0.92	0.75	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG88	-7.01	-1.91	-1.67	0.00	-0.92	0.75	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG88	-7.01	-1.91	-1.67	0.00	-0.92	0.75	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
261	**Cross-section No. 20 - U 220**								
	0.000	LG42	8.37	0.70	0.24	-0.02	0.31	-0.30	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	-8.34	0.64	-1.26	0.00	0.71	-0.10	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG87	-1.57	0.71	-0.69	0.00	-0.27	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG130	0.10	0.53	-0.13	0.00	0.07	-0.15	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG45	-8.12	0.74	-1.35	0.00	0.76	-0.21	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.785	LG19	-4.73	-1.45	-0.89	0.00	-0.20	0.06	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.13	0.74	-0.15	-0.01	0.09	-0.18	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.785	LG13	1.89	-1.61	-0.12	-0.03	0.05	0.09	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG11	-4.47	0.95	-0.94	-0.03	0.54	-0.17	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.785	LG13	1.89	-1.61	-0.12	-0.03	0.05	0.09	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG87	-1.57	0.71	-0.69	0.00	-0.27	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG36	-1.27	1.04	-0.78	-0.02	-0.21	-0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG130	0.10	0.53	-0.13	0.00	0.07	-0.15	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG21	1.64	0.64	-0.07	-0.01	0.11	-0.26	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG52	-1.50	-1.26	-0.72	-0.01	-0.81	0.08	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG32	-1.50	-1.25	-0.72	-0.01	-0.81	0.09	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG88	-8.34	-0.96	-1.26	0.00	-0.28	0.02	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.785	LG29	-4.74	-1.43	-0.85	0.00	-0.19	0.06	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG47	2.66	0.61	0.02	-0.01	0.10	-0.26	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG45	-8.12	0.74	-1.35	0.00	0.76	-0.21	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG42	8.37	0.70	0.24	-0.02	0.31	-0.30	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG88	-8.34	0.64	-1.26	0.00	0.71	-0.10	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-8.34	0.64	-1.26	0.00	0.71	-0.10	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-8.34	0.64	-1.26	0.00	0.71	-0.10	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
262	**Cross-section No. 20 - U 220**								
	0.785	LG114	0.21	-0.72	-0.13	0.00	-0.12	0.00	100)
	Negligible internal forces								
	0.000	LG42	6.02	1.30	-0.83	-0.02	0.50	0.09	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	-5.17	0.81	-1.76	0.00	-0.28	0.02	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG114	0.21	0.87	-0.13	0.00	-0.02	0.06	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG45	-4.88	1.13	-1.85	0.00	-0.30	0.05	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG52	-1.13	1.17	1.10	-0.01	-0.81	0.08	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.28	1.18	-0.17	-0.01	-0.03	0.08	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG13	1.61	1.35	-0.33	-0.03	0.05	0.09	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG11	-2.49	1.31	-1.26	-0.03	-0.20	0.06	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG13	1.61	1.35	-0.33	-0.03	0.05	0.09	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.785	LG15	-2.43	-1.19	-1.31	-0.03	-1.23	0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG114	0.21	0.87	-0.13	0.00	-0.02	0.06	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG35	2.07	1.20	-0.26	-0.01	0.13	0.10	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG52	-1.13	1.17	1.10	-0.01	-0.81	0.08	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG32	-1.15	1.18	1.10	-0.01	-0.81	0.09	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.785	LG45	-4.88	-1.02	-1.85	0.00	-1.75	0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.785	LG41	-4.56	-1.15	-1.92	-0.02	-1.81	0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG29	-2.72	1.14	-1.16	0.00	-0.19	0.06	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG89	5.73	0.89	-0.66	-0.01	0.53	0.08	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG34	5.78	1.20	-0.71	-0.01	0.52	0.10	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG88	-5.17	0.81	-1.76	0.00	-0.28	0.02	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-5.17	0.81	-1.76	0.00	-0.28	0.02	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-5.17	0.81	-1.76	0.00	-0.28	0.02	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
270	**Cross-section No. 20 - U 220**								
	0.078	LG87	11.71	1.57	0.21	0.00	0.01	0.38	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG55	-24.15	1.85	0.25	0.00	-0.11	0.13	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG2	-1.73	6.85	0.03	0.00	0.00	2.01	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG10	5.99	6.92	0.15	0.00	-0.01	2.12	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG2	-1.73	6.85	0.03	0.00	0.00	2.01	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG11	2.10	6.90	0.07	0.00	0.30	2.12	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG34	-6.03	1.68	0.58	0.00	-0.58	-0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG10	5.99	6.92	0.15	0.00	-0.01	2.12	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG12	-4.18	6.64	0.36	0.00	-0.34	1.75	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG55	-24.15	1.85	0.25	0.00	-0.11	0.13	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-24.15	1.85	0.25	0.00	-0.11	0.13	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG55	-24.15	1.85	0.25	0.00	-0.11	0.13	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
272	**Cross-section No. 20 - U 220**								
	0.000	LG87	14.49	1.61	0.34	0.00	-0.07	0.35	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.540	LG55	-28.28	1.71	-0.26	0.00	0.00	-0.60	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG2	-1.64	6.44	0.03	0.00	-0.01	2.18	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG42	-7.28	5.03	0.95	0.00	-0.77	1.38	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG13	-17.24	6.49	-0.14	0.00	0.08	2.21	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG7	2.75	6.38	-0.19	-0.01	0.54	2.08	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG49	5.78	5.10	-0.34	-0.01	0.91	1.56	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG7	2.75	6.38	-0.19	-0.01	0.54	2.08	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG2	-1.64	6.44	0.03	0.00	-0.01	2.18	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG25	2.49	5.07	-0.19	-0.01	0.54	1.49	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG13	-17.24	6.49	-0.14	0.00	0.08	2.21	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG11	2.92	6.43	-0.19	0.00	0.54	2.16	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG7	2.75	6.38	-0.19	-0.01	0.54	2.08	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.540	LG55	-28.28	1.71	-0.26	0.00	0.00	-0.60	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.540	LG55	-28.28	1.71	-0.26	0.00	0.00	-0.60	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.540	LG55	-28.28	1.71	-0.26	0.00	0.00	-0.60	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
286	**Cross-section No. 20 - U 220**								
	0.450	LG89	-0.54	-0.87	-0.06	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.450	LG40	9.62	-1.32	-0.05	0.00	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-12.55	0.10	0.05	0.00	-0.02	-0.17	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG16	2.03	0.03	0.03	0.00	-0.01	-0.35	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.450	LG16	2.03	-1.56	0.03	0.00	0.00	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG16	2.03	0.03	0.03	0.00	-0.01	-0.35	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG51	-11.19	0.05	0.09	0.00	-0.04	-0.31	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG90	-12.55	0.10	0.05	0.00	-0.02	-0.17	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-12.55	0.10	0.05	0.00	-0.02	-0.17	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG90	-12.55	0.10	0.05	0.00	-0.02	-0.17	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
295	**Cross-section No. 20 - U 220**								
	0.230	LG90	3.77	0.79	-2.86	0.00	-0.67	0.59	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.460	LG89	-7.85	-5.74	1.07	0.00	0.80	1.92	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.460	LG111	-0.06	-4.67	0.11	0.00	0.18	1.81	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.460	LG55	3.29	-2.36	-2.88	0.00	-1.32	1.38	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.460	LG54	-7.63	-7.88	1.09	-0.01	0.85	2.73	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.25	-3.98	0.14	-0.01	0.17	0.07	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG14	-0.86	-7.80	0.51	-0.02	0.34	-0.45	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG51	3.11	-0.96	-2.76	-0.01	0.12	0.77	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.460	LG40	-1.73	-10.93	0.48	-0.01	0.45	3.84	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG5	0.15	-5.53	0.30	-0.01	0.33	-0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.460	LG111	-0.06	-4.67	0.11	0.00	0.18	1.81	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.460	LG52	-1.96	-10.03	0.28	-0.01	0.17	3.51	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.460	LG31	1.81	-4.67	-1.71	0.00	-0.74	2.05	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.460	LG48	-1.87	-10.90	0.41	-0.01	0.37	3.86	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG90	3.77	1.55	-2.86	0.00	-0.01	0.86	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG39	3.23	-0.37	-2.74	-0.01	0.13	0.84	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.460	LG54	-7.63	-7.88	1.09	-0.01	0.85	2.73	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.460	LG16	-4.32	-9.04	0.97	-0.01	0.96	3.25	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.460	LG89	-7.85	-5.74	1.07	0.00	0.80	1.92	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.460	LG89	-7.85	-5.74	1.07	0.00	0.80	1.92	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.460	LG89	-7.85	-5.74	1.07	0.00	0.80	1.92	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
297	**Cross-section No. 20 - U 220**								
	0.000	LG48	3.19	1.51	1.43	0.00	0.34	-0.29	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	-2.88	0.14	0.99	0.00	0.24	-1.27	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG43	1.59	2.11	-1.93	0.00	-0.24	-0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.112	LG15	-0.32	0.98	0.61	0.00	0.17	-1.08	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.225	LG43	1.59	1.36	-1.93	0.00	-0.67	-0.40	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG42	0.98	2.30	-0.41	0.00	-0.27	1.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	2.77	1.70	0.87	0.00	0.19	-0.30	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG43	1.59	2.11	-1.93	0.00	-0.24	-0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.112	LG15	-0.32	0.98	0.61	0.00	0.17	-1.08	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.225	LG41	-2.00	0.14	1.02	0.00	0.44	-1.49	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG6	2.77	1.70	0.87	0.00	0.19	-0.30	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.112	LG88	-2.88	-0.10	0.99	0.00	0.35	-1.27	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG88	-2.88	0.14	0.99	0.00	0.24	-1.27	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-2.88	0.14	0.99	0.00	0.24	-1.27	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-2.88	0.14	0.99	0.00	0.24	-1.27	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
299	**Cross-section No. 20 - U 220**								
	0.470	LG43	-4.67	-7.21	-0.05	-0.01	0.05	2.99	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.470	LG90	-4.18	-2.18	-0.19	0.00	-0.01	0.91	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.68	-2.58	0.02	-0.01	0.01	-0.06	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG15	-1.81	-8.11	0.51	-0.03	0.15	-0.27	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.470	LG15	-1.83	-9.13	0.51	-0.03	0.39	3.78	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.470	LG3	-1.20	-9.06	0.20	-0.02	0.10	3.75	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG15	-1.83	-9.13	0.51	-0.03	0.39	3.78	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.470	LG90	-4.18	-2.18	-0.19	0.00	-0.01	0.91	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.470	LG17	-3.38	-9.04	0.08	-0.02	0.09	3.75	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.470	LG43	-4.67	-7.21	-0.05	-0.01	0.05	2.99	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.470	LG90	-4.18	-2.18	-0.19	0.00	-0.01	0.91	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.470	LG43	-4.67	-7.21	-0.05	-0.01	0.05	2.99	312)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2								
	0.470	LG90	-4.18	-2.18	-0.19	0.00	-0.01	0.91	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
	0.470	LG43	-4.67	-7.21	-0.05	-0.01	0.05	2.99	326)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2								
300	**Cross-section No. 20 - U 220**								
	0.000	LG48	3.17	2.08	1.43	0.00	-0.95	0.24	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.900	LG88	-3.03	1.70	1.01	0.00	0.24	-1.27	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	0.85	0.79	-1.93	0.00	1.52	-0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.900	LG15	-0.39	0.40	0.64	0.00	0.11	-0.95	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.900	LG43	1.68	-1.43	-1.94	0.00	-0.24	-0.01	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	-2.01	4.36	1.09	0.00	-0.76	1.21	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	2.77	2.20	0.88	0.00	-0.61	0.26	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG90	0.85	0.79	-1.93	0.00	1.52	-0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.900	LG15	-0.39	0.40	0.64	0.00	0.11	-0.95	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.900	LG49	-2.02	1.39	1.09	0.00	0.22	-1.37	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.900	LG6	2.77	-0.95	0.88	0.00	0.19	-0.30	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.900	LG33	-2.72	1.44	1.10	0.00	0.25	-1.30	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.900	LG88	-3.03	1.70	1.01	0.00	0.24	-1.27	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.900	LG88	-3.03	1.70	1.01	0.00	0.24	-1.27	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.900	LG88	-3.03	1.70	1.01	0.00	0.24	-1.27	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
301	**Cross-section No. 20 - U 220**								
	0.000	LG41	4.68	-0.30	1.34	0.00	-1.18	-0.38	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-3.44	-0.06	0.32	0.00	0.04	-0.15	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG16	2.35	-0.30	0.63	0.00	-0.13	-0.48	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.365	LG41	4.68	-1.47	1.34	0.00	-0.69	-0.06	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.365	LG13	-0.68	-1.72	0.44	0.00	0.07	-0.03	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG7	3.78	-0.44	0.94	0.00	-0.77	-0.45	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG16	2.35	-0.30	0.63	0.00	-0.13	-0.48	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.365	LG46	1.65	-0.81	0.63	0.00	0.21	-0.17	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.365	LG37	4.40	-1.51	1.30	0.00	-0.68	-0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG14	3.31	-0.36	0.36	0.00	-0.14	-0.47	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG15	3.97	-0.41	0.99	0.00	-0.80	-0.46	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-3.44	-0.06	0.32	0.00	0.04	-0.15	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-3.44	-0.06	0.32	0.00	0.04	-0.15	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-3.44	-0.06	0.32	0.00	0.04	-0.15	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
302	**Cross-section No. 20 - U 220**								
	0.000	LG48	2.72	1.23	-0.02	0.00	0.68	-0.26	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-0.43	0.96	-2.89	0.00	-0.86	0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG49	0.98	-0.04	1.19	0.00	-0.07	-0.88	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG51	-0.41	1.37	-2.92	0.00	-0.79	-0.05	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG38	-0.18	2.88	-0.42	0.00	0.00	0.67	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG9	0.24	1.40	-1.74	0.00	-0.44	-0.12	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG90	-0.43	0.96	-2.89	0.00	-0.86	0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG49	0.98	-0.04	1.19	0.00	-0.07	-0.88	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.345	LG49	0.98	-1.20	1.19	0.00	0.34	-0.67	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.345	LG48	2.72	0.07	-0.02	0.00	0.67	-0.48	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
304	**Cross-section No. 20 - U 220**								
	0.645	LG2	0.98	-0.85	-0.10	0.00	-0.05	0.01	100)
	Negligible internal forces								
	0.645	LG88	-0.02	0.24	0.32	0.00	0.70	0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG46	-0.40	0.47	-0.22	0.00	0.00	-0.41	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.645	LG90	-0.56	-0.56	2.67	0.00	1.29	0.09	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG49	0.59	2.14	0.22	0.00	0.48	0.70	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG9	0.05	1.46	1.45	0.00	-0.27	0.25	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.645	LG88	-0.02	0.24	0.32	0.00	0.70	0.02	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG46	-0.40	0.47	-0.22	0.00	0.00	-0.41	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG49	0.59	2.14	0.22	0.00	0.48	0.70	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
328	**Cross-section No. 20 - U 220**								
	0.078	LG40	7.32	25.84	1.32	0.00	-0.16	1.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-7.15	9.35	-0.62	0.00	0.10	1.10	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG17	-1.75	24.75	-0.31	0.00	0.05	2.88	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.155	LG44	6.92	21.83	1.32	0.00	-0.05	-0.86	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG50	2.40	31.28	0.92	0.00	-0.66	3.64	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG14	6.04	28.20	0.83	0.00	-0.17	3.27	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG17	-1.75	24.75	-0.31	0.00	0.05	2.88	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG50	2.40	31.28	0.92	0.00	-0.66	3.64	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	6.04	28.20	0.83	0.00	-0.17	3.27	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	3.15	31.26	0.62	0.00	-0.41	3.64	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-7.15	9.35	-0.62	0.00	0.10	1.10	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-7.15	9.35	-0.62	0.00	0.10	1.10	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-7.15	9.35	-0.62	0.00	0.10	1.10	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
329	**Cross-section No. 20 - U 220**								
	0.000	LG111	0.66	0.08	-0.03	0.00	0.01	0.04	100)
	Negligible internal forces								
	0.000	LG43	3.60	0.05	0.89	0.00	0.05	0.33	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.645	LG26	1.35	-0.87	-0.15	0.00	-0.34	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.645	LG3	1.74	-0.58	-0.05	0.00	-0.04	0.27	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.645	LG90	2.76	-0.46	0.98	0.00	0.71	0.42	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG37	1.68	1.27	0.79	0.00	0.40	1.08	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG32	1.14	-0.08	-0.87	0.00	0.13	-0.02	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.645	LG26	1.35	-0.87	-0.15	0.00	-0.34	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.645	LG3	1.74	-0.58	-0.05	0.00	-0.04	0.27	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG41	1.79	1.25	0.79	0.00	0.40	1.10	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG43	3.60	0.05	0.89	0.00	0.05	0.33	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.645	LG43	3.60	-0.74	0.89	0.00	0.63	0.56	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
330	**Cross-section No. 20 - U 220**								
	0.270	LG40	12.76	4.37	0.13	0.00	0.07	0.48	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-14.79	4.45	0.04	0.00	-0.01	1.58	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG124	2.63	4.43	-0.01	0.00	-0.01	1.53	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG89	-0.59	4.61	1.13	0.00	-1.03	1.64	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG16	2.60	7.68	0.65	0.00	-0.61	2.70	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG34	0.21	5.83	1.12	0.00	-1.02	2.05	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG124	2.63	4.43	-0.01	0.00	-0.01	1.53	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	2.60	7.68	0.65	0.00	-0.61	2.70	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-5.93	7.57	0.01	0.00	-0.03	2.66	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG15	6.14	6.87	-0.47	0.00	0.68	2.37	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-14.79	4.45	0.04	0.00	-0.01	1.58	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-14.79	4.45	0.04	0.00	-0.01	1.58	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-14.79	4.45	0.04	0.00	-0.01	1.58	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
331	**Cross-section No. 20 - U 220**								
	0.900	LG40	1.26	-0.67	-0.44	0.00	0.12	0.04	100)
	Negligible internal forces								
	0.900	LG43	3.69	-1.76	0.86	0.00	0.05	0.33	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG52	1.18	0.34	-0.47	0.00	0.54	0.02	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG15	2.00	-1.29	0.45	0.00	-0.17	-0.99	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.900	LG90	2.81	-1.10	0.94	0.00	0.08	0.23	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.900	LG41	2.03	-3.23	0.79	0.00	0.40	1.10	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG35	3.11	-0.68	0.90	0.00	-0.74	-0.62	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG52	1.18	0.34	-0.47	0.00	0.54	0.02	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	2.00	-1.29	0.45	0.00	-0.17	-0.99	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG41	2.03	-2.13	0.79	0.00	-0.31	-1.31	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.900	LG43	3.69	-1.76	0.86	0.00	0.05	0.33	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	3.69	-0.66	0.86	0.00	-0.73	-0.76	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
333	**Cross-section No. 20 - U 220**								
	0.000	LG111	0.58	0.17	-0.39	0.00	-0.07	-0.04	100)
	Negligible internal forces								
	0.690	LG41	4.63	-1.77	0.58	0.00	0.62	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.690	LG42	-0.46	0.38	-1.48	0.00	-1.25	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG29	2.49	-0.64	0.19	0.00	0.09	-0.66	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG42	-0.46	1.71	-1.48	0.00	-0.23	0.72	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.690	LG49	4.37	-1.86	0.58	0.00	0.61	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	1.81	0.73	-1.03	0.00	-0.25	-0.06	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.690	LG51	2.78	-0.41	-0.58	0.01	-0.19	0.00	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG43	3.02	1.03	-0.60	0.01	0.21	0.25	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.690	LG42	-0.46	0.38	-1.48	0.00	-1.25	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG29	2.49	-0.64	0.19	0.00	0.09	-0.66	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG42	-0.46	1.71	-1.48	0.00	-0.23	0.72	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG47	2.42	0.54	-0.41	0.01	0.23	0.15	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.690	LG88	3.83	-1.48	0.92	0.00	0.89	0.00	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.690	LG43	3.02	-0.31	-0.60	0.01	-0.20	0.00	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG25	3.08	-0.15	0.03	0.00	0.07	-0.56	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG53	3.83	-1.03	0.73	0.00	0.22	-0.92	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	3.02	1.03	-0.60	0.01	0.21	0.25	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
335	**Cross-section No. 20 - U 220**								
	0.000	LG90	-5.80	2.17	-0.99	0.01	0.16	0.45	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	0.74	2.38	0.01	0.01	-0.01	-0.08	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG54	1.98	2.48	-0.97	0.10	0.57	0.04	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG54	1.98	2.48	-0.97	0.10	0.57	0.04	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG50	2.41	6.68	-0.90	0.09	0.54	0.52	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG54	1.98	2.48	-0.97	0.10	0.57	0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.246	LG14	1.13	7.49	0.39	0.01	0.00	-1.69	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.246	LG15	1.88	7.61	0.12	-0.04	-0.22	-1.55	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG39	-5.17	6.98	-0.82	0.01	0.10	0.90	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG90	-5.80	2.17	-0.99	0.01	0.16	0.45	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-5.80	2.17	-0.99	0.01	0.16	0.45	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-5.80	2.17	-0.99	0.01	0.16	0.45	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
337	**Cross-section No. 20 - U 220**								
	0.165	LG40	6.70	-0.92	0.02	0.00	0.15	-0.73	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG90	-6.44	-0.10	-0.20	0.00	-0.13	0.03	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	2.42	-0.60	-0.03	0.00	0.00	-0.50	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.165	LG30	2.69	-1.89	0.27	0.00	-0.17	-0.51	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	2.42	-0.60	-0.03	0.00	0.00	-0.50	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG54	2.07	-1.36	0.47	0.00	-0.36	-0.72	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG52	6.19	-0.96	0.02	0.00	0.15	-0.87	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG30	2.69	-1.41	0.27	0.00	-0.22	-0.79	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG90	-6.44	-0.10	-0.20	0.00	-0.13	0.03	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.165	LG90	-6.44	-0.46	-0.20	0.00	-0.16	0.07	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG90	-6.44	-0.10	-0.20	0.00	-0.13	0.03	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
338	**Cross-section No. 20 - U 220**								
	0.160	LG42	9.14	6.65	-0.19	0.00	0.00	-0.01	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	-9.91	4.98	-1.38	0.00	0.22	0.77	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	0.49	6.72	-0.77	0.00	0.12	1.03	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG43	3.08	6.50	-2.78	0.00	0.44	1.00	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG41	-9.32	7.58	-1.71	-0.01	0.27	1.17	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG7	-5.37	6.89	-1.32	0.00	0.21	1.06	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG3	0.49	6.72	-0.77	0.00	0.12	1.03	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	2.12	6.80	-2.04	0.00	0.33	1.05	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG42	9.14	7.11	-0.19	0.00	0.03	1.09	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG41	-9.32	7.58	-1.71	-0.01	0.27	1.17	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG88	-9.91	4.98	-1.38	0.00	0.22	0.77	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-9.91	4.98	-1.38	0.00	0.22	0.77	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-9.91	4.98	-1.38	0.00	0.22	0.77	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
339	**Cross-section No. 20 - U 220**								
	0.000	LG42	10.18	3.54	1.14	-0.02	-0.40	1.31	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG88	-10.75	1.63	-0.57	0.00	1.07	0.52	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG87	-1.80	-0.19	-2.34	0.00	-0.27	0.00	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG130	0.01	2.02	-0.17	0.00	0.18	0.71	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG44	-1.74	1.97	-2.43	-0.01	1.29	0.61	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG19	-6.26	2.82	-0.51	-0.01	0.82	1.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.03	2.56	-0.20	-0.01	0.21	0.88	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG13	2.12	2.89	-0.27	-0.03	0.31	0.99	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG36	-1.51	1.85	-2.46	-0.02	1.33	0.53	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG16	6.27	3.42	0.51	-0.03	-0.05	1.24	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG87	-1.80	-0.19	-2.34	0.00	-0.27	0.00	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG36	-1.51	-0.05	-2.46	-0.02	-0.21	-0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG130	0.01	2.02	-0.17	0.00	0.18	0.71	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG31	1.81	2.97	-0.15	-0.01	0.18	1.07	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG28	-1.04	2.31	-1.51	-0.01	0.83	0.77	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	2.12	3.20	-0.32	-0.03	0.36	1.13	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	6.27	3.42	0.51	-0.03	-0.05	1.24	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG45	-10.58	2.66	-0.67	-0.01	1.18	0.92	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG42	10.18	3.54	1.14	-0.02	-0.40	1.31	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG88	-10.75	1.63	-0.57	0.00	1.07	0.52	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-10.75	1.63	-0.57	0.00	1.07	0.52	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG88	-10.75	1.63	-0.57	0.00	1.07	0.52	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
346	**Cross-section No. 20 - U 220**								
	0.555	LG48	2.72	-2.13	-1.20	0.00	0.01	0.18	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.278	LG88	0.31	-1.99	0.35	0.00	0.39	-0.03	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG3	1.23	-0.18	-0.11	0.00	0.07	-0.44	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.555	LG90	-0.43	-1.18	2.56	0.00	-0.44	0.17	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.555	LG49	0.98	-3.40	0.25	0.00	0.48	0.70	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG9	0.24	-0.16	1.38	0.00	-1.04	-0.39	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.278	LG88	0.31	-1.99	0.35	0.00	0.39	-0.03	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG3	1.23	-0.18	-0.11	0.00	0.07	-0.44	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.555	LG49	0.98	-3.40	0.25	0.00	0.48	0.70	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.555	LG48	2.72	-2.13	-1.20	0.00	0.01	0.18	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG48	2.72	-0.26	-1.20	0.00	0.67	-0.48	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
358	**Cross-section No. 20 - U 220**								
	0.000	LG39	-8.28	10.28	-3.49	-0.01	1.60	2.44	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG23	-1.41	10.23	0.07	0.00	-0.11	2.41	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.334	LG13	-5.97	10.09	-2.21	0.00	0.22	-0.88	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG9	-5.96	11.37	-2.12	0.00	0.92	2.73	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.44	7.00	0.09	-0.01	-0.07	1.57	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG41	-0.05	8.96	-2.47	0.30	0.86	2.17	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.334	LG41	-0.05	8.23	-2.53	0.30	0.03	-0.70	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG41	-0.05	8.96	-2.47	0.30	0.86	2.17	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG23	-1.41	10.23	0.07	0.00	-0.11	2.41	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	-1.38	12.94	0.71	-0.14	-0.06	3.02	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG24	-1.54	9.76	0.91	0.00	-0.54	2.31	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG14	-1.85	11.49	0.60	0.02	-0.42	2.72	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG9	-5.96	11.37	-2.12	0.00	0.92	2.73	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG17	-5.83	12.49	-2.25	0.01	0.97	2.95	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG39	-8.28	10.28	-3.49	-0.01	1.60	2.44	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG39	-8.28	10.28	-3.49	-0.01	1.60	2.44	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG39	-8.28	10.28	-3.49	-0.01	1.60	2.44	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
361	**Cross-section No. 20 - U 220**								
	0.160	LG40	3.21	1.49	-0.27	0.02	0.13	0.76	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.160	LG39	-0.88	1.81	2.18	0.00	-0.18	1.18	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG38	0.78	2.25	2.40	0.01	-0.20	1.37	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG38	0.78	2.25	2.40	0.01	-0.20	1.37	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.74	0.91	0.38	0.01	-0.03	0.76	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.160	LG14	2.46	1.93	0.13	0.02	0.18	1.01	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.160	LG41	1.97	1.18	-2.42	0.02	1.02	0.91	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG14	2.45	2.26	0.13	0.02	0.16	1.35	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.160	LG39	-0.88	1.81	2.18	0.00	-0.18	1.18	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	1.17	2.59	1.73	0.01	-0.05	1.61	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG51	-0.85	2.06	2.18	0.00	-0.55	1.53	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	0.19	2.49	1.59	0.01	-0.26	1.68	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG40	3.21	1.77	-0.27	0.02	0.17	1.02	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
362	**Cross-section No. 20 - U 220**								
	0.132	LG40	2.71	2.39	1.45	0.02	0.28	0.26	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.132	LG38	1.17	6.21	2.51	0.00	0.90	-0.04	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG9	-0.55	6.51	8.19	0.00	0.19	1.05	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG17	-0.48	7.41	8.57	0.00	0.25	1.11	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG17	-0.48	7.41	8.57	0.00	0.25	1.11	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.36	3.46	1.79	0.00	0.09	0.59	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.265	LG36	2.70	1.40	1.16	0.02	0.36	0.07	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG43	-1.47	7.87	11.47	-0.01	0.19	1.11	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG43	-1.47	7.87	11.47	-0.01	0.19	1.11	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.132	LG38	1.17	6.21	2.51	0.00	0.90	-0.04	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.132	LG47	-1.74	6.89	10.60	-0.02	1.51	0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG9	-0.55	6.51	8.19	0.00	0.19	1.05	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG51	-1.53	7.27	11.21	-0.01	0.14	1.08	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-0.48	7.41	8.57	0.00	0.25	1.11	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.265	LG43	-1.47	7.31	11.48	-0.01	3.23	-0.90	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.265	LG40	2.71	2.12	1.45	0.02	0.47	-0.04	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG40	2.71	2.67	1.45	0.02	0.09	0.60	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.132	LG48	2.66	1.80	1.19	0.02	0.20	0.31	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
371	**Cross-section No. 20 - U 220**								
	0.365	LG43	-5.28	2.58	-0.08	0.00	0.28	-2.26	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.365	LG3	-1.47	3.25	0.24	0.00	0.06	-2.80	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG40	-1.19	3.07	1.43	0.00	-0.58	-1.19	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG11	-0.11	3.86	0.89	0.00	-0.60	-1.48	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	-1.27	3.85	0.94	0.00	-0.35	-1.50	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.365	LG3	-1.47	3.25	0.24	0.00	0.06	-2.80	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.365	LG16	-1.79	3.23	-0.16	0.00	0.26	-2.82	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-3.87	3.86	0.07	0.00	0.17	-1.52	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.365	LG17	-3.88	3.25	0.07	0.00	0.20	-2.82	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.365	LG43	-5.28	2.58	-0.08	0.00	0.28	-2.26	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.365	LG43	-5.28	2.58	-0.08	0.00	0.28	-2.26	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.365	LG43	-5.28	2.58	-0.08	0.00	0.28	-2.26	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
372	**Cross-section No. 20 - U 220**								
	0.625	LG43	-5.46	-0.56	-0.24	0.00	0.16	-2.26	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG10	-1.20	-0.61	0.16	0.00	0.08	-2.83	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG45	1.52	0.27	0.98	0.00	-0.61	-0.88	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG7	0.10	0.75	0.55	-0.01	-0.32	-2.78	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG49	1.24	0.61	0.95	-0.01	-0.59	-2.20	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	1.13	0.61	0.95	-0.01	-0.59	-2.20	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG10	-1.20	-0.61	0.16	0.00	0.08	-2.83	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	-1.97	0.71	-0.28	0.00	0.29	-2.81	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	-0.05	0.75	0.56	-0.01	-0.32	-2.78	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG13	-3.84	-0.64	-0.16	0.00	0.12	-2.84	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG17	-4.00	0.73	-0.15	0.00	0.22	-2.81	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-5.46	0.57	-0.23	0.00	0.31	-2.25	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-5.46	-0.56	-0.24	0.00	0.16	-2.26	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-5.46	-0.56	-0.24	0.00	0.16	-2.26	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
373	**Cross-section No. 20 - U 220**								
	0.000	LG43	-5.73	-2.80	-0.22	-0.01	0.21	-2.27	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG89	-1.83	-1.25	-0.63	0.00	-0.19	-0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG87	-0.14	-0.81	0.05	0.00	0.04	-0.67	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG46	-2.13	-1.69	-0.62	0.00	-0.18	-0.01	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.82	-1.12	-0.01	-0.01	0.03	-0.90	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG15	0.29	-4.86	0.48	-0.02	0.27	-0.21	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.625	LG15	0.29	-4.86	0.48	-0.02	0.27	-0.21	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG89	-1.83	-1.25	-0.63	0.00	-0.19	-0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG45	2.13	-1.66	0.80	-0.01	0.39	-0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG87	-0.14	-0.81	0.05	0.00	0.04	-0.67	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG10	-1.12	-3.48	0.03	-0.02	0.06	-2.84	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG34	-2.02	-1.14	-0.62	0.00	0.20	-0.90	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG38	-2.40	-2.80	-0.61	-0.01	0.22	-2.26	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG35	-5.24	-1.13	-0.22	0.00	0.19	-0.91	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG13	-4.03	-3.50	-0.13	-0.01	0.15	-2.85	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG47	-5.34	-1.14	-0.22	0.00	0.19	-0.90	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG39	-5.62	-2.79	-0.22	-0.01	0.20	-2.27	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG43	-5.73	-2.80	-0.22	-0.01	0.21	-2.27	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-5.73	-2.80	-0.22	-0.01	0.21	-2.27	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-5.73	-2.80	-0.22	-0.01	0.21	-2.27	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
374	**Cross-section No. 20 - U 220**								
	0.000	LG43	-4.69	7.00	-0.82	0.08	0.05	2.89	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-0.68	2.87	-0.13	0.05	0.02	1.20	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.155	LG16	-0.27	8.43	-0.92	0.11	-0.24	2.28	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.155	LG16	-0.27	8.43	-0.92	0.11	-0.24	2.28	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG16	-0.28	8.77	-0.91	0.11	-0.11	3.61	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG3	-1.23	8.80	-0.69	0.11	0.10	3.62	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	-1.86	8.93	-0.38	0.11	0.39	3.65	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-3.41	8.79	-0.87	0.10	0.09	3.62	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	-4.69	7.00	-0.82	0.08	0.05	2.89	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-4.69	7.00	-0.82	0.08	0.05	2.89	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-4.69	7.00	-0.82	0.08	0.05	2.89	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
377	**Cross-section No. 20 - U 220**								
	0.000	LG43	-3.40	3.80	0.19	0.01	-0.29	1.42	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG117	-0.42	2.47	0.08	0.00	-0.05	0.91	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG117	-0.42	2.47	0.08	0.00	-0.05	0.91	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	-0.78	4.86	0.16	0.01	-0.09	1.81	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG16	0.37	4.80	0.15	0.01	-0.35	1.79	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG16	0.37	4.80	0.15	0.01	-0.35	1.79	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG117	-0.42	2.47	0.08	0.00	-0.05	0.91	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG10	-0.72	4.88	0.17	0.01	-0.02	1.81	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG33	-2.40	1.57	0.22	0.00	0.49	0.57	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG12	0.47	4.83	0.15	0.01	-0.34	1.80	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG35	-3.18	0.96	0.12	0.00	-0.18	-0.22	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG39	-3.33	2.70	0.19	0.01	-0.17	-0.62	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG35	-3.18	1.50	0.12	0.00	-0.25	0.55	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG39	-3.33	3.81	0.19	0.01	-0.29	1.42	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-3.40	3.80	0.19	0.01	-0.29	1.42	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-3.40	3.80	0.19	0.01	-0.29	1.42	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-3.40	3.80	0.19	0.01	-0.29	1.42	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
378	**Cross-section No. 20 - U 220**								
	0.000	LG43	-2.84	6.01	-0.07	0.03	0.02	2.35	102)
	Cross-section check - Compression acc. to 6.2.4								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG1	-0.43	2.49	-0.01	0.01	0.00	0.97	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG16	-0.13	7.55	0.19	0.03	-0.35	2.94	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG16	-0.13	7.55	0.19	0.03	-0.35	2.94	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG17	-1.97	7.52	-0.11	0.03	0.03	2.93	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	-0.69	7.52	-0.44	0.03	0.59	2.91	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG43	-2.84	6.01	-0.07	0.03	0.02	2.35	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	-2.84	6.01	-0.07	0.03	0.02	2.35	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-2.84	6.01	-0.07	0.03	0.02	2.35	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-2.84	6.01	-0.07	0.03	0.02	2.35	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
381	**Cross-section No. 20 - U 220**								
	0.365	LG43	-5.46	2.68	-0.42	0.00	0.28	-2.20	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.365	LG10	-0.50	3.38	0.00	0.00	-0.08	-2.81	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG88	0.10	0.92	0.99	0.00	-0.91	-0.40	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG13	-3.76	3.98	-0.36	0.00	0.32	-1.43	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG8	-0.89	3.98	-0.28	0.01	0.39	-1.43	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.365	LG44	0.32	1.04	0.28	0.01	-0.19	-0.92	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.365	LG45	-0.19	1.00	0.95	0.01	-0.55	-0.93	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG16	-1.01	3.97	-0.29	0.01	0.39	-1.42	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.365	LG10	-0.50	3.38	0.00	0.00	-0.08	-2.81	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.365	LG6	-0.52	3.37	0.00	0.01	-0.08	-2.81	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.365	LG11	-0.81	3.35	0.40	0.00	-0.30	-2.81	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.365	LG41	-0.52	2.63	0.85	0.01	-0.53	-2.25	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.365	LG13	-3.77	3.38	-0.36	0.00	0.19	-2.78	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.365	LG39	-5.36	2.68	-0.42	0.00	0.28	-2.20	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.365	LG43	-5.46	2.68	-0.42	0.00	0.28	-2.20	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.365	LG43	-5.46	2.68	-0.42	0.00	0.28	-2.20	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.365	LG43	-5.46	2.68	-0.42	0.00	0.28	-2.20	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
383	**Cross-section No. 20 - U 220**								
	0.625	LG43	-5.30	-0.37	-0.25	0.01	0.15	-2.31	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG118	-0.71	-0.26	0.00	0.01	0.02	-1.48	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG45	-0.63	-0.26	0.95	0.00	-0.03	-0.94	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	-1.17	0.90	-0.02	0.01	0.04	-2.79	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG42	-0.36	0.75	-0.55	0.01	0.50	-2.18	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.625	LG41	-0.95	-0.43	0.92	0.01	-0.03	-2.33	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG16	-0.85	0.91	-0.33	0.01	0.32	-2.76	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.625	LG118	-0.71	-0.26	0.00	0.01	0.02	-1.48	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG10	-0.59	-0.47	0.23	0.01	0.05	-2.93	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG37	-0.84	0.69	0.91	0.00	-0.60	-2.25	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG11	-1.06	0.87	0.53	0.01	-0.34	-2.80	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG35	-4.89	-0.20	-0.25	0.01	0.14	-0.91	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG13	-3.67	-0.46	-0.17	0.01	0.10	-2.92	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG90	-4.74	0.27	-0.25	0.00	0.30	-0.63	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG13	-3.67	0.92	-0.17	0.01	0.21	-2.77	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-5.30	0.76	-0.25	0.01	0.31	-2.19	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-5.30	-0.37	-0.25	0.01	0.15	-2.31	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-5.30	-0.37	-0.25	0.01	0.15	-2.31	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
384	**Cross-section No. 20 - U 220**								
	0.000	LG43	-5.02	-2.83	-0.30	0.01	0.21	-2.32	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG32	0.05	-1.13	0.08	0.00	0.02	-0.95	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG32	0.06	-1.67	0.08	0.00	0.07	-0.07	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.70	-1.12	-0.02	0.01	0.02	-0.93	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG16	-0.56	-4.94	-0.45	0.02	-0.12	-0.25	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.625	LG16	-0.56	-4.94	-0.45	0.02	-0.12	-0.25	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG89	0.65	-1.22	-0.66	0.01	-0.20	-0.04	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG32	0.05	-1.13	0.08	0.00	0.02	-0.95	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG10	-0.67	-3.59	-0.02	0.01	0.03	-2.94	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG33	-1.14	-1.67	0.79	0.00	0.35	-0.07	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG38	0.17	-2.83	-0.70	0.01	0.23	-2.31	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG13	-3.48	-3.58	-0.23	0.01	0.14	-2.92	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG39	-4.92	-2.84	-0.31	0.01	0.20	-2.32	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-5.02	-2.83	-0.30	0.01	0.21	-2.32	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-5.02	-2.83	-0.30	0.01	0.21	-2.32	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-5.02	-2.83	-0.30	0.01	0.21	-2.32	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
385	**Cross-section No. 20 - U 220**								
	0.155	LG88	3.14	1.68	0.58	-0.04	0.58	0.56	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG43	-6.09	6.80	0.29	-0.08	-0.09	2.85	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-0.85	2.73	0.08	-0.05	-0.01	1.18	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.155	LG16	-2.58	8.24	0.28	-0.11	-0.23	2.27	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.155	LG15	0.57	8.07	0.89	-0.11	0.35	2.25	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG16	-2.59	8.57	0.27	-0.11	-0.27	3.57	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.000	LG3	-1.63	8.54	0.58	-0.11	-0.08	3.55	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG8	-2.43	8.61	0.30	-0.11	-0.28	3.57	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-4.45	8.54	0.49	-0.10	-0.10	3.56	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG50	-2.89	6.88	-0.08	-0.10	-0.39	2.87	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-6.09	6.80	0.29	-0.08	-0.09	2.85	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-6.09	6.80	0.29	-0.08	-0.09	2.85	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-6.09	6.80	0.29	-0.08	-0.09	2.85	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
386	**Cross-section No. 20 - U 220**								
	0.000	LG88	3.93	-0.78	0.04	0.00	0.48	-0.18	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG43	-7.13	-3.83	0.04	0.01	-0.19	1.44	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG4	-1.15	-1.61	0.05	0.01	0.01	0.59	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG39	-6.99	-3.82	0.04	0.01	-0.19	1.43	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	-1.67	-3.43	0.15	0.01	-0.05	-0.77	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG14	-1.24	-4.80	0.17	0.01	0.11	1.80	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.625	LG14	-1.24	-4.80	0.17	0.01	0.11	1.80	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG4	-1.15	-1.61	0.05	0.01	0.01	0.59	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG6	-1.06	-4.80	0.18	0.01	0.12	1.80	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG19	1.55	-1.61	0.05	0.01	0.31	0.59	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG7	1.02	-4.79	0.16	0.01	0.34	1.80	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG31	-4.28	-1.61	0.01	0.00	-0.12	0.59	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG17	-5.19	-4.79	0.10	0.01	-0.09	1.80	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG39	-6.99	-3.82	0.04	0.01	-0.19	1.43	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG16	-3.18	-4.79	0.13	0.01	-0.19	1.80	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG43	-7.13	-3.83	0.04	0.01	-0.19	1.44	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-7.13	-3.83	0.04	0.01	-0.19	1.44	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-7.13	-3.83	0.04	0.01	-0.19	1.44	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
387	**Cross-section No. 20 - U 220**								
	0.000	LG88	3.54	0.14	0.22	0.00	0.67	-0.21	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG43	-7.56	0.36	0.17	0.00	-0.20	-0.69	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-2.05	0.48	0.07	0.00	-0.06	-0.85	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG16	-3.17	-0.90	0.03	0.00	-0.32	-0.72	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	-2.05	0.48	0.07	0.00	-0.06	-0.85	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	0.46	0.49	0.19	0.00	0.34	-0.84	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-5.54	0.47	0.13	0.00	-0.15	-0.86	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG16	-3.17	0.46	0.03	0.00	-0.34	-0.86	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG43	-7.56	0.36	0.17	0.00	-0.20	-0.69	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-7.56	0.36	0.17	0.00	-0.20	-0.69	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-7.56	0.36	0.17	0.00	-0.20	-0.69	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
388	**Cross-section No. 20 - U 220**								
	0.000	LG88	2.96	-0.88	-0.08	0.00	0.91	-0.17	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.625	LG43	-7.73	-4.16	0.06	0.00	-0.04	1.68	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG3	-2.14	-5.15	-0.04	0.00	-0.03	2.07	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG17	-5.69	-5.17	0.02	0.00	-0.04	2.09	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG3	-2.14	-5.15	-0.04	0.00	-0.03	2.07	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG15	0.04	-5.15	-0.08	0.00	0.48	2.07	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG17	-5.69	-5.17	0.02	0.00	-0.04	2.09	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG16	-3.02	-5.16	-0.01	0.00	-0.36	2.08	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG43	-7.73	-4.16	0.06	0.00	-0.04	1.68	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-7.73	-4.16	0.06	0.00	-0.04	1.68	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-7.73	-4.16	0.06	0.00	-0.04	1.68	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
389	**Cross-section No. 20 - U 220**								
	0.625	LG43	-8.18	1.30	-0.07	0.01	-0.01	-1.77	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG32	-0.21	0.53	-0.08	0.00	0.05	-0.73	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG88	0.70	0.39	-0.94	0.00	0.30	-0.54	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG52	-0.22	1.07	-0.08	0.00	0.11	-0.23	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	-2.08	3.08	-0.04	0.01	0.02	-0.78	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG15	-1.44	3.08	-0.58	0.01	0.53	-0.77	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	-0.48	2.48	-0.94	0.01	0.87	-0.61	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG15	-1.44	3.08	-0.58	0.01	0.53	-0.77	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG32	-0.21	0.53	-0.08	0.00	0.05	-0.73	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG10	-1.52	1.73	-0.07	0.01	0.03	-2.29	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG33	0.37	0.52	-0.93	0.00	0.29	-0.73	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG37	-0.30	1.37	-0.94	0.01	0.29	-1.82	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG35	-7.34	0.46	-0.05	0.00	0.00	-0.68	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG13	-5.80	1.69	-0.06	0.01	-0.01	-2.26	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG43	-8.18	1.30	-0.07	0.01	-0.01	-1.77	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-8.18	1.30	-0.07	0.01	-0.01	-1.77	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-8.18	1.30	-0.07	0.01	-0.01	-1.77	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
390	**Cross-section No. 20 - U 220**								
	0.000	LG43	-8.49	-0.91	-0.06	0.00	0.04	-1.77	102)
	Cross-section check - Compression acc. to 6.2.4								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG10	-1.71	-0.84	-0.10	0.00	0.06	-2.29	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.420	LG88	-0.90	-0.41	-1.01	0.00	0.15	-0.42	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.420	LG17	-6.31	-1.79	-0.05	0.00	0.01	-1.65	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG33	-1.21	-0.27	-1.00	0.00	0.57	-0.73	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG10	-1.71	-0.84	-0.10	0.00	0.06	-2.29	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG11	-2.21	-0.86	-0.61	0.00	0.34	-2.29	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG13	-6.03	-0.99	-0.04	0.00	0.03	-2.26	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	-8.49	-0.91	-0.06	0.00	0.04	-1.77	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-8.49	-0.91	-0.06	0.00	0.04	-1.77	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-8.49	-0.91	-0.06	0.00	0.04	-1.77	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
391	**Cross-section No. 20 - U 220**								
	0.450	LG129	-0.94	-0.90	0.01	0.00	0.00	0.00	100)
	Negligible internal forces								
	0.000	LG43	-8.84	-2.43	-0.16	0.00	0.07	-1.25	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG16	-1.30	-3.28	0.26	0.01	-0.12	-1.66	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG88	-2.63	-0.80	-1.00	0.00	0.45	-0.42	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.450	LG16	-1.30	-4.10	0.26	0.01	0.00	0.00	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	-2.32	-3.45	-0.03	0.01	0.01	-1.74	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.450	LG6	-1.92	-4.35	-0.10	0.01	0.00	0.00	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.450	LG49	-3.65	-3.48	-0.99	0.01	0.00	0.00	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.450	LG6	-1.92	-4.35	-0.10	0.01	0.00	0.00	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG16	-1.30	-3.28	0.26	0.01	-0.12	-1.66	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG10	-1.91	-3.54	-0.10	0.01	0.05	-1.78	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG38	0.19	-2.55	0.46	0.00	-0.21	-1.30	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG34	0.94	-0.77	0.49	-0.01	-0.22	-0.42	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-6.60	-3.24	-0.11	0.00	0.05	-1.65	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG13	-6.30	-3.33	-0.11	0.01	0.05	-1.69	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG33	-2.94	-1.03	-0.99	0.00	0.44	-0.54	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG11	-3.31	-3.52	-0.61	0.01	0.28	-1.77	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG43	-8.84	-2.43	-0.16	0.00	0.07	-1.25	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-8.84	-2.43	-0.16	0.00	0.07	-1.25	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-8.84	-2.43	-0.16	0.00	0.07	-1.25	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
392	**Cross-section No. 20 - U 220**								
	0.625	LG43	-2.60	1.64	-0.06	0.00	-0.02	-2.00	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG88	0.86	0.83	-0.93	0.00	0.89	-0.20	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG11	0.21	3.30	-0.54	-0.01	0.50	-0.83	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG2	-0.44	3.32	-0.01	-0.01	-0.01	-0.82	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG16	-0.54	3.36	0.38	-0.01	-0.32	-0.82	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.625	LG41	0.63	1.54	-0.91	-0.01	0.29	-1.97	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG16	-0.54	3.36	0.38	-0.01	-0.32	-0.82	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG43	-2.60	1.64	-0.06	0.00	-0.02	-2.00	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG17	-1.78	2.02	-0.04	-0.01	-0.02	-2.49	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG37	0.66	1.53	-0.90	0.00	0.29	-1.97	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG41	0.63	1.54	-0.91	-0.01	0.29	-1.97	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
393	**Cross-section No. 20 - U 220**								
	0.000	LG87	0.18	-0.15	-0.14	0.00	0.09	-0.59	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG88	2.46	-0.13	-1.05	0.00	0.59	-0.60	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	-0.34	-0.03	-0.02	-0.01	0.00	-0.82	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG16	-1.04	-0.51	0.32	-0.02	-0.16	-2.49	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.420	LG41	2.26	-1.12	-1.05	-0.01	0.14	-1.63	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.420	LG16	-1.04	-1.25	0.32	-0.02	-0.03	-2.12	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG87	0.18	-0.15	-0.14	0.00	0.09	-0.59	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-1.52	-0.48	-0.08	-0.01	0.02	-2.49	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG88	2.46	-0.13	-1.05	0.00	0.59	-0.60	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	1.20	-0.63	-0.65	-0.01	0.35	-2.48	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
394	**Cross-section No. 20 - U 220**								
	0.450	LG88	4.19	-1.23	-1.01	-0.01	0.00	0.00	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG1	-0.29	-1.48	-0.01	-0.02	0.00	-0.74	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG16	-1.54	-4.32	0.26	-0.05	-0.12	-2.13	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG41	4.03	-3.30	-1.00	-0.04	0.45	-1.64	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.450	LG16	-1.53	-5.14	0.25	-0.05	0.00	0.00	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG17	-1.23	-4.36	-0.08	-0.05	0.03	-2.15	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	2.34	-4.18	-0.61	-0.05	0.27	-2.06	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG41	4.03	-3.30	-1.00	-0.04	0.45	-1.64	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
396	**Cross-section No. 20 - U 220**								
	0.000	LG43	-3.21	0.46	0.05	0.00	-0.14	-0.61	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG10	-0.66	0.55	-0.11	0.00	0.10	-0.82	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG16	0.32	0.56	-0.13	0.01	-0.26	-0.79	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG46	1.30	-0.29	-0.09	0.01	-0.53	-0.20	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG10	-0.66	0.55	-0.11	0.00	0.10	-0.82	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG31	-2.07	0.24	0.05	0.01	-0.08	-0.22	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG11	-1.66	0.55	0.02	0.00	0.43	-0.81	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG16	0.32	0.56	-0.13	0.01	-0.26	-0.79	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG39	-3.15	0.46	0.05	0.00	-0.14	-0.62	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	-3.21	0.46	0.05	0.00	-0.14	-0.61	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-3.21	0.46	0.05	0.00	-0.14	-0.61	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-3.21	0.46	0.05	0.00	-0.14	-0.61	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
397	**Cross-section No. 20 - U 220**								
	0.625	LG43	-3.04	-4.19	0.10	0.00	-0.02	1.72	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG17	-2.15	-5.24	0.07	0.00	-0.02	2.14	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG14	-0.64	-5.25	-0.04	0.00	0.03	2.12	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.625	LG17	-2.15	-5.24	0.07	0.00	-0.02	2.14	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG15	-1.33	-5.24	-0.05	0.00	0.48	2.12	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG43	-3.04	-4.19	0.10	0.00	-0.02	1.72	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG43	-3.04	-4.19	0.10	0.00	-0.02	1.72	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-3.04	-4.19	0.10	0.00	-0.02	1.72	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-3.04	-4.19	0.10	0.00	-0.02	1.72	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
399	**Cross-section No. 20 - U 220**								
	0.000	LG43	-4.31	4.27	-0.25	0.00	0.00	1.82	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG3	-1.14	5.32	-0.06	0.00	0.01	2.28	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG11	-1.91	5.34	0.04	0.00	0.29	2.28	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	-1.14	5.32	-0.06	0.00	0.01	2.28	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG15	-2.05	5.34	0.03	0.00	0.30	2.29	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG17	-3.13	5.33	-0.18	0.00	0.00	2.28	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG43	-4.31	4.27	-0.25	0.00	0.00	1.82	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-4.31	4.27	-0.25	0.00	0.00	1.82	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG43	-4.31	4.27	-0.25	0.00	0.00	1.82	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
400	**Cross-section No. 20 - U 220**								
	0.625	LG43	-3.96	-0.37	-0.16	0.00	-0.20	-0.62	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG2	-0.93	-0.45	0.05	0.00	0.01	-0.77	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG6	-0.79	0.92	0.10	-0.01	0.02	-0.62	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	-1.05	0.92	0.03	-0.01	-0.01	-0.62	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG42	1.18	0.75	0.01	-0.01	-0.37	-0.48	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG16	0.21	0.92	0.02	-0.01	-0.23	-0.62	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG2	-0.93	-0.45	0.05	0.00	0.01	-0.77	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG3	-1.05	-0.44	0.04	-0.01	0.01	-0.77	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.625	LG11	-2.00	-0.45	0.03	-0.01	0.32	-0.77	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG7	-2.02	-0.45	0.03	-0.01	0.32	-0.77	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG13	-2.75	-0.45	-0.07	0.00	-0.11	-0.78	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG39	-3.87	-0.37	-0.15	0.00	-0.20	-0.62	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG41	-2.72	-0.37	0.00	-0.01	0.52	-0.61	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG43	-3.96	-0.37	-0.16	0.00	-0.20	-0.62	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-3.96	-0.37	-0.16	0.00	-0.20	-0.62	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-3.96	-0.37	-0.16	0.00	-0.20	-0.62	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
401	**Cross-section No. 20 - U 220**								
	0.625	LG43	-3.64	-3.81	-0.31	-0.01	-0.33	1.42	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.625	LG32	-0.43	-1.54	-0.01	0.00	0.10	0.57	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.625	LG32	-0.43	-1.54	-0.01	0.00	0.10	0.57	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG2	-0.85	-3.44	-0.21	-0.01	0.03	-0.77	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.625	LG16	0.33	-4.77	-0.27	-0.01	-0.36	1.79	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.625	LG16	0.33	-4.77	-0.27	-0.01	-0.36	1.79	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.625	LG32	-0.43	-1.54	-0.01	0.00	0.10	0.57	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG10	-0.75	-4.80	-0.17	-0.01	-0.02	1.81	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG33	-2.50	-1.54	-0.06	-0.01	0.47	0.57	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.625	LG12	0.44	-4.78	-0.25	-0.01	-0.35	1.80	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG35	-3.38	-0.99	-0.20	0.00	-0.16	-0.24	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG39	-3.57	-2.71	-0.29	-0.01	-0.14	-0.62	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.625	LG35	-3.38	-1.53	-0.20	0.00	-0.28	0.55	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG37	-2.68	-3.82	-0.15	-0.01	0.42	1.44	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.625	LG43	-3.64	-3.81	-0.31	-0.01	-0.33	1.42	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-3.64	-3.81	-0.31	-0.01	-0.33	1.42	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.625	LG43	-3.64	-3.81	-0.31	-0.01	-0.33	1.42	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
433	**Cross-section No. 20 - U 220**								
	0.000	LG48	3.12	0.86	1.38	0.00	-1.01	0.28	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.045	LG88	-3.33	-1.53	1.04	0.00	-0.67	1.11	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG35	1.22	0.00	-1.89	0.00	1.58	-0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.045	LG46	0.66	1.98	-0.51	0.00	0.18	-0.90	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.023	LG43	1.58	0.13	-1.94	0.00	1.55	0.05	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG42	1.37	2.23	-0.55	0.00	0.20	-0.75	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG6	2.70	0.72	0.84	0.00	-0.64	0.29	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG35	1.22	0.00	-1.89	0.00	1.58	-0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	N [kN]	Vy [kN]	Vz [kN]	MT [kNm]	My [kNm]	Mz [kNm]	Acc. to Formula
	0.045	LG46	0.66	1.98	-0.51	0.00	0.18	-0.90	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.045	LG49	-2.34	-1.33	1.11	0.00	-0.76	1.21	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.045	LG53	-2.81	-1.39	1.16	0.00	-0.77	1.14	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.045	LG88	-3.33	-1.53	1.04	0.00	-0.67	1.11	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.045	LG88	-3.33	-1.53	1.04	0.00	-0.67	1.11	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.045	LG88	-3.33	-1.53	1.04	0.00	-0.67	1.11	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
437	**Cross-section No. 20 - U 220**								
	0.305	LG41	4.99	-3.95	0.99	-0.01	0.77	0.64	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.610	LG89	-10.23	-4.01	-0.26	0.00	-0.48	1.51	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.610	LG2	0.50	-5.87	0.04	-0.01	0.02	2.27	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.305	LG43	2.87	-3.19	-4.91	0.00	-2.23	0.66	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.610	LG48	-0.08	-6.60	1.14	0.00	1.40	2.47	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG3	0.68	-3.74	0.04	-0.01	-0.02	-0.64	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG49	4.74	-2.93	1.03	-0.01	0.49	-0.44	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.610	LG43	2.87	-4.26	-4.91	-0.01	-3.72	1.79	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.610	LG14	0.41	-6.64	0.66	-0.01	0.79	2.53	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.610	LG2	0.50	-5.87	0.04	-0.01	0.02	2.27	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.610	LG3	0.67	-6.04	0.03	-0.01	0.01	2.35	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.610	LG40	0.08	-6.57	1.10	0.00	1.36	2.48	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.610	LG14	0.41	-6.64	0.66	-0.01	0.79	2.53	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG47	2.99	-1.47	-4.83	0.00	-0.69	0.01	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.610	LG30	-5.64	-5.12	-0.01	0.00	-0.15	1.97	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.610	LG16	-5.34	-6.49	-0.18	0.00	-0.35	2.47	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.610	LG15	3.35	-5.72	0.58	-0.01	0.62	2.24	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.610	LG89	-10.23	-4.01	-0.26	0.00	-0.48	1.51	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.610	LG89	-10.23	-4.01	-0.26	0.00	-0.48	1.51	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.610	LG89	-10.23	-4.01	-0.26	0.00	-0.48	1.51	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
440	**Cross-section No. 20 - U 220**								
	0.000	LG90	3.58	1.24	1.53	0.00	-0.33	-0.30	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.600	LG89	-7.69	0.71	0.36	0.00	-0.08	-1.07	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.600	LG129	0.00	0.54	0.10	0.00	0.03	-0.92	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG47	3.28	1.94	1.56	0.00	-0.32	-0.37	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG46	-7.37	2.69	0.42	0.00	-0.33	-0.33	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.25	2.37	0.12	-0.01	-0.04	-0.30	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	1.200	LG14	-0.75	-1.05	0.12	-0.02	0.25	-1.70	131)
	Cross-section check - Torsion acc. to 6.2.7								

■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	1.200	LG43	3.10	-1.71	1.66	-0.01	1.61	-0.83	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG14	-0.75	3.39	0.13	-0.01	0.09	-0.29	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.600	LG129	0.00	0.54	0.10	0.00	0.03	-0.92	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.600	LG14	-0.75	1.17	0.13	-0.02	0.17	-1.66	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.600	LG21	1.97	0.45	1.00	0.00	0.39	-1.12	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	1.200	LG40	-1.56	-0.84	-0.09	-0.01	0.23	-1.75	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	1.200	LG46	-7.38	-0.79	0.42	0.00	0.17	-1.46	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.600	LG16	-4.19	1.08	0.49	-0.01	-0.05	-1.67	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.600	LG47	3.28	0.22	1.56	0.00	0.62	-1.02	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	1.200	LG42	-7.26	-1.01	0.54	-0.01	0.23	-1.66	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG89	-7.68	1.99	0.36	0.00	-0.30	-0.26	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.600	LG89	-7.69	0.71	0.36	0.00	-0.08	-1.07	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.600	LG89	-7.69	0.71	0.36	0.00	-0.08	-1.07	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
443	**Cross-section No. 20 - U 220**								
	0.265	LG90	3.58	-2.11	-2.87	0.00	0.75	0.23	101)
	Cross-section check - Tension acc. to 6.2.3								
	0.000	LG89	-7.69	-0.83	0.34	0.00	0.13	-1.11	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG129	0.00	-0.98	0.11	0.00	0.09	-0.87	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.530	LG55	3.14	-3.37	-2.89	0.00	0.00	0.77	122)
	Cross-section check - Shear force in z-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.530	LG35	3.26	-3.42	-2.87	0.00	0.01	0.85	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.25	-1.40	0.12	-0.01	0.10	-1.08	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.530	LG14	-0.74	-3.34	0.17	-0.02	0.34	-0.45	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG51	2.97	-2.05	-2.78	-0.01	1.59	-0.81	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.530	LG11	0.10	-3.79	0.49	-0.01	0.58	0.31	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.530	LG5	0.18	-3.61	0.27	-0.01	0.33	-0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG129	0.00	-0.98	0.11	0.00	0.09	-0.87	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG44	-1.64	-0.94	-0.16	-0.01	0.17	-1.57	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG21	1.97	-1.59	-1.64	0.00	0.98	-0.88	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG40	-1.56	-1.16	-0.02	-0.01	0.23	-1.76	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.265	LG35	3.26	-2.65	-2.87	0.00	0.77	0.04	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG46	-7.38	-1.12	0.41	0.00	0.17	-1.47	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.530	LG39	3.06	-3.93	-2.77	-0.01	0.13	0.84	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.265	LG46	-7.37	-1.89	0.41	0.00	0.28	-1.07	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG42	-7.26	-1.33	0.54	-0.01	0.23	-1.66	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.265	LG89	-7.68	-1.39	0.34	0.00	0.22	-0.82	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-7.69	-0.83	0.34	0.00	0.13	-1.11	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.000	LG89	-7.69	-0.83	0.34	0.00	0.13	-1.11	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
446	**Cross-section No. 20 - U 220**								
	0.000	LG89	-5.32	2.77	-0.40	0.00	0.40	1.11	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG90	2.14	1.70	0.68	0.00	-0.49	0.01	112)
	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 3								
	0.000	LG31	1.33	3.84	0.03	0.00	-0.01	1.05	117)
	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 3								
	0.000	LG30	-2.78	4.43	-0.53	0.00	0.47	1.68	124)
	Cross-section check - Shear force in y-axis acc. to 6.2.6(4) - Class 3 or 4								
	0.000	LG1	0.45	4.07	-0.43	0.01	0.35	1.33	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	1.090	LG14	0.16	0.02	-1.17	0.02	-0.33	-0.86	131)
	Cross-section check - Torsion acc. to 6.2.7								
	1.090	LG14	0.16	0.02	-1.17	0.02	-0.33	-0.86	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG14	0.15	5.74	-1.15	0.02	0.93	2.28	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG90	2.14	1.70	0.68	0.00	-0.49	0.01	142)
	Cross-section check - Bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.545	LG40	-0.07	3.07	-1.34	0.02	0.32	0.00	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG31	1.33	3.84	0.03	0.00	-0.01	1.05	152)
	Cross-section check - Bending about z-axis and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG27	1.30	4.43	-0.15	0.01	0.15	1.29	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG129	0.23	3.17	-0.39	0.00	0.32	1.10	162)
	Cross-section check - Biaxial bending and shear force acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG48	-0.12	5.88	-1.31	0.02	1.03	2.43	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.545	LG34	-5.11	1.40	-0.51	0.00	0.21	0.03	182)
	Cross-section check - Bending, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.545	LG50	-5.01	1.95	-0.70	0.01	0.27	0.03	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG88	-5.24	3.22	0.13	0.01	0.03	0.87	202)
	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG53	-5.29	4.52	-0.01	0.01	0.15	1.35	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.000	LG30	-2.78	4.43	-0.53	0.00	0.47	1.68	222)
	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG16	-2.80	5.03	-0.80	0.02	0.72	1.93	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.000	LG89	-5.32	2.77	-0.40	0.00	0.40	1.11	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	1.090	LG49	-5.31	-0.37	-0.19	0.01	0.10	-1.00	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.000	LG89	-5.32	2.77	-0.40	0.00	0.40	1.11	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
586	**Cross-section No. 20 - U 220**								
	0.085	LG43	-7.93	-6.61	-0.21	0.13	-0.02	2.24	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-1.10	-2.51	-0.02	0.06	0.00	0.70	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG16	-2.73	-8.01	-0.01	0.16	-0.42	2.08	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.085	LG41	0.86	-6.54	-0.84	0.12	0.92	2.20	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.085	LG16	-2.73	-8.19	-0.01	0.16	-0.42	2.77	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.085	LG3	-2.25	-8.25	-0.36	0.15	-0.04	2.77	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG15	-0.60	-8.24	-0.71	0.15	0.53	2.76	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG17	-5.86	-8.29	-0.34	0.15	-0.04	2.78	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.085	LG16	-2.73	-8.19	-0.01	0.16	-0.42	2.77	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								

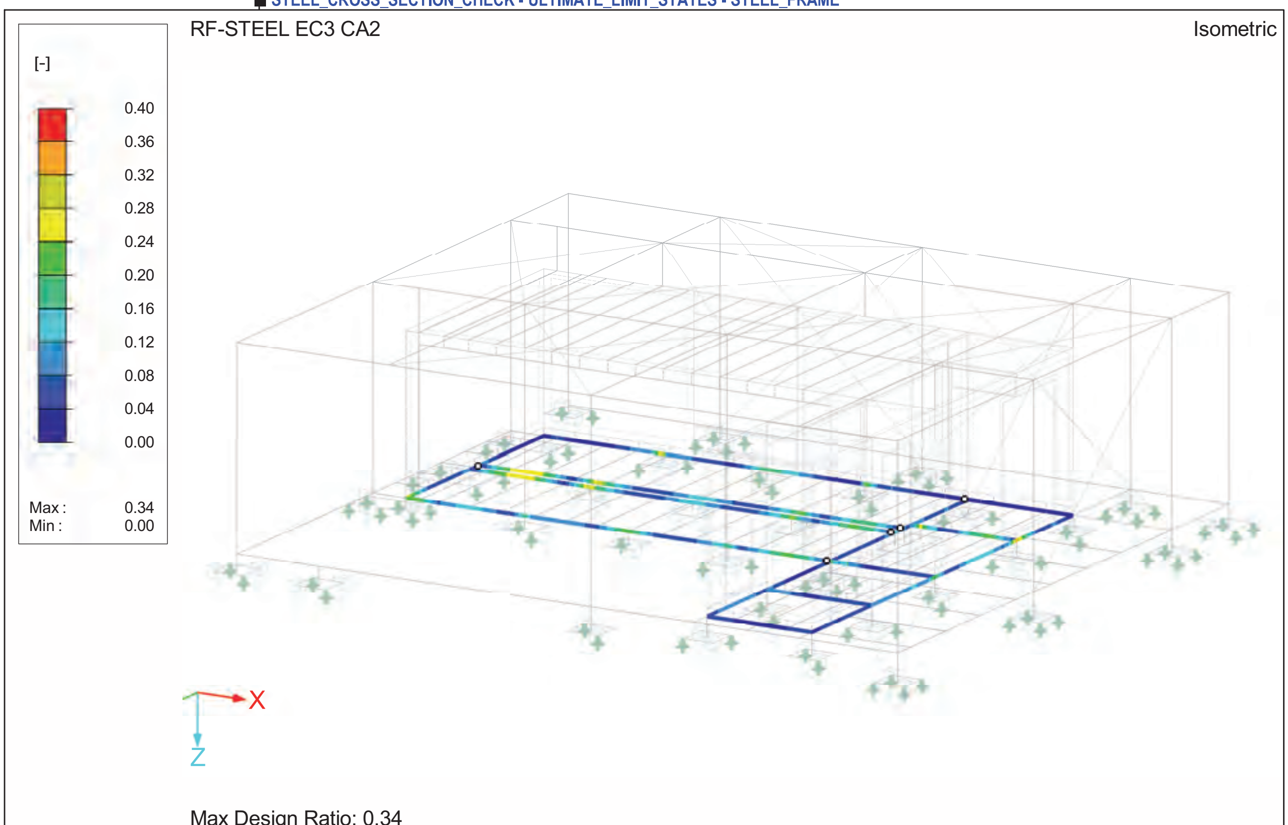
■ 3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	V_y	V_z	Moments [kNm] M_T	M_y	M_z	Acc. to Formula
	0.085	LG43	-7.93	-6.61	-0.21	0.13	-0.02	2.24	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.085	LG43	-7.93	-6.61	-0.21	0.13	-0.02	2.24	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.085	LG43	-7.93	-6.61	-0.21	0.13	-0.02	2.24	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
640	**Cross-section No. 20 - U 220**								
	0.260	LG43	-5.19	4.73	0.26	-0.02	0.30	-1.24	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-0.79	2.04	0.41	-0.02	-0.13	0.01	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.000	LG15	-0.39	6.02	1.63	-0.04	-1.01	0.02	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG40	-1.28	4.84	3.25	-0.03	-1.41	0.02	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG15	-0.39	6.02	1.63	-0.04	-1.01	0.02	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG41	0.51	4.72	2.06	-0.03	-1.49	0.02	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.260	LG3	-1.44	5.78	0.82	-0.03	-0.03	-1.52	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.260	LG8	-1.54	5.87	-0.18	-0.03	0.32	-1.54	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG90	-4.55	1.62	-0.16	-0.01	0.36	0.01	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.260	LG17	-3.81	5.85	0.56	-0.03	0.17	-1.54	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.260	LG51	-5.09	4.73	0.18	-0.02	0.31	-1.24	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.260	LG43	-5.19	4.73	0.26	-0.02	0.30	-1.24	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.260	LG43	-5.19	4.73	0.26	-0.02	0.30	-1.24	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.260	LG43	-5.19	4.73	0.26	-0.02	0.30	-1.24	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
641	**Cross-section No. 20 - U 220**								
	0.260	LG43	-5.52	4.34	-0.82	0.03	0.42	-1.14	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-0.72	1.94	-0.35	0.02	0.13	0.01	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								
	0.260	LG15	-0.81	5.68	-0.01	0.04	-0.43	-1.49	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.000	LG14	-0.56	5.97	-1.01	0.04	0.19	0.03	133)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG15	-0.80	6.03	0.00	0.04	-0.42	0.03	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.000	LG88	0.32	1.62	1.04	0.02	-1.14	0.01	147)
	Cross-section check - Bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.260	LG10	-0.43	5.63	-0.96	0.03	-0.07	-1.48	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.260	LG11	-0.67	5.69	0.05	0.04	-0.43	-1.49	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.000	LG43	-5.52	4.64	-0.81	0.03	0.63	0.03	187)
	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.260	LG13	-3.81	5.54	-0.81	0.03	0.31	-1.45	227)
	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9 - Class 3								
	0.260	LG43	-5.52	4.34	-0.82	0.03	0.42	-1.14	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.260	LG43	-5.52	4.34	-0.82	0.03	0.42	-1.14	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.260	LG43	-5.52	4.34	-0.82	0.03	0.42	-1.14	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								
642	**Cross-section No. 20 - U 220**								
	0.085	LG43	-2.85	-6.86	0.18	-0.13	0.02	2.29	102)
	Cross-section check - Compression acc. to 6.2.4								
	0.000	LG1	-0.43	-2.77	0.00	-0.06	0.00	0.70	126)
	Cross-section check - Shear buckling acc. to 6.2.6(6)								

3.1 GOVERNING INTERNAL FORCES BY MEMBER

Member No	Loc x [m]	Load Case	Forces [kN] N	Vy	Vz	Moments [kNm] MT	My	Mz	Acc. to Formula
	0.085	LG16	-0.14	-8.72	0.55	-0.15	-0.35	2.87	131)
	Cross-section check - Torsion acc. to 6.2.7								
	0.085	LG16	-0.14	-8.72	0.55	-0.15	-0.35	2.87	138)
	Cross-section check - Torsion and shear force acc. to 6.2.7(5)								
	0.085	LG17	-1.99	-8.62	0.30	-0.15	0.03	2.86	157)
	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG15	-0.70	-8.64	0.00	-0.14	0.59	2.85	167)
	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.9.2 and 6.2.10 - Class 3								
	0.085	LG43	-2.85	-6.86	0.18	-0.13	0.02	2.29	207)
	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.2 - Class 3								
	0.085	LG43	-2.85	-6.86	0.18	-0.13	0.02	2.29	301)
	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.085	LG43	-2.85	-6.86	0.18	-0.13	0.02	2.29	311)
	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)								
	0.085	LG43	-2.85	-6.86	0.18	-0.13	0.02	2.29	325)
	Stability analysis - Torsional - Flexural buckling acc. to 6.3.1.4 and 6.3.1.2(4)								

STEEL_CROSS_SECTION_CHECK - ULTIMATE_LIMIT_STATES - STEEL_FRAME



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TIMBER_CROSS-SECTION_CHECK

1.1.2 DETAILS

Stability Analysis:	Stability Analysis acc. to Equivalent Member Method

1.1.3 DATA FOR NATIONAL ANNEX

Partial Factor for Material Properties

Fundamental Situation for Solid Wood	γ_M:	1.300
Fundamental Situation for Glulam Timber	γ_M:	1.250
Accidental Situation	γ_M:	1.000
For Timber in Fire	$\gamma_{M,fi}$:	1.000

Modification Factor k_{mod}

LDC	1	2	3
Fundamental	0.600	0.600	0.500
Long	0.700	0.700	0.550
Middle	0.800	0.800	0.650
Short	0.900	0.900	0.700
Very short	1.100	1.100	0.900

Parameters for Coniferous Wood

Charring Rate β_n:	0.80 mm/min
Increased Charring d_0:	7.00 mm
Factor k_{fi}:	1.25

Parameters for Glued Laminated Timber

Charring Rate β_n:	0.70 mm/min
Increased Charring d_0:	7.00 mm
Factor k_{fi}:	1.15

1.1.4 USED CODES LIST

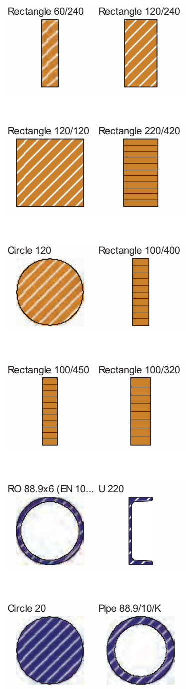
[1]	CSN EN 1995-1-1:2006-12+A1:2009-05/NA: 2007-09	Part 1-1: General - Common rules and rules for buildings
[2]	CSN EN 1995-1-2:2006-12/NA:2007-09	Part 1-2: General - Structural fire design
[3]	CSN EN 1990:2004-03+A1:2007-04/NA:2004-06	Basis of structural design (Including: Corrigendum 1:2007-11, Corrigendum 2:2008-08)
[4]	CSN EN 1991-1-1:2004-03/NA:2004-06	Part 1-1: General actions - Densities, self-weight, imposed loads for buildings
[5]	CSN EN 1991-1-3:2005-06/NA:2008-07	Part 1-3: General actions - Snow loads (Including: Amendment Z1:2006-12)
[6]	CSN EN 1991-1-4:2007-04/NA:2008-05	Part 1-4: General actions - Wind loads (Including: Corrigendum 1:2008-09)
[7]	CSN EN 1194:1999-11	Timber structures - Glued laminated timber - Strength classes and determination of characteristic values
[8]	CSN EN 338:2010-05	Structural timber

1.2.1 MATERIALS

Material No	Material Description	Comment
3	Poplar and Coniferous Timber C24	
4	Glulam Timber GL24h	
5	Glulam Timber GL28c	

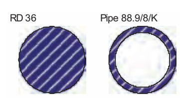
Special Settings acc. to Article 3.2 resp. 3.3

Increase of Strength $f_{m,k}$ and $f_{t,0,k}$ according to: ☒ According 3.2(3)
☒ According 3.3(3)



1.3.1 CROSS-SECTIONS

Section No	Material No	Cross-Section Description [mm]	Comment
1	3	Rectangle 60/240	
2	3	Rectangle 120/240	
3	3	Rectangle 120/120	
4	4	Rectangle 220/420	
5	5	Circle 120	
6	4	Rectangle 100/400	
8	4	Rectangle 100/450	
10	4	Rectangle 100/320	
17	2	RO 88.9x6 (EN 10219-2)	
		The cross-section cannot be designed because the material data is invalid!	
20	10	U 220	
		The cross-section cannot be designed because the material data is invalid!	
21	2	Circle 20	
		The cross-section cannot be designed because the material data is invalid!	
24	10	Pipe 88.9/10/K	
		The cross-section cannot be designed because the material data is invalid!	
25	15	RD 36	
		The cross-section cannot be designed because the material data is invalid!	
26	13	Pipe 88.9/8/K	
		The cross-section cannot be designed because the material data is invalid!	



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TIMBER_CROSS-SECTION_CHECK

2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
Ultimate Limit State Design									
LG1	UB (1.35*LC1)	382	4.710	0.53	≤ 1	333)	ULS	Permanent	0.600

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-2.63 kN	$V_{z,d}$	-3.16 kN	$M_{y,d}$	-1.02 kNm
$V_{y,d}$	0.06 kN	T_d	0.01 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

N_d	2.63 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	1.763 N/mm^2
$\sigma_{c,0,d}$	0.183 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.038 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	28.827 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	11.077 N/mm^2
i_z	17.3 mm	k_{mod}	0.600	$f_{m,z,d}$	13.305 N/mm^2
λ_y	67.983	γ_M	1.300	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	9.692 N/mm^2	η_1	0.19
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	1.02 kNm	η_2	0.53
$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.01 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG2	UB (1.35*LC1 + 1.5*LC2)	382	4.710	0.35	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-2.63 kN	$V_{z,d}$	-3.16 kN	$M_{y,d}$	-1.01 kNm
$V_{y,d}$	0.07 kN	T_d	0.01 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

N_d	2.63 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	1.761 N/mm^2
$\sigma_{c,0,d}$	0.183 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.041 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	28.827 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	16.615 N/mm^2
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	19.957 N/mm^2
λ_y	67.983	γ_M	1.300	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	14.538 N/mm^2	η_1	0.13
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	1.01 kNm	η_2	0.35
$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.01 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG3	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3)	382	4.710	0.54	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.00 kN	$V_{z,d}$	-4.82 kN	$M_{y,d}$	-1.55 kNm
$V_{y,d}$	0.09 kN	T_d	0.01 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

N_d	4.00 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	2.686 N/mm^2
$\sigma_{c,0,d}$	0.278 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.057 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	28.827 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	16.615 N/mm^2
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	19.957 N/mm^2
λ_y	67.983	γ_M	1.300	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	14.538 N/mm^2	η_1	0.20
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	1.55 kNm	η_2	0.54

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TIMBER_CROSS-SECTION_CHECK

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.01 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG4	UB (1.35*LC1 + 1.5*LC3)	382	4.710	0.54	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.00 kN	$V_{z,d}$	-4.82 kN	$M_{y,d}$	-1.55 kNm
$V_{y,d}$	0.08 kN	T_d	0.01 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

N_d	4.00 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	2.689 N/mm^2
$\sigma_{c,0,d}$	0.278 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.054 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	28.827 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	16.615 N/mm^2
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	19.957 N/mm^2
λ_y	67.983	γ_M	1.300	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	14.538 N/mm^2	η_1	0.20
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	1.55 kNm	η_2	0.54
$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.01 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG5	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4)	154	4.710	0.38	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-0.03 kN	$V_{z,d}$	-13.13 kN	$M_{y,d}$	-6.34 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	-0.02 kNm

Design Ratio

$V_{z,d,red}$	13.13 kN	k_{cr}	0.670	γ_M	1.250
b	100.0 mm	τ_d	0.735 N/mm^2	$f_{v,d}$	1.944 N/mm^2
h	400.0 mm	$f_{v,k}$	2.700 N/mm^2		0.38
b_{ef}	67.0 mm	k_{mod}	0.900		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG6	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC5)	154	4.710	0.38	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-5.78 kN	$V_{z,d}$	-13.20 kN	$M_{y,d}$	-6.62 kNm
$V_{y,d}$	-1.08 kN	T_d	-0.05 kNm	$M_{z,d}$	0.55 kNm

Design Ratio

$V_{z,d,red}$	13.20 kN	k_{cr}	0.670	γ_M	1.250
b	100.0 mm	τ_d	0.739 N/mm^2	$f_{v,d}$	1.944 N/mm^2
h	400.0 mm	$f_{v,k}$	2.700 N/mm^2		0.38
b_{ef}	67.0 mm	k_{mod}	0.900		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG7	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC6)	130	0.000	1.06	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.14 kN	$V_{z,d}$	-37.60 kN	$M_{y,d}$	-0.44 kNm
$V_{y,d}$	-2.50 kN	T_d	-0.60 kNm	$M_{z,d}$	0.01 kNm

Design Ratio

$V_{z,d,red}$	37.60 kN	k_{cr}	0.670	γ_M	1.300
b	120.0 mm	τ_d	2.923 N/mm^2	$f_{v,d}$	2.769 N/mm^2
h	240.0 mm	$f_{v,k}$	4.000 N/mm^2		1.06
b_{ef}	80.4 mm	k_{mod}	0.900		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG8	UB (1.35*LC1 + 1.5*LC2 +	382	4.710	0.66	≤ 1	333)	ULS	Short-term	0.900

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TIMBER_CROSS-SECTION_CHECK

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG8	0.75*LC4 + 0.9*LC7)	382	4.710	0.66	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.88	kN	$V_{z,d}$	-4.71	kN	$M_{y,d}$	-1.87	kNm
$V_{y,d}$	-0.25	kN	T_d	0.01	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

N_d	4.88	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	3.239	N/mm^2
$\sigma_{c,0,d}$	0.339	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.065	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	28.827	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	19.957	N/mm^2
λ_y	67.983		γ_M	1.300		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	14.538	N/mm^2	η_1	0.24	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	1.87	kNm	η_2	0.66	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.01	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG9	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC8)	125	0.000	0.50	≤ 1	121)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Torsion acc. to 6.1.8

Design Internal Forces

N_d	-2.83	kN	$V_{z,d}$	0.29	kN	$M_{y,d}$	-0.01	kNm
$V_{y,d}$	0.87	kN	T_d	0.54	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

T_d	0.54	kNm	$f_{v,k}$	4.000	N/mm^2	$f_{v,d}$	2.769	N/mm^2
W_t	242.78	cm^3	k_{mod}	0.900		k_{shape}	1.600	
$\tau_{tor,d}$	2.233	N/mm^2	γ_M	1.300			0.50	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG10	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC5)	142	2.605	0.30	≤ 1	303)	ULS	Short-term	0.900

Compression Member with Axial Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-29.17	kN	$V_{z,d}$	0.00	kN	$M_{y,d}$	0.00	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	29.17	kN	λ_z	86.833		$k_{c,y}$	0.499	
A	113.10	cm^2	$f_{c,0,k}$	24.000	N/mm^2	$k_{c,z}$	0.499	
$\sigma_{c,0,d}$	2.579	N/mm^2	$E_{0,05}$	10200.00	N/mm^2	k_{mod}	0.900	
$l_{ef,y}$	2.605	m	$\lambda_{rel,y}$	1.341		γ_M	1.250	
$l_{ef,z}$	2.605	m	$\lambda_{rel,z}$	1.341		$f_{c,0,d}$	17.280	N/mm^2
i_y	30.0	mm	β_c	0.100			0.30	
i_z	30.0	mm	k_y	1.451			0.30	
λ_y	86.833		k_z	1.451				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG11	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC6)	130	0.000	1.04	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.26	kN	$V_{z,d}$	-37.08	kN	$M_{y,d}$	-0.44	kNm
$V_{y,d}$	-2.37	kN	T_d	-0.59	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$V_{z,d,red}$	37.08	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	2.882	N/mm^2	$f_{v,d}$	2.769	N/mm^2
h	240.0	mm	$f_{v,k}$	4.000	N/mm^2		1.04	
b_{ef}	80.4	mm	k_{mod}	0.900				

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG12	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC7)	382	4.710	0.65	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.86	kN	$V_{z,d}$	-4.69	kN	$M_{y,d}$	-1.86	kNm
$V_{y,d}$	-0.25	kN	T_d	0.01	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

N_d	4.86	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm³
A	144.00	cm²	β_c	0.200		$\sigma_{m,y,d}$	3.223	N/mm²
$\sigma_{c,0,d}$	0.337	N/mm²	k_y	1.250		$\sigma_{m,z,d}$	0.066	N/mm²
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm²
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	28.827	N/mm²
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.615	N/mm²
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	19.957	N/mm²
λ_y	67.983		γ_M	1.300		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	14.538	N/mm²	η_1	0.24	
$f_{c,0,k}$	21.000	N/mm²	$M_{y,d}$	1.86	kNm	η_2	0.65	
$E_{0,05}$	7400.000	N/mm²	$M_{z,d}$	0.01	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm³			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG13	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC8)	125	0.000	0.50	≤ 1	121)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Torsion acc. to 6.1.8

Design Internal Forces

N_d	-2.82	kN	$V_{z,d}$	0.30	kN	$M_{y,d}$	-0.01	kNm
$V_{y,d}$	0.94	kN	T_d	0.54	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

T_d	0.54	kNm	$f_{v,k}$	4.000	N/mm²	$f_{v,d}$	2.769	N/mm²
W_t	242.78	cm³	k_{mod}	0.900		k_{shape}	1.600	
$\tau_{tor,d}$	2.208	N/mm²	γ_M	1.300			0.50	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG14	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC5)	135	2.355	0.43	≤ 1	151)	ULS	Short-term	0.900

Cross-section Resistance - Uniaxial Bending acc. to 6.1.6

Design Internal Forces

N_d	-0.17	kN	$V_{z,d}$	0.01	kN	$M_{y,d}$	4.15	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	4.15	kNm	$f_{m,y,k}$	24.000	N/mm²	$f_{m,y,d}$	16.615	N/mm²
W_y	576.00	cm³	k_{mod}	0.900			0.43	
$\sigma_{m,y,d}$	7.201	N/mm²	γ_M	1.300				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG15	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC6)	130	0.000	1.07	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.30	kN	$V_{z,d}$	-38.25	kN	$M_{y,d}$	-0.47	kNm
$V_{y,d}$	-2.85	kN	T_d	-0.58	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$V_{z,d,red}$	38.25	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	2.973	N/mm²	$f_{v,d}$	2.769	N/mm²
h	240.0	mm	$f_{v,k}$	4.000	N/mm²		1.07	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG16	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC7)	382	4.710	0.84	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

N_d	-6.22	kN	$V_{z,d}$	-6.35	kN	$M_{y,d}$	-2.39	kNm
$V_{y,d}$	-0.23	kN	T_d	0.01	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

N_d	6.22	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	4.148	N/mm^2
$\sigma_{c,0,d}$	0.432	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.050	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	28.827	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	19.957	N/mm^2
λ_y	67.983		γ_M	1.300		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	14.538	N/mm^2	η_1	0.30	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	2.39	kNm	η_2	0.84	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.01	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG17	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC8)	382	4.710	0.60	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.46	kN	$V_{z,d}$	-5.17	kN	$M_{y,d}$	-1.71	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	4.46	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	1.71	kNm
$\sigma_{c,0,d}$	0.310	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	2.976	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.22	
λ_z	271.932		k_{mod}	0.900		η_2	0.60	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG18	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC5)	135	2.355	0.43	≤ 1	151)	ULS	Short-term	0.900

Cross-section Resistance - Uniaxial Bending acc. to 6.1.6

Design Internal Forces

N_d	-0.16	kN	$V_{z,d}$	0.01	kN	$M_{y,d}$	4.15	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	4.15	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,d}$	16.615	N/mm^2
W_y	576.00	cm^3	k_{mod}	0.900			0.43	
$\sigma_{m,y,d}$	7.200	N/mm^2	γ_M	1.300				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG19	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC6)	130	0.000	1.07	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.31	kN	$V_{z,d}$	-38.16	kN	$M_{y,d}$	-0.47	kNm
$V_{y,d}$	-2.78	kN	T_d	-0.58	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$V_{z,d,red}$	38.16	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	2.967	N/mm^2	$f_{v,d}$	2.769	N/mm^2
h	240.0	mm	$f_{v,k}$	4.000	N/mm^2		1.07	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG20	UB (1.35*LC1 + 1.5*LC3 +	382	4.710	0.84	≤ 1	333)	ULS	Short-term	0.900

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2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG20	0.9*LC7)	382	4.710	0.84	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-6.22	kN	$V_{z,d}$	-6.35	kN	$M_{y,d}$	-2.39	kNm
$V_{y,d}$	-0.24	kN	T_d	0.01	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

N_d	6.22	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	4.150	N/mm^2
$\sigma_{c,0,d}$	0.432	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.053	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	28.827	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	19.957	N/mm^2
λ_y	67.983		γ_M	1.300		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	14.538	N/mm^2	η_1	0.30	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	2.39	kNm	η_2	0.84	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.01	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG21	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC8)	382	4.710	0.60	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.46	kN	$V_{z,d}$	-5.17	kN	$M_{y,d}$	-1.72	kNm
$V_{y,d}$	-0.01	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	4.46	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	1.72	kNm
$\sigma_{c,0,d}$	0.310	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	2.978	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.22	
λ_z	271.932		k_{mod}	0.900		η_2	0.60	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG22	UB (1.35*LC1 + 1.5*LC4)	154	4.707	0.55	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	0.00	kN	$V_{z,d}$	-19.21	kN	$M_{y,d}$	-9.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

$V_{z,d,red}$	19.21	kN	k_{cr}	0.670		γ_M	1.250	
b	100.0	mm	τ_d	1.075	N/mm^2	$f_{v,d}$	1.944	N/mm^2
h	400.0	mm	$f_{v,k}$	2.700	N/mm^2		0.55	
b_{ef}	67.0	mm	k_{mod}	0.900				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG23	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	154	4.710	0.55	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	0.00	kN	$V_{z,d}$	-19.17	kN	$M_{y,d}$	-9.69	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	-0.02	kNm

Design Ratio

$V_{z,d,red}$	19.17	kN	k_{cr}	0.670		γ_M	1.250	
b	100.0	mm	τ_d	1.073	N/mm^2	$f_{v,d}$	1.944	N/mm^2

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■ 2.1 DESIGN BY LOAD CASE

h	400.0 mm	$f_{v,k}$	2.700 N/mm²		0.55			
b_{ef}	67.0 mm	k_{mod}	0.900					

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG24	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC5)	154	4.710	0.55	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-5.75 kN	$V_{z,d}$	-19.24 kN	$M_{y,d}$	-9.97 kNm
$V_{y,d}$	-1.09 kN	T_d	-0.04 kNm	$M_{z,d}$	0.56 kNm

Design Ratio

$V_{z,d,red}$	19.24 kN	k_{cr}	0.670	γ_M	1.250
b	100.0 mm	τ_d	1.077 N/mm²	$f_{v,d}$	1.944 N/mm²
h	400.0 mm	$f_{v,k}$	2.700 N/mm²		0.55
b_{ef}	67.0 mm	k_{mod}	0.900		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG25	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC6)	130	0.000	1.07	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.02 kN	$V_{z,d}$	-38.12 kN	$M_{y,d}$	-0.45 kNm
$V_{y,d}$	-2.62 kN	T_d	-0.60 kNm	$M_{z,d}$	0.01 kNm

Design Ratio

$V_{z,d,red}$	38.12 kN	k_{cr}	0.670	γ_M	1.300
b	120.0 mm	τ_d	2.963 N/mm²	$f_{v,d}$	2.769 N/mm²
h	240.0 mm	$f_{v,k}$	4.000 N/mm²		1.07
b_{ef}	80.4 mm	k_{mod}	0.900		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG26	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC7)	382	4.710	0.66	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.91 kN	$V_{z,d}$	-4.74 kN	$M_{y,d}$	-1.88 kNm
$V_{y,d}$	-0.24 kN	T_d	0.01 kNm	$M_{z,d}$	0.01 kNm

Design Ratio

N_d	4.91 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm³
A	144.00 cm²	β_c	0.200	$\sigma_{m,y,d}$	3.257 N/mm²
$\sigma_{c,0,d}$	0.341 N/mm²	k_y	1.250	$\sigma_{m,z,d}$	0.065 N/mm²
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm²
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	28.827 N/mm²
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	16.615 N/mm²
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	19.957 N/mm²
λ_y	67.983	γ_M	1.300	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	14.538 N/mm²	η_1	0.24
$f_{c,0,k}$	21.000 N/mm²	$M_{y,d}$	1.88 kNm	η_2	0.66
$E_{0,05}$	7400.000 N/mm²	$M_{z,d}$	0.01 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm³		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG27	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC8)	154	4.710	0.55	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-3.29 kN	$V_{z,d}$	-19.13 kN	$M_{y,d}$	-9.51 kNm
$V_{y,d}$	1.11 kN	T_d	0.05 kNm	$M_{z,d}$	-0.55 kNm

Design Ratio

$V_{z,d,red}$	19.13 kN	k_{cr}	0.670	γ_M	1.250
b	100.0 mm	τ_d	1.070 N/mm²	$f_{v,d}$	1.944 N/mm²
h	400.0 mm	$f_{v,k}$	2.700 N/mm²		0.55
b_{ef}	67.0 mm	k_{mod}	0.900		

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG28	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC5)	154	4.707	0.56	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-5.75	kN	$V_{z,d}$	-19.29	kN	$M_{y,d}$	-10.17	kNm
$V_{y,d}$	-1.09	kN	T_d	-0.04	kNm	$M_{z,d}$	0.56	kNm

Design Ratio

$V_{z,d,red}$	19.29	kN	k_{cr}	0.670		γ_M	1.250	
b	100.0	mm	τ_d	1.079	N/mm^2	$f_{v,d}$	1.944	N/mm^2
h	400.0	mm	$f_{v,k}$	2.700	N/mm^2		0.56	
b_{ef}	67.0	mm	k_{mod}	0.900				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG29	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC6)	130	0.000	1.07	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.03	kN	$V_{z,d}$	-38.06	kN	$M_{y,d}$	-0.45	kNm
$V_{y,d}$	-2.57	kN	T_d	-0.60	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$V_{z,d,red}$	38.06	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	2.958	N/mm^2	$f_{v,d}$	2.769	N/mm^2
h	240.0	mm	$f_{v,k}$	4.000	N/mm^2		1.07	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG30	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC7)	382	4.710	0.66	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.91	kN	$V_{z,d}$	-4.74	kN	$M_{y,d}$	-1.88	kNm
$V_{y,d}$	-0.24	kN	T_d	0.01	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

N_d	4.91	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	3.259	N/mm^2
$\sigma_{c,0,d}$	0.341	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.067	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	28.827	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	19.957	N/mm^2
λ_y	67.983		γ_M	1.300		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	14.538	N/mm^2	η_1	0.24	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	1.88	kNm	η_2	0.66	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.01	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG31	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC8)	154	4.710	0.55	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-3.41	kN	$V_{z,d}$	-19.17	kN	$M_{y,d}$	-9.77	kNm
$V_{y,d}$	1.11	kN	T_d	0.05	kNm	$M_{z,d}$	-0.55	kNm

Design Ratio

$V_{z,d,red}$	19.17	kN	k_{cr}	0.670		γ_M	1.250	
b	100.0	mm	τ_d	1.073	N/mm^2	$f_{v,d}$	1.944	N/mm^2
h	400.0	mm	$f_{v,k}$	2.700	N/mm^2		0.55	
b_{ef}	67.0	mm	k_{mod}	0.900				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG32	UB (1.35*LC1 + 1.5*LC5)	125	0.000	0.42	≤ 1	121)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Torsion acc. to 6.1.8

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TIMBER_CROSS-SECTION_CHECK

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

Design Internal Forces

N_d	4.10 kN	$V_{z,d}$	-1.88 kN	$M_{y,d}$	-0.02 kNm
$V_{y,d}$	-1.81 kN	T_d	-0.45 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

T_d	0.45 kNm	$f_{v,k}$	4.000 N/mm^2	$f_{v,d}$	2.769 N/mm^2
W_t	242.78 cm^3	k_{mod}	0.900	k_{shape}	1.600
$\tau_{tor,d}$	1.851 N/mm^2	γ_M	1.300		0.42

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG33	UB (1.35*LC1 + 1.5*LC6)	130	0.000	1.69	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.85 kN	$V_{z,d}$	-60.24 kN	$M_{y,d}$	-0.69 kNm
$V_{y,d}$	-3.27 kN	T_d	-1.01 kNm	$M_{z,d}$	0.01 kNm

Design Ratio

$V_{z,d,red}$	60.24 kN	k_{cr}	0.670	γ_M	1.300
b	120.0 mm	τ_d	4.683 N/mm^2	$f_{v,d}$	2.769 N/mm^2
h	240.0 mm	$f_{v,k}$	4.000 N/mm^2		1.69
b_{ef}	80.4 mm	k_{mod}	0.900		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG34	UB (1.35*LC1 + 1.5*LC7)	130	0.000	0.97	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-1.26 kN	$V_{z,d}$	34.39 kN	$M_{y,d}$	0.30 kNm
$V_{y,d}$	-1.25 kN	T_d	0.75 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

$V_{z,d,red}$	34.39 kN	k_{cr}	0.670	γ_M	1.300
b	120.0 mm	τ_d	2.673 N/mm^2	$f_{v,d}$	2.769 N/mm^2
h	240.0 mm	$f_{v,k}$	4.000 N/mm^2		0.97
b_{ef}	80.4 mm	k_{mod}	0.900		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG35	UB (1.35*LC1 + 1.5*LC8)	163	0.000	0.81	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.32 kN	$V_{z,d}$	1.61 kN	$M_{y,d}$	-1.33 kNm
$V_{y,d}$	-9.51 kN	T_d	0.02 kNm	$M_{z,d}$	-8.16 kNm

Design Ratio

N_d	8.32 kN	$\lambda_{rel,z}$	2.624	W_z	666.67 cm^3
A	400.00 cm^2	β_c	0.100	$\sigma_{m,y,d}$	0.497 N/mm^2
$\sigma_{c,0,d}$	0.208 N/mm^2	k_y	0.733	$\sigma_{m,z,d}$	12.245 N/mm^2
$l_{ef,y}$	4.710 m	k_z	4.060	$f_{m,y,k}$	24.993 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.943	$f_{m,z,k}$	24.000 N/mm^2
i_y	115.5 mm	$k_{c,z}$	0.140	$f_{m,y,d}$	17.995 N/mm^2
i_z	28.9 mm	k_{mod}	0.900	$f_{m,z,d}$	17.280 N/mm^2
λ_y	40.790	γ_M	1.250	k_m	0.700
λ_z	163.159	$f_{c,0,d}$	17.280 N/mm^2	η_1	0.54
$f_{c,0,k}$	24.000 N/mm^2	$M_{y,d}$	1.33 kNm	η_2	0.81
$E_{0,05}$	9400.000 N/mm^2	$M_{z,d}$	8.16 kNm		
$\lambda_{rel,y}$	0.656	W_y	2666.67 cm^3		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG36	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC5)	125	0.000	0.42	≤ 1	121)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Torsion acc. to 6.1.8

Design Internal Forces

N_d	4.13 kN	$V_{z,d}$	-1.88 kN	$M_{y,d}$	-0.02 kNm
$V_{y,d}$	-1.91 kN	T_d	-0.45 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

T_d	0.45 kNm	$f_{v,k}$	4.000 N/mm^2	$f_{v,d}$	2.769 N/mm^2
W_t	242.78 cm^3	k_{mod}	0.900	k_{shape}	1.600

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	$\tau_{tor,d}$ 1.858 N/mm^2		γ_M	1.300				0.42	
LG37	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC6)	130	0.000	1.69	> 1	111)	ULS	Short-term	0.900
	Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7								
	Design Internal Forces								
	N_d 1.84 kN		$V_{z,d}$	-60.29 kN		$M_{y,d}$		-0.69 kNm	
	$V_{y,d}$ -3.31 kN		T_d	-1.01 kNm		$M_{z,d}$		0.01 kNm	
	Design Ratio								
	$V_{z,d,red}$ 60.29 kN		k_{cr}	0.670		γ_M		1.300	
	b 120.0 mm		τ_d	4.687 N/mm^2		$f_{v,d}$		2.769 N/mm^2	
	h 240.0 mm		$f_{v,k}$	4.000 N/mm^2				1.69	
	b_{ef} 80.4 mm		k_{mod}	0.900					
LG38	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC7)	130	0.000	0.96	≤ 1	111)	ULS	Short-term	0.900
	Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7								
	Design Internal Forces								
	N_d -1.25 kN		$V_{z,d}$	34.30 kN		$M_{y,d}$		0.29 kNm	
	$V_{y,d}$ -1.30 kN		T_d	0.75 kNm		$M_{z,d}$		-0.01 kNm	
	Design Ratio								
	$V_{z,d,red}$ 34.30 kN		k_{cr}	0.670		γ_M		1.300	
	b 120.0 mm		τ_d	2.666 N/mm^2		$f_{v,d}$		2.769 N/mm^2	
	h 240.0 mm		$f_{v,k}$	4.000 N/mm^2				0.96	
	b_{ef} 80.4 mm		k_{mod}	0.900					
LG39	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC8)	163	0.000	0.81	≤ 1	333)	ULS	Short-term	0.900
	Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d -8.25 kN		$V_{z,d}$	1.61 kN		$M_{y,d}$		-1.33 kNm	
	$V_{y,d}$ -9.51 kN		T_d	0.02 kNm		$M_{z,d}$		-8.16 kNm	
	Design Ratio								
	N_d 8.25 kN		$\lambda_{rel,z}$	2.624		W_z		666.67 cm^3	
	A 400.00 cm^2		β_c	0.100		$\sigma_{m,y,d}$		0.497 N/mm^2	
	$\sigma_{c,0,d}$ 0.206 N/mm^2		k_y	0.733		$\sigma_{m,z,d}$		12.242 N/mm^2	
	$l_{ef,y}$ 4.710 m		k_z	4.060		$f_{m,y,k}$		24.993 N/mm^2	
	$l_{ef,z}$ 4.710 m		$k_{c,y}$	0.943		$f_{m,z,k}$		24.000 N/mm^2	
	i_y 115.5 mm		$k_{c,z}$	0.140		$f_{m,y,d}$		17.995 N/mm^2	
	i_z 28.9 mm		k_{mod}	0.900		$f_{m,z,d}$		17.280 N/mm^2	
	λ_y 40.790		γ_M	1.250		k_m		0.700	
	λ_z 163.159		$f_{c,0,d}$	17.280 N/mm^2		η_1		0.54	
	$f_{c,0,k}$ 24.000 N/mm^2		$M_{y,d}$	1.33 kNm		η_2		0.81	
	$E_{0,05}$ 9400.000 N/mm^2		$M_{z,d}$	8.16 kNm					
	$\lambda_{rel,y}$ 0.656		W_y	2666.67 cm^3					
LG40	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC5)	125	0.000	0.40	≤ 1	121)	ULS	Short-term	0.900
	Cross-section Resistance - Shear due to Torsion acc. to 6.1.8								
	Design Internal Forces								
	N_d 4.13 kN		$V_{z,d}$	-2.04 kN		$M_{y,d}$		-0.03 kNm	
	$V_{y,d}$ -2.01 kN		T_d	-0.43 kNm		$M_{z,d}$		-0.01 kNm	
	Design Ratio								
	T_d 0.43 kNm		$f_{v,k}$	4.000 N/mm^2		$f_{v,d}$		2.769 N/mm^2	
	W_t 242.78 cm^3		k_{mod}	0.900		k_{shape}		1.600	
	$\tau_{tor,d}$ 1.761 N/mm^2		γ_M	1.300				0.40	
LG41	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC6)	130	0.000	1.72	> 1	111)	ULS	Short-term	0.900

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7								
	Design Internal Forces								
	N_d 1.82 kN	$V_{z,d}$	-61.11 kN		$M_{y,d}$	-0.71 kNm			
	$V_{y,d}$ -3.66 kN	T_d	-1.00 kNm		$M_{z,d}$	0.02 kNm			
	Design Ratio								
	$V_{z,d,red}$ 61.11 kN	k_{cr}	0.670		γ_M	1.300			
	b 120.0 mm	τ_d	4.751 N/mm²		$f_{v,d}$	2.769 N/mm²			
	h 240.0 mm	$f_{v,k}$	4.000 N/mm²			1.72			
	b_{ef} 80.4 mm	k_{mod}	0.900						
LG42	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC7)	382	4.710	0.98	≤ 1	333)	ULS	Short-term	0.900
	Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d -7.29 kN	$V_{z,d}$	-6.86 kN		$M_{y,d}$	-2.79 kNm			
	$V_{y,d}$ -0.46 kN	T_d	0.02 kNm		$M_{z,d}$	0.02 kNm			
	Design Ratio								
	N_d 7.29 kN	$\lambda_{rel,z}$	4.611		W_z	144.00 cm³			
	A 144.00 cm²	β_c	0.200		$\sigma_{m,y,d}$	4.845 N/mm²			
	$\sigma_{c,0,d}$ 0.506 N/mm²	k_y	1.250		$\sigma_{m,z,d}$	0.126 N/mm²			
	$l_{ef,y}$ 4.710 m	k_z	11.562		$f_{m,y,k}$	24.000 N/mm²			
	$l_{ef,z}$ 4.710 m	$k_{c,y}$	0.577		$f_{m,z,k}$	28.827 N/mm²			
	i_y 69.3 mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.615 N/mm²			
	i_z 17.3 mm	k_{mod}	0.900		$f_{m,z,d}$	19.957 N/mm²			
	λ_y 67.983	γ_M	1.300		k_m	0.700			
	λ_z 271.932	$f_{c,0,d}$	14.538 N/mm²		η_1	0.36			
	$f_{c,0,k}$ 21.000 N/mm²	$M_{y,d}$	2.79 kNm		η_2	0.98			
	$E_{0,05}$ 7400.000 N/mm²	$M_{z,d}$	0.02 kNm						
	$\lambda_{rel,y}$ 1.153	W_y	576.00 cm³						
LG43	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC8)	163	0.000	0.81	≤ 1	333)	ULS	Short-term	0.900
	Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d -8.19 kN	$V_{z,d}$	1.61 kN		$M_{y,d}$	-1.33 kNm			
	$V_{y,d}$ -9.51 kN	T_d	0.02 kNm		$M_{z,d}$	-8.16 kNm			
	Design Ratio								
	N_d 8.19 kN	$\lambda_{rel,z}$	2.624		W_z	666.67 cm³			
	A 400.00 cm²	β_c	0.100		$\sigma_{m,y,d}$	0.497 N/mm²			
	$\sigma_{c,0,d}$ 0.205 N/mm²	k_y	0.733		$\sigma_{m,z,d}$	12.240 N/mm²			
	$l_{ef,y}$ 4.710 m	k_z	4.060		$f_{m,y,k}$	24.993 N/mm²			
	$l_{ef,z}$ 4.710 m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000 N/mm²			
	i_y 115.5 mm	$k_{c,z}$	0.140		$f_{m,y,d}$	17.995 N/mm²			
	i_z 28.9 mm	k_{mod}	0.900		$f_{m,z,d}$	17.280 N/mm²			
	λ_y 40.790	γ_M	1.250		k_m	0.700			
	λ_z 163.159	$f_{c,0,d}$	17.280 N/mm²		η_1	0.54			
	$f_{c,0,k}$ 24.000 N/mm²	$M_{y,d}$	1.33 kNm		η_2	0.81			
	$E_{0,05}$ 9400.000 N/mm²	$M_{z,d}$	8.16 kNm						
	$\lambda_{rel,y}$ 0.656	W_y	2666.67 cm³						
LG44	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC5)	125	0.000	0.40	≤ 1	121)	ULS	Short-term	0.900
	Cross-section Resistance - Shear due to Torsion acc. to 6.1.8								
	Design Internal Forces								
	N_d 4.10 kN	$V_{z,d}$	-2.03 kN		$M_{y,d}$	-0.03 kNm			
	$V_{y,d}$ -1.91 kN	T_d	-0.43 kNm		$M_{z,d}$	-0.01 kNm			
	Design Ratio								

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2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

T_d	0.43	kNm	$f_{v,k}$	4.000	N/mm²	$f_{v,d}$	2.769	N/mm²
W_t	242.78	cm³	k_{mod}	0.900		k_{shape}	1.600	
$\tau_{tor,d}$	1.754	N/mm²	γ_M	1.300			0.40	

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG45	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC6)	130	0.000	1.71	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.83	kN	$V_{z,d}$	-61.07	kN	$M_{y,d}$	-0.71	kNm
$V_{y,d}$	-3.61	kN	T_d	-1.00	kNm	$M_{z,d}$	0.02	kNm

Design Ratio

$V_{z,d,red}$	61.07	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	4.747	N/mm²	$f_{v,d}$	2.769	N/mm²
h	240.0	mm	$f_{v,k}$	4.000	N/mm²		1.71	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG46	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC7)	382	4.710	0.98	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-7.29	kN	$V_{z,d}$	-6.86	kN	$M_{y,d}$	-2.79	kNm
$V_{y,d}$	-0.46	kN	T_d	0.02	kNm	$M_{z,d}$	0.02	kNm

Design Ratio

N_d	7.29	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm³
A	144.00	cm²	β_c	0.200		$\sigma_{m,y,d}$	4.848	N/mm²
$\sigma_{c,0,d}$	0.506	N/mm²	k_y	1.250		$\sigma_{m,z,d}$	0.128	N/mm²
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm²
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	28.827	N/mm²
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.615	N/mm²
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	19.957	N/mm²
λ_y	67.983		γ_M	1.300		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	14.538	N/mm²	η_1	0.36	
$f_{c,0,k}$	21.000	N/mm²	$M_{y,d}$	2.79	kNm	η_2	0.98	
$E_{0,05}$	7400.000	N/mm²	$M_{z,d}$	0.02	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm³			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG47	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC8)	163	0.000	0.81	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.26	kN	$V_{z,d}$	1.61	kN	$M_{y,d}$	-1.33	kNm
$V_{y,d}$	-9.51	kN	T_d	0.02	kNm	$M_{z,d}$	-8.16	kNm

Design Ratio

N_d	8.26	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm³
A	400.00	cm²	β_c	0.100		$\sigma_{m,y,d}$	0.497	N/mm²
$\sigma_{c,0,d}$	0.207	N/mm²	k_y	0.733		$\sigma_{m,z,d}$	12.243	N/mm²
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.993	N/mm²
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm²
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	17.995	N/mm²
i_z	28.9	mm	k_{mod}	0.900		$f_{m,z,d}$	17.280	N/mm²
λ_y	40.790		γ_M	1.250		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	17.280	N/mm²	η_1	0.54	
$f_{c,0,k}$	24.000	N/mm²	$M_{y,d}$	1.33	kNm	η_2	0.81	
$E_{0,05}$	9400.000	N/mm²	$M_{z,d}$	8.16	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm³			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG48	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC5)	125	0.000	0.42	≤ 1	121)	ULS	Short-term	0.900

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

Cross-section Resistance - Shear due to Torsion acc. to 6.1.8

Design Internal Forces

N_d	4.21 kN	$V_{z,d}$	-1.95 kN	$M_{y,d}$	-0.03 kNm
$V_{y,d}$	-1.99 kN	T_d	-0.45 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

T_d	0.45 kNm	$f_{v,k}$	4.000 N/mm^2	$f_{v,d}$	2.769 N/mm^2
W_t	242.78 cm^3	k_{mod}	0.900	k_{shape}	1.600
$\tau_{tor,d}$	1.858 N/mm^2	γ_M	1.300		0.42

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG49	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC6)	130	0.000	1.72	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.64 kN	$V_{z,d}$	-61.16 kN	$M_{y,d}$	-0.70 kNm
$V_{y,d}$	-3.46 kN	T_d	-1.02 kNm	$M_{z,d}$	0.01 kNm

Design Ratio

$V_{z,d,red}$	61.16 kN	k_{cr}	0.670	γ_M	1.300
b	120.0 mm	τ_d	4.754 N/mm^2	$f_{v,d}$	2.769 N/mm^2
h	240.0 mm	$f_{v,k}$	4.000 N/mm^2		1.72
b_{ef}	80.4 mm	k_{mod}	0.900		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG50	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC7)	130	0.000	0.98	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-1.12 kN	$V_{z,d}$	34.83 kN	$M_{y,d}$	0.30 kNm
$V_{y,d}$	-1.45 kN	T_d	0.76 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

$V_{z,d,red}$	34.83 kN	k_{cr}	0.670	γ_M	1.300
b	120.0 mm	τ_d	2.707 N/mm^2	$f_{v,d}$	2.769 N/mm^2
h	240.0 mm	$f_{v,k}$	4.000 N/mm^2		0.98
b_{ef}	80.4 mm	k_{mod}	0.900		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG51	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC8)	163	0.000	0.81	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.16 kN	$V_{z,d}$	1.61 kN	$M_{y,d}$	-1.32 kNm
$V_{y,d}$	-9.51 kN	T_d	0.02 kNm	$M_{z,d}$	-8.16 kNm

Design Ratio

N_d	8.16 kN	$\lambda_{rel,z}$	2.624	W_z	666.67 cm^3
A	400.00 cm^2	β_c	0.100	$\sigma_{m,y,d}$	0.495 N/mm^2
$\sigma_{c,0,d}$	0.204 N/mm^2	k_y	0.733	$\sigma_{m,z,d}$	12.240 N/mm^2
$l_{ef,y}$	4.710 m	k_z	4.060	$f_{m,y,k}$	24.993 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.943	$f_{m,z,k}$	24.000 N/mm^2
i_y	115.5 mm	$k_{c,z}$	0.140	$f_{m,y,d}$	17.995 N/mm^2
i_z	28.9 mm	k_{mod}	0.900	$f_{m,z,d}$	17.280 N/mm^2
λ_y	40.790	γ_M	1.250	k_m	0.700
λ_z	163.159	$f_{c,0,d}$	17.280 N/mm^2	η_1	0.54
$f_{c,0,k}$	24.000 N/mm^2	$M_{y,d}$	1.32 kNm	η_2	0.81
$E_{0,05}$	9400.000 N/mm^2	$M_{z,d}$	8.16 kNm		
$\lambda_{rel,y}$	0.656	W_y	2666.67 cm^3		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG52	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC5)	125	0.000	0.42	≤ 1	121)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Torsion acc. to 6.1.8

Design Internal Forces

N_d	4.18 kN	$V_{z,d}$	-1.94 kN	$M_{y,d}$	-0.02 kNm

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■ 2.1 DESIGN BY LOAD CASE

	$V_{y,d}$	-1.90	kN	T_d	-0.45	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

T_d	0.45	kNm	$f_{v,k}$	4.000	N/mm²	$f_{v,d}$	2.769	N/mm²
W_t	242.78	cm³	k_{mod}	0.900		k_{shape}	1.600	
$\tau_{tor,d}$	1.852	N/mm²	γ_M	1.300			0.42	

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG53	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC6)	130	0.000	1.72	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.65	kN	$V_{z,d}$	-61.11	kN	$M_{y,d}$	-0.70	kNm
$V_{y,d}$	-3.41	kN	T_d	-1.02	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$V_{z,d,red}$	61.11	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	4.751	N/mm²	$f_{v,d}$	2.769	N/mm²
h	240.0	mm	$f_{v,k}$	4.000	N/mm²		1.72	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG54	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC7)	130	0.000	0.98	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-1.14	kN	$V_{z,d}$	34.93	kN	$M_{y,d}$	0.30	kNm
$V_{y,d}$	-1.41	kN	T_d	0.77	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

$V_{z,d,red}$	34.93	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	2.715	N/mm²	$f_{v,d}$	2.769	N/mm²
h	240.0	mm	$f_{v,k}$	4.000	N/mm²		0.98	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG55	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC8)	163	0.000	0.81	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.23	kN	$V_{z,d}$	1.61	kN	$M_{y,d}$	-1.32	kNm
$V_{y,d}$	-9.51	kN	T_d	0.02	kNm	$M_{z,d}$	-8.16	kNm

Design Ratio

N_d	8.23	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm³
A	400.00	cm²	β_c	0.100		$\sigma_{m,y,d}$	0.495	N/mm²
$\sigma_{c,0,d}$	0.206	N/mm²	k_y	0.733		$\sigma_{m,z,d}$	12.242	N/mm²
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.993	N/mm²
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm²
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	17.995	N/mm²
i_z	28.9	mm	k_{mod}	0.900		$f_{m,z,d}$	17.280	N/mm²
λ_y	40.790		γ_M	1.250		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	17.280	N/mm²	η_1	0.54	
$f_{c,0,k}$	24.000	N/mm²	$M_{y,d}$	1.32	kNm	η_2	0.81	
$E_{0,05}$	9400.000	N/mm²	$M_{z,d}$	8.16	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm³			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG87	UB (LC1 + 1.5*LC5)	125	0.000	0.43	≤ 1	121)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Torsion acc. to 6.1.8

Design Internal Forces

N_d	4.04	kN	$V_{z,d}$	-1.71	kN	$M_{y,d}$	-0.02	kNm
$V_{y,d}$	-1.69	kN	T_d	-0.47	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

T_d	0.47	kNm	$f_{v,k}$	4.000	N/mm²	$f_{v,d}$	2.769	N/mm²
W_t	242.78	cm³	k_{mod}	0.900		k_{shape}	1.600	

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2.1 DESIGN BY LOAD CASE

$\tau_{tor,d}$	1.918	N/mm²	γ_M	1.300			0.43	

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG88	UB (LC1 + 1.5*LC6)	130	0.000	1.66	> 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	1.99	kN	$V_{z,d}$	-59.10	kN	$M_{y,d}$	-0.66	kNm
$V_{y,d}$	-2.93	kN	T_d	-1.01	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$V_{z,d,red}$	59.10	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	4.594	N/mm²	$f_{v,d}$	2.769	N/mm²
h	240.0	mm	$f_{v,k}$	4.000	N/mm²		1.66	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG89	UB (LC1 + 1.5*LC7)	130	0.000	0.97	≤ 1	111)	ULS	Short-term	0.900

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-1.46	kN	$V_{z,d}$	34.73	kN	$M_{y,d}$	0.31	kNm
$V_{y,d}$	-0.91	kN	T_d	0.74	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$V_{z,d,red}$	34.73	kN	k_{cr}	0.670		γ_M	1.300	
b	120.0	mm	τ_d	2.699	N/mm²	$f_{v,d}$	2.769	N/mm²
h	240.0	mm	$f_{v,k}$	4.000	N/mm²		0.97	
b_{ef}	80.4	mm	k_{mod}	0.900				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG90	UB (LC1 + 1.5*LC8)	163	0.000	0.81	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.54	kN	$V_{z,d}$	1.17	kN	$M_{y,d}$	-0.96	kNm
$V_{y,d}$	-9.51	kN	T_d	0.02	kNm	$M_{z,d}$	-8.16	kNm

Design Ratio

N_d	8.54	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm³
A	400.00	cm²	β_c	0.100		$\sigma_{m,y,d}$	0.359	N/mm²
$\sigma_{c,0,d}$	0.213	N/mm²	k_y	0.733		$\sigma_{m,z,d}$	12.245	N/mm²
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.993	N/mm²
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm²
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	17.995	N/mm²
i_z	28.9	mm	k_{mod}	0.900		$f_{m,z,d}$	17.280	N/mm²
λ_y	40.790		γ_M	1.250		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	17.280	N/mm²	η_1	0.53	
$f_{c,0,k}$	24.000	N/mm²	$M_{y,d}$	0.96	kNm	η_2	0.81	
$E_{0,05}$	9400.000	N/mm²	$M_{z,d}$	8.16	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm³			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG111	US (LC1 + LC10)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.97	kN	$V_{z,d}$	-2.34	kN	$M_{y,d}$	-0.76	kNm
$V_{y,d}$	0.04	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	1.97	kN	$E_{0,05}$	7400.000	N/mm²	$f_{c,0,d}$	14.538	N/mm²
A	144.00	cm²	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.76	kNm
$\sigma_{c,0,d}$	0.137	N/mm²	$\lambda_{rel,z}$	4.611		W_y	576.00	cm³
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.318	N/mm²
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm²
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm²
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.10	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

$f_{c,0,k}$	21.000 N/mm²	γ_M	1.300		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG112	US (LC1 + LC11)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95 kN	$V_{z,d}$	-2.34 kN	$M_{y,d}$	-0.75 kNm
$V_{y,d}$	0.04 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

N_d	1.95 kN	$E_{0,05}$	7400.000 N/mm²	$f_{c,0,d}$	14.538 N/mm²
A	144.00 cm²	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.75 kNm
$\sigma_{c,0,d}$	0.136 N/mm²	$\lambda_{rel,z}$	4.611	W_y	576.00 cm³
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	1.305 N/mm²
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm²
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	16.615 N/mm²
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.09
λ_z	271.932	k_{mod}	0.900	η_2	0.26
$f_{c,0,k}$	21.000 N/mm²	γ_M	1.300		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG113	US (LC1 + LC14)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95 kN	$V_{z,d}$	-2.34 kN	$M_{y,d}$	-0.75 kNm
$V_{y,d}$	0.04 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

N_d	1.95 kN	$E_{0,05}$	7400.000 N/mm²	$f_{c,0,d}$	14.538 N/mm²
A	144.00 cm²	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.75 kNm
$\sigma_{c,0,d}$	0.136 N/mm²	$\lambda_{rel,z}$	4.611	W_y	576.00 cm³
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	1.306 N/mm²
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm²
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	16.615 N/mm²
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.09
λ_z	271.932	k_{mod}	0.900	η_2	0.26
$f_{c,0,k}$	21.000 N/mm²	γ_M	1.300		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG114	US (LC1 + LC17)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.96 kN	$V_{z,d}$	-2.34 kN	$M_{y,d}$	-0.75 kNm
$V_{y,d}$	0.04 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

N_d	1.96 kN	$E_{0,05}$	7400.000 N/mm²	$f_{c,0,d}$	14.538 N/mm²
A	144.00 cm²	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.75 kNm
$\sigma_{c,0,d}$	0.136 N/mm²	$\lambda_{rel,z}$	4.611	W_y	576.00 cm³
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	1.307 N/mm²
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm²
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	16.615 N/mm²
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.09
λ_z	271.932	k_{mod}	0.900	η_2	0.26
$f_{c,0,k}$	21.000 N/mm²	γ_M	1.300		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG115	US (LC1 + LC20)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95 kN	$V_{z,d}$	-2.34 kN	$M_{y,d}$	-0.75 kNm
$V_{y,d}$	0.04 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

Design Ratio

N_d	1.95	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.75	kNm
$\sigma_{c,0,d}$	0.136	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.307	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.09	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LG116	US (LC1 + LC21)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95	kN	$V_{z,d}$	-2.34	kN	$M_{y,d}$	-0.75	kNm
$V_{y,d}$	0.04	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	1.95	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.75	kNm
$\sigma_{c,0,d}$	0.136	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.307	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.09	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LG117	US (LC1 + 0.6*LC2 + LC10)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.97	kN	$V_{z,d}$	-2.34	kN	$M_{y,d}$	-0.76	kNm
$V_{y,d}$	0.04	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	1.97	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.76	kNm
$\sigma_{c,0,d}$	0.137	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.317	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.10	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LG118	US (LC1 + 0.6*LC2 + LC11)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95	kN	$V_{z,d}$	-2.34	kN	$M_{y,d}$	-0.75	kNm
$V_{y,d}$	0.05	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	1.95	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.75	kNm
$\sigma_{c,0,d}$	0.135	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.304	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.09	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG119	US (LC1 + 0.6*LC2 + LC14)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95	kN	$V_{z,d}$	-2.34	kN	$M_{y,d}$	-0.75	kNm
$V_{y,d}$	0.05	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	1.95	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.75	kNm
$\sigma_{c,0,d}$	0.136	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.305	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.09	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG120	US (LC1 + 0.6*LC2 + LC17)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95	kN	$V_{z,d}$	-2.34	kN	$M_{y,d}$	-0.75	kNm
$V_{y,d}$	0.05	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	1.95	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.75	kNm
$\sigma_{c,0,d}$	0.136	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.306	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.09	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG121	US (LC1 + 0.6*LC2 + LC20)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-1.95	kN	$V_{z,d}$	-2.34	kN	$M_{y,d}$	-0.75	kNm
$V_{y,d}$	0.05	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	1.95	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.75	kNm
$\sigma_{c,0,d}$	0.136	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.306	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.09	
λ_z	271.932		k_{mod}	0.900		η_2	0.26	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG122	US (LC1 + 0.6*LC2 + LC21)	382	4.710	0.26	≤ 1	323)	ULS	Short-term	0.900

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d -1.95 kN; $V_{z,d}$ -2.34 kN; $M_{y,d}$ -0.75 kNm								
	$V_{y,d}$ 0.05 kN; T_d 0.00 kNm; $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	N_d 1.95 kN; $E_{0,05}$ 7400.000 N/mm²; $f_{c,0,d}$ 14.538 N/mm²								
	A 144.00 cm²; $\lambda_{rel,y}$ 1.153; $M_{y,d}$ 0.75 kNm								
	$\sigma_{c,0,d}$ 0.136 N/mm²; $\lambda_{rel,z}$ 4.611; W_y 576.00 cm³								
	$l_{ef,y}$ 4.710 m; β_c 0.200; $\sigma_{m,y,d}$ 1.306 N/mm²								
	$l_{ef,z}$ 4.710 m; k_y 1.250; $f_{m,y,k}$ 24.000 N/mm²								
	i_y 69.3 mm; k_z 11.562; $f_{m,y,d}$ 16.615 N/mm²								
	i_z 17.3 mm; $k_{c,y}$ 0.577; k_m 0.700								
	λ_y 67.983; $k_{c,z}$ 0.045; η_1 0.09								
	λ_z 271.932; k_{mod} 0.900; η_2 0.26								
	$f_{c,0,k}$ 21.000 N/mm²; γ_M 1.300								
LG123	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC10)	382	4.710	0.34	≤ 1	323)	ULS	Short-term	0.900
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d -2.52 kN; $V_{z,d}$ -3.00 kN; $M_{y,d}$ -0.97 kNm								
	$V_{y,d}$ 0.05 kN; T_d 0.01 kNm; $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	N_d 2.52 kN; $E_{0,05}$ 7400.000 N/mm²; $f_{c,0,d}$ 14.538 N/mm²								
	A 144.00 cm²; $\lambda_{rel,y}$ 1.153; $M_{y,d}$ 0.97 kNm								
	$\sigma_{c,0,d}$ 0.175 N/mm²; $\lambda_{rel,z}$ 4.611; W_y 576.00 cm³								
	$l_{ef,y}$ 4.710 m; β_c 0.200; $\sigma_{m,y,d}$ 1.688 N/mm²								
	$l_{ef,z}$ 4.710 m; k_y 1.250; $f_{m,y,k}$ 24.000 N/mm²								
	i_y 69.3 mm; k_z 11.562; $f_{m,y,d}$ 16.615 N/mm²								
	i_z 17.3 mm; $k_{c,y}$ 0.577; k_m 0.700								
	λ_y 67.983; $k_{c,z}$ 0.045; η_1 0.12								
	λ_z 271.932; k_{mod} 0.900; η_2 0.34								
	$f_{c,0,k}$ 21.000 N/mm²; γ_M 1.300								
LG124	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC11)	382	4.710	0.34	≤ 1	323)	ULS	Short-term	0.900
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d -2.50 kN; $V_{z,d}$ -3.01 kN; $M_{y,d}$ -0.96 kNm								
	$V_{y,d}$ 0.06 kN; T_d 0.01 kNm; $M_{z,d}$ -0.01 kNm								
	Design Ratio								
	N_d 2.50 kN; $E_{0,05}$ 7400.000 N/mm²; $f_{c,0,d}$ 14.538 N/mm²								
	A 144.00 cm²; $\lambda_{rel,y}$ 1.153; $M_{y,d}$ 0.96 kNm								
	$\sigma_{c,0,d}$ 0.174 N/mm²; $\lambda_{rel,z}$ 4.611; W_y 576.00 cm³								
	$l_{ef,y}$ 4.710 m; β_c 0.200; $\sigma_{m,y,d}$ 1.675 N/mm²								
	$l_{ef,z}$ 4.710 m; k_y 1.250; $f_{m,y,k}$ 24.000 N/mm²								
	i_y 69.3 mm; k_z 11.562; $f_{m,y,d}$ 16.615 N/mm²								
	i_z 17.3 mm; $k_{c,y}$ 0.577; k_m 0.700								
	λ_y 67.983; $k_{c,z}$ 0.045; η_1 0.12								
	λ_z 271.932; k_{mod} 0.900; η_2 0.34								
	$f_{c,0,k}$ 21.000 N/mm²; γ_M 1.300								
LG125	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC14)	382	4.710	0.34	≤ 1	323)	ULS	Short-term	0.900
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d -2.50 kN; $V_{z,d}$ -3.01 kN; $M_{y,d}$ -0.97 kNm								

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2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

$V_{y,d}$	0.05	kN	T_d	0.01	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

N_d	2.50	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97	kNm
$\sigma_{c,0,d}$	0.174	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.676	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.12	
λ_z	271.932		k_{mod}	0.900		η_2	0.34	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG126	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC17)	382	4.710	0.34	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-2.51	kN	$V_{z,d}$	-3.01	kN	$M_{y,d}$	-0.97	kNm
$V_{y,d}$	0.05	kN	T_d	0.01	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

N_d	2.51	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97	kNm
$\sigma_{c,0,d}$	0.174	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.677	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.12	
λ_z	271.932		k_{mod}	0.900		η_2	0.34	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG127	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC20)	382	4.710	0.34	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-2.51	kN	$V_{z,d}$	-3.01	kN	$M_{y,d}$	-0.97	kNm
$V_{y,d}$	0.05	kN	T_d	0.01	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

N_d	2.51	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97	kNm
$\sigma_{c,0,d}$	0.174	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.676	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.12	
λ_z	271.932		k_{mod}	0.900		η_2	0.34	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.300				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG128	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC21)	382	4.710	0.34	≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-2.51	kN	$V_{z,d}$	-3.01	kN	$M_{y,d}$	-0.97	kNm
$V_{y,d}$	0.05	kN	T_d	0.01	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

N_d	2.51	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.538	N/mm^2

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TIMBER_CROSS-SECTION_CHECK

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design	Acc. to Formula	DS	LDC	Factor k_{mod}
	A	144.00 cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97 kNm	
	$\sigma_{c,0,d}$	0.174 N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00 cm^3	
	$l_{ef,y}$	4.710 m	β_c	0.200		$\sigma_{m,y,d}$	1.676 N/mm^2	
	$l_{ef,z}$	4.710 m	k_y	1.250		$f_{m,y,k}$	24.000 N/mm^2	
	i_y	69.3 mm	k_z	11.562		$f_{m,y,d}$	16.615 N/mm^2	
	i_z	17.3 mm	$k_{c,y}$	0.577		k_m	0.700	
	λ_y	67.983	$k_{c,z}$	0.045		η_1	0.12	
	λ_z	271.932	k_{mod}	0.900		η_2	0.34	
	$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.300				
LG129	US (LC1 + 0.6*LC3 + LC10)	382	4.710	0.34 ≤ 1	323)	ULS	Short-term	0.900
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes							
	Design Internal Forces							
	N_d	-2.53 kN	$V_{z,d}$	-3.00 kN		$M_{y,d}$	-0.97 kNm	
	$V_{y,d}$	0.05 kN	T_d	0.01 kNm		$M_{z,d}$	0.00 kNm	
	Design Ratio							
	N_d	2.53 kN	$E_{0,05}$	7400.000 N/mm^2		$f_{c,0,d}$	14.538 N/mm^2	
	A	144.00 cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97 kNm	
	$\sigma_{c,0,d}$	0.175 N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00 cm^3	
	$l_{ef,y}$	4.710 m	β_c	0.200		$\sigma_{m,y,d}$	1.689 N/mm^2	
	$l_{ef,z}$	4.710 m	k_y	1.250		$f_{m,y,k}$	24.000 N/mm^2	
	i_y	69.3 mm	k_z	11.562		$f_{m,y,d}$	16.615 N/mm^2	
	i_z	17.3 mm	$k_{c,y}$	0.577		k_m	0.700	
	λ_y	67.983	$k_{c,z}$	0.045		η_1	0.12	
	λ_z	271.932	k_{mod}	0.900		η_2	0.34	
	$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.300				
LG130	US (LC1 + 0.6*LC3 + LC11)	382	4.710	0.34 ≤ 1	323)	ULS	Short-term	0.900
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes							
	Design Internal Forces							
	N_d	-2.50 kN	$V_{z,d}$	-3.01 kN		$M_{y,d}$	-0.97 kNm	
	$V_{y,d}$	0.05 kN	T_d	0.01 kNm		$M_{z,d}$	-0.01 kNm	
	Design Ratio							
	N_d	2.50 kN	$E_{0,05}$	7400.000 N/mm^2		$f_{c,0,d}$	14.538 N/mm^2	
	A	144.00 cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97 kNm	
	$\sigma_{c,0,d}$	0.174 N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00 cm^3	
	$l_{ef,y}$	4.710 m	β_c	0.200		$\sigma_{m,y,d}$	1.676 N/mm^2	
	$l_{ef,z}$	4.710 m	k_y	1.250		$f_{m,y,k}$	24.000 N/mm^2	
	i_y	69.3 mm	k_z	11.562		$f_{m,y,d}$	16.615 N/mm^2	
	i_z	17.3 mm	$k_{c,y}$	0.577		k_m	0.700	
	λ_y	67.983	$k_{c,z}$	0.045		η_1	0.12	
	λ_z	271.932	k_{mod}	0.900		η_2	0.34	
	$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.300				
LG131	US (LC1 + 0.6*LC3 + LC14)	382	4.710	0.34 ≤ 1	323)	ULS	Short-term	0.900
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes							
	Design Internal Forces							
	N_d	-2.51 kN	$V_{z,d}$	-3.01 kN		$M_{y,d}$	-0.97 kNm	
	$V_{y,d}$	0.05 kN	T_d	0.01 kNm		$M_{z,d}$	-0.01 kNm	
	Design Ratio							
	N_d	2.51 kN	$E_{0,05}$	7400.000 N/mm^2		$f_{c,0,d}$	14.538 N/mm^2	
	A	144.00 cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97 kNm	
	$\sigma_{c,0,d}$	0.174 N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00 cm^3	
	$l_{ef,y}$	4.710 m	β_c	0.200		$\sigma_{m,y,d}$	1.677 N/mm^2	
	$l_{ef,z}$	4.710 m	k_y	1.250		$f_{m,y,k}$	24.000 N/mm^2	
	i_y	69.3 mm	k_z	11.562		$f_{m,y,d}$	16.615 N/mm^2	
	i_z	17.3 mm	$k_{c,y}$	0.577		k_m	0.700	

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TIMBER_CROSS-SECTION_CHECK

■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design	Acc. to Formula	DS	LDC	Factor k_{mod}

λ_y	67.983		$k_{c,z}$	0.045		η_1	0.12	
λ_z	271.932		k_{mod}	0.900		η_2	0.34	
$f_{c,0,k}$	21.000	N/mm²	γ_M	1.300				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design	Acc. to Formula	DS	LDC	Factor k_{mod}
LG132	US (LC1 + 0.6*LC3 + LC17)	382	4.710	0.34 ≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-2.51	kN	$V_{z,d}$	-3.01	kN	$M_{y,d}$	-0.97	kNm
$V_{y,d}$	0.05	kN	T_d	0.01	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

N_d	2.51	kN	$E_{0,05}$	7400.000	N/mm²	$f_{c,0,d}$	14.538	N/mm²
A	144.00	cm²	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97	kNm
$\sigma_{c,0,d}$	0.174	N/mm²	$\lambda_{rel,z}$	4.611		W_y	576.00	cm³
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.678	N/mm²
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm²
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm²
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.12	
λ_z	271.932		k_{mod}	0.900		η_2	0.34	
$f_{c,0,k}$	21.000	N/mm²	γ_M	1.300				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design	Acc. to Formula	DS	LDC	Factor k_{mod}
LG133	US (LC1 + 0.6*LC3 + LC20)	382	4.710	0.34 ≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-2.51	kN	$V_{z,d}$	-3.01	kN	$M_{y,d}$	-0.97	kNm
$V_{y,d}$	0.05	kN	T_d	0.01	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

N_d	2.51	kN	$E_{0,05}$	7400.000	N/mm²	$f_{c,0,d}$	14.538	N/mm²
A	144.00	cm²	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97	kNm
$\sigma_{c,0,d}$	0.174	N/mm²	$\lambda_{rel,z}$	4.611		W_y	576.00	cm³
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.677	N/mm²
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm²
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm²
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.12	
λ_z	271.932		k_{mod}	0.900		η_2	0.34	
$f_{c,0,k}$	21.000	N/mm²	γ_M	1.300				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design	Acc. to Formula	DS	LDC	Factor k_{mod}
LG134	US (LC1 + 0.6*LC3 + LC21)	382	4.710	0.34 ≤ 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

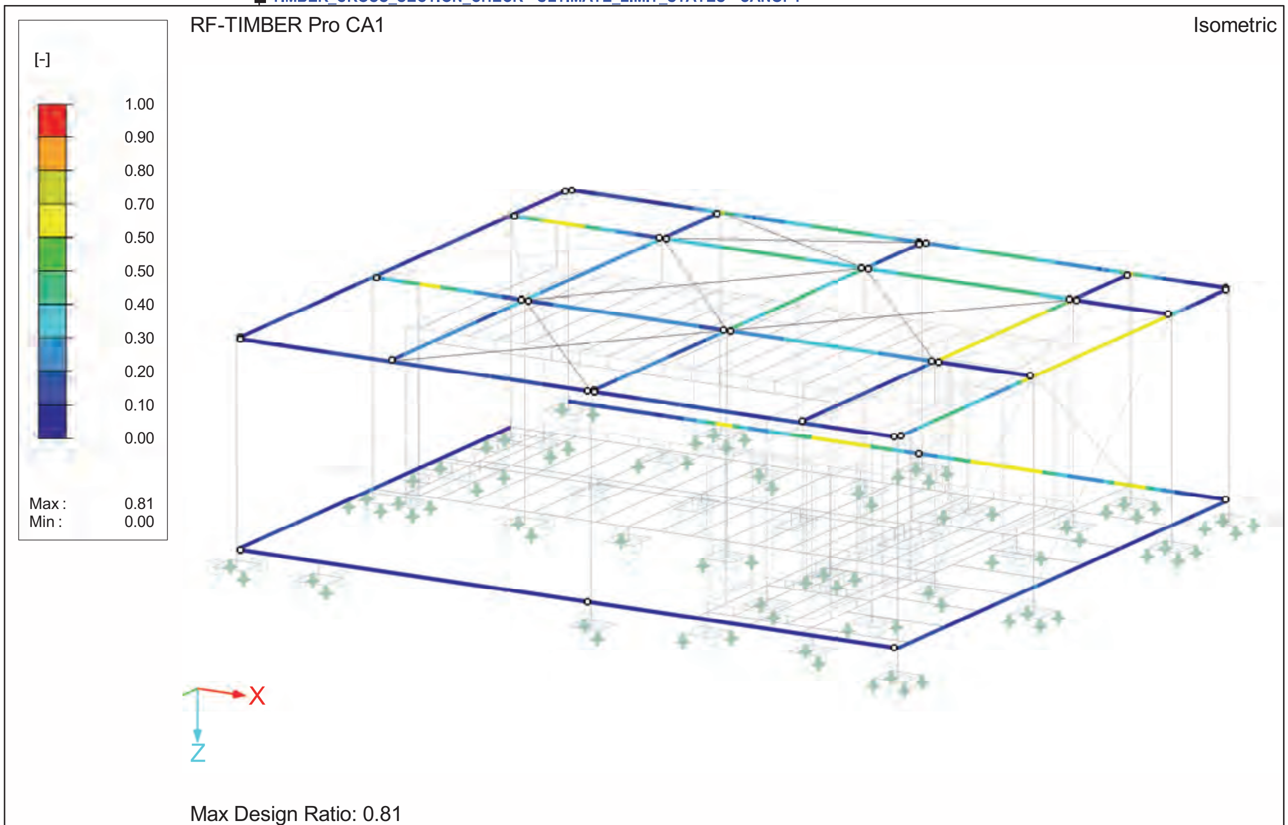
Design Internal Forces

N_d	-2.51	kN	$V_{z,d}$	-3.01	kN	$M_{y,d}$	-0.97	kNm
$V_{y,d}$	0.05	kN	T_d	0.01	kNm	$M_{z,d}$	-0.01	kNm

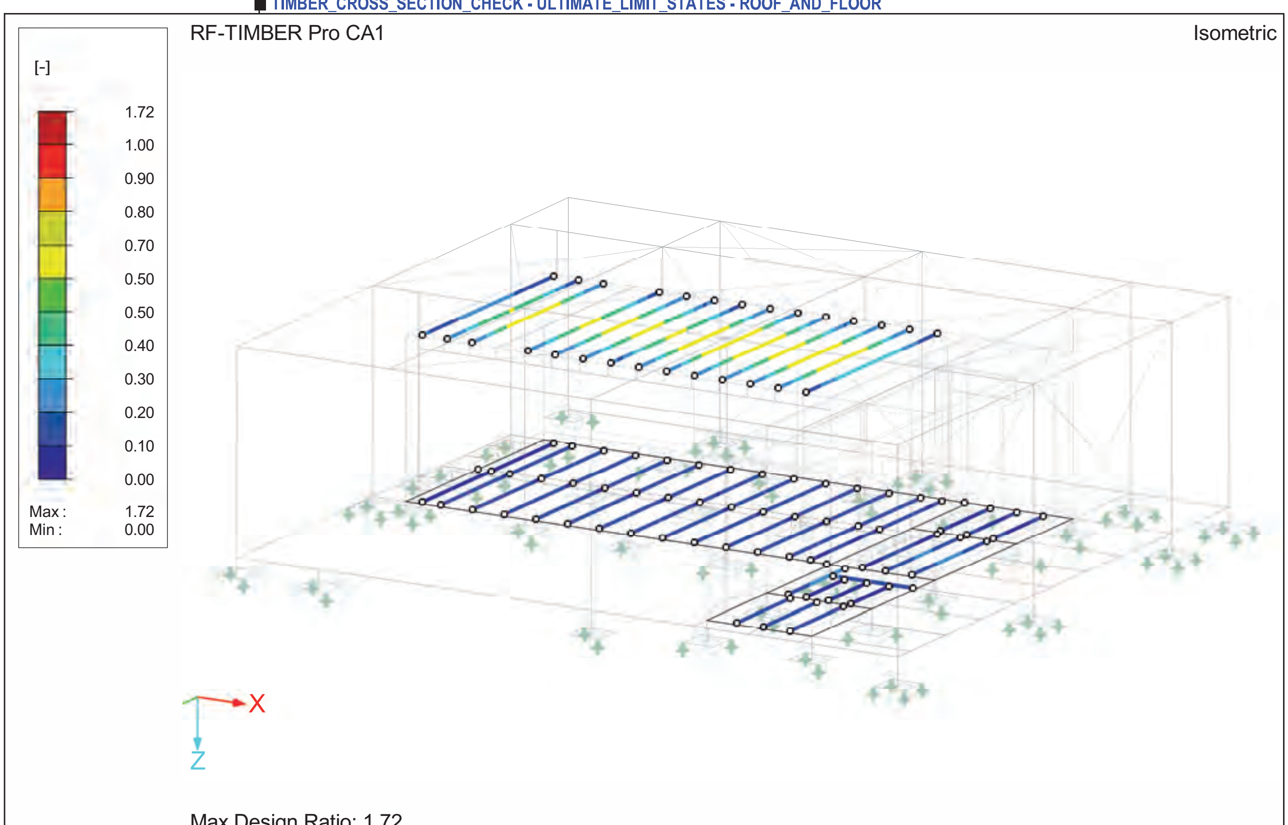
Design Ratio

N_d	2.51	kN	$E_{0,05}$	7400.000	N/mm²	$f_{c,0,d}$	14.538	N/mm²
A	144.00	cm²	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.97	kNm
$\sigma_{c,0,d}$	0.174	N/mm²	$\lambda_{rel,z}$	4.611		W_y	576.00	cm³
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	1.677	N/mm²
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm²
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.615	N/mm²
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.12	
λ_z	271.932		k_{mod}	0.900		η_2	0.34	
$f_{c,0,k}$	21.000	N/mm²	γ_M	1.300				

TIMBER_CROSS_SECTION_CHECK - ULTIMATE_LIMIT_STATES - CANOPY



TIMBER_CROSS_SECTION_CHECK - ULTIMATE_LIMIT_STATES - ROOF_AND_FLOOR



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TIMBER_DEFLECTIONS

1.1.2 DETAILS

Stability Analysis:	Stability Analysis acc. to Equivalent Member Method
Deformation related to:	Shifted members ends / set of members ends

1.1.3 DATA FOR NATIONAL ANNEX

Partial Factor for Material Properties

Fundamental Situation for Solid Wood	γ_M:	1.300
Fundamental Situation for Glulam Timber	γ_M:	1.250
Accidental Situation	γ_M:	1.000
For Timber in Fire	$\gamma_{M,fi}$:	1.000

Limit Values and Reference of Deformations

Characteristic (Rare) Design Situation

	Span	Cantilever Beam
w_{inst}	$\leq l / 300$	$\leq l_k / 150$

Quasi-Permanent Design Situation

		Span	Cantilever Beam
- Eq. (7.2):	$w_{fin} - w_c$	$\leq l / 250$	$\leq l_k / 125$
	w_{fin}	$\leq l / 150$	$\leq l_k / 75$

Modification Factor k_{mod}

LDC	1	2	3
Fundamental	0.600	0.600	0.500
Long	0.700	0.700	0.550
Middle	0.800	0.800	0.650
Short	0.900	0.900	0.700
Very short	1.100	1.100	0.900

Parameters for Coniferous Wood

Charring Rate β_n:	0.80 mm/min
Increased Charring d_0:	7.00 mm
Factor k_{fi}:	1.25

Parameters for Glued Laminated Timber

Charring Rate β_n:	0.70 mm/min
Increased Charring d_0:	7.00 mm
Factor k_{fi}:	1.15

1.1.4 USED CODES LIST

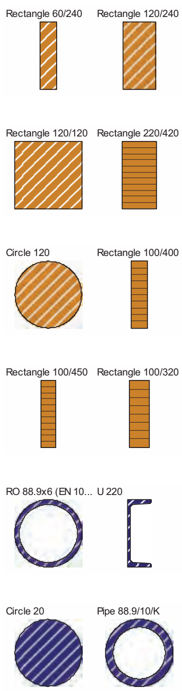
[1]	CSN EN 1995-1-1:2006-12+A1:2009-05/NA: 2007-09	Part 1-1: General - Common rules and rules for buildings
[2]	CSN EN 1995-1-2:2006-12/NA:2007-09	Part 1-2: General - Structural fire design
[3]	CSN EN 1990:2004-03+A1:2007-04/NA:2004-06	Basis of structural design (Including: Corrigendum 1:2007-11, Corrigendum 2:2008-08)
[4]	CSN EN 1991-1-1:2004-03/NA:2004-06	Part 1-1: General actions - Densities, self-weight, imposed loads for buildings
[5]	CSN EN 1991-1-3:2005-06/NA:2008-07	Part 1-3: General actions - Snow loads (Including: Amendment Z1:2006-12)
[6]	CSN EN 1991-1-4:2007-04/NA:2008-05	Part 1-4: General actions - Wind loads (Including: Corrigendum 1:2008-09)
[7]	CSN EN 1194:1999-11	Timber structures - Glued laminated timber - Strength classes and determination of characteristic values
[8]	CSN EN 338:2010-05	Structural timber

1.2.1 MATERIALS

Material No	Material Description	Comment
3	Poplar and Coniferous Timber C24	
4	Glulam Timber GL24h	
5	Glulam Timber GL28c	

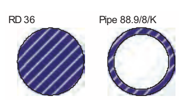
Special Settings acc. to Article 3.2 resp. 3.3

Increase of Strength $f_{m,k}$ and $f_{t,0,k}$ according to: ☐ According 3.2(3)
☐ According 3.3(3)



1.3.1 CROSS-SECTIONS

Section No	Material No	Cross-Section Description [mm]	Comment
1	3	Rectangle 60/240	
2	3	Rectangle 120/240	
3	3	Rectangle 120/120	
4	4	Rectangle 220/420	
5	5	Circle 120	
6	4	Rectangle 100/400	
8	4	Rectangle 100/450	
10	4	Rectangle 100/320	
17	2	RO 88.9x6 (EN 10219-2) The cross-section cannot be designed because the material data is invalid!	
20	10	U 220 The cross-section cannot be designed because the material data is invalid!	
21	2	Circle 20 The cross-section cannot be designed because the material data is invalid!	
24	10	Pipe 88.9/10/K The cross-section cannot be designed because the material data is invalid!	
25	15	RD 36 The cross-section cannot be designed because the material data is invalid!	
26	13	Pipe 88.9/8/K The cross-section cannot be designed because the material data is invalid!	



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TIMBER_DEFLECTIONS

2.1 DESIGN BY LOAD CASE

Serviceability Limit State Design

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG261	SC (LC1)	136	2.305	0.41	≤ 1	402)	S1	Permanent	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction

Deformations

w_x 0.1 mm | w_y 0.3 mm | w_z 9.2 mm

Design Ratio

$w_{fin,z}$ 7.8 mm | $l / (w_{fin})_{limit}$ 250.00 | η 0.41

l 4.710 m | $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG262	SC (LC1 + LC2)	136	2.405	0.41	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction

Deformations

w_x 0.1 mm | w_y 0.3 mm | w_z 9.5 mm

Design Ratio

$w_{fin,z}$ 7.8 mm | $l / (w_{fin})_{limit}$ 250.00 | η 0.41

l 4.710 m | $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG263	SC (LC1 + LC2 + LC3)	136	2.405	0.61	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction

Deformations

w_x 0.2 mm | w_y 0.3 mm | w_z 13.5 mm

Design Ratio

$w_{fin,z}$ 11.5 mm | $l / (w_{fin})_{limit}$ 250.00 | η 0.61

l 4.710 m | $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG264	SC (LC1 + LC3)	136	2.305	0.61	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction

Deformations

w_x 0.1 mm | w_y 0.3 mm | w_z 13.3 mm

Design Ratio

$w_{fin,z}$ 11.5 mm | $l / (w_{fin})_{limit}$ 250.00 | η 0.61

l 4.710 m | $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG265	SC (LC1 + LC2 + 0.5*LC4)	136	2.405	0.41	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction

Deformations

w_x 0.1 mm | w_y 0.3 mm | w_z 9.6 mm

Design Ratio

$w_{fin,z}$ 7.8 mm | $l / (w_{fin})_{limit}$ 250.00 | η 0.41

l 4.710 m | $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG266	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC5)	136	2.405	0.39	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction

Deformations

w_x 0.2 mm | w_y 1.3 mm | w_z 9.0 mm

Design Ratio

$w_{fin,z}$ 7.3 mm | $l / (w_{fin})_{limit}$ 250.00 | η 0.39

l 4.710 m | $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG267	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction

Deformations

w_x -1.4 mm | w_y 22.8 mm | w_z 0.1 mm

Design Ratio

$w_{fin,y}$ 10.1 mm | $l / (w_{fin})_{limit}$ 250.00 | η 0.62

l 4.105 m | $w_{fin,limit,y}$ 16.4 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG268	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction **Deformations** w_x 1.7 mm w_y -0.1 mm w_z 12.2 mm **Design Ratio** $w_{fin,z}$ 10.9 mm l / $(w_{fin})_{limit}$ 250.00 η 0.58 l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG269	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC8)	162	1.950	0.51	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction **Deformations** w_x -0.5 mm w_y -17.1 mm w_z 0.6 mm **Design Ratio** $w_{fin,y}$ -9.5 mm l / $(w_{fin})_{limit}$ 250.00 η 0.51 l 4.650 m $w_{fin,limit,y}$ 18.6 mm								
LG270	SC (LC1 + LC2 + 0.6*LC5)	136	2.405	0.39	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction **Deformations** w_x 0.1 mm w_y 1.2 mm w_z 8.8 mm **Design Ratio** $w_{fin,z}$ 7.3 mm l / $(w_{fin})_{limit}$ 250.00 η 0.39 l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG271	SC (LC1 + LC2 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction **Deformations** w_x -1.5 mm w_y 22.7 mm w_z 0.2 mm **Design Ratio** $w_{fin,y}$ 10.1 mm l / $(w_{fin})_{limit}$ 250.00 η 0.62 l 4.105 m $w_{fin,limit,y}$ 16.4 mm								
LG272	SC (LC1 + LC2 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction **Deformations** w_x 1.7 mm w_y -0.1 mm w_z 12.1 mm **Design Ratio** $w_{fin,z}$ 10.9 mm l / $(w_{fin})_{limit}$ 250.00 η 0.58 l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG273	SC (LC1 + LC2 + 0.6*LC8)	162	1.950	0.51	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction **Deformations** w_x -0.5 mm w_y -17.2 mm w_z 0.6 mm **Design Ratio** $w_{fin,y}$ -9.5 mm l / $(w_{fin})_{limit}$ 250.00 η 0.51 l 4.650 m $w_{fin,limit,y}$ 18.6 mm								
LG274	SC (LC1 + LC2 + LC3 + 0.6*LC5)	136	2.305	0.59	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction **Deformations** w_x 0.2 mm w_y 1.2 mm w_z 12.9 mm **Design Ratio** $w_{fin,z}$ 11.1 mm l / $(w_{fin})_{limit}$ 250.00 η 0.59 l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG275	SC (LC1 + LC2 + LC3 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction **Deformations**								

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	w_x -1.4 mm; w_y 22.7 mm; w_z 0.2 mm								
	Design Ratio								
	$w_{fin,y}$ 10.1 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.62								
	l 4.105 m; $w_{fin,limit,y}$ 16.4 mm								
LG276	SC (LC1 + LC2 + LC3 + 0.6*LC7)	136	2.305	0.77	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.5 mm; w_y -0.2 mm; w_z 16.9 mm								
	Design Ratio								
	$w_{fin,z}$ 14.6 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.77								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG277	SC (LC1 + LC2 + LC3 + 0.6*LC8)	136	2.305	0.61	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.3 mm; w_y -0.9 mm; w_z 13.7 mm								
	Design Ratio								
	$w_{fin,z}$ 11.5 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.61								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG278	SC (LC1 + LC3 + 0.6*LC5)	136	2.305	0.59	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm; w_y 1.2 mm; w_z 12.7 mm								
	Design Ratio								
	$w_{fin,z}$ 11.1 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.59								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG279	SC (LC1 + LC3 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.5 mm; w_y 22.7 mm; w_z 0.2 mm								
	Design Ratio								
	$w_{fin,y}$ 10.1 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.62								
	l 4.105 m; $w_{fin,limit,y}$ 16.4 mm								
LG280	SC (LC1 + LC3 + 0.6*LC7)	136	2.305	0.77	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.5 mm; w_y -0.2 mm; w_z 16.6 mm								
	Design Ratio								
	$w_{fin,z}$ 14.6 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.77								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG281	SC (LC1 + LC3 + 0.6*LC8)	136	2.405	0.61	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.3 mm; w_y -0.9 mm; w_z 13.4 mm								
	Design Ratio								
	$w_{fin,z}$ 11.5 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.61								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG282	SC (LC1 + LC4)	136	2.305	0.41	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.1 mm; w_y 0.3 mm; w_z 9.6 mm								
	Design Ratio								
	$w_{fin,z}$ 7.8 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.41								

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG283	SC (LC1 + 0.7*LC2 + LC4)	136	2.305	0.41	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm; w_y 0.3 mm; w_z 9.8 mm								
	Design Ratio								
	$w_{fin,z}$ 7.8 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.41								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG284	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC5)	136	2.305	0.39	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm; w_y 1.3 mm; w_z 9.2 mm								
	Design Ratio								
	$w_{fin,z}$ 7.4 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.39								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG285	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.4 mm; w_y 22.9 mm; w_z 0.1 mm								
	Design Ratio								
	$w_{fin,y}$ 10.1 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.62								
	l 4.105 m; $w_{fin,limit,y}$ 16.4 mm								
LG286	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.7 mm; w_y -0.1 mm; w_z 12.2 mm								
	Design Ratio								
	$w_{fin,z}$ 10.9 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.58								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG287	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC8)	162	1.950	0.51	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -0.5 mm; w_y -17.1 mm; w_z 0.6 mm								
	Design Ratio								
	$w_{fin,y}$ -9.5 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.51								
	l 4.650 m; $w_{fin,limit,y}$ 18.6 mm								
LG288	SC (LC1 + LC4 + 0.6*LC5)	136	2.305	0.39	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm; w_y 1.3 mm; w_z 9.0 mm								
	Design Ratio								
	$w_{fin,z}$ 7.4 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.39								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG289	SC (LC1 + LC4 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.5 mm; w_y 22.9 mm; w_z 0.1 mm								
	Design Ratio								
	$w_{fin,y}$ 10.1 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.62								
	l 4.105 m; $w_{fin,limit,y}$ 16.4 mm								

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG290	SC (LC1 + LC4 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.7 mm; w_y -0.1 mm; w_z 12.1 mm								
	Design Ratio								
	$w_{fin,z}$ 10.9 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.58								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG291	SC (LC1)	136	2.305	0.41	≤ 1	402)	S1	Permanent	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.1 mm; w_y 0.3 mm; w_z 9.2 mm								
	Design Ratio								
	$w_{fin,z}$ 7.8 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.41								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG292	SC (LC1 + LC2)	136	2.405	0.41	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.1 mm; w_y 0.3 mm; w_z 9.5 mm								
	Design Ratio								
	$w_{fin,z}$ 7.8 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.41								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG293	SC (LC1 + LC2 + LC3)	136	2.405	0.61	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm; w_y 0.3 mm; w_z 13.5 mm								
	Design Ratio								
	$w_{fin,z}$ 11.5 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.61								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG294	SC (LC1 + LC3)	136	2.305	0.61	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.1 mm; w_y 0.3 mm; w_z 13.3 mm								
	Design Ratio								
	$w_{fin,z}$ 11.5 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.61								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG295	SC (LC1 + LC2 + 0.5*LC4)	136	2.405	0.41	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.1 mm; w_y 0.3 mm; w_z 9.6 mm								
	Design Ratio								
	$w_{fin,z}$ 7.8 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.41								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG296	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC5)	136	2.405	0.39	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm; w_y 1.3 mm; w_z 9.0 mm								
	Design Ratio								
	$w_{fin,z}$ 7.3 mm; $l / (w_{fin})_{limit}$ 250.00; η 0.39								
	l 4.710 m; $w_{fin,limit,z}$ 18.8 mm								
LG297	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	w_x -1.4 mm w_y 22.8 mm w_z 0.1 mm								
	Design Ratio								
	$w_{fin,y}$ 10.1 mm $l / (w_{fin})_{limit}$ 250.00 η 0.62								
	l 4.105 m $w_{fin,limit,y}$ 16.4 mm								
LG298	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.7 mm w_y -0.1 mm w_z 12.2 mm								
	Design Ratio								
	$w_{fin,z}$ 10.9 mm $l / (w_{fin})_{limit}$ 250.00 η 0.58								
	l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG299	SC (LC1 + LC2 + 0.5*LC4 + 0.6*LC8)	162	1.950	0.51	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -0.5 mm w_y -17.1 mm w_z 0.6 mm								
	Design Ratio								
	$w_{fin,y}$ -9.5 mm $l / (w_{fin})_{limit}$ 250.00 η 0.51								
	l 4.650 m $w_{fin,limit,y}$ 18.6 mm								
LG300	SC (LC1 + LC2 + 0.6*LC5)	136	2.405	0.39	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.1 mm w_y 1.2 mm w_z 8.8 mm								
	Design Ratio								
	$w_{fin,z}$ 7.3 mm $l / (w_{fin})_{limit}$ 250.00 η 0.39								
	l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG301	SC (LC1 + LC2 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.5 mm w_y 22.7 mm w_z 0.2 mm								
	Design Ratio								
	$w_{fin,y}$ 10.1 mm $l / (w_{fin})_{limit}$ 250.00 η 0.62								
	l 4.105 m $w_{fin,limit,y}$ 16.4 mm								
LG302	SC (LC1 + LC2 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.7 mm w_y -0.1 mm w_z 12.1 mm								
	Design Ratio								
	$w_{fin,z}$ 10.9 mm $l / (w_{fin})_{limit}$ 250.00 η 0.58								
	l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG303	SC (LC1 + LC2 + 0.6*LC8)	162	1.950	0.51	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -0.5 mm w_y -17.2 mm w_z 0.6 mm								
	Design Ratio								
	$w_{fin,y}$ -9.5 mm $l / (w_{fin})_{limit}$ 250.00 η 0.51								
	l 4.650 m $w_{fin,limit,y}$ 18.6 mm								
LG304	SC (LC1 + LC2 + LC3 + 0.6*LC5)	136	2.305	0.59	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm w_y 1.2 mm w_z 12.9 mm								
	Design Ratio								

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	$w_{fin,z}$ 11.1 mm		$l / (w_{fin})_{limit}$	250.00		η		0.59	
	l 4.710 m		$w_{fin,limit,z}$	18.8 mm					
LG305	SC (LC1 + LC2 + LC3 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.4 mm		w_y	22.7 mm		w_z		0.2 mm	
	Design Ratio								
	$w_{fin,y}$ 10.1 mm		$l / (w_{fin})_{limit}$	250.00		η		0.62	
	l 4.105 m		$w_{fin,limit,y}$	16.4 mm					
LG306	SC (LC1 + LC2 + LC3 + 0.6*LC7)	136	2.305	0.77	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.5 mm		w_y	-0.2 mm		w_z		16.9 mm	
	Design Ratio								
	$w_{fin,z}$ 14.6 mm		$l / (w_{fin})_{limit}$	250.00		η		0.77	
	l 4.710 m		$w_{fin,limit,z}$	18.8 mm					
LG307	SC (LC1 + LC2 + LC3 + 0.6*LC8)	136	2.305	0.61	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.3 mm		w_y	-0.9 mm		w_z		13.7 mm	
	Design Ratio								
	$w_{fin,z}$ 11.5 mm		$l / (w_{fin})_{limit}$	250.00		η		0.61	
	l 4.710 m		$w_{fin,limit,z}$	18.8 mm					
LG308	SC (LC1 + LC3 + 0.6*LC5)	136	2.305	0.59	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm		w_y	1.2 mm		w_z		12.7 mm	
	Design Ratio								
	$w_{fin,z}$ 11.1 mm		$l / (w_{fin})_{limit}$	250.00		η		0.59	
	l 4.710 m		$w_{fin,limit,z}$	18.8 mm					
LG309	SC (LC1 + LC3 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.5 mm		w_y	22.7 mm		w_z		0.2 mm	
	Design Ratio								
	$w_{fin,y}$ 10.1 mm		$l / (w_{fin})_{limit}$	250.00		η		0.62	
	l 4.105 m		$w_{fin,limit,y}$	16.4 mm					
LG310	SC (LC1 + LC3 + 0.6*LC7)	136	2.305	0.77	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.5 mm		w_y	-0.2 mm		w_z		16.6 mm	
	Design Ratio								
	$w_{fin,z}$ 14.6 mm		$l / (w_{fin})_{limit}$	250.00		η		0.77	
	l 4.710 m		$w_{fin,limit,z}$	18.8 mm					
LG311	SC (LC1 + LC3 + 0.6*LC8)	136	2.405	0.61	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.3 mm		w_y	-0.9 mm		w_z		13.4 mm	
	Design Ratio								
	$w_{fin,z}$ 11.5 mm		$l / (w_{fin})_{limit}$	250.00		η		0.61	
	l 4.710 m		$w_{fin,limit,z}$	18.8 mm					

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG312	SC (LC1 + LC4)	136	2.305	0.41	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction
Deformations
w_x 0.1 mm w_y 0.3 mm w_z 9.6 mm
Design Ratio
$w_{fin,z}$ 7.8 mm $l / (w_{fin})_{limit}$ 250.00 η 0.41
l 4.710 m $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG313	SC (LC1 + 0.7*LC2 + LC4)	136	2.305	0.41	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction
Deformations
w_x 0.2 mm w_y 0.3 mm w_z 9.8 mm
Design Ratio
$w_{fin,z}$ 7.8 mm $l / (w_{fin})_{limit}$ 250.00 η 0.41
l 4.710 m $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG314	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC5)	136	2.305	0.39	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction
Deformations
w_x 0.2 mm w_y 1.3 mm w_z 9.2 mm
Design Ratio
$w_{fin,z}$ 7.4 mm $l / (w_{fin})_{limit}$ 250.00 η 0.39
l 4.710 m $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG315	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction
Deformations
w_x -1.4 mm w_y 22.9 mm w_z 0.1 mm
Design Ratio
$w_{fin,y}$ 10.1 mm $l / (w_{fin})_{limit}$ 250.00 η 0.62
l 4.105 m $w_{fin,limit,y}$ 16.4 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG316	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction
Deformations
w_x 1.7 mm w_y -0.1 mm w_z 12.2 mm
Design Ratio
$w_{fin,z}$ 10.9 mm $l / (w_{fin})_{limit}$ 250.00 η 0.58
l 4.710 m $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG317	SC (LC1 + 0.7*LC2 + LC4 + 0.6*LC8)	162	1.950	0.51	≤ 1	407)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction
Deformations
w_x -0.5 mm w_y -17.1 mm w_z 0.6 mm
Design Ratio
$w_{fin,y}$ -9.5 mm $l / (w_{fin})_{limit}$ 250.00 η 0.51
l 4.650 m $w_{fin,limit,y}$ 18.6 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG318	SC (LC1 + LC4 + 0.6*LC5)	136	2.305	0.39	≤ 1	402)	S1	Short-term	

Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction
Deformations
w_x 0.2 mm w_y 1.3 mm w_z 9.0 mm
Design Ratio
$w_{fin,z}$ 7.4 mm $l / (w_{fin})_{limit}$ 250.00 η 0.39
l 4.710 m $w_{fin,limit,z}$ 18.8 mm

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG319	SC (LC1 + LC4 + 0.6*LC6)	175	1.759	0.62	≤ 1	407)	S1	Short-term	

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.5 mm w_y 22.9 mm w_z 0.1 mm								
	Design Ratio								
	$w_{fin,y}$ 10.1 mm l / $(w_{fin})_{limit}$ 250.00 η 0.62								
	l 4.105 m $w_{fin,limit,y}$ 16.4 mm								
LG320	SC (LC1 + LC4 + 0.6*LC7)	127	2.305	0.58	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 1.7 mm w_y -0.1 mm w_z 12.1 mm								
	Design Ratio								
	$w_{fin,z}$ 10.9 mm l / $(w_{fin})_{limit}$ 250.00 η 0.58								
	l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG321	SC (LC1 + LC4 + 0.6*LC8)	162	1.950	0.51	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -0.5 mm w_y -17.2 mm w_z 0.6 mm								
	Design Ratio								
	$w_{fin,y}$ -9.5 mm l / $(w_{fin})_{limit}$ 250.00 η 0.51								
	l 4.650 m $w_{fin,limit,y}$ 18.6 mm								
LG322	SC (LC1 + LC5)	136	2.405	0.37	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.1 mm w_y 1.8 mm w_z 8.2 mm								
	Design Ratio								
	$w_{fin,z}$ 7.0 mm l / $(w_{fin})_{limit}$ 250.00 η 0.37								
	l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG323	SC (LC1 + LC6)	175	1.759	1.03	> 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -2.6 mm w_y 37.9 mm w_z 0.1 mm								
	Design Ratio								
	$w_{fin,y}$ 16.9 mm l / $(w_{fin})_{limit}$ 250.00 η 1.03								
	l 4.105 m $w_{fin,limit,y}$ 16.4 mm								
LG324	SC (LC1 + LC7)	127	2.305	0.70	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 2.8 mm w_y -0.5 mm w_z 14.2 mm								
	Design Ratio								
	$w_{fin,z}$ 13.1 mm l / $(w_{fin})_{limit}$ 250.00 η 0.70								
	l 4.710 m $w_{fin,limit,z}$ 18.8 mm								
LG325	SC (LC1 + LC8)	162	1.950	0.86	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.0 mm w_y -29.2 mm w_z 0.6 mm								
	Design Ratio								
	$w_{fin,y}$ -15.9 mm l / $(w_{fin})_{limit}$ 250.00 η 0.86								
	l 4.650 m $w_{fin,limit,y}$ 18.6 mm								
LG326	SC (LC1 + 0.7*LC2 + LC5)	136	2.305	0.37	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm w_y 1.9 mm w_z 8.4 mm								
	Design Ratio								
	$w_{fin,z}$ 7.0 mm l / $(w_{fin})_{limit}$ 250.00 η 0.37								

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	l 4.710 m	$w_{fin,limit,z}$		18.8 mm					
LG327	SC (LC1 + 0.7*LC2 + LC6)	175	1.759	1.03	> 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -2.6 mm	w_y		37.9 mm		w_z		0.1 mm	
	Design Ratio								
	$w_{fin,y}$ 16.9 mm	$l / (w_{fin})_{limit}$		250.00		η		1.03	
	l 4.105 m	$w_{fin,limit,y}$		16.4 mm					
LG328	SC (LC1 + 0.7*LC2 + LC7)	127	2.305	0.70	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 2.8 mm	w_y		-0.5 mm		w_z		14.3 mm	
	Design Ratio								
	$w_{fin,z}$ 13.1 mm	$l / (w_{fin})_{limit}$		250.00		η		0.70	
	l 4.710 m	$w_{fin,limit,z}$		18.8 mm					
LG329	SC (LC1 + 0.7*LC2 + LC8)	162	1.950	0.86	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.0 mm	w_y		-29.1 mm		w_z		0.6 mm	
	Design Ratio								
	$w_{fin,y}$ -15.9 mm	$l / (w_{fin})_{limit}$		250.00		η		0.86	
	l 4.650 m	$w_{fin,limit,y}$		18.6 mm					
LG330	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC5)	136	2.305	0.51	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm	w_y		1.9 mm		w_z		11.2 mm	
	Design Ratio								
	$w_{fin,z}$ 9.6 mm	$l / (w_{fin})_{limit}$		250.00		η		0.51	
	l 4.710 m	$w_{fin,limit,z}$		18.8 mm					
LG331	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC6)	175	1.759	1.03	> 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -2.6 mm	w_y		37.9 mm		w_z		0.1 mm	
	Design Ratio								
	$w_{fin,y}$ 16.9 mm	$l / (w_{fin})_{limit}$		250.00		η		1.03	
	l 4.105 m	$w_{fin,limit,y}$		16.4 mm					
LG332	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC7)	127	2.305	0.83	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 2.8 mm	w_y		-0.5 mm		w_z		16.9 mm	
	Design Ratio								
	$w_{fin,z}$ 15.6 mm	$l / (w_{fin})_{limit}$		250.00		η		0.83	
	l 4.710 m	$w_{fin,limit,z}$		18.8 mm					
LG333	SC (LC1 + 0.7*LC2 + 0.7*LC3 + LC8)	162	1.950	0.86	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.0 mm	w_y		-29.1 mm		w_z		0.6 mm	
	Design Ratio								
	$w_{fin,y}$ -15.9 mm	$l / (w_{fin})_{limit}$		250.00		η		0.86	
	l 4.650 m	$w_{fin,limit,y}$		18.6 mm					

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG334	SC (LC1 + 0.7*LC3 + LC5)	136	2.305	0.51	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm	w_y	1.8 mm		w_z	11.0 mm			
	Design Ratio								
	$w_{fin,z}$ 9.6 mm	$l / (w_{fin})_{limit}$	250.00		η	0.51			
	l 4.710 m	$w_{fin,limit,z}$	18.8 mm						
LG335	SC (LC1 + 0.7*LC3 + LC6)	175	1.759	1.03	> 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -2.6 mm	w_y	37.9 mm		w_z	0.1 mm			
	Design Ratio								
	$w_{fin,y}$ 16.9 mm	$l / (w_{fin})_{limit}$	250.00		η	1.03			
	l 4.105 m	$w_{fin,limit,y}$	16.4 mm						
LG336	SC (LC1 + 0.7*LC3 + LC7)	127	2.305	0.83	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 2.8 mm	w_y	-0.5 mm		w_z	16.8 mm			
	Design Ratio								
	$w_{fin,z}$ 15.6 mm	$l / (w_{fin})_{limit}$	250.00		η	0.83			
	l 4.710 m	$w_{fin,limit,z}$	18.8 mm						
LG337	SC (LC1 + 0.7*LC3 + LC8)	162	1.950	0.86	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.0 mm	w_y	-29.2 mm		w_z	0.6 mm			
	Design Ratio								
	$w_{fin,y}$ -15.9 mm	$l / (w_{fin})_{limit}$	250.00		η	0.86			
	l 4.650 m	$w_{fin,limit,y}$	18.6 mm						
LG338	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC5)	136	2.305	0.37	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm	w_y	1.9 mm		w_z	8.6 mm			
	Design Ratio								
	$w_{fin,z}$ 7.0 mm	$l / (w_{fin})_{limit}$	250.00		η	0.37			
	l 4.710 m	$w_{fin,limit,z}$	18.8 mm						
LG339	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC6)	175	1.759	1.03	> 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -2.6 mm	w_y	38.1 mm		w_z	0.0 mm			
	Design Ratio								
	$w_{fin,y}$ 16.9 mm	$l / (w_{fin})_{limit}$	250.00		η	1.03			
	l 4.105 m	$w_{fin,limit,y}$	16.4 mm						
LG340	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC7)	127	2.305	0.70	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 2.8 mm	w_y	-0.4 mm		w_z	14.4 mm			
	Design Ratio								
	$w_{fin,z}$ 13.1 mm	$l / (w_{fin})_{limit}$	250.00		η	0.70			
	l 4.710 m	$w_{fin,limit,z}$	18.8 mm						
LG341	SC (LC1 + 0.7*LC2 + 0.5*LC4 + LC8)	162	1.950	0.86	≤ 1	407)	S1	Short-term	

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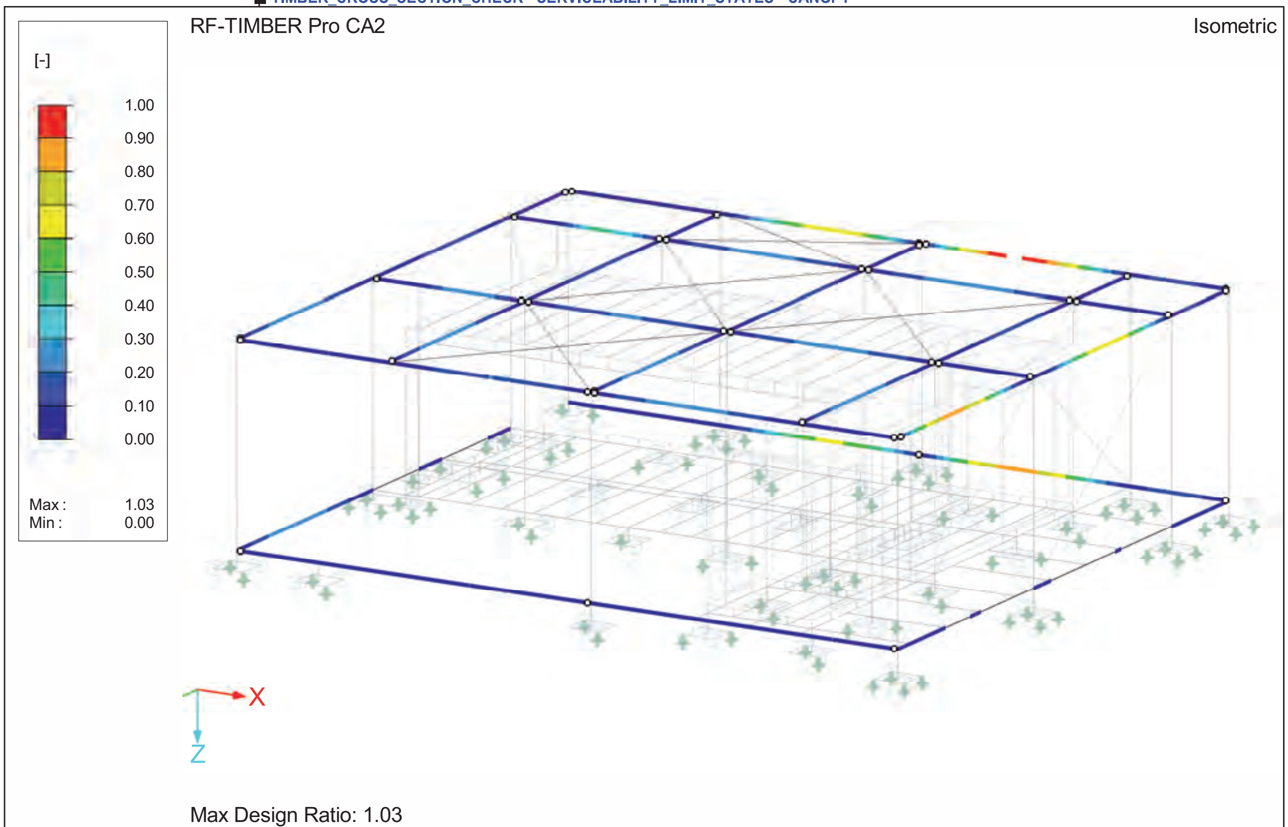
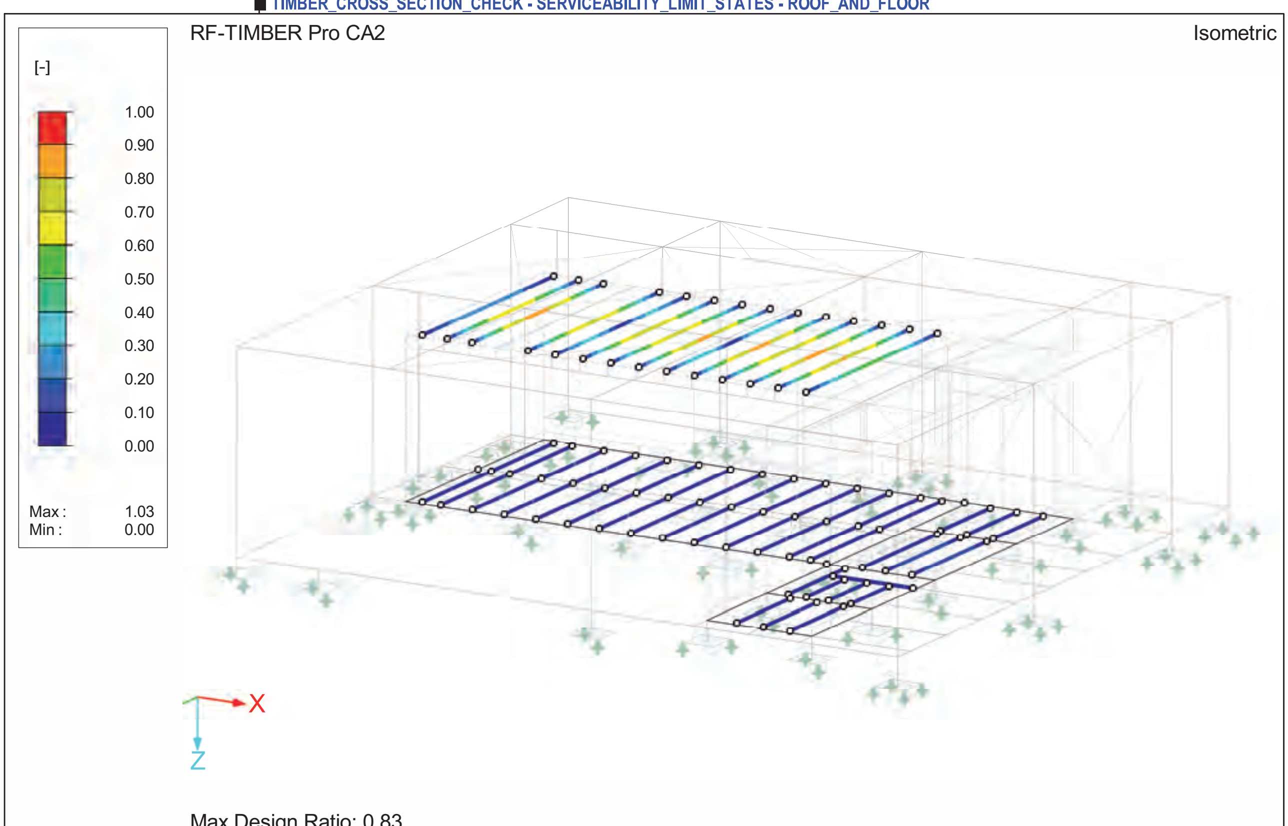
■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.0 mm	w_y	-29.1 mm		w_z	0.6 mm			
	Design Ratio								
	$w_{fin,y}$ -15.9 mm	$l / (w_{fin})_{limit}$	250.00		η	0.86			
	l 4.650 m	$w_{fin,limit,y}$	18.6 mm						
LG342	SC (LC1 + 0.5*LC4 + LC5)	136	2.305	0.37	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 0.2 mm	w_y	1.9 mm		w_z	8.4 mm			
	Design Ratio								
	$w_{fin,z}$ 7.0 mm	$l / (w_{fin})_{limit}$	250.00		η	0.37			
	l 4.710 m	$w_{fin,limit,z}$	18.8 mm						
LG343	SC (LC1 + 0.5*LC4 + LC6)	175	1.759	1.03	> 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -2.6 mm	w_y	38.1 mm		w_z	0.0 mm			
	Design Ratio								
	$w_{fin,y}$ 16.9 mm	$l / (w_{fin})_{limit}$	250.00		η	1.03			
	l 4.105 m	$w_{fin,limit,y}$	16.4 mm						
LG344	SC (LC1 + 0.5*LC4 + LC7)	127	2.305	0.70	≤ 1	402)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, z-Direction								
	Deformations								
	w_x 2.8 mm	w_y	-0.5 mm		w_z	14.3 mm			
	Design Ratio								
	$w_{fin,z}$ 13.1 mm	$l / (w_{fin})_{limit}$	250.00		η	0.70			
	l 4.710 m	$w_{fin,limit,z}$	18.8 mm						
LG345	SC (LC1 + 0.5*LC4 + LC8)	162	1.950	0.86	≤ 1	407)	S1	Short-term	
	Serviceability - Design Situation Quasi-permanent acc. to 7.2 - Inner Bay, y-Direction								
	Deformations								
	w_x -1.0 mm	w_y	-29.2 mm		w_z	0.6 mm			
	Design Ratio								
	$w_{fin,y}$ -15.9 mm	$l / (w_{fin})_{limit}$	250.00		η	0.86			
	l 4.650 m	$w_{fin,limit,y}$	18.6 mm						

■ TIMBER_CROSS_SECTION_CHECK - SERVICEABILITY_LIMIT_STATES - CANOPY



■ TIMBER_CROSS_SECTION_CHECK - SERVICEABILITY_LIMIT_STATES - ROOF_AND_FLOOR



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1.1.2 DETAILS

Stability Analysis:	Stability Analysis acc. to Equivalent Member Method

1.1.3 DATA FOR NATIONAL ANNEX

Partial Factor for Material Properties

Fundamental Situation for Solid Wood	γ_M:	1.300
Fundamental Situation for Glulam Timber	γ_M:	1.250
Accidental Situation	γ_M:	1.000
For Timber in Fire	$\gamma_{M,fi}$:	1.000

Modification Factor k_{mod}

LDC	1	2	3
Fundamental	0.600	0.600	0.500
Long	0.700	0.700	0.550
Middle	0.800	0.800	0.650
Short	0.900	0.900	0.700
Very short	1.100	1.100	0.900

Parameters for Coniferous Wood

Charring Rate β_n:	0.80 mm/min
Increased Charring d_0:	7.00 mm
Factor k_{fi}:	1.25

Parameters for Glued Laminated Timber

Charring Rate β_n:	0.70 mm/min
Increased Charring d_0:	7.00 mm
Factor k_{fi}:	1.15

1.1.4 USED CODES LIST

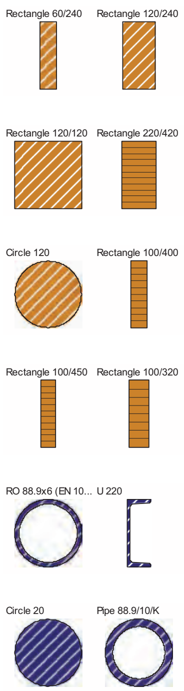
[1]	CSN EN 1995-1-1:2006-12+A1:2009-05/NA: 2007-09	Part 1-1: General - Common rules and rules for buildings
[2]	CSN EN 1995-1-2:2006-12/NA:2007-09	Part 1-2: General - Structural fire design
[3]	CSN EN 1990:2004-03+A1:2007-04/NA:2004-06	Basis of structural design (Including: Corrigendum 1:2007-11, Corrigendum 2:2008-08)
[4]	CSN EN 1991-1-1:2004-03/NA:2004-06	Part 1-1: General actions - Densities, self-weight, imposed loads for buildings
[5]	CSN EN 1991-1-3:2005-06/NA:2008-07	Part 1-3: General actions - Snow loads (Including: Amendment Z1:2006-12)
[6]	CSN EN 1991-1-4:2007-04/NA:2008-05	Part 1-4: General actions - Wind loads (Including: Corrigendum 1:2008-09)
[7]	CSN EN 1194:1999-11	Timber structures - Glued laminated timber - Strength classes and determination of characteristic values
[8]	CSN EN 338:2010-05	Structural timber

1.2.1 MATERIALS

Material No	Material Description	Comment
3	Poplar and Coniferous Timber C24	
4	Glulam Timber GL24h	
5	Glulam Timber GL28c	

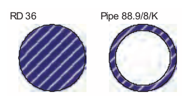
Special Settings acc. to Article 3.2 resp. 3.3

Increase of Strength $f_{m,k}$ and $f_{t,0,k}$ according to: ☐ According 3.2(3)
☐ According 3.3(3)



1.3.1 CROSS-SECTIONS

Section No	Material No	Cross-Section Description [mm]	Comment
1	3	Rectangle 60/240	
2	3	Rectangle 120/240	
3	3	Rectangle 120/120	
4	4	Rectangle 220/420	
5	5	Circle 120	
6	4	Rectangle 100/400	
8	4	Rectangle 100/450	
10	4	Rectangle 100/320	
17	2	RO 88.9x6 (EN 10219-2)	
	The cross-section cannot be designed because the material data is invalid!		
20	10	U 220	
	The cross-section cannot be designed because the material data is invalid!		
21	2	Circle 20	
	The cross-section cannot be designed because the material data is invalid!		
24	10	Pipe 88.9/10/K	
	The cross-section cannot be designed because the material data is invalid!		
25	15	RD 36	
	The cross-section cannot be designed because the material data is invalid!		
26	13	Pipe 88.9/8/K	
	The cross-section cannot be designed because the material data is invalid!		



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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
Ultimate Limit State Design									
LG1	UB (1.35*LC1)	382	2.305	0.53	≤ 1	311)	ULS	Permanent	0.500

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.02	kN	$V_{z,d}$	-0.03	kN	$M_{y,d}$	2.55	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	2.55	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.500	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	12.000	N/mm^2
$\sigma_{m,y,d}$	4.432	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.53	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG2	UB (1.35*LC1 + 1.5*LC2)	382	2.305	0.38	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.08	kN	$V_{z,d}$	-0.03	kN	$M_{y,d}$	2.55	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	2.55	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	4.432	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.38	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG3	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3)	382	2.305	0.57	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.04	kN	$V_{z,d}$	-0.04	kN	$M_{y,d}$	3.90	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$M_{y,d}$	3.90	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	6.767	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.57	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG4	UB (1.35*LC1 + 1.5*LC3)	382	2.305	0.57	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	0.01	kN	$V_{z,d}$	-0.04	kN	$M_{y,d}$	3.90	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$M_{y,d}$	3.90	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	6.767	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.57	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG5	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4)	154	4.710	0.39	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

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■ 2.1 DESIGN BY LOAD CASE

N_d	-0.03 kN	$V_{z,d}$	-13.13 kN	$M_{y,d}$	-6.34 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	-0.02 kNm

Design Ratio

$V_{z,d}$	13.13 kN	k_{cr}	0.670	γ_M	1.000
b	100.0 mm	τ_d	0.735 N/mm^2	$f_{v,d}$	1.890 N/mm^2
h	400.0 mm	$f_{v,k}$	2.700 N/mm^2		0.39
b_{ef}	67.0 mm	k_{mod}	0.700		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG6	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC5)	154	4.710	0.39	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-5.78 kN	$V_{z,d}$	-13.20 kN	$M_{y,d}$	-6.62 kNm
$V_{y,d}$	-1.08 kN	T_d	-0.05 kNm	$M_{z,d}$	0.55 kNm

Design Ratio

$V_{z,d}$	13.20 kN	k_{cr}	0.670	γ_M	1.000
b	100.0 mm	τ_d	0.739 N/mm^2	$f_{v,d}$	1.890 N/mm^2
h	400.0 mm	$f_{v,k}$	2.700 N/mm^2		0.39
b_{ef}	67.0 mm	k_{mod}	0.700		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG7	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC6)	125	4.710	1.57	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-19.17 kN	$V_{z,d}$	-10.99 kN	$M_{y,d}$	0.11 kNm
$V_{y,d}$	-1.53 kN	T_d	-0.13 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

N_d	19.17 kN	$E_{0,05}$	7400.000 N/mm^2	$f_{c,0,d}$	18.900 N/mm^2
A	144.00 cm^2	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.11 kNm
$\sigma_{c,0,d}$	1.331 N/mm^2	$\lambda_{rel,z}$	4.611	W_y	576.00 cm^3
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	0.197 N/mm^2
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm^2
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.13
λ_z	271.932	k_{mod}	0.900	η_2	1.57
$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.000		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG8	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC7)	125	0.000	0.83	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-9.90 kN	$V_{z,d}$	7.69 kN	$M_{y,d}$	0.06 kNm
$V_{y,d}$	-0.13 kN	T_d	0.50 kNm	$M_{z,d}$	0.06 kNm

Design Ratio

N_d	9.90 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	0.106 N/mm^2
$\sigma_{c,0,d}$	0.688 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.416 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	24.000 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	21.600 N/mm^2
λ_y	67.983	γ_M	1.000	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	18.900 N/mm^2	η_1	0.08
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	0.06 kNm	η_2	0.83
$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.06 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG9	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC4 + 0.9*LC8)	163	0.000	0.50	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.56	kN	$V_{z,d}$	1.65	kN	$M_{y,d}$	-1.36	kNm
$V_{y,d}$	-5.71	kN	T_d	0.01	kNm	$M_{z,d}$	-4.87	kNm

Design Ratio

N_d	4.56	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm^3
A	400.00	cm^2	β_c	0.100		$\sigma_{m,y,d}$	0.511	N/mm^2
$\sigma_{c,0,d}$	0.114	N/mm^2	k_y	0.733		$\sigma_{m,z,d}$	7.306	N/mm^2
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm^2
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	16.800	N/mm^2
i_z	28.9	mm	k_{mod}	0.700		$f_{m,z,d}$	16.800	N/mm^2
λ_y	40.790		γ_M	1.000		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	16.800	N/mm^2	η_1	0.34	
$f_{c,0,k}$	24.000	N/mm^2	$M_{y,d}$	1.36	kNm	η_2	0.50	
$E_{0,05}$	9400.000	N/mm^2	$M_{z,d}$	4.87	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG10	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC5)	142	2.605	0.31	≤ 1	303)	ULS	Short-term	0.700

Compression Member with Axial Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-29.17	kN	$V_{z,d}$	0.00	kN	$M_{y,d}$	0.00	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	29.17	kN	λ_z	86.833		$k_{c,y}$	0.499	
A	113.10	cm^2	$f_{c,0,k}$	24.000	N/mm^2	$k_{c,z}$	0.499	
$\sigma_{c,0,d}$	2.579	N/mm^2	$E_{0,05}$	10200.00	N/mm^2	k_{mod}	0.700	
$l_{ef,y}$	2.605	m	$\lambda_{rel,y}$	1.341		γ_M	1.000	
$l_{ef,z}$	2.605	m	$\lambda_{rel,z}$	1.341		$f_{c,0,d}$	16.800	N/mm^2
i_y	30.0	mm	β_c	0.100			0.31	
i_z	30.0	mm	k_y	1.451			0.31	
λ_y	86.833		k_z	1.451				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG11	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC6)	125	4.710	1.54	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-18.88	kN	$V_{z,d}$	-10.82	kN	$M_{y,d}$	0.11	kNm
$V_{y,d}$	-1.48	kN	T_d	-0.13	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	18.88	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.11	kNm
$\sigma_{c,0,d}$	1.311	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	0.194	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.13	
λ_z	271.932		k_{mod}	0.900		η_2	1.54	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG12	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC7)	125	0.000	0.82	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

Design Internal Forces

N_d	-9.80	kN	$V_{z,d}$	7.61	kN	$M_{y,d}$	0.06	kNm
$V_{y,d}$	-0.06	kN	T_d	0.49	kNm	$M_{z,d}$	0.06	kNm

Design Ratio

N_d	9.80	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.105	N/mm^2
$\sigma_{c,0,d}$	0.680	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.408	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.08	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.06	kNm	η_2	0.82	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.06	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG13	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC8)	163	0.000	0.51	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.63	kN	$V_{z,d}$	1.65	kN	$M_{y,d}$	-1.37	kNm
$V_{y,d}$	-5.71	kN	T_d	0.01	kNm	$M_{z,d}$	-4.87	kNm

Design Ratio

N_d	4.63	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm^3
A	400.00	cm^2	β_c	0.100		$\sigma_{m,y,d}$	0.513	N/mm^2
$\sigma_{c,0,d}$	0.116	N/mm^2	k_y	0.733		$\sigma_{m,z,d}$	7.308	N/mm^2
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm^2
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	16.800	N/mm^2
i_z	28.9	mm	k_{mod}	0.700		$f_{m,z,d}$	16.800	N/mm^2
λ_y	40.790		γ_M	1.000		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	16.800	N/mm^2	η_1	0.34	
$f_{c,0,k}$	24.000	N/mm^2	$M_{y,d}$	1.37	kNm	η_2	0.51	
$E_{0,05}$	9400.000	N/mm^2	$M_{z,d}$	4.87	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG14	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC5)	382	2.305	0.49	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.11	kN	$V_{z,d}$	0.02	kN	$M_{y,d}$	3.37	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

$M_{y,d}$	3.37	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	5.843	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.49	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG15	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC6)	125	4.710	1.54	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-18.83	kN	$V_{z,d}$	-10.53	kN	$M_{y,d}$	0.11	kNm
$V_{y,d}$	-1.53	kN	T_d	-0.18	kNm	$M_{z,d}$	0.00	kNm

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2.1 DESIGN BY LOAD CASE

Design Ratio

N_d	18.83	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.11	kNm
$\sigma_{c,0,d}$	1.308	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	0.183	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.13	
λ_z	271.932		k_{mod}	0.900		η_2	1.54	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG16	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC7)	382	4.710	0.83	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-6.22	kN	$V_{z,d}$	-6.35	kN	$M_{y,d}$	-2.39	kNm
$V_{y,d}$	-0.23	kN	T_d	0.01	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

N_d	6.22	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	4.148	N/mm^2
$\sigma_{c,0,d}$	0.432	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.050	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	16.800	N/mm^2
i_z	17.3	mm	k_{mod}	0.700		$f_{m,z,d}$	16.800	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	14.700	N/mm^2	η_1	0.30	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	2.39	kNm	η_2	0.83	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.01	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG17	UB (1.35*LC1 + 1.5*LC2 + 1.5*LC3 + 0.9*LC8)	382	4.710	0.59	≤ 1	323)	ULS	Short-term	0.700

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.46	kN	$V_{z,d}$	-5.17	kN	$M_{y,d}$	-1.71	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	4.46	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	14.700	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	1.71	kNm
$\sigma_{c,0,d}$	0.310	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	2.976	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	16.800	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.21	
λ_z	271.932		k_{mod}	0.700		η_2	0.59	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG18	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC5)	382	2.305	0.49	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.05	kN	$V_{z,d}$	0.02	kN	$M_{y,d}$	3.37	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.01	kNm

Design Ratio

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	$M_{y,d}$	3.37 kNm	$f_{m,y,k}$	24.000 N/mm^2	$f_{m,y,k}$	24.000 N/mm^2			
	b	60.0 mm	$E_{0,05}$	7400.000 N/mm^2	k_{mod}	0.700			
	h	240.0 mm	G_{05}	464.000 N/mm^2	γ_M	1.000			
	W_y	576.00 cm^3	$\lambda_{rel,m}$	1.143	$f_{m,y,d}$	16.800 N/mm^2			
	$\sigma_{m,y,d}$	5.843 N/mm^2	$\sigma_{m,crit}$	18.382 N/mm^2		0.49			
	l_{ef}	4.710 m	k_{crit}	0.703					
LG19	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC6)	125	4.710	1.54	> 1	323)	ULS	Short-term	0.900
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d	-18.79 kN	$V_{z,d}$	-10.47 kN	$M_{y,d}$	0.10 kNm			
	$V_{y,d}$	-1.46 kN	T_d	-0.17 kNm	$M_{z,d}$	0.00 kNm			
	Design Ratio								
	N_d	18.79 kN	$E_{0,05}$	7400.000 N/mm^2	$f_{c,0,d}$	18.900 N/mm^2			
	A	144.00 cm^2	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.10 kNm			
	$\sigma_{c,0,d}$	1.305 N/mm^2	$\lambda_{rel,z}$	4.611	W_y	576.00 cm^3			
	$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	0.182 N/mm^2			
	$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm^2			
	i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	21.600 N/mm^2			
	i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700			
	λ_y	67.983	$k_{c,z}$	0.045	η_1	0.13			
	λ_z	271.932	k_{mod}	0.900	η_2	1.54			
	$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.000					
LG20	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC7)	382	4.710	0.83	≤ 1	333)	ULS	Short-term	0.700
	Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d	-6.22 kN	$V_{z,d}$	-6.35 kN	$M_{y,d}$	-2.39 kNm			
	$V_{y,d}$	-0.24 kN	T_d	0.01 kNm	$M_{z,d}$	0.01 kNm			
	Design Ratio								
	N_d	6.22 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3			
	A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	4.150 N/mm^2			
	$\sigma_{c,0,d}$	0.432 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.053 N/mm^2			
	$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2			
	$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	24.000 N/mm^2			
	i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	16.800 N/mm^2			
	i_z	17.3 mm	k_{mod}	0.700	$f_{m,z,d}$	16.800 N/mm^2			
	λ_y	67.983	γ_M	1.000	k_m	0.700			
	λ_z	271.932	$f_{c,0,d}$	14.700 N/mm^2	η_1	0.30			
	$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	2.39 kNm	η_2	0.83			
	$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.01 kNm					
	$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3					
LG21	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC8)	382	4.710	0.59	≤ 1	323)	ULS	Short-term	0.700
	Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes								
	Design Internal Forces								
	N_d	-4.46 kN	$V_{z,d}$	-5.17 kN	$M_{y,d}$	-1.72 kNm			
	$V_{y,d}$	-0.01 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm			
	Design Ratio								
	N_d	4.46 kN	$E_{0,05}$	7400.000 N/mm^2	$f_{c,0,d}$	14.700 N/mm^2			
	A	144.00 cm^2	$\lambda_{rel,y}$	1.153	$M_{y,d}$	1.72 kNm			
	$\sigma_{c,0,d}$	0.310 N/mm^2	$\lambda_{rel,z}$	4.611	W_y	576.00 cm^3			
	$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	2.978 N/mm^2			
	$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm^2			

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	16.800 N/mm^2
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.21
λ_z	271.932	k_{mod}	0.700	η_2	0.59
$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG22	UB (1.35*LC1 + 1.5*LC4)	154	4.707	0.57	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	0.00 kN	$V_{z,d}$	-19.21 kN	$M_{y,d}$	-9.89 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

$V_{z,d}$	19.21 kN	k_{cr}	0.670	γ_M	1.000
b	100.0 mm	τ_d	1.075 N/mm^2	$f_{v,d}$	1.890 N/mm^2
h	400.0 mm	$f_{v,k}$	2.700 N/mm^2		0.57
b_{ef}	67.0 mm	k_{mod}	0.700		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG23	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	154	4.710	0.57	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	0.00 kN	$V_{z,d}$	-19.17 kN	$M_{y,d}$	-9.69 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	-0.02 kNm

Design Ratio

$V_{z,d}$	19.17 kN	k_{cr}	0.670	γ_M	1.000
b	100.0 mm	τ_d	1.073 N/mm^2	$f_{v,d}$	1.890 N/mm^2
h	400.0 mm	$f_{v,k}$	2.700 N/mm^2		0.57
b_{ef}	67.0 mm	k_{mod}	0.700		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG24	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC5)	154	4.710	0.57	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-5.75 kN	$V_{z,d}$	-19.24 kN	$M_{y,d}$	-9.97 kNm
$V_{y,d}$	-1.09 kN	T_d	-0.04 kNm	$M_{z,d}$	0.56 kNm

Design Ratio

$V_{z,d}$	19.24 kN	k_{cr}	0.670	γ_M	1.000
b	100.0 mm	τ_d	1.077 N/mm^2	$f_{v,d}$	1.890 N/mm^2
h	400.0 mm	$f_{v,k}$	2.700 N/mm^2		0.57
b_{ef}	67.0 mm	k_{mod}	0.700		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG25	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC6)	125	4.710	1.59	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-19.45 kN	$V_{z,d}$	-11.15 kN	$M_{y,d}$	0.12 kNm
$V_{y,d}$	-1.56 kN	T_d	-0.14 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

N_d	19.45 kN	$E_{0,05}$	7400.000 N/mm^2	$f_{c,0,d}$	18.900 N/mm^2
A	144.00 cm^2	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.12 kNm
$\sigma_{c,0,d}$	1.350 N/mm^2	$\lambda_{rel,z}$	4.611	W_y	576.00 cm^3
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	0.200 N/mm^2
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm^2
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.13
λ_z	271.932	k_{mod}	0.900	η_2	1.59
$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.000		

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG26	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC7)	125	0.000	0.84	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-10.00	kN	$V_{z,d}$	7.74	kN	$M_{y,d}$	0.06	kNm
$V_{y,d}$	-0.15	kN	T_d	0.51	kNm	$M_{z,d}$	0.06	kNm

Design Ratio

N_d	10.00	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.107	N/mm^2
$\sigma_{c,0,d}$	0.694	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.421	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.08	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.06	kNm	η_2	0.84	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.06	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG27	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4 + 0.9*LC8)	154	4.710	0.57	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-3.29	kN	$V_{z,d}$	-19.13	kN	$M_{y,d}$	-9.51	kNm
$V_{y,d}$	1.11	kN	T_d	0.05	kNm	$M_{z,d}$	-0.55	kNm

Design Ratio

$V_{z,d}$	19.13	kN	k_{cr}	0.670		γ_M	1.000	
b	100.0	mm	τ_d	1.070	N/mm^2	$f_{v,d}$	1.890	N/mm^2
h	400.0	mm	$f_{v,k}$	2.700	N/mm^2		0.57	
b_{ef}	67.0	mm	k_{mod}	0.700				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG28	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC5)	154	4.707	0.57	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-5.75	kN	$V_{z,d}$	-19.29	kN	$M_{y,d}$	-10.17	kNm
$V_{y,d}$	-1.09	kN	T_d	-0.04	kNm	$M_{z,d}$	0.56	kNm

Design Ratio

$V_{z,d}$	19.29	kN	k_{cr}	0.670		γ_M	1.000	
b	100.0	mm	τ_d	1.079	N/mm^2	$f_{v,d}$	1.890	N/mm^2
h	400.0	mm	$f_{v,k}$	2.700	N/mm^2		0.57	
b_{ef}	67.0	mm	k_{mod}	0.700				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG29	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC6)	125	4.710	1.59	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-19.41	kN	$V_{z,d}$	-11.11	kN	$M_{y,d}$	0.11	kNm
$V_{y,d}$	-1.52	kN	T_d	-0.13	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	19.41	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.11	kNm
$\sigma_{c,0,d}$	1.348	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	0.199	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	21.600	N/mm^2

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.13	
λ_z	271.932		k_{mod}	0.900		η_2	1.59	
$f_{c,0,k}$	21.000	N/mm²	γ_M	1.000				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG30	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC7)	125	0.000	0.84	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-10.04	kN	$V_{z,d}$	7.78	kN	$M_{y,d}$	0.06	kNm
$V_{y,d}$	-0.06	kN	T_d	0.51	kNm	$M_{z,d}$	0.06	kNm

Design Ratio

N_d	10.04	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm³
A	144.00	cm²	β_c	0.200		$\sigma_{m,y,d}$	0.107	N/mm²
$\sigma_{c,0,d}$	0.697	N/mm²	k_y	1.250		$\sigma_{m,z,d}$	0.420	N/mm²
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm²
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm²
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm²
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm²
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm²	η_1	0.08	
$f_{c,0,k}$	21.000	N/mm²	$M_{y,d}$	0.06	kNm	η_2	0.84	
$E_{0,05}$	7400.000	N/mm²	$M_{z,d}$	0.06	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm³			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG31	UB (1.35*LC1 + 1.5*LC4 + 0.9*LC8)	154	4.710	0.57	≤ 1	111)	ULS	Short-term	0.700

Cross-section Resistance - Shear due to Shear Force Vz acc. to 6.1.7

Design Internal Forces

N_d	-3.41	kN	$V_{z,d}$	-19.17	kN	$M_{y,d}$	-9.77	kNm
$V_{y,d}$	1.11	kN	T_d	0.05	kNm	$M_{z,d}$	-0.55	kNm

Design Ratio

$V_{z,d}$	19.17	kN	k_{cr}	0.670		γ_M	1.000	
b	100.0	mm	τ_d	1.073	N/mm²	$f_{v,d}$	1.890	N/mm²
h	400.0	mm	$f_{v,k}$	2.700	N/mm²		0.57	
b_{ef}	67.0	mm	k_{mod}	0.700				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG32	UB (1.35*LC1 + 1.5*LC5)	125	4.710	0.42	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-5.01	kN	$V_{z,d}$	-3.25	kN	$M_{y,d}$	0.03	kNm
$V_{y,d}$	1.91	kN	T_d	0.18	kNm	$M_{z,d}$	0.02	kNm

Design Ratio

N_d	5.01	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm³
A	144.00	cm²	β_c	0.200		$\sigma_{m,y,d}$	0.045	N/mm²
$\sigma_{c,0,d}$	0.348	N/mm²	k_y	1.250		$\sigma_{m,z,d}$	0.162	N/mm²
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm²
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm²
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm²
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm²
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm²	η_1	0.04	
$f_{c,0,k}$	21.000	N/mm²	$M_{y,d}$	0.03	kNm	η_2	0.42	
$E_{0,05}$	7400.000	N/mm²	$M_{z,d}$	0.02	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm³			

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG33	UB (1.35*LC1 + 1.5*LC6)	125	4.710	2.57	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

Design Internal Forces

N_d	-31.40 kN	$V_{z,d}$	-18.32 kN	$M_{y,d}$	0.19 kNm
$V_{y,d}$	-2.20 kN	T_d	-0.14 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

N_d	31.40 kN	$E_{0,05}$	7400.000 N/mm^2	$f_{c,0,d}$	18.900 N/mm^2
A	144.00 cm^2	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.19 kNm
$\sigma_{c,0,d}$	2.180 N/mm^2	$\lambda_{rel,z}$	4.611	W_y	576.00 cm^3
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	0.334 N/mm^2
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm^2
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.22
λ_z	271.932	k_{mod}	0.900	η_2	2.57
$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG34	UB (1.35*LC1 + 1.5*LC7)	125	0.000	1.37	> 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-16.40 kN	$V_{z,d}$	13.14 kN	$M_{y,d}$	0.11 kNm
$V_{y,d}$	0.33 kN	T_d	0.78 kNm	$M_{z,d}$	0.10 kNm

Design Ratio

N_d	16.40 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	0.193 N/mm^2
$\sigma_{c,0,d}$	1.139 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.661 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	24.000 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	21.600 N/mm^2
λ_y	67.983	γ_M	1.000	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	18.900 N/mm^2	η_1	0.13
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	0.11 kNm	η_2	1.37
$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.10 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG35	UB (1.35*LC1 + 1.5*LC8)	163	0.000	0.84	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.32 kN	$V_{z,d}$	1.61 kN	$M_{y,d}$	-1.33 kNm
$V_{y,d}$	-9.51 kN	T_d	0.02 kNm	$M_{z,d}$	-8.16 kNm

Design Ratio

N_d	8.32 kN	$\lambda_{rel,z}$	2.624	W_z	666.67 cm^3
A	400.00 cm^2	β_c	0.100	$\sigma_{m,y,d}$	0.497 N/mm^2
$\sigma_{c,0,d}$	0.208 N/mm^2	k_y	0.733	$\sigma_{m,z,d}$	12.245 N/mm^2
$l_{ef,y}$	4.710 m	k_z	4.060	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.943	$f_{m,z,k}$	24.000 N/mm^2
i_y	115.5 mm	$k_{c,z}$	0.140	$f_{m,y,d}$	16.800 N/mm^2
i_z	28.9 mm	k_{mod}	0.700	$f_{m,z,d}$	16.800 N/mm^2
λ_y	40.790	γ_M	1.000	k_m	0.700
λ_z	163.159	$f_{c,0,d}$	16.800 N/mm^2	η_1	0.55
$f_{c,0,k}$	24.000 N/mm^2	$M_{y,d}$	1.33 kNm	η_2	0.84
$E_{0,05}$	9400.000 N/mm^2	$M_{z,d}$	8.16 kNm		
$\lambda_{rel,y}$	0.656	W_y	2666.67 cm^3		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG36	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC5)	125	4.710	0.42	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

N_d	-5.04	kN	$V_{z,d}$	-3.30	kN	$M_{y,d}$	0.03	kNm
$V_{y,d}$	1.86	kN	T_d	0.18	kNm	$M_{z,d}$	0.02	kNm

Design Ratio

N_d	5.04	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.046	N/mm^2
$\sigma_{c,0,d}$	0.350	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.161	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.04	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.03	kNm	η_2	0.42	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.02	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG37	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC6)	125	4.710	2.57	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-31.42	kN	$V_{z,d}$	-18.36	kN	$M_{y,d}$	0.19	kNm
$V_{y,d}$	-2.24	kN	T_d	-0.14	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	31.42	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.19	kNm
$\sigma_{c,0,d}$	2.182	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	0.335	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.22	
λ_z	271.932		k_{mod}	0.900		η_2	2.57	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG38	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC7)	125	0.000	1.37	> 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-16.37	kN	$V_{z,d}$	13.10	kN	$M_{y,d}$	0.11	kNm
$V_{y,d}$	0.25	kN	T_d	0.77	kNm	$M_{z,d}$	0.10	kNm

Design Ratio

N_d	16.37	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.193	N/mm^2
$\sigma_{c,0,d}$	1.137	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.662	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.13	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.11	kNm	η_2	1.37	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.10	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG39	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC8)	163	0.000	0.84	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

Design Internal Forces

N_d	-8.25	kN	$V_{z,d}$	1.61	kN	$M_{y,d}$	-1.33	kNm
$V_{y,d}$	-9.51	kN	T_d	0.02	kNm	$M_{z,d}$	-8.16	kNm

Design Ratio

N_d	8.25	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm^3
A	400.00	cm^2	β_c	0.100		$\sigma_{m,y,d}$	0.497	N/mm^2
$\sigma_{c,0,d}$	0.206	N/mm^2	k_y	0.733		$\sigma_{m,z,d}$	12.242	N/mm^2
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm^2
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	16.800	N/mm^2
i_z	28.9	mm	k_{mod}	0.700		$f_{m,z,d}$	16.800	N/mm^2
λ_y	40.790		γ_M	1.000		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	16.800	N/mm^2	η_1	0.55	
$f_{c,0,k}$	24.000	N/mm^2	$M_{y,d}$	1.33	kNm	η_2	0.84	
$E_{0,05}$	9400.000	N/mm^2	$M_{z,d}$	8.16	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG40	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC5)	125	4.710	0.42	≤ 1	328)	ULS	Short-term	0.900

Member with Bending about z-Axis and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-5.01	kN	$V_{z,d}$	-3.10	kN	$M_{y,d}$	0.02	kNm
$V_{y,d}$	1.83	kN	T_d	0.15	kNm	$M_{z,d}$	0.02	kNm

Design Ratio

N_d	5.01	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{z,d}$	0.02	kNm
$\sigma_{c,0,d}$	0.348	N/mm^2	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,z,d}$	0.161	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,z,d}$	21.600	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.04	
λ_z	271.932		k_{mod}	0.900		η_2	0.42	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG41	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC6)	125	4.710	2.57	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-31.39	kN	$V_{z,d}$	-18.15	kN	$M_{y,d}$	0.19	kNm
$V_{y,d}$	-2.27	kN	T_d	-0.17	kNm	$M_{z,d}$	-0.01	kNm

Design Ratio

N_d	31.39	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.19	kNm
$\sigma_{c,0,d}$	2.180	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	0.327	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.21	
λ_z	271.932		k_{mod}	0.900		η_2	2.57	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG42	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC7)	125	0.000	1.37	> 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod

N_d	-16.36 kN	$V_{z,d}$	12.96 kN	$M_{y,d}$	0.11 kNm
$V_{y,d}$	0.15 kN	T_d	0.80 kNm	$M_{z,d}$	0.10 kNm

Design Ratio

N_d	16.36 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm³
A	144.00 cm²	β_c	0.200	$\sigma_{m,y,d}$	0.184 N/mm²
$\sigma_{c,0,d}$	1.136 N/mm²	k_y	1.250	$\sigma_{m,z,d}$	0.663 N/mm²
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm²
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	24.000 N/mm²
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	21.600 N/mm²
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	21.600 N/mm²
λ_y	67.983	γ_M	1.000	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	18.900 N/mm²	η_1	0.13
$f_{c,0,k}$	21.000 N/mm²	$M_{y,d}$	0.11 kNm	η_2	1.37
$E_{0,05}$	7400.000 N/mm²	$M_{z,d}$	0.10 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm³		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG43	UB (1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.5*LC8)	163	0.000	0.84	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.19 kN	$V_{z,d}$	1.61 kN	$M_{y,d}$	-1.33 kNm
$V_{y,d}$	-9.51 kN	T_d	0.02 kNm	$M_{z,d}$	-8.16 kNm

Design Ratio

N_d	8.19 kN	$\lambda_{rel,z}$	2.624	W_z	666.67 cm³
A	400.00 cm²	β_c	0.100	$\sigma_{m,y,d}$	0.497 N/mm²
$\sigma_{c,0,d}$	0.205 N/mm²	k_y	0.733	$\sigma_{m,z,d}$	12.240 N/mm²
$l_{ef,y}$	4.710 m	k_z	4.060	$f_{m,y,k}$	24.000 N/mm²
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.943	$f_{m,z,k}$	24.000 N/mm²
i_y	115.5 mm	$k_{c,z}$	0.140	$f_{m,y,d}$	16.800 N/mm²
i_z	28.9 mm	k_{mod}	0.700	$f_{m,z,d}$	16.800 N/mm²
λ_y	40.790	γ_M	1.000	k_m	0.700
λ_z	163.159	$f_{c,0,d}$	16.800 N/mm²	η_1	0.55
$f_{c,0,k}$	24.000 N/mm²	$M_{y,d}$	1.33 kNm	η_2	0.84
$E_{0,05}$	9400.000 N/mm²	$M_{z,d}$	8.16 kNm		
$\lambda_{rel,y}$	0.656	W_y	2666.67 cm³		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG44	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC5)	125	4.710	0.41	≤ 1	328)	ULS	Short-term	0.900

Member with Bending about z-Axis and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.98 kN	$V_{z,d}$	-3.04 kN	$M_{y,d}$	0.02 kNm
$V_{y,d}$	1.88 kN	T_d	0.15 kNm	$M_{z,d}$	0.02 kNm

Design Ratio

N_d	4.98 kN	$E_{0,05}$	7400.000 N/mm²	$f_{c,0,d}$	18.900 N/mm²
A	144.00 cm²	$\lambda_{rel,y}$	1.153	$M_{z,d}$	0.02 kNm
$\sigma_{c,0,d}$	0.346 N/mm²	$\lambda_{rel,z}$	4.611	W_z	144.00 cm³
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,z,d}$	0.162 N/mm²
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,z,k}$	24.000 N/mm²
i_y	69.3 mm	k_z	11.562	$f_{m,z,d}$	21.600 N/mm²
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.04
λ_z	271.932	k_{mod}	0.900	η_2	0.41
$f_{c,0,k}$	21.000 N/mm²	γ_M	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG45	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC6)	125	4.710	2.56	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod

Design Internal Forces

N_d	-31.36	kN	$V_{z,d}$	-18.12	kN	$M_{y,d}$	0.19	kNm
$V_{y,d}$	-2.23	kN	T_d	-0.17	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	31.36	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.19	kNm
$\sigma_{c,0,d}$	2.178	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	0.327	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.21	
λ_z	271.932		k_{mod}	0.900		η_2	2.56	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG46	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC7)	125	0.000	1.37	> 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-16.39	kN	$V_{z,d}$	13.01	kN	$M_{y,d}$	0.11	kNm
$V_{y,d}$	0.24	kN	T_d	0.80	kNm	$M_{z,d}$	0.10	kNm

Design Ratio

N_d	16.39	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.185	N/mm^2
$\sigma_{c,0,d}$	1.138	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.662	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.13	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.11	kNm	η_2	1.37	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.10	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG47	UB (1.35*LC1 + 1.05*LC3 + 1.5*LC8)	163	0.000	0.84	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.26	kN	$V_{z,d}$	1.61	kN	$M_{y,d}$	-1.33	kNm
$V_{y,d}$	-9.51	kN	T_d	0.02	kNm	$M_{z,d}$	-8.16	kNm

Design Ratio

N_d	8.26	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm^3
A	400.00	cm^2	β_c	0.100		$\sigma_{m,y,d}$	0.497	N/mm^2
$\sigma_{c,0,d}$	0.207	N/mm^2	k_y	0.733		$\sigma_{m,z,d}$	12.243	N/mm^2
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm^2
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	16.800	N/mm^2
i_z	28.9	mm	k_{mod}	0.700		$f_{m,z,d}$	16.800	N/mm^2
λ_y	40.790		γ_M	1.000		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	16.800	N/mm^2	η_1	0.55	
$f_{c,0,k}$	24.000	N/mm^2	$M_{y,d}$	1.33	kNm	η_2	0.84	
$E_{0,05}$	9400.000	N/mm^2	$M_{z,d}$	8.16	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG48	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC5)	125	4.710	0.43	≤ 1	333)	ULS	Short-term	0.900

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-5.14 kN	$V_{z,d}$	-3.36 kN	$M_{y,d}$	0.03 kNm
$V_{y,d}$	1.83 kN	T_d	0.18 kNm	$M_{z,d}$	0.02 kNm

Design Ratio

N_d	5.14 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	0.047 N/mm^2
$\sigma_{c,0,d}$	0.357 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.160 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	24.000 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	21.600 N/mm^2
λ_y	67.983	γ_M	1.000	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	18.900 N/mm^2	η_1	0.04
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	0.03 kNm	η_2	0.43
$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.02 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG49	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC6)	125	4.710	2.61	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-31.88 kN	$V_{z,d}$	-18.64 kN	$M_{y,d}$	0.20 kNm
$V_{y,d}$	-2.30 kN	T_d	-0.15 kNm	$M_{z,d}$	-0.01 kNm

Design Ratio

N_d	31.88 kN	$E_{0,05}$	7400.000 N/mm^2	$f_{c,0,d}$	18.900 N/mm^2
A	144.00 cm^2	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.20 kNm
$\sigma_{c,0,d}$	2.214 N/mm^2	$\lambda_{rel,z}$	4.611	W_y	576.00 cm^3
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	0.340 N/mm^2
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm^2
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.22
λ_z	271.932	k_{mod}	0.900	η_2	2.61
$f_{c,0,k}$	21.000 N/mm^2	γ_M	1.000		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG50	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.5*LC7)	125	0.000	1.38	> 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-16.54 kN	$V_{z,d}$	13.22 kN	$M_{y,d}$	0.11 kNm
$V_{y,d}$	0.18 kN	T_d	0.78 kNm	$M_{z,d}$	0.10 kNm

Design Ratio

N_d	16.54 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm^3
A	144.00 cm^2	β_c	0.200	$\sigma_{m,y,d}$	0.195 N/mm^2
$\sigma_{c,0,d}$	1.149 N/mm^2	k_y	1.250	$\sigma_{m,z,d}$	0.673 N/mm^2
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm^2
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	24.000 N/mm^2
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	21.600 N/mm^2
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	21.600 N/mm^2
λ_y	67.983	γ_M	1.000	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	18.900 N/mm^2	η_1	0.14
$f_{c,0,k}$	21.000 N/mm^2	$M_{y,d}$	0.11 kNm	η_2	1.38
$E_{0,05}$	7400.000 N/mm^2	$M_{z,d}$	0.10 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm^3		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG51	UB (1.35*LC1 + 1.05*LC2	163	0.000	0.84	≤ 1	333)	ULS	Short-term	0.700

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG51	+ 0.75*LC4 + 1.5*LC8)	163	0.000	0.84	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.16	kN	$V_{z,d}$	1.61	kN	$M_{y,d}$	-1.32	kNm
$V_{y,d}$	-9.51	kN	T_d	0.02	kNm	$M_{z,d}$	-8.16	kNm

Design Ratio

N_d	8.16	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm^3
A	400.00	cm^2	β_c	0.100		$\sigma_{m,y,d}$	0.495	N/mm^2
$\sigma_{c,0,d}$	0.204	N/mm^2	k_y	0.733		$\sigma_{m,z,d}$	12.240	N/mm^2
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm^2
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	16.800	N/mm^2
i_z	28.9	mm	k_{mod}	0.700		$f_{m,z,d}$	16.800	N/mm^2
λ_y	40.790		γ_M	1.000		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	16.800	N/mm^2	η_1	0.55	
$f_{c,0,k}$	24.000	N/mm^2	$M_{y,d}$	1.32	kNm	η_2	0.84	
$E_{0,05}$	9400.000	N/mm^2	$M_{z,d}$	8.16	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG52	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC5)	125	4.710	0.42	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-5.10	kN	$V_{z,d}$	-3.31	kN	$M_{y,d}$	0.03	kNm
$V_{y,d}$	1.88	kN	T_d	0.18	kNm	$M_{z,d}$	0.02	kNm

Design Ratio

N_d	5.10	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.046	N/mm^2
$\sigma_{c,0,d}$	0.354	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.161	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.04	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.03	kNm	η_2	0.42	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.02	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG53	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC6)	125	4.710	2.61	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-31.86	kN	$V_{z,d}$	-18.60	kN	$M_{y,d}$	0.20	kNm
$V_{y,d}$	-2.26	kN	T_d	-0.14	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

N_d	31.86	kN	$E_{0,05}$	7400.000	N/mm^2	$f_{c,0,d}$	18.900	N/mm^2
A	144.00	cm^2	$\lambda_{rel,y}$	1.153		$M_{y,d}$	0.20	kNm
$\sigma_{c,0,d}$	2.212	N/mm^2	$\lambda_{rel,z}$	4.611		W_y	576.00	cm^3
$l_{ef,y}$	4.710	m	β_c	0.200		$\sigma_{m,y,d}$	0.339	N/mm^2
$l_{ef,z}$	4.710	m	k_y	1.250		$f_{m,y,k}$	24.000	N/mm^2
i_y	69.3	mm	k_z	11.562		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	$k_{c,y}$	0.577		k_m	0.700	
λ_y	67.983		$k_{c,z}$	0.045		η_1	0.22	
λ_z	271.932		k_{mod}	0.900		η_2	2.61	
$f_{c,0,k}$	21.000	N/mm^2	γ_M	1.000				

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG54	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC7)	125	0.000	1.39	> 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-16.57	kN	$V_{z,d}$	13.26	kN	$M_{y,d}$	0.11	kNm
$V_{y,d}$	0.27	kN	T_d	0.79	kNm	$M_{z,d}$	0.10	kNm

Design Ratio

N_d	16.57	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.195	N/mm^2
$\sigma_{c,0,d}$	1.150	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.671	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.14	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.11	kNm	η_2	1.39	
$E_{0,05}$	7400.000	N/mm^2	$M_{z,d}$	0.10	kNm			
$\lambda_{rel,y}$	1.153		W_y	576.00	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG55	UB (1.35*LC1 + 0.75*LC4 + 1.5*LC8)	163	0.000	0.84	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.23	kN	$V_{z,d}$	1.61	kN	$M_{y,d}$	-1.32	kNm
$V_{y,d}$	-9.51	kN	T_d	0.02	kNm	$M_{z,d}$	-8.16	kNm

Design Ratio

N_d	8.23	kN	$\lambda_{rel,z}$	2.624		W_z	666.67	cm^3
A	400.00	cm^2	β_c	0.100		$\sigma_{m,y,d}$	0.495	N/mm^2
$\sigma_{c,0,d}$	0.206	N/mm^2	k_y	0.733		$\sigma_{m,z,d}$	12.242	N/mm^2
$l_{ef,y}$	4.710	m	k_z	4.060		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.943		$f_{m,z,k}$	24.000	N/mm^2
i_y	115.5	mm	$k_{c,z}$	0.140		$f_{m,y,d}$	16.800	N/mm^2
i_z	28.9	mm	k_{mod}	0.700		$f_{m,z,d}$	16.800	N/mm^2
λ_y	40.790		γ_M	1.000		k_m	0.700	
λ_z	163.159		$f_{c,0,d}$	16.800	N/mm^2	η_1	0.55	
$f_{c,0,k}$	24.000	N/mm^2	$M_{y,d}$	1.32	kNm	η_2	0.84	
$E_{0,05}$	9400.000	N/mm^2	$M_{z,d}$	8.16	kNm			
$\lambda_{rel,y}$	0.656		W_y	2666.67	cm^3			

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG87	UB (LC1 + 1.5*LC5)	125	4.710	0.41	≤ 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-4.94	kN	$V_{z,d}$	-3.34	kN	$M_{y,d}$	0.03	kNm
$V_{y,d}$	1.96	kN	T_d	0.21	kNm	$M_{z,d}$	0.02	kNm

Design Ratio

N_d	4.94	kN	$\lambda_{rel,z}$	4.611		W_z	144.00	cm^3
A	144.00	cm^2	β_c	0.200		$\sigma_{m,y,d}$	0.049	N/mm^2
$\sigma_{c,0,d}$	0.343	N/mm^2	k_y	1.250		$\sigma_{m,z,d}$	0.162	N/mm^2
$l_{ef,y}$	4.710	m	k_z	11.562		$f_{m,y,k}$	24.000	N/mm^2
$l_{ef,z}$	4.710	m	$k_{c,y}$	0.577		$f_{m,z,k}$	24.000	N/mm^2
i_y	69.3	mm	$k_{c,z}$	0.045		$f_{m,y,d}$	21.600	N/mm^2
i_z	17.3	mm	k_{mod}	0.900		$f_{m,z,d}$	21.600	N/mm^2
λ_y	67.983		γ_M	1.000		k_m	0.700	
λ_z	271.932		$f_{c,0,d}$	18.900	N/mm^2	η_1	0.04	
$f_{c,0,k}$	21.000	N/mm^2	$M_{y,d}$	0.03	kNm	η_2	0.41	

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2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

$E_{0,05}$	7400.000 N/mm²	$M_{z,d}$	0.02 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm³		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG88	UB (LC1 + 1.5*LC6)	125	4.710	2.54	> 1	323)	ULS	Short-term	0.900

Member with Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-31.11 kN	$V_{z,d}$	-18.27 kN	$M_{y,d}$	0.19 kNm
$V_{y,d}$	-2.13 kN	T_d	-0.11 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

N_d	31.11 kN	$E_{0,05}$	7400.000 N/mm²	$f_{c,0,d}$	18.900 N/mm²
A	144.00 cm²	$\lambda_{rel,y}$	1.153	$M_{y,d}$	0.19 kNm
$\sigma_{c,0,d}$	2.161 N/mm²	$\lambda_{rel,z}$	4.611	W_y	576.00 cm³
$l_{ef,y}$	4.710 m	β_c	0.200	$\sigma_{m,y,d}$	0.336 N/mm²
$l_{ef,z}$	4.710 m	k_y	1.250	$f_{m,y,k}$	24.000 N/mm²
i_y	69.3 mm	k_z	11.562	$f_{m,y,d}$	21.600 N/mm²
i_z	17.3 mm	$k_{c,y}$	0.577	k_m	0.700
λ_y	67.983	$k_{c,z}$	0.045	η_1	0.21
λ_z	271.932	k_{mod}	0.900	η_2	2.54
$f_{c,0,k}$	21.000 N/mm²	γ_M	1.000		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG89	UB (LC1 + 1.5*LC7)	125	0.000	1.37	> 1	333)	ULS	Short-term	0.900

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-16.31 kN	$V_{z,d}$	13.19 kN	$M_{y,d}$	0.11 kNm
$V_{y,d}$	0.42 kN	T_d	0.75 kNm	$M_{z,d}$	0.09 kNm

Design Ratio

N_d	16.31 kN	$\lambda_{rel,z}$	4.611	W_z	144.00 cm³
A	144.00 cm²	β_c	0.200	$\sigma_{m,y,d}$	0.199 N/mm²
$\sigma_{c,0,d}$	1.133 N/mm²	k_y	1.250	$\sigma_{m,z,d}$	0.656 N/mm²
$l_{ef,y}$	4.710 m	k_z	11.562	$f_{m,y,k}$	24.000 N/mm²
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.577	$f_{m,z,k}$	24.000 N/mm²
i_y	69.3 mm	$k_{c,z}$	0.045	$f_{m,y,d}$	21.600 N/mm²
i_z	17.3 mm	k_{mod}	0.900	$f_{m,z,d}$	21.600 N/mm²
λ_y	67.983	γ_M	1.000	k_m	0.700
λ_z	271.932	$f_{c,0,d}$	18.900 N/mm²	η_1	0.13
$f_{c,0,k}$	21.000 N/mm²	$M_{y,d}$	0.11 kNm	η_2	1.37
$E_{0,05}$	7400.000 N/mm²	$M_{z,d}$	0.09 kNm		
$\lambda_{rel,y}$	1.153	W_y	576.00 cm³		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG90	UB (LC1 + 1.5*LC8)	163	0.000	0.83	≤ 1	333)	ULS	Short-term	0.700

Member with Biaxial Bending and Compression acc. to 6.3.2 - Buckling about Both Axes

Design Internal Forces

N_d	-8.54 kN	$V_{z,d}$	1.17 kN	$M_{y,d}$	-0.96 kNm
$V_{y,d}$	-9.51 kN	T_d	0.02 kNm	$M_{z,d}$	-8.16 kNm

Design Ratio

N_d	8.54 kN	$\lambda_{rel,z}$	2.624	W_z	666.67 cm³
A	400.00 cm²	β_c	0.100	$\sigma_{m,y,d}$	0.359 N/mm²
$\sigma_{c,0,d}$	0.213 N/mm²	k_y	0.733	$\sigma_{m,z,d}$	12.245 N/mm²
$l_{ef,y}$	4.710 m	k_z	4.060	$f_{m,y,k}$	24.000 N/mm²
$l_{ef,z}$	4.710 m	$k_{c,y}$	0.943	$f_{m,z,k}$	24.000 N/mm²
i_y	115.5 mm	$k_{c,z}$	0.140	$f_{m,y,d}$	16.800 N/mm²
i_z	28.9 mm	k_{mod}	0.700	$f_{m,z,d}$	16.800 N/mm²
λ_y	40.790	γ_M	1.000	k_m	0.700
λ_z	163.159	$f_{c,0,d}$	16.800 N/mm²	η_1	0.55
$f_{c,0,k}$	24.000 N/mm²	$M_{y,d}$	0.96 kNm	η_2	0.83
$E_{0,05}$	9400.000 N/mm²	$M_{z,d}$	8.16 kNm		
$\lambda_{rel,y}$	0.656	W_y	2666.67 cm³		

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG111	US (LC1 + LC10)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.03	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm²	$f_{m,y,k}$	24.000	N/mm²
b	60.0	mm	$E_{0,05}$	7400.000	N/mm²	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm²	γ_M	1.000	
W_y	576.00	cm³	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm²
$\sigma_{m,y,d}$	3.283	N/mm²	$\sigma_{m,crit}$	18.382	N/mm²		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG112	US (LC1 + LC11)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.02	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm²	$f_{m,y,k}$	24.000	N/mm²
b	60.0	mm	$E_{0,05}$	7400.000	N/mm²	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm²	γ_M	1.000	
W_y	576.00	cm³	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm²
$\sigma_{m,y,d}$	3.284	N/mm²	$\sigma_{m,crit}$	18.382	N/mm²		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG113	US (LC1 + LC14)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.02	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm²	$f_{m,y,k}$	24.000	N/mm²
b	60.0	mm	$E_{0,05}$	7400.000	N/mm²	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm²	γ_M	1.000	
W_y	576.00	cm³	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm²
$\sigma_{m,y,d}$	3.283	N/mm²	$\sigma_{m,crit}$	18.382	N/mm²		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG114	US (LC1 + LC17)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.02	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm²	$f_{m,y,k}$	24.000	N/mm²
b	60.0	mm	$E_{0,05}$	7400.000	N/mm²	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm²	γ_M	1.000	
W_y	576.00	cm³	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm²
$\sigma_{m,y,d}$	3.283	N/mm²	$\sigma_{m,crit}$	18.382	N/mm²		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG115	US (LC1 + LC20)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.02	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	3.283	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG116	US (LC1 + LC21)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.02	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	3.284	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG117	US (LC1 + 0.6*LC2 + LC10)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.06	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	3.283	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG118	US (LC1 + 0.6*LC2 + LC11)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.04	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	3.284	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG119	US (LC1 + 0.6*LC2 + LC14)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.04	kN	$V_{z,d}$	-0.02	kN	$M_{y,d}$	1.89	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	1.89	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	3.283	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.28	
l_{ef}	4.710	m	k_{crit}	0.703				

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG120	US (LC1 + 0.6*LC2 + LC17)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.04 kN	$V_{z,d}$	-0.02 kN	$M_{y,d}$	1.89 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

$M_{y,d}$	1.89 kNm	$f_{m,y,k}$	24.000 N/mm²	$f_{m,y,k}$	24.000 N/mm²
b	60.0 mm	$E_{0,05}$	7400.000 N/mm²	k_{mod}	0.700
h	240.0 mm	G_{05}	464.000 N/mm²	γ_M	1.000
W_y	576.00 cm³	$\lambda_{rel,m}$	1.143	$f_{m,y,d}$	16.800 N/mm²
$\sigma_{m,y,d}$	3.283 N/mm²	$\sigma_{m,crit}$	18.382 N/mm²		0.28
l_{ef}	4.710 m	k_{crit}	0.703		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG121	US (LC1 + 0.6*LC2 + LC20)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.04 kN	$V_{z,d}$	-0.02 kN	$M_{y,d}$	1.89 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

$M_{y,d}$	1.89 kNm	$f_{m,y,k}$	24.000 N/mm²	$f_{m,y,k}$	24.000 N/mm²
b	60.0 mm	$E_{0,05}$	7400.000 N/mm²	k_{mod}	0.700
h	240.0 mm	G_{05}	464.000 N/mm²	γ_M	1.000
W_y	576.00 cm³	$\lambda_{rel,m}$	1.143	$f_{m,y,d}$	16.800 N/mm²
$\sigma_{m,y,d}$	3.283 N/mm²	$\sigma_{m,crit}$	18.382 N/mm²		0.28
l_{ef}	4.710 m	k_{crit}	0.703		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG122	US (LC1 + 0.6*LC2 + LC21)	382	2.305	0.28	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.04 kN	$V_{z,d}$	-0.02 kN	$M_{y,d}$	1.89 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

$M_{y,d}$	1.89 kNm	$f_{m,y,k}$	24.000 N/mm²	$f_{m,y,k}$	24.000 N/mm²
b	60.0 mm	$E_{0,05}$	7400.000 N/mm²	k_{mod}	0.700
h	240.0 mm	G_{05}	464.000 N/mm²	γ_M	1.000
W_y	576.00 cm³	$\lambda_{rel,m}$	1.143	$f_{m,y,d}$	16.800 N/mm²
$\sigma_{m,y,d}$	3.283 N/mm²	$\sigma_{m,crit}$	18.382 N/mm²		0.28
l_{ef}	4.710 m	k_{crit}	0.703		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG123	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC10)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.04 kN	$V_{z,d}$	-0.03 kN	$M_{y,d}$	2.43 kNm
$V_{y,d}$	0.00 kN	T_d	0.00 kNm	$M_{z,d}$	0.00 kNm

Design Ratio

$M_{y,d}$	2.43 kNm	$f_{m,y,k}$	24.000 N/mm²	$f_{m,y,k}$	24.000 N/mm²
b	60.0 mm	$E_{0,05}$	7400.000 N/mm²	k_{mod}	0.700
h	240.0 mm	G_{05}	464.000 N/mm²	γ_M	1.000
W_y	576.00 cm³	$\lambda_{rel,m}$	1.143	$f_{m,y,d}$	16.800 N/mm²
$\sigma_{m,y,d}$	4.217 N/mm²	$\sigma_{m,crit}$	18.382 N/mm²		0.36
l_{ef}	4.710 m	k_{crit}	0.703		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
LG124	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC11)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	-0.03 kN	$V_{z,d}$	-0.02 kN	$M_{y,d}$	2.43 kNm

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	$V_{y,d}$ 0.00 kN · T_d 0.00 kNm · $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm · $f_{m,y,k}$ 24.000 N/mm² · $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm · $E_{0,05}$ 7400.000 N/mm² · k_{mod} 0.700								
	h 240.0 mm · G_{05} 464.000 N/mm² · γ_M 1.000								
	W_y 576.00 cm³ · $\lambda_{rel,m}$ 1.143 · $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.218 N/mm² · $\sigma_{m,crit}$ 18.382 N/mm² · 0.36								
	l_{ef} 4.710 m · k_{crit} 0.703								
LG125	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC14)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d -0.03 kN · $V_{z,d}$ -0.02 kN · $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN · T_d 0.00 kNm · $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm · $f_{m,y,k}$ 24.000 N/mm² · $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm · $E_{0,05}$ 7400.000 N/mm² · k_{mod} 0.700								
	h 240.0 mm · G_{05} 464.000 N/mm² · γ_M 1.000								
	W_y 576.00 cm³ · $\lambda_{rel,m}$ 1.143 · $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.217 N/mm² · $\sigma_{m,crit}$ 18.382 N/mm² · 0.36								
	l_{ef} 4.710 m · k_{crit} 0.703								
LG126	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC17)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d -0.03 kN · $V_{z,d}$ -0.03 kN · $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN · T_d 0.00 kNm · $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm · $f_{m,y,k}$ 24.000 N/mm² · $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm · $E_{0,05}$ 7400.000 N/mm² · k_{mod} 0.700								
	h 240.0 mm · G_{05} 464.000 N/mm² · γ_M 1.000								
	W_y 576.00 cm³ · $\lambda_{rel,m}$ 1.143 · $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.218 N/mm² · $\sigma_{m,crit}$ 18.382 N/mm² · 0.36								
	l_{ef} 4.710 m · k_{crit} 0.703								
LG127	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC20)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d -0.03 kN · $V_{z,d}$ -0.02 kN · $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN · T_d 0.00 kNm · $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm · $f_{m,y,k}$ 24.000 N/mm² · $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm · $E_{0,05}$ 7400.000 N/mm² · k_{mod} 0.700								
	h 240.0 mm · G_{05} 464.000 N/mm² · γ_M 1.000								
	W_y 576.00 cm³ · $\lambda_{rel,m}$ 1.143 · $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.217 N/mm² · $\sigma_{m,crit}$ 18.382 N/mm² · 0.36								
	l_{ef} 4.710 m · k_{crit} 0.703								
LG128	US (LC1 + 0.6*LC2 + 0.6*LC3 + LC21)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d -0.03 kN · $V_{z,d}$ -0.02 kN · $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN · T_d 0.00 kNm · $M_{z,d}$ 0.00 kNm								
	Design Ratio								

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor k_{mod}
	$M_{y,d}$ 2.43 kNm; $f_{m,y,k}$ 24.000 N/mm²; $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm; $E_{0,05}$ 7400.000 N/mm²; k_{mod} 0.700								
	h 240.0 mm; G_{05} 464.000 N/mm²; γ_M 1.000								
	W_y 576.00 cm³; $\lambda_{rel,m}$ 1.143; $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.218 N/mm²; $\sigma_{m,crit}$ 18.382 N/mm²; 0.36								
	l_{ef} 4.710 m; k_{crit} 0.703								
LG129	US (LC1 + 0.6*LC3 + LC10)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d -0.02 kN; $V_{z,d}$ -0.03 kN; $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN; T_d 0.00 kNm; $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm; $f_{m,y,k}$ 24.000 N/mm²; $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm; $E_{0,05}$ 7400.000 N/mm²; k_{mod} 0.700								
	h 240.0 mm; G_{05} 464.000 N/mm²; γ_M 1.000								
	W_y 576.00 cm³; $\lambda_{rel,m}$ 1.143; $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.218 N/mm²; $\sigma_{m,crit}$ 18.382 N/mm²; 0.36								
	l_{ef} 4.710 m; k_{crit} 0.703								
LG130	US (LC1 + 0.6*LC3 + LC11)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d 0.00 kN; $V_{z,d}$ -0.02 kN; $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN; T_d 0.00 kNm; $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm; $f_{m,y,k}$ 24.000 N/mm²; $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm; $E_{0,05}$ 7400.000 N/mm²; k_{mod} 0.700								
	h 240.0 mm; G_{05} 464.000 N/mm²; γ_M 1.000								
	W_y 576.00 cm³; $\lambda_{rel,m}$ 1.143; $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.218 N/mm²; $\sigma_{m,crit}$ 18.382 N/mm²; 0.36								
	l_{ef} 4.710 m; k_{crit} 0.703								
LG131	US (LC1 + 0.6*LC3 + LC14)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d 0.00 kN; $V_{z,d}$ -0.03 kN; $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN; T_d 0.00 kNm; $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm; $f_{m,y,k}$ 24.000 N/mm²; $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm; $E_{0,05}$ 7400.000 N/mm²; k_{mod} 0.700								
	h 240.0 mm; G_{05} 464.000 N/mm²; γ_M 1.000								
	W_y 576.00 cm³; $\lambda_{rel,m}$ 1.143; $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.218 N/mm²; $\sigma_{m,crit}$ 18.382 N/mm²; 0.36								
	l_{ef} 4.710 m; k_{crit} 0.703								
LG132	US (LC1 + 0.6*LC3 + LC17)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700
	Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis								
	Design Internal Forces								
	N_d 0.00 kN; $V_{z,d}$ -0.03 kN; $M_{y,d}$ 2.43 kNm								
	$V_{y,d}$ 0.00 kN; T_d 0.00 kNm; $M_{z,d}$ 0.00 kNm								
	Design Ratio								
	$M_{y,d}$ 2.43 kNm; $f_{m,y,k}$ 24.000 N/mm²; $f_{m,y,k}$ 24.000 N/mm²								
	b 60.0 mm; $E_{0,05}$ 7400.000 N/mm²; k_{mod} 0.700								
	h 240.0 mm; G_{05} 464.000 N/mm²; γ_M 1.000								
	W_y 576.00 cm³; $\lambda_{rel,m}$ 1.143; $f_{m,y,d}$ 16.800 N/mm²								
	$\sigma_{m,y,d}$ 4.218 N/mm²; $\sigma_{m,crit}$ 18.382 N/mm²; 0.36								
	l_{ef} 4.710 m; k_{crit} 0.703								

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG133	US (LC1 + 0.6*LC3 + LC20)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	0.00	kN	$V_{z,d}$	-0.03	kN	$M_{y,d}$	2.43	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	2.43	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	4.218	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.36	
l_{ef}	4.710	m	k_{crit}	0.703				

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	DS	LDC	Factor kmod
LG134	US (LC1 + 0.6*LC3 + LC21)	382	2.305	0.36	≤ 1	311)	ULS	Short-term	0.700

Flexural Member without Compression Force acc. to 6.3.3 - Bending about y-Axis

Design Internal Forces

N_d	0.00	kN	$V_{z,d}$	-0.03	kN	$M_{y,d}$	2.43	kNm
$V_{y,d}$	0.00	kN	T_d	0.00	kNm	$M_{z,d}$	0.00	kNm

Design Ratio

$M_{y,d}$	2.43	kNm	$f_{m,y,k}$	24.000	N/mm^2	$f_{m,y,k}$	24.000	N/mm^2
b	60.0	mm	$E_{0,05}$	7400.000	N/mm^2	k_{mod}	0.700	
h	240.0	mm	G_{05}	464.000	N/mm^2	γ_M	1.000	
W_y	576.00	cm^3	$\lambda_{rel,m}$	1.143		$f_{m,y,d}$	16.800	N/mm^2
$\sigma_{m,y,d}$	4.218	N/mm^2	$\sigma_{m,crit}$	18.382	N/mm^2		0.36	
l_{ef}	4.710	m	k_{crit}	0.703				

TIMBER_CROSS_SECTION_CHECK -SEISMIC - CANOPY

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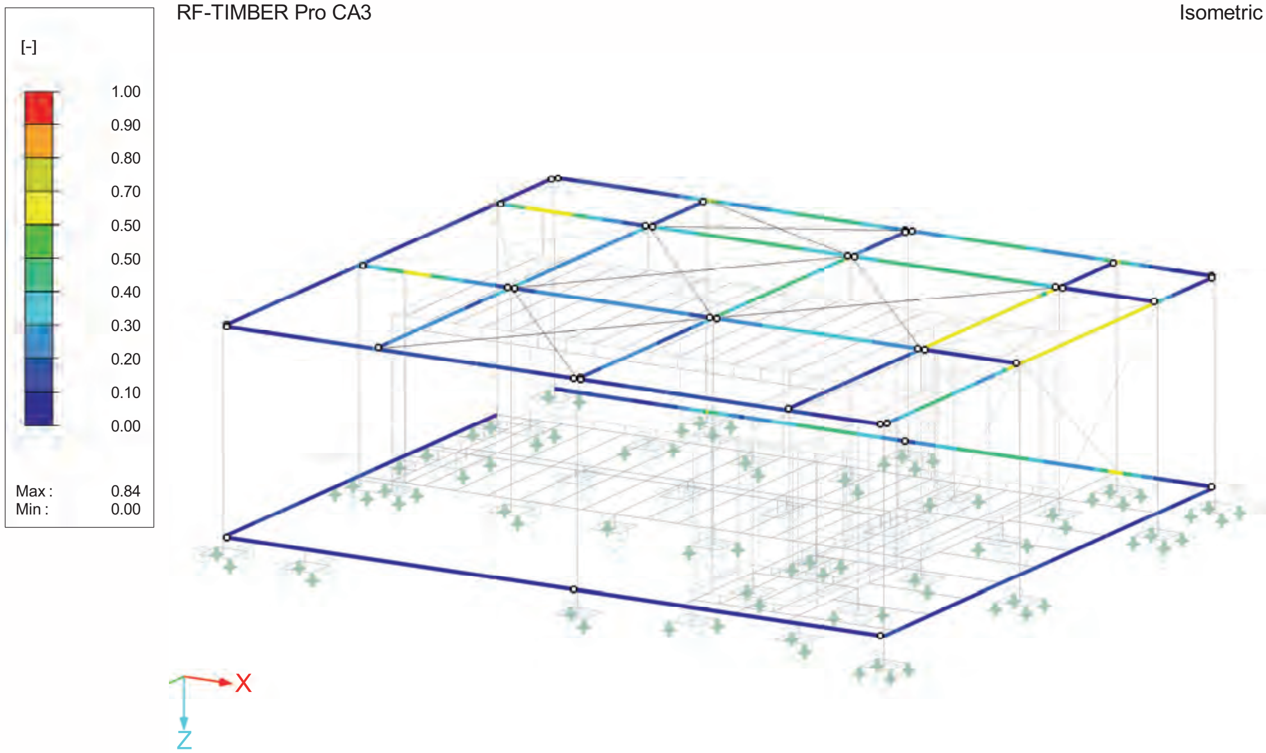
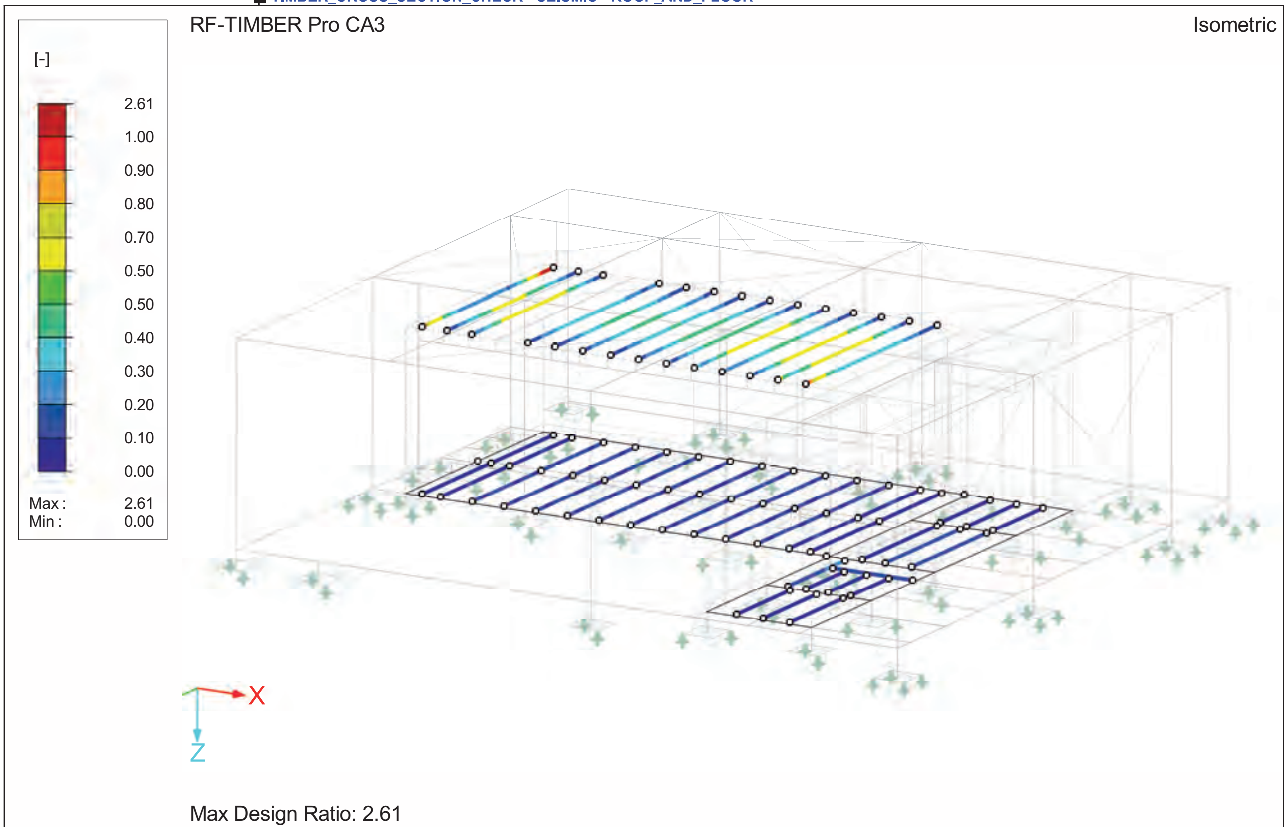


Max Design Ratio: 0.84

TIMBER_CROSS_SECTION_CHECK - SEISMIC - ROOF_AND_FLOOR



RF-DYNAM

CA1

Dynamic analysis

1.1 GENERAL DATA

Selected method:	☒ Eigenvectors
	☐ Forced Vibrations
	☒ Equivalent Lateral Loads
	  ☐ Combination of Actions
	  ☒ Actions in General Direction

Number of smallest eigenvalues:	20
Set self-weight as mass with factor:	☒ 1.00
Axial force effect has been activated	☐
Eigenvalue solver approach:	Lanczos Method
Masses considered in:	☒ X-direction ☐ X-rotating ☒ Y-direction ☐ Y-rotating ☒ Z-direction ☐ Z-rotating
Type of mass matrix:	Diagonal
Standardized Eigenmodes:	Such that |u| = 1
Internal Member Division	☐

1.2 ADDITIONAL NODAL MASSES

No.	List of Nodes with Masses	Mass			Mass Moments			
		mX [kg]	mY [kg]	mZ [kg]	IX [kg.m²]	IY [kg.m²]	IZ [kg.m²]	
1	192,195,196,199	15.00	15.00	15.00	0.00	0.00	0.00	

1.4 ADDITIONAL MEMBER MASSES

No.	List of Members with Masses	Mass m [kg/m]	
1	146	21.51	
2	146	6.88	
3	156	28.50	
4	147	49.89	
5	147	15.48	
6	160	40.76	
7	163	5.10	
8	151	45.01	
9	151	16.56	
10	157	63.10	
11	158	70.23	
12	161	54.96	
13	164	19.34	
14	153	55.05	
15	153	17.63	
16	154	54.35	
17	154	20.38	
18	162	14.62	
19	159	41.29	
20	162	5.16	
21	159	14.19	
22	160	14.01	
23	163	14.44	
24	150	21.23	
25	151	67.94	
26	154	87.05	
27	160	44.59	
28	150	6.79	
29	150	33.97	
30	1,4,6,7,12,17,22,27,32,37,42,47,52,57,62,67, 72,73,89,91,95,107,108,119,121,123,259-262, 286,295,297,300-302,304,328,330,337-339	162.00	
31	181,183,192,210,224	76.00	

1.4 ADDITIONAL MEMBER MASSES

No.	List of Members with Masses	Mass m [kg/m]	
32	182,195,213,222,223	90.00	
33	11,16,21,26,31,36,41,46,51,61,66,71,258,270, 272	17.00	
34	160,163	6.37	
35	108,295	120.00	
36	1	11.51	
37	2	41.90	
38	3	15.54	
39	4	7.10	
40	5	32.67	
41	6	11.51	
42	7	11.51	
43	8	39.57	
44	9	18.92	
45	10	18.92	
46	11	24.08	
47	12	24.08	
48	13	48.16	
49	14	20.95	
50	15	20.95	
51	16	24.08	
52	17	24.08	
53	18	48.16	
54	19	20.95	
55	20	20.95	
56	21	24.08	
57	22	24.08	
58	23	48.16	
59	24	20.95	
60	25	48.16	
61	26	24.08	
62	27	24.08	
63	28	48.16	
64	29	20.95	
65	30	48.16	
66	31	24.08	
67	32	24.08	
68	33	48.16	
69	34	20.95	
70	35	48.16	
71	36	24.08	
72	37	24.08	
73	38	48.16	
74	39	20.95	
75	40	48.16	
76	41	24.08	
77	42	24.08	
78	43	48.16	
79	44	20.95	
80	45	48.16	
81	46	24.08	
82	47	24.08	
83	48	48.16	
84	49	20.95	
85	50	48.16	
86	51	24.08	
87	52	24.08	
88	53	48.16	
89	54	20.95	
90	55	41.53	
91	56	24.08	
92	57	24.08	
93	58	48.16	
94	59	20.95	
95	60	35.94	
96	61	24.08	
97	62	24.08	
98	63	41.53	
99	64	19.47	
100	65	34.56	

1.4 ADDITIONAL MEMBER MASSES

No.	List of Members with Masses	Mass m [kg/m]	
101	66	17.45	
102	67	17.45	
103	68	35.94	
104	69	18.25	
105	70	34.56	
106	71	18.49	
107	72	20.34	
108	73	19.78	
109	74	43.20	
110	75	38.27	
111	76	38.58	
112	77	35.85	
113	78	20.68	
114	79	20.68	
115	80	41.36	
116	81	35.00	
117	82	20.68	
118	83	41.36	
119	84	37.58	
120	85	20.68	
121	86	40.41	
122	87	36.63	
123	88	19.73	
124	89	19.73	
125	90	15.17	
126	91	17.96	
127	92	29.49	
128	93	46.48	
129	94	35.00	
130	95	23.06	
131	96	38.23	
132	97	37.38	
133	98	31.22	
134	99	37.58	
135	100	39.97	
136	101	33.81	
137	102	37.58	
138	103	39.97	
139	104	34.86	
140	105	37.68	
141	106	41.02	
142	107	21.75	
143	108	20.34	
144	109	42.81	
145	110	39.73	
146	111	42.45	
147	112	43.51	
148	113	42.09	
149	114	44.82	
150	115	41.15	
151	116	42.09	
152	117	44.82	
153	118	40.68	
154	119	20.34	
155	120	40.68	
156	121	20.34	
157	122	40.12	
158	123	20.34	
159	124	43.75	
160	128	27.00	
161	149	34.56	
162	152	34.56	
163	179	34.56	
164	201	39.57	
165	202	48.16	
166	258	15.49	
167	259	11.51	
168	260	11.51	
169	261	11.51	
170	262	11.51	

1.4 ADDITIONAL MEMBER MASSES

No.	List of Members with Masses	Mass m [kg/m]	
171	270	24.08	
172	272	24.08	
173	286	18.49	
174	295	21.75	
175	296	15.54	
176	297	17.96	
177	299	34.56	
178	300	17.96	
179	301	15.49	
180	302	19.73	
181	304	19.73	
182	328	24.08	
183	329	20.68	
184	330	24.08	
185	331	20.68	
186	333	38.27	
187	335	39.73	
188	337	24.08	
189	338	7.10	
190	339	11.51	
191	358	43.20	
192	359	20.95	
193	360	48.16	
194	361	32.67	
195	362	41.90	
196	369	48.16	
197	370	27.00	
198	371	23.93	
199	372	34.56	
200	373	34.56	
201	374	34.56	
202	377	34.56	
203	378	34.56	
204	381	23.93	
205	383	34.56	
206	384	34.56	
207	385	34.56	
208	386	34.56	
209	387	34.56	
210	388	34.56	
211	389	34.56	
212	390	26.44	
213	391	27.74	
214	392	34.56	
215	393	26.44	
216	394	27.74	
217	395	20.95	
218	396	34.56	
219	397	34.56	
220	398	20.95	
221	399	34.56	
222	400	34.56	
223	401	34.56	
224	402	20.95	
225	403	20.95	
226	404	20.95	
227	405	20.95	
228	406	19.47	
229	585	48.16	
230	586	34.56	
231	587	18.25	
232	588	20.95	
233	640	18.61	
234	641	18.61	
235	642	34.56	
236	125	28.91	
237	126	57.82	
238	127	60.77	
239	129	64.90	
240	130	64.90	

1.4 ADDITIONAL MEMBER MASSES

No.	List of Members with Masses	Mass m [kg/m]	
241	131	64.01	
242	132	64.90	
243	133	64.90	
244	134	64.90	
245	135	64.90	
246	136	64.90	
247	137	64.90	
248	138	64.90	
249	139	32.45	
250	212	64.01	
251	228	64.90	
252	382	65.20	
253	183	15.23	
254	343	15.85	
255	344	32.63	
256	345	38.32	
257	346	36.50	
258	347	30.19	

1.5 ADDITIONAL SURFACE MASSES

No.	List of surfaces with masses	Mass m [kg/m^2]	
1	17	73.00	
2	9,10	15.00	
3	11,14	20.00	

EQ. LAT. FORCES

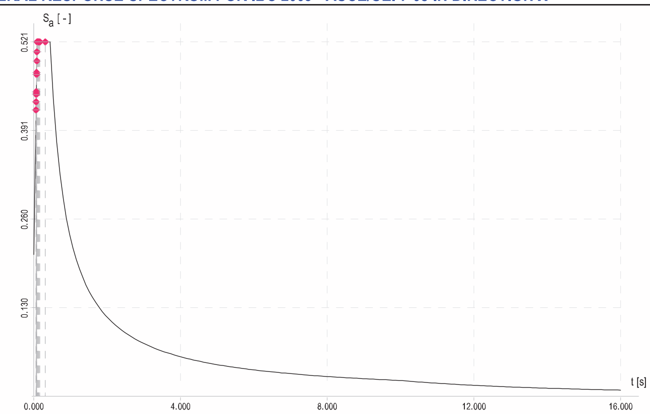
1.9 EQUIVALENT LATERAL FORCES

Export to RFEM ☐
Accidental Torsional Actions ☐

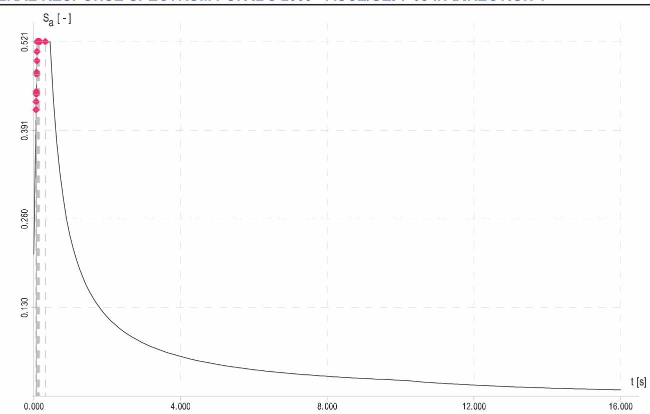
CODE PARAMETERS - IBC 2009 - ASCE/SEI 7-05

Parameters	Symbol	Value	Unit
Category		II	
Occupancy Importance Factor	I_E	1.000	
Site Class		C	
Mapped Spectral Response Acceleration for Short Period	S_S	69.7	% of g
Mapped Spectral Response Acceleration for 1 Second Period	S_1	22.1	% of g
Long-period Transition Period	T_L	10.000	s
Site Coefficients for Short Period	F_a	1.121	
Site Coefficients for 1 Second Period	F_v	1.579	
Adjusted Spectral Response Acceleration for Short Period	S_{MS}	0.781	
Adjusted Spectral Response Acceleration for 1 Second Period	S_{M1}	0.349	
Adjusted Spectral Response Acceleration for Short Period	S_{DS}	0.521	
Adjusted Spectral Response Acceleration for 1 Second Period	S_{D1}	0.233	
Response Modification Factor	R	2.000	

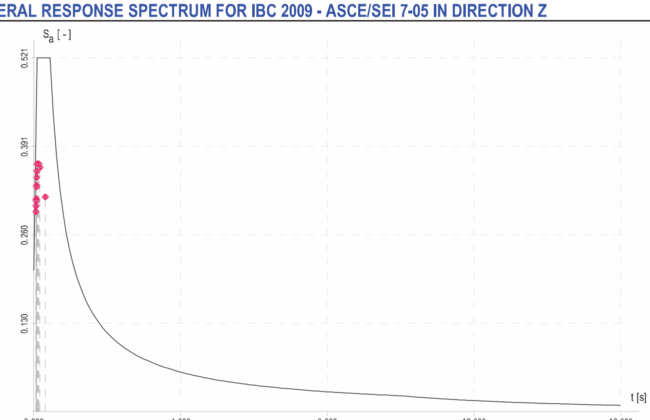
GENERAL RESPONSE SPECTRUM FOR IBC 2009 - ASCE/SEI 7-05 IN DIRECTION X



GENERAL RESPONSE SPECTRUM FOR IBC 2009 - ASCE/SEI 7-05 IN DIRECTION Y



GENERAL RESPONSE SPECTRUM FOR IBC 2009 - ASCE/SEI 7-05 IN DIRECTION Z



ASSIGNED FACTORS FOR SPECTRUM

Eigenmode No.	Eigenperiod T [s]	Factor of Stand. Response Spectrum in Direction fX	fY	fZ
1	0.313	1.000	1.000	0.607
2	0.167	1.000	1.000	0.690
3	0.141	1.000	1.000	0.700
4	0.131	1.000	1.000	0.700
5	0.129	1.000	1.000	0.700
6	0.126	1.000	1.000	0.700
7	0.115	1.000	1.000	0.700
8	0.112	1.000	1.000	0.700
9	0.099	1.000	1.000	0.700

■ ASSIGNED FACTORS FOR SPECTRUM

Eigenmode No.	Eigenperiod T [s]	Factor of Stand. Response Spectrum in Direction fX	fY	fZ
10	0.096	1.000	1.000	0.700
11	0.093	1.000	1.000	0.700
12	0.085	1.000	1.000	0.700
13	0.081	1.000	1.000	0.700
14	0.076	1.000	1.000	0.700
15	0.076	1.000	1.000	0.700
16	0.068	1.000	1.000	0.700
17	0.068	1.000	1.000	0.700
18	0.067	1.000	1.000	0.700
19	0.064	1.000	1.000	0.700
20	0.061	1.000	1.000	0.700

■ **ALLOCATION OF MODAL SEISMIC RESPONSE**

No.	Eigenmode No.	Generate in RFEM LC No.	Auto	Coefficient for Modal Seismic Response C_{sm} [-]
1	1 - 3.20 Hz	9	☒	0.260492
2	2 - 6.00 Hz	10	☒	0.260492
3	3 - 7.11 Hz	11	☒	0.260492
4	4 - 7.61 Hz	12	☒	0.260492
5	5 - 7.73 Hz	13	☒	0.260492
6	6 - 7.96 Hz	14	☒	0.260492
7	7 - 8.66 Hz	15	☒	0.260492
8	8 - 8.92 Hz	16	☒	0.260492
9	9 - 10.07 Hz	17	☒	0.260492
10	10 - 10.41 Hz	18	☒	0.260492
11	11 - 10.78 Hz	19	☒	0.260492
12	12 - 11.75 Hz	20	☒	0.253187
13	13 - 12.31 Hz	21	☒	0.246375
14	14 - 13.08 Hz	22	☒	0.238010
15	15 - 13.22 Hz	23	☒	0.236538
16	16 - 14.62 Hz	24	☒	0.223878
17	17 - 14.76 Hz	25	☒	0.222765
18	18 - 14.88 Hz	26	☒	0.221780
19	19 - 15.59 Hz	27	☒	0.216422
20	20 - 16.48 Hz	28	☒	0.210388

RESULTS

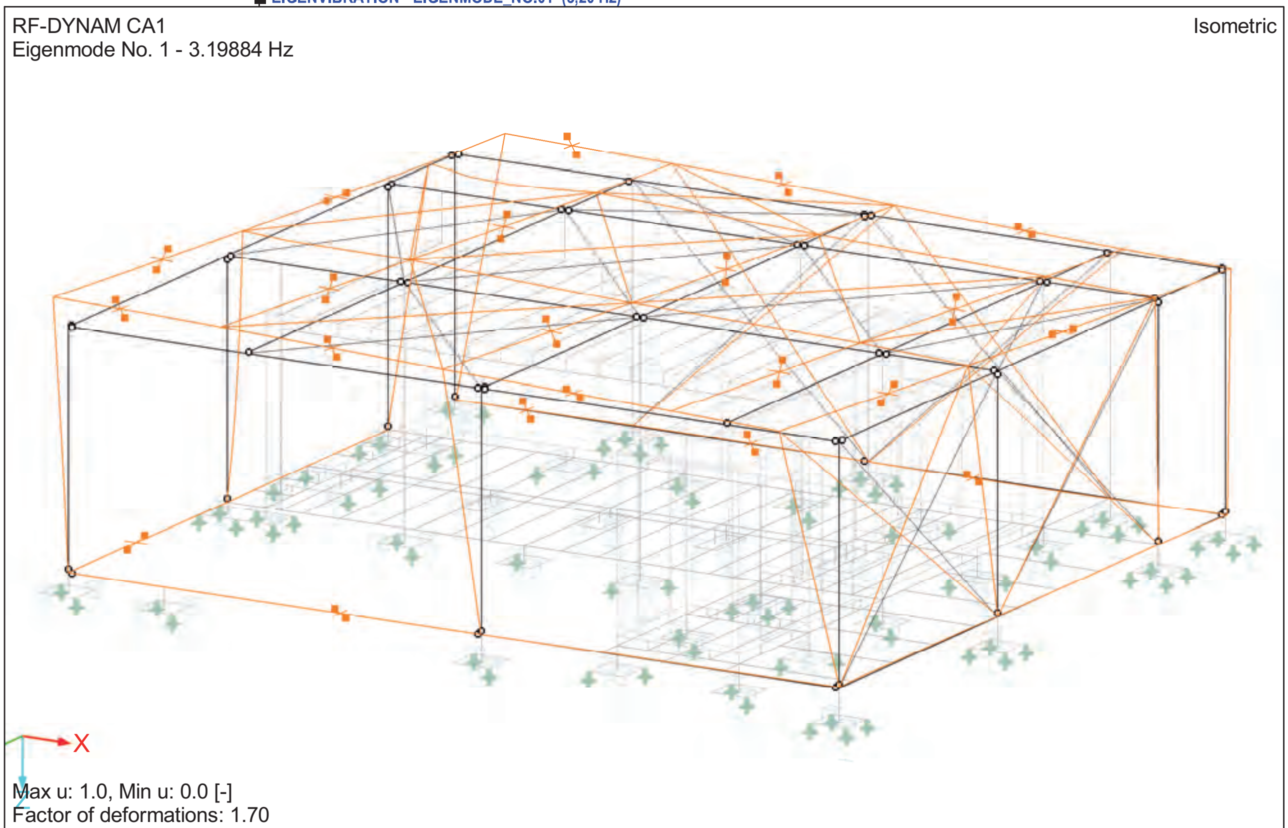
2.1 EIGENVALUES, NATURAL FREQUENCIES AND PERIODS

Eigen No.	Eigenvalue λ_i [1/s^2]	Angular Frequency ω_i [rad/s]	Nat. frequency f_i [Hz]	Eigenperiod T_i [s]	
1	403.965	20.099	3.199	0.3126	
2	1421.798	37.707	6.001	0.1666	
3	1996.631	44.684	7.112	0.1406	
4	2287.092	47.824	7.611	0.1314	
5	2361.512	48.595	7.734	0.1293	
6	2504.431	50.044	7.965	0.1256	
7	2960.375	54.409	8.660	0.1155	
8	3139.679	56.033	8.918	0.1121	
9	4003.995	63.277	10.071	0.0993	
10	4281.028	65.430	10.413	0.09603	
11	4586.047	67.720	10.778	0.0928	
12	5447.051	73.804	11.746	0.0851	
13	5981.488	77.340	12.309	0.0812	
14	6752.669	82.175	13.078	0.0765	
15	6903.768	83.089	13.224	0.0756	
16	8441.559	91.878	14.623	0.0684	
17	8600.822	92.741	14.760	0.0678	
18	8745.511	93.517	14.884	0.0672	
19	9600.435	97.982	15.594	0.0641	
20	10722.583	103.550	16.480	0.0607	

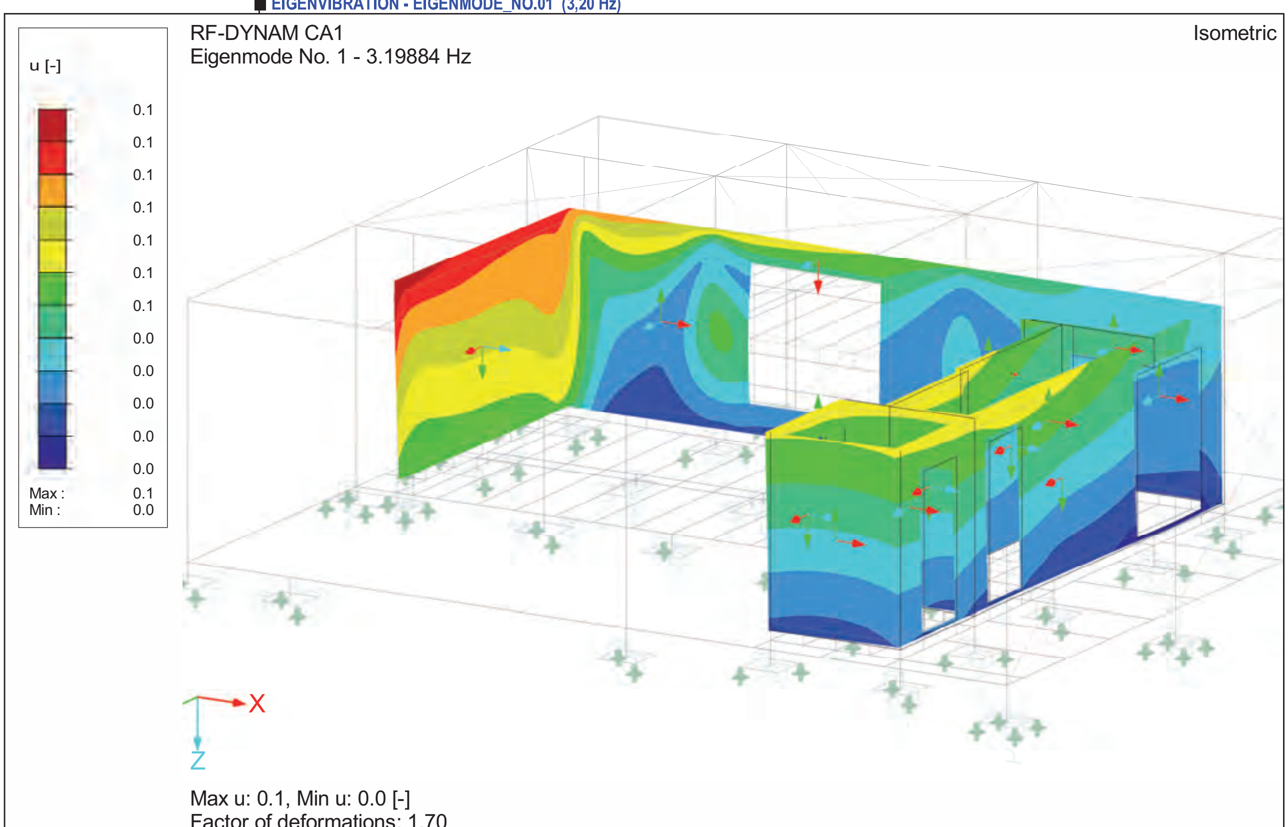
2.7 EQUIVALENT MASS FACTORS

Eigen No.	Modal Mass	Participation Factor			Equivalent Mass			Equivalent Mass Factor		
	M_i [kg]	L_{iX} [kg]	L_{iY} [kg]	L_{iZ} [kg]	m_{eX} [kg]	m_{eY} [kg]	m_{eZ} [kg]	f_{meX} [-]	f_{meY} [-]	f_{meZ} [-]
1	2100.00	-2104.44	-3065.18	-23.53	2108.88	4473.95	0.26	0.064	0.135	0.000
2	3006.26	4916.55	-4012.49	153.27	8040.69	5355.50	7.81	0.243	0.162	0.000
3	998.73	90.69	145.07	-2126.44	8.24	21.07	4527.47	0.000	0.001	0.137
4	1315.16	220.82	1048.11	764.41	37.08	835.29	444.30	0.001	0.025	0.013
5	7432.59	-1636.78	-8860.99	225.65	360.45	10563.90	6.85	0.011	0.320	0.000
6	950.50	76.66	76.00	-870.38	6.18	6.08	797.00	0.000	0.000	0.024
7	1056.26	-65.80	27.79	137.76	4.10	0.73	17.97	0.000	0.000	0.001
8	6613.01	-8398.29	-1141.22	-516.62	10665.54	196.94	40.36	0.323	0.006	0.001
9	245.49	-19.06	26.97	-255.87	1.48	2.96	266.70	0.000	0.000	0.008
10	1355.09	-117.16	-53.10	-211.16	10.13	2.08	32.90	0.000	0.000	0.001
11	5547.06	-197.91	-2232.36	71.99	7.06	898.39	0.93	0.000	0.027	0.000
12	5038.65	-59.18	44.88	-72.86	0.70	0.40	1.05	0.000	0.000	0.000
13	1359.23	-21.98	-0.10	-48.33	0.36	0.00	1.72	0.000	0.000	0.000
14	46.71	-40.27	20.99	4.54	34.72	9.43	0.44	0.001	0.000	0.000
15	50.01	-52.68	7.81	-1.34	55.49	1.22	0.04	0.002	0.000	0.000
16	437.84	-21.83	235.97	196.68	1.09	127.17	88.35	0.000	0.004	0.003
17	271.42	19.14	173.69	-255.62	1.35	111.15	240.75	0.000	0.003	0.007
18	1374.10	78.58	148.26	205.97	4.49	16.00	30.87	0.000	0.000	0.001
19	57.45	104.56	19.41	-21.77	190.31	6.56	8.25	0.006	0.000	0.000
20	392.63	220.72	-51.28	399.16	124.08	6.70	405.79	0.004	0.000	0.012
Sum					21662.41	22635.51	6919.83	0.656	0.685	0.210

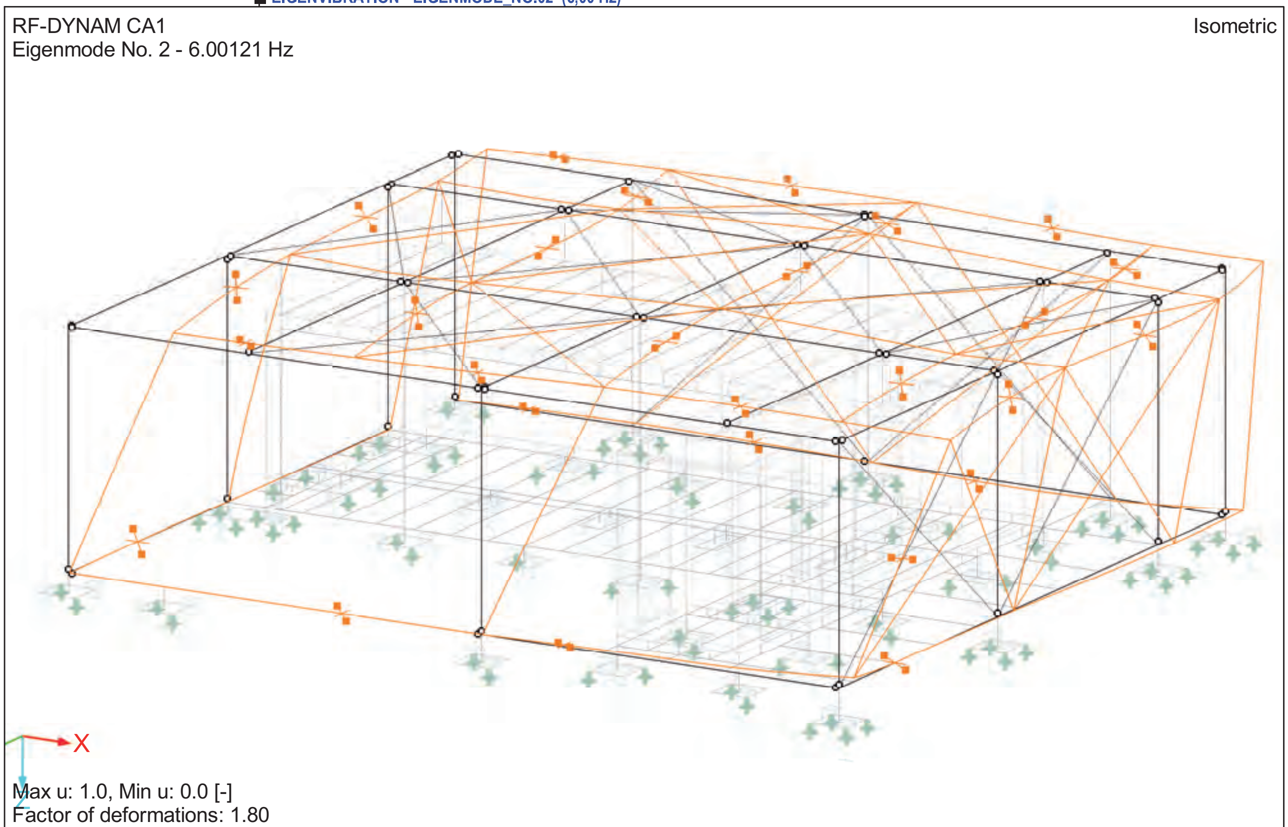
■ EIGENVIBRATION - EIGENMODE_NO.01 (3,20 Hz)



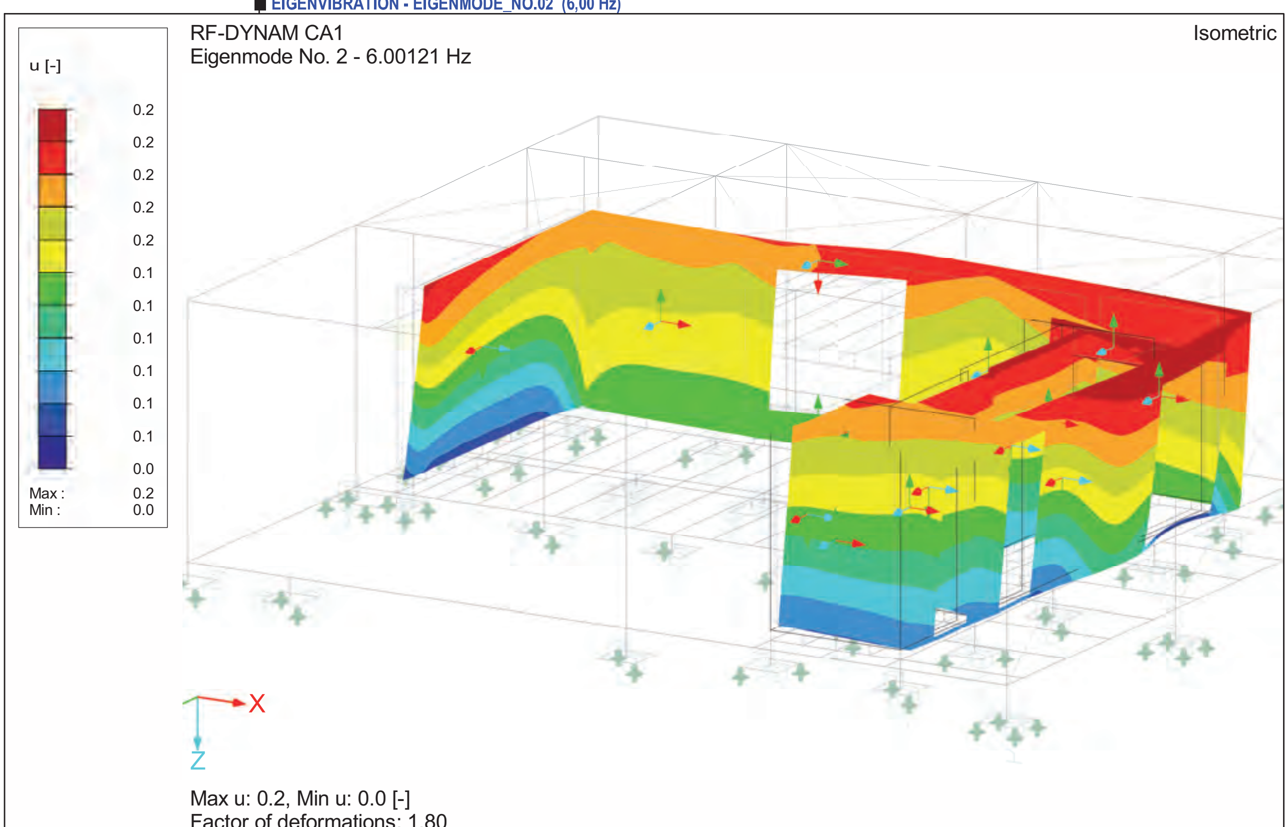
■ EIGENVIBRATION - EIGENMODE_NO.01 (3,20 Hz)



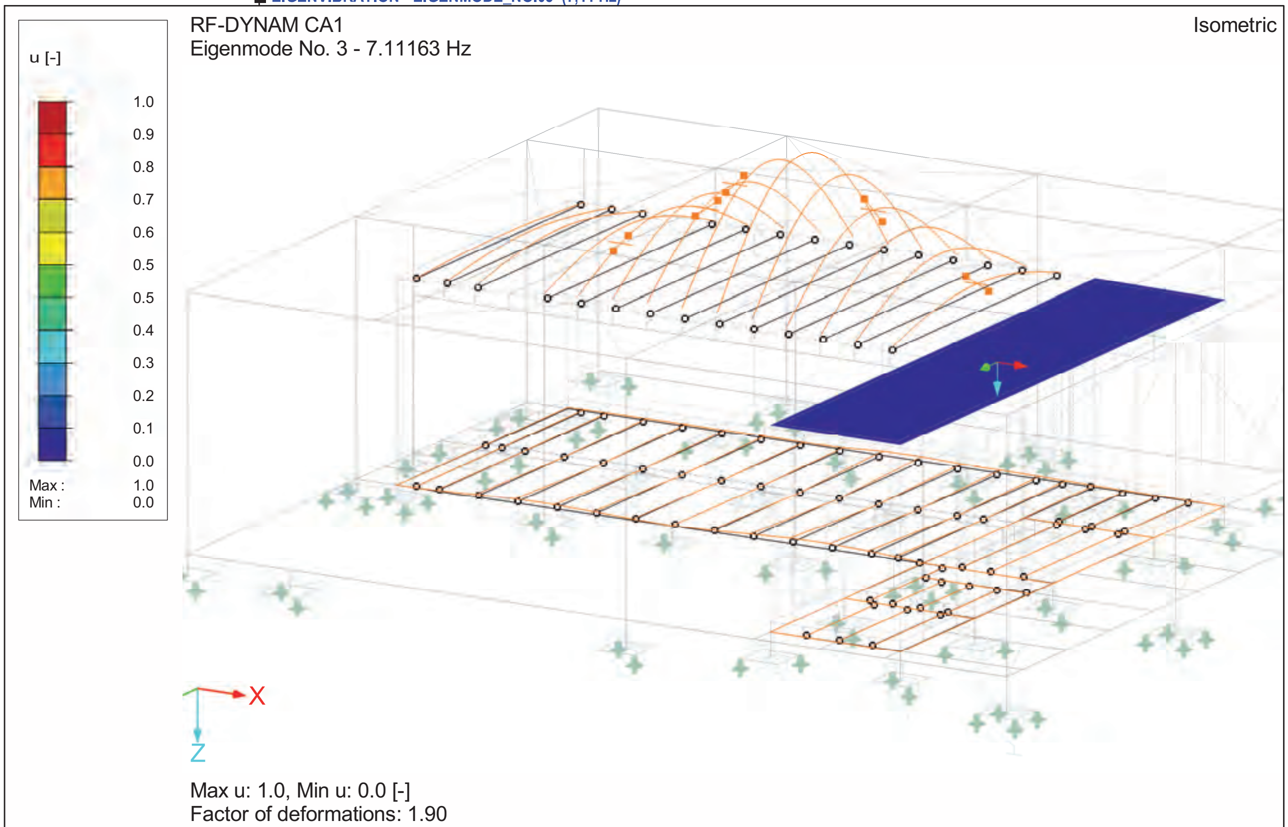
EIGENVIBRATION - EIGENMODE_NO.02 (6,00 Hz)



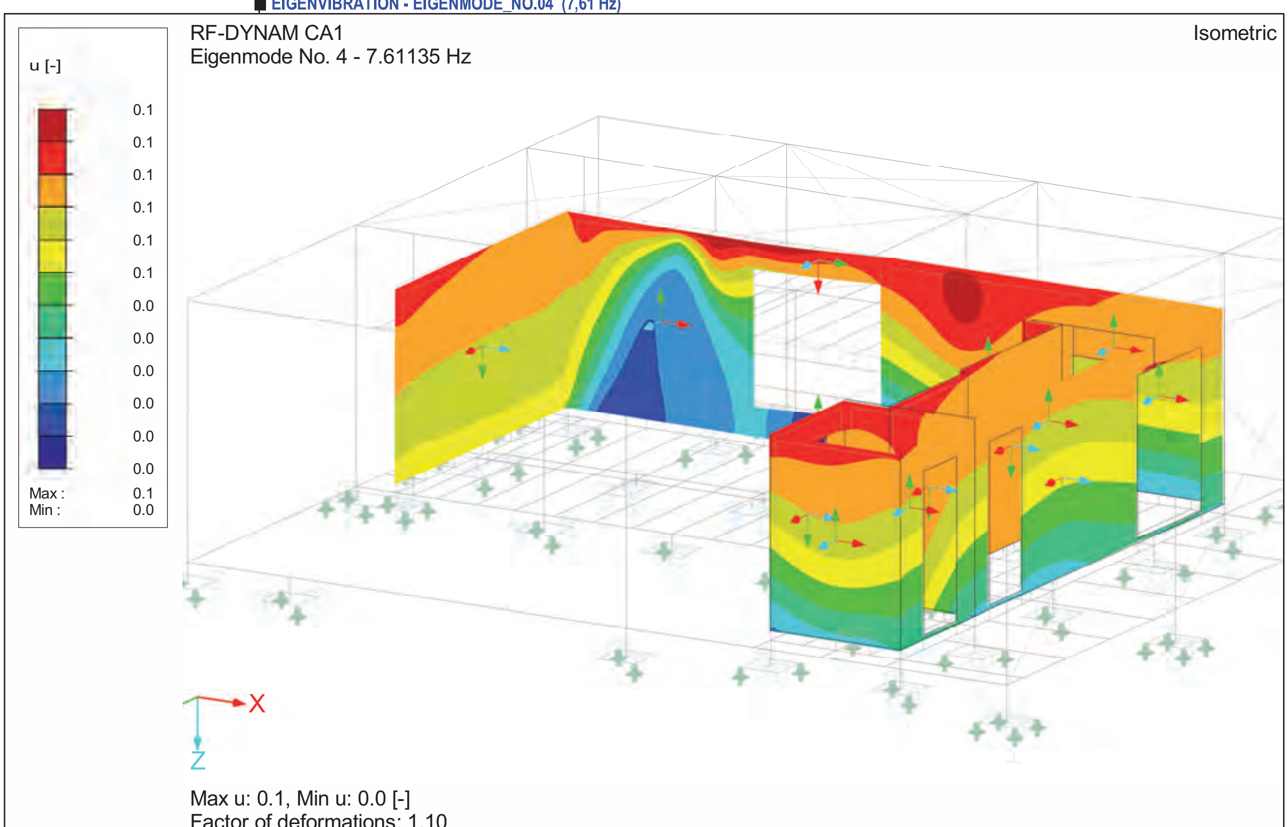
EIGENVIBRATION - EIGENMODE_NO.02 (6,00 Hz)



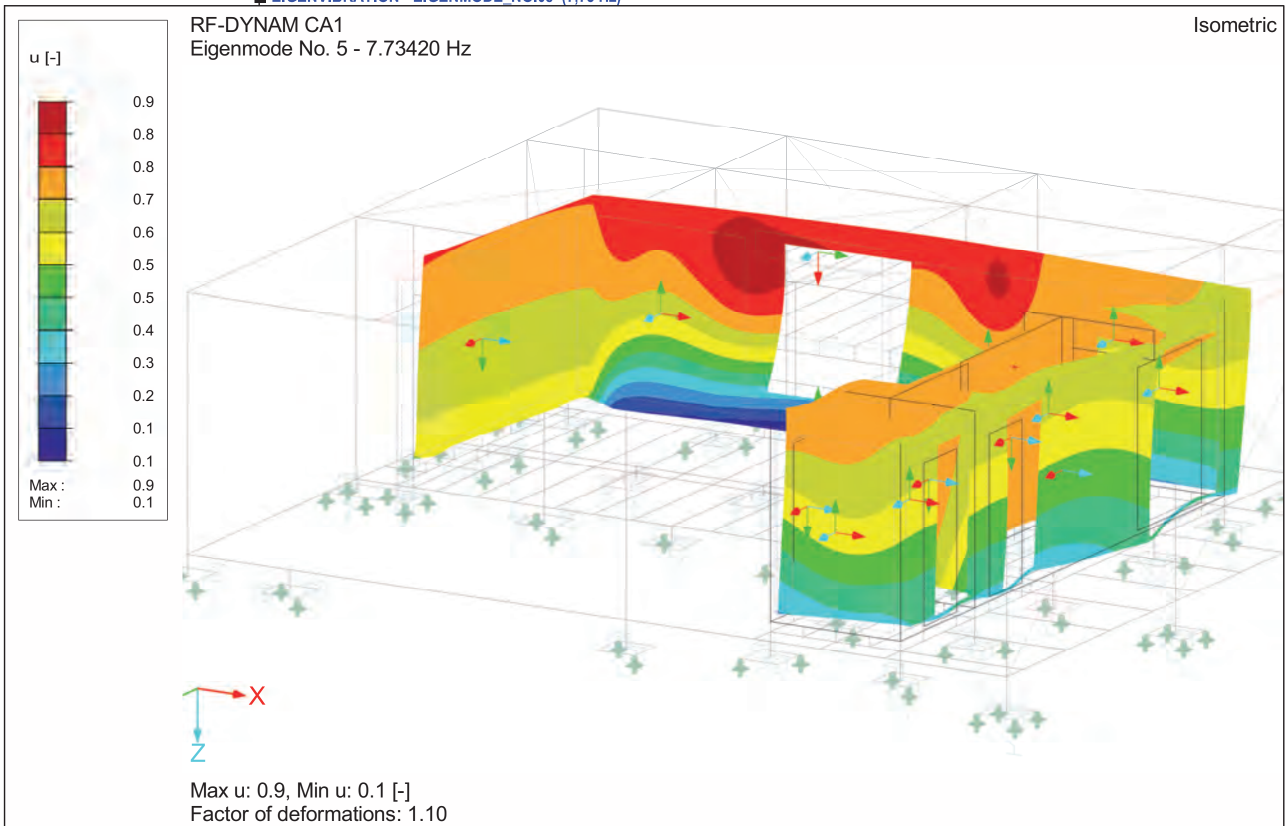
EIGENVIBRATION - EIGENMODE_NO.03 (7,11 Hz)



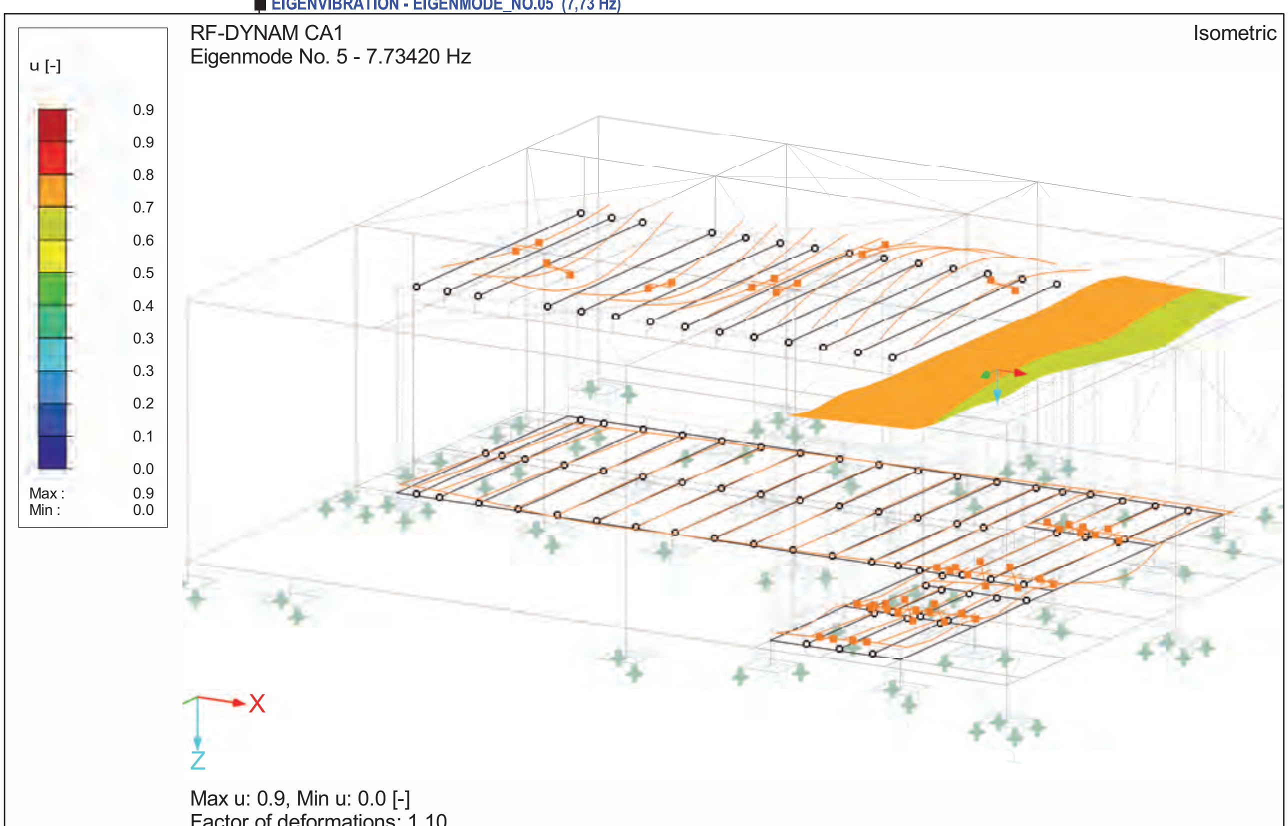
EIGENVIBRATION - EIGENMODE_NO.04 (7,61 Hz)



EIGENVIBRATION - EIGENMODE_NO.05 (7,73 Hz)



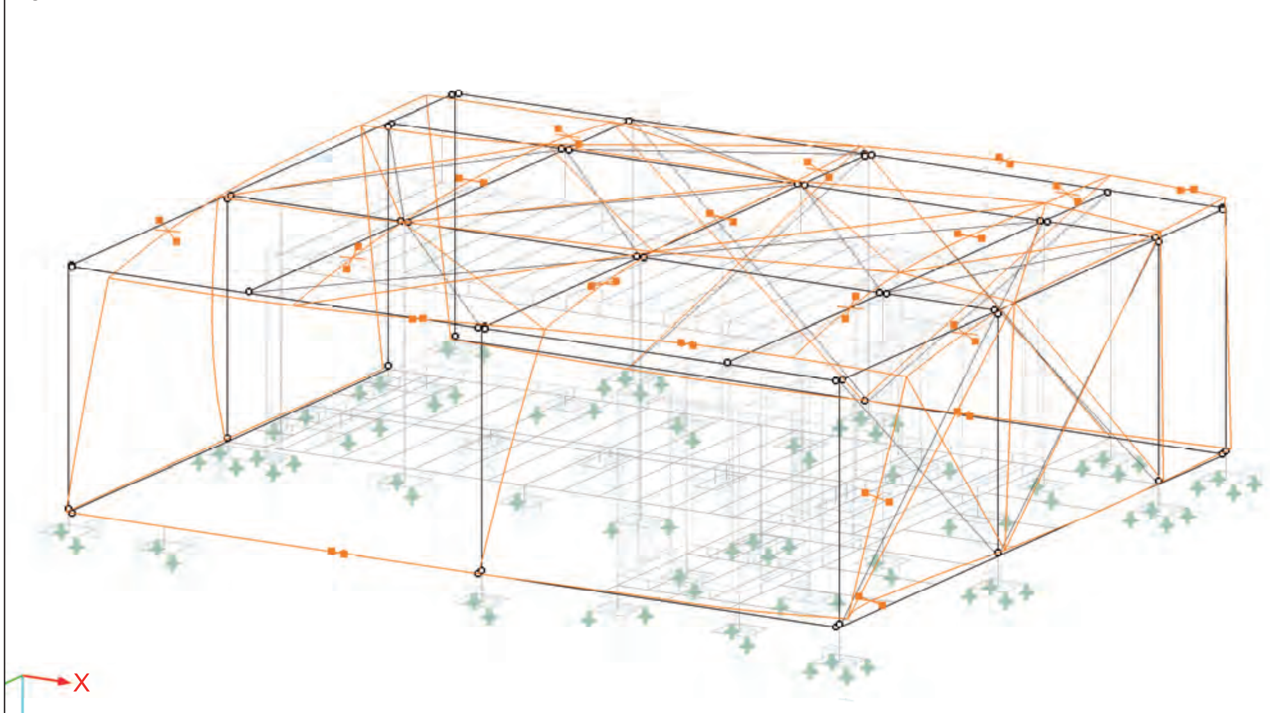
EIGENVIBRATION - EIGENMODE_NO.05 (7,73 Hz)



EIGENVIBRATION - EIGENMODE_NO.08 (8,92 Hz)

RF-DYNAM CA1
Eigenmode No. 8 - 8.91790 Hz

Isometric

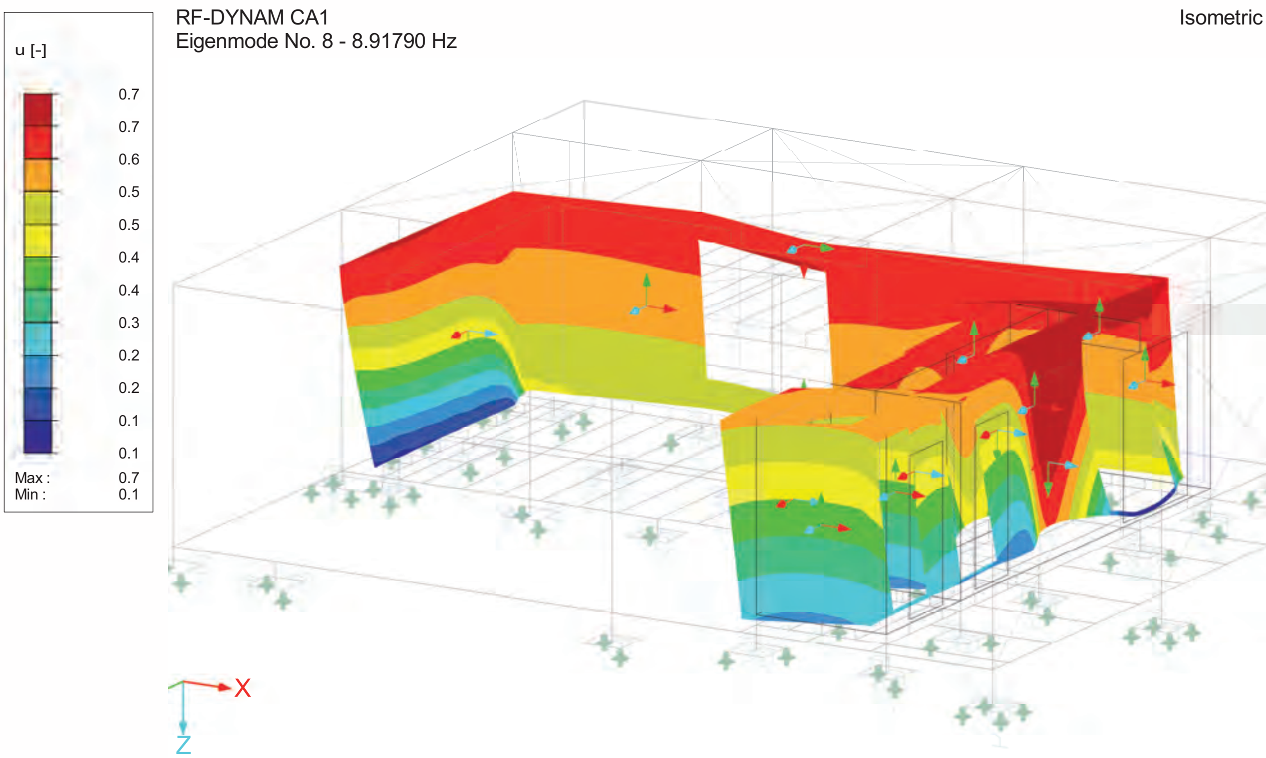


Max u: 1.0, Min u: 0.0 [-]
Factor of deformations: 1.00

EIGENVIBRATION - EIGENMODE_NO.08 (8,92 Hz)

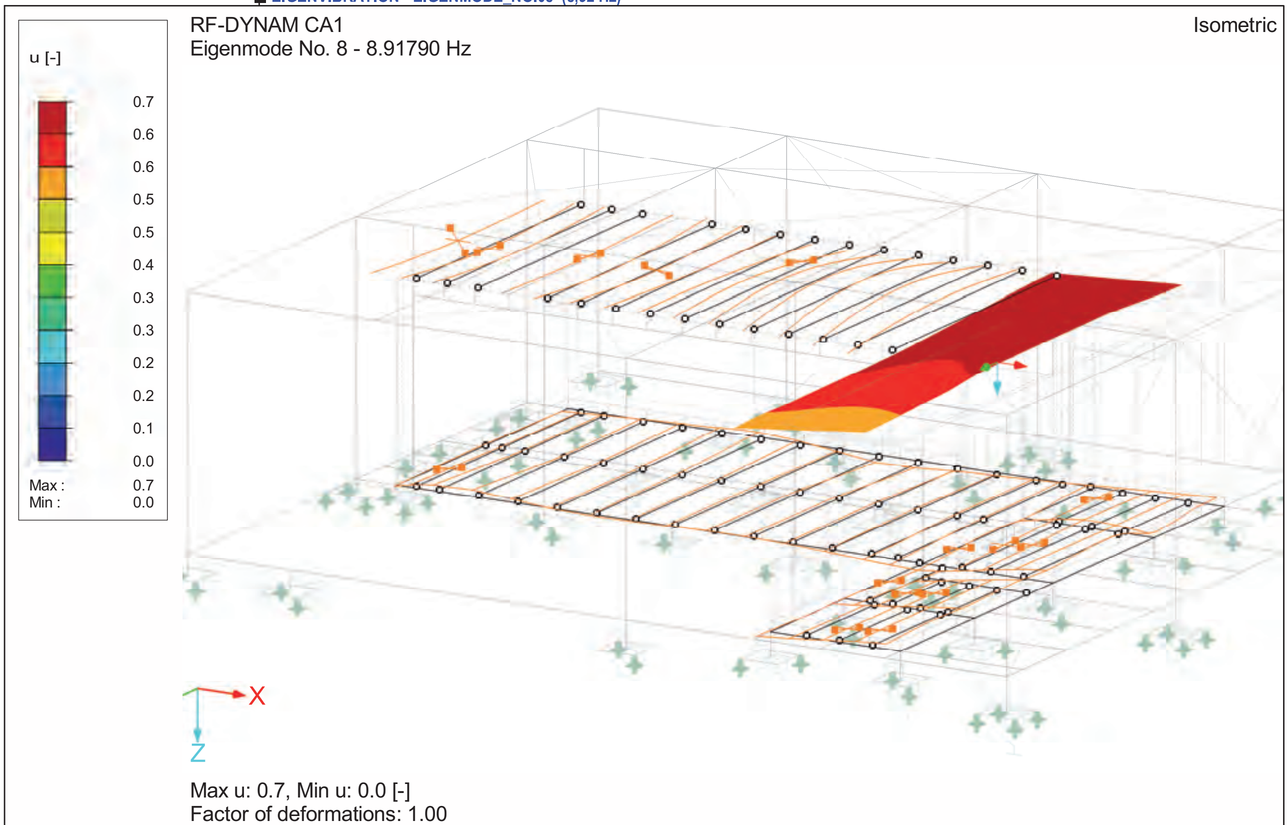
RF-DYNAM CA1
Eigenmode No. 8 - 8.91790 Hz

Isometric

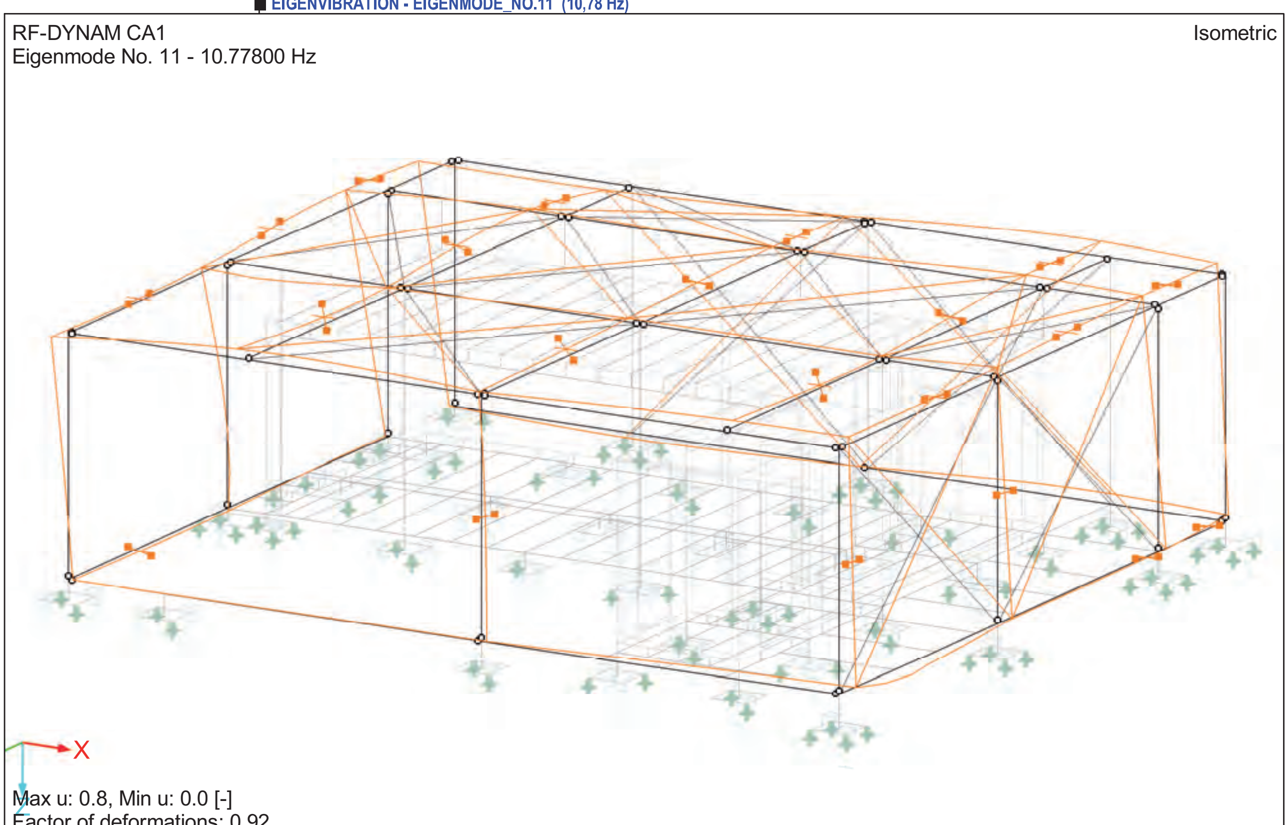


Max u: 0.7, Min u: 0.1 [-]
Factor of deformations: 1.00

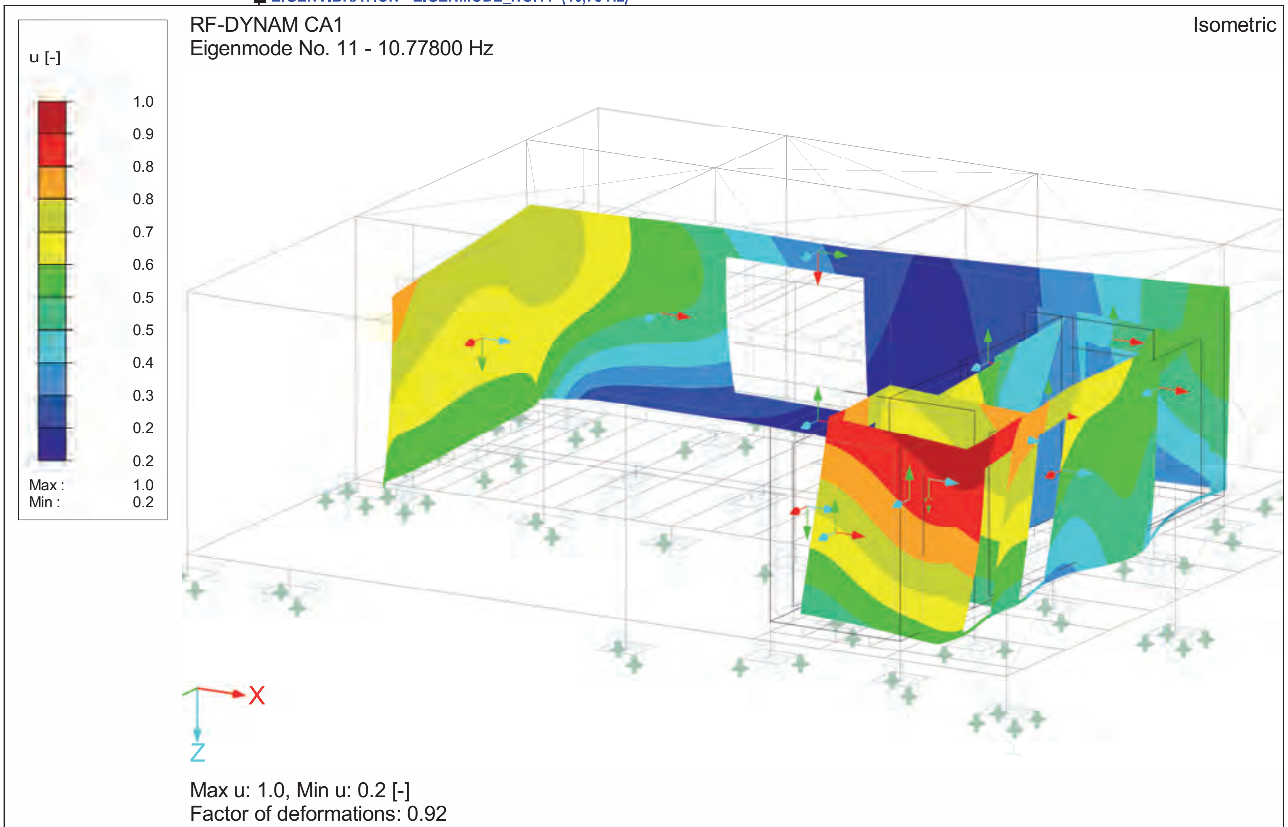
EIGENVIBRATION - EIGENMODE_NO.08 (8,92 Hz)



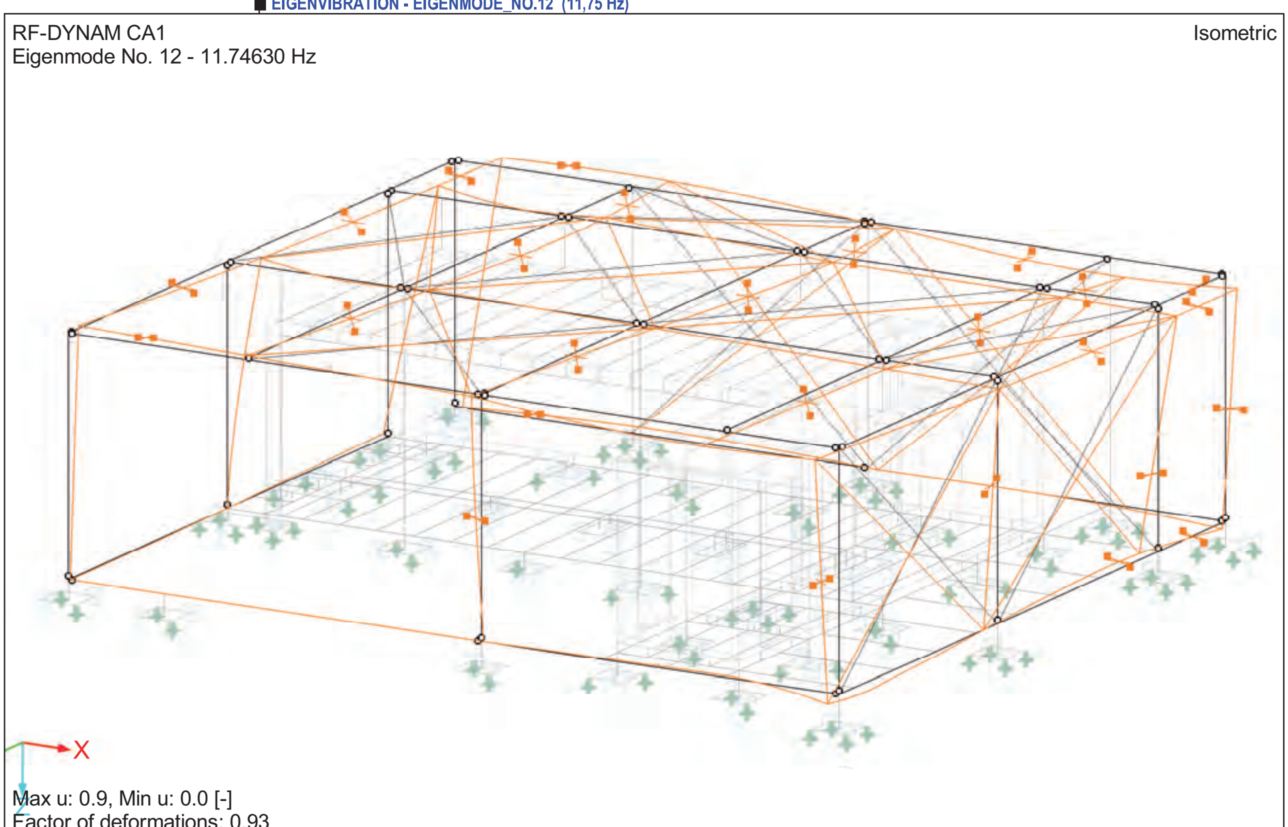
EIGENVIBRATION - EIGENMODE_NO.11 (10,78 Hz)



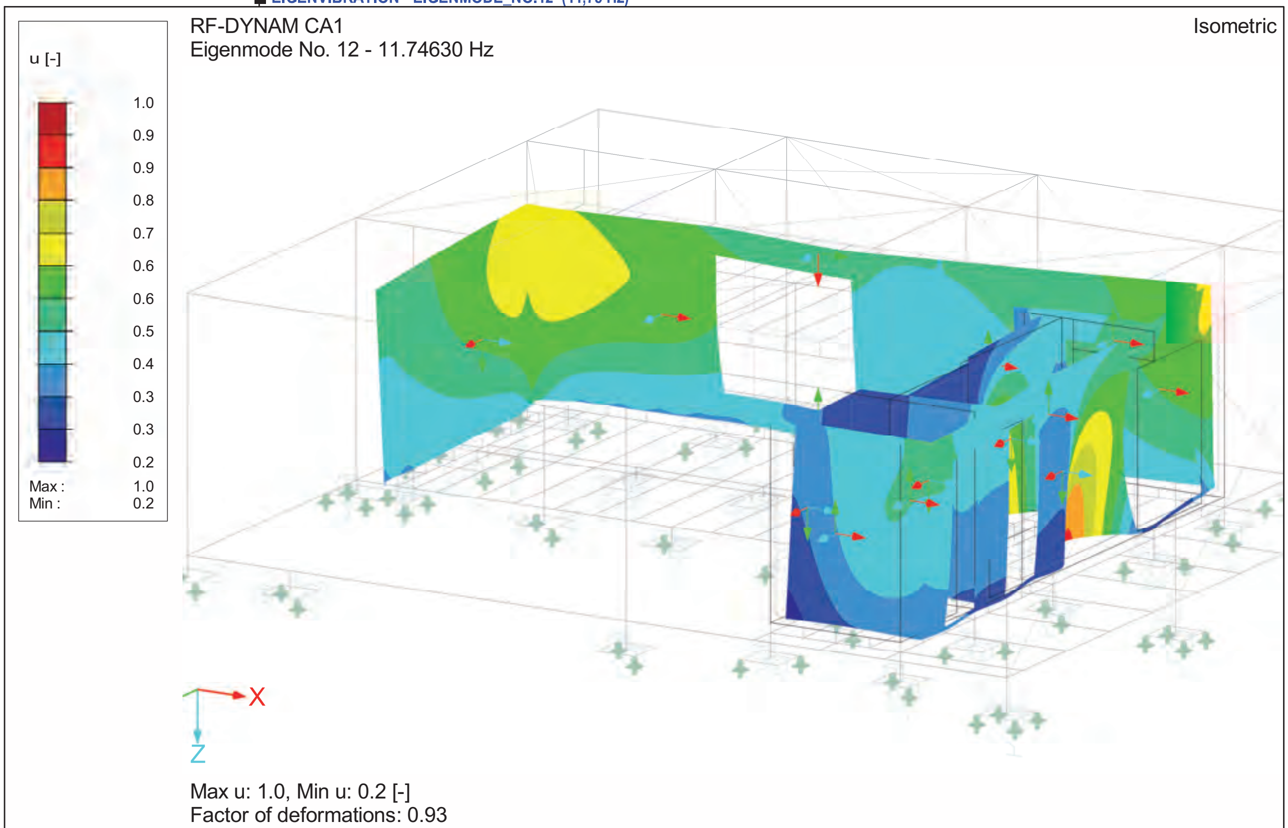
EIGENVIBRATION - EIGENMODE_NO.11 (10,78 Hz)



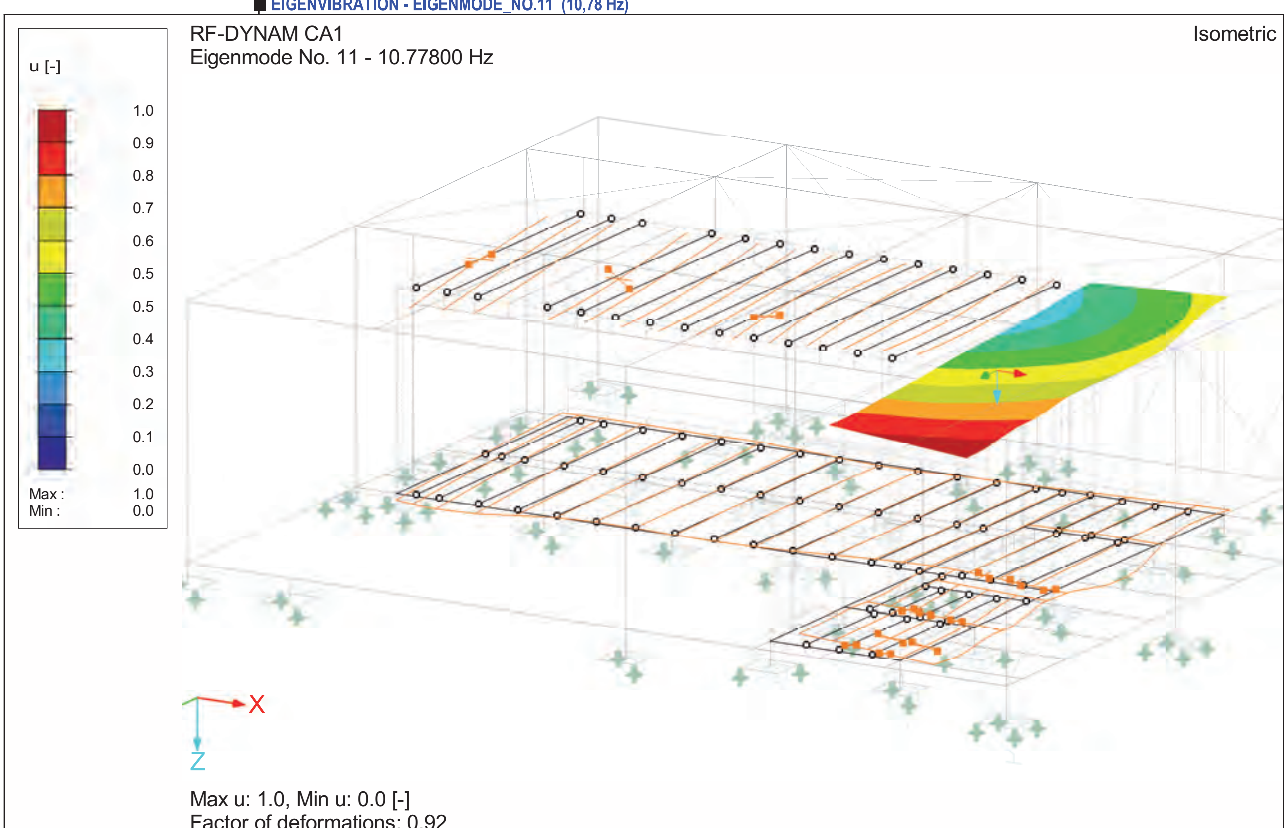
EIGENVIBRATION - EIGENMODE_NO.12 (11,75 Hz)



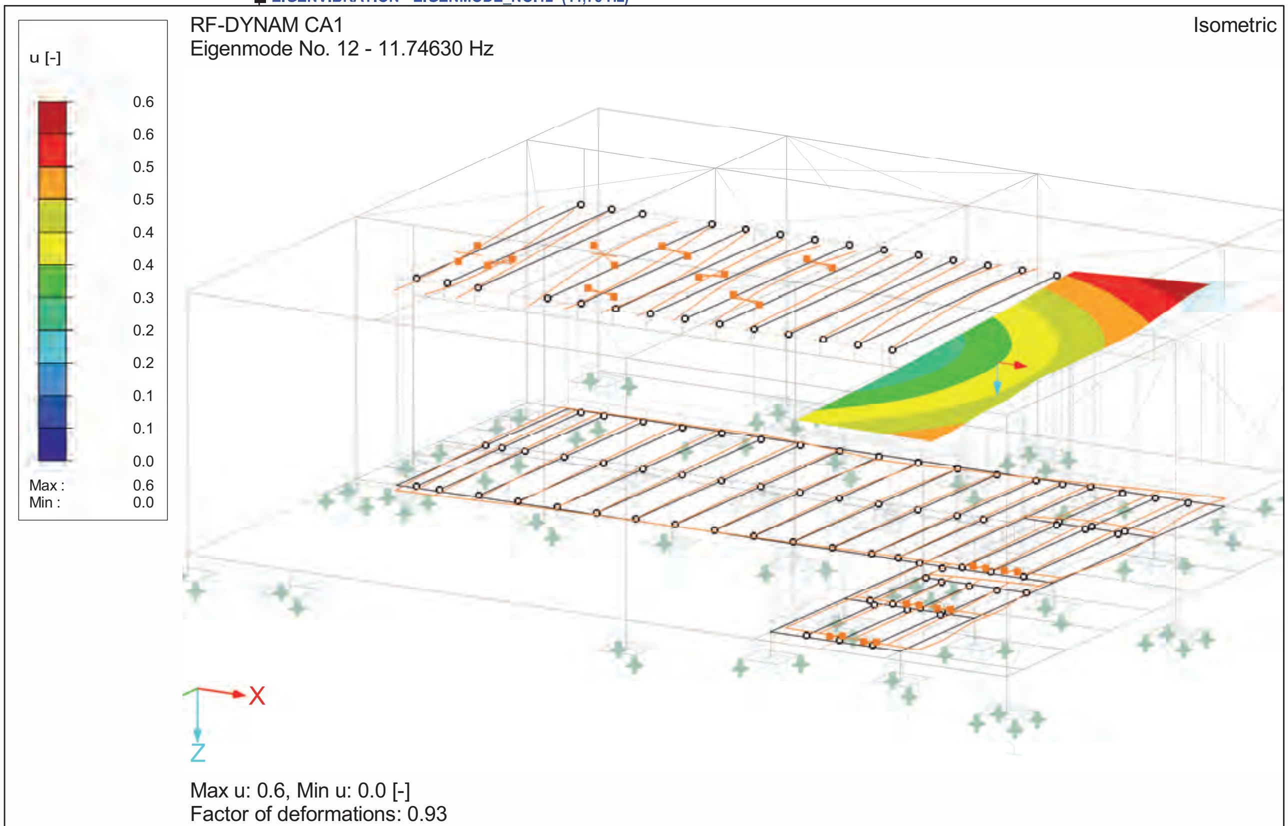
EIGENVIBRATION - EIGENMODE_NO.12 (11,75 Hz)



EIGENVIBRATION - EIGENMODE_NO.11 (10,78 Hz)



EIGENVIBRATION - EIGENMODE_NO.12 (11,75 Hz)



RF-COMBI 2006

CA1

1.1.1 GENERAL DATA

Generation of : Load Groups for Non-Linear Analyses

Combination Rules according to Standard CSN EN 1990 + EN 1995

Generating for Design Situations :
- ☐ Static Equilibrium
  - ☒ Basic Combination
  - ☐ Exceptional
  - ☒ Seismic
- ☒ Ultimate limit state
  - ☒ Basic Combination
  - ☐ Exceptional
  - ☒ Seismic
- ☒ Serviceability Limit State
  - ☒ Rare
  - ☐ Frequent
  - ☐ Quasi-Permanent

☒ Generating ULS Combinations from favorable permanent Actions

Control Parameters : ☐ Reducing possible combinations by examining the results

First number of generated LG : 1

1.1.2 DETAILS - PARTIAL FACTORS - STATIC EQUILIBRIUM

			Design Situation		
	Action Category		Basic Combination	Exceptional	Seismic
1.	Permanent Actions	unfavorable g-G,sup:	1.10	1.00	1.00
		favorable g-G,inf:	0.90	1.00	1.00
2.	Prestress	unfavorable g-P,sup:	1.10	1.00	1.00
		favorable g-P,inf:	0.90	1.00	1.00
3. ...					
6.	Variable Actions	unfavorable g-Q:	1.50	1.00	1.00
7.	Accidental Actions	g-A:		1.00	
8.	Seismic Actions	g-1:			1.00

1.1.3 DETAILS - PARTIAL FACTORS - ULTIMATE LIMIT STATE

			Design Situation		
	Action Category		Basic Combination	Exceptional	Seismic
1.	Permanent Actions	unfavorable g-G,sup:	1.35	1.00	1.00
		favorable g-G,inf:	1.00	1.00	1.00
2.	Prestress	g-P,sup:	1.00	1.00	1.00
3. ...					
6.	Variable Actions	unfavorable g-Q:	1.50	1.00	1.00
7.	Accidental Actions	g-A:		1.00	
8.	Seismic Actions	g-1:			1.00

1.1.5 DETAILS - COMBINATION FACTORS - VARIABLE ACTIONS

			Combination Factors		
	Action Category		Phi-0	Phi-1	Phi-2
3. A	Live Loads	- Category A - Housing/Common Rooms	0.70	0.50	0.30
3. B		- Category B - Offices	0.70	0.50	0.30
3. C		- Category C - Meeting Halls	0.70	0.70	0.60
3. D		- Category D - Showrooms	0.70	0.70	0.60
3. E		- Category E - Storage Rooms	1.00	0.90	0.80
3. F	Live Loads	- Category F - Vehicle Load < 30 kN	0.70	0.70	0.60
3. G		- Category G - Vehicle Load > 30 kN	0.70	0.50	0.30
3. H		- Category H - Roofs	0.00	0.00	0.00
4. A	Snow and Ice Loads	- Finland, Island, Norway, Sweden	0.70	0.50	0.20
4. B	- Other CEN Countries	- Sites > 1 000 m Altitude	0.50	0.20	0.00
5.	Wind Loads		0.60	0.20	0.00
6.	Temperature Actions (Fire Excluded)		0.60	0.50	0.00

1.2 ACTIONS

Action No.	Description	Load Cases	LC Description	Alternative
AC1	SELF_WEIGH_OF_STRUCTURE	LC1	SELF_WEIGH_OF_STRUCTURE	
AC2	IMPOSED_LOADS	LC2	IMPOSED_INTERIOR	
		LC3	IMPOSED_ROOF	
AC3	SNOW	LC4	SNOW	
AC4	WIND	LC5	WIND_W1	
		LC6	WIND_W2	
		LC7	WIND_W3	
		LC8	WIND_W4	
AC5	SEISMIC	LC10	Equivalent lateral loads from RF-DYNA	
		LC11	Equivalent lateral loads from RF-DYNA	
		LC14	Equivalent lateral loads from RF-DYNA	
		LC17	Equivalent lateral loads from RF-DYNA	
		LC20	Equivalent lateral loads from RF-DYNA	
		LC21	Equivalent lateral loads from RF-DYNA	

1.3 ACTION CATEGORIES

	Action Category			Actions
1.	Permanent Actions		$G_{k,j}$:	AC1
2.	Prestress		P_k:	
3. A	Live Loads	- Category A - Housing/Common Rooms	$Q_{k,i}$:	
3. B		- Category B - Offices	$Q_{k,i}$:	
3. C		- Category C - Meeting Halls	$Q_{k,i}$:	AC2
3. D		- Category D - Showrooms	$Q_{k,i}$:	
3. E		- Category E - Storage Rooms	$Q_{k,i}$:	
3. F	Live Loads	- Category F - Vehicle Load < 30 kN	$Q_{k,i}$:	
3. G		- Category G - Vehicle Load > 30 kN	$Q_{k,i}$:	
3. H		- Category H - Roofs	$Q_{k,i}$:	
4. A	Snow and Ice Loads		$Q_{k,i}$:	
4. B	Snow and Ice Loads		$Q_{k,i}$:	AC3
5.	Wind Loads		$Q_{k,i}$:	AC4
6.	Temperature Actions (Fire Excluded)		$Q_{k,i}$:	
7.	Accidental Actions		A_d:	
8.	Seismic Actions		A_{Ed}:	AC5

2.1 BY ACTIONS

No.	Apply	LG No.	LG Type	Load Group
1	☒	LG1	UB	1.35*AC1
2	☒	LG2 .. 4	UB	1.35*AC1 + 1.50*AC2
3	☒	LG5	UB	1.35*AC1 + 1.50*AC2 + 0.75*AC3
4	☒	LG6 .. 9	UB	1.35*AC1 + 1.50*AC2 + 0.75*AC3 + 0.90*AC4
5	☒	LG10 .. 21	UB	1.35*AC1 + 1.50*AC2 + 0.90*AC4
6	☒	LG22	UB	1.35*AC1 + 1.50*AC3
7	☒	LG23	UB	1.35*AC1 + 1.05*AC2 + 1.50*AC3
8	☒	LG24 .. 27	UB	1.35*AC1 + 1.05*AC2 + 1.50*AC3 + 0.90*AC4
9	☒	LG28 .. 31	UB	1.35*AC1 + 1.50*AC3 + 0.90*AC4
10	☒	LG32 .. 35	UB	1.35*AC1 + 1.50*AC4
11	☒	LG36 .. 47	UB	1.35*AC1 + 1.05*AC2 + 1.50*AC4
12	☒	LG48 .. 51	UB	1.35*AC1 + 1.05*AC2 + 0.75*AC3 + 1.50*AC4
13	☒	LG52 .. 55	UB	1.35*AC1 + 0.75*AC3 + 1.50*AC4
14	☐	LG56	UB	1.00*AC1
15	☐	LG57 .. 59	UB	1.00*AC1 + 1.50*AC2
16	☐	LG60	UB	1.00*AC1 + 1.50*AC2 + 0.75*AC3
17	☐	LG61 .. 64	UB	1.00*AC1 + 1.50*AC2 + 0.75*AC3 + 0.90*AC4
18	☐	LG65 .. 76	UB	1.00*AC1 + 1.50*AC2 + 0.90*AC4
19	☐	LG77	UB	1.00*AC1 + 1.50*AC3
20	☐	LG78	UB	1.00*AC1 + 1.05*AC2 + 1.50*AC3
21	☐	LG79 .. 82	UB	1.00*AC1 + 1.05*AC2 + 1.50*AC3 + 0.90*AC4
22	☐	LG83 .. 86	UB	1.00*AC1 + 1.50*AC3 + 0.90*AC4
23	☒	LG87 .. 90	UB	1.00*AC1 + 1.50*AC4
24	☐	LG91 .. 102	UB	1.00*AC1 + 1.05*AC2 + 1.50*AC4
25	☐	LG103 .. 106	UB	1.00*AC1 + 1.05*AC2 + 0.75*AC3 + 1.50*AC4
26	☐	LG107 .. 110	UB	1.00*AC1 + 0.75*AC3 + 1.50*AC4

2.1 BY ACTIONS

No.	Apply	LG No.	LG Type	Load Group
27	☒	LG111 .. 116	US	1.00*AC1 + 1.00*AC5
28	☒	LG117 .. 134	US	1.00*AC1 + 0.60*AC2 + 1.00*AC5
29	☐	LG135 .. 140	US	1.00*AC1 + 0.60*AC2 + 0.00*AC3 + 1.00*AC5
30	☐	LG141 .. 164	US	1.00*AC1 + 0.60*AC2 + 0.00*AC3 + 0.00*AC4 + 1.00*AC5
31	☐	LG165 .. 236	US	1.00*AC1 + 0.60*AC2 + 0.00*AC4 + 1.00*AC5
32	☐	LG237 .. 242	US	1.00*AC1 + 0.00*AC3 + 1.00*AC5
33	☐	LG243 .. 266	US	1.00*AC1 + 0.00*AC3 + 0.00*AC4 + 1.00*AC5
34	☐	LG267 .. 290	US	1.00*AC1 + 0.00*AC4 + 1.00*AC5
35	☒	LG291	SC	1.00*AC1
36	☒	LG292 .. 294	SC	1.00*AC1 + 1.00*AC2
37	☒	LG295	SC	1.00*AC1 + 1.00*AC2 + 0.50*AC3
38	☒	LG296 .. 299	SC	1.00*AC1 + 1.00*AC2 + 0.50*AC3 + 0.60*AC4
39	☒	LG300 .. 311	SC	1.00*AC1 + 1.00*AC2 + 0.60*AC4
40	☒	LG312	SC	1.00*AC1 + 1.00*AC3
41	☒	LG313	SC	1.00*AC1 + 0.70*AC2 + 1.00*AC3
42	☒	LG314 .. 317	SC	1.00*AC1 + 0.70*AC2 + 1.00*AC3 + 0.60*AC4
43	☒	LG318 .. 321	SC	1.00*AC1 + 1.00*AC3 + 0.60*AC4
44	☒	LG322 .. 325	SC	1.00*AC1 + 1.00*AC4
45	☒	LG326 .. 337	SC	1.00*AC1 + 0.70*AC2 + 1.00*AC4
46	☒	LG338 .. 341	SC	1.00*AC1 + 0.70*AC2 + 0.50*AC3 + 1.00*AC4
47	☒	LG342 .. 345	SC	1.00*AC1 + 0.50*AC3 + 1.00*AC4

2.2 BY LOAD CASES

LG No.	Apply	LG Type	Load Group
LG1	☒	UB	1.35*LC1
LG2	☒	UB	1.35*LC1 + 1.50*LC2
LG3	☒	UB	1.35*LC1 + 1.50*LC2 + 1.50*LC3
LG4	☒	UB	1.35*LC1 + 1.50*LC3
LG5	☒	UB	1.35*LC1 + 1.50*LC2 + 0.75*LC4
LG6	☒	UB	1.35*LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC5
LG7	☒	UB	1.35*LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC6
LG8	☒	UB	1.35*LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC7
LG9	☒	UB	1.35*LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC8
LG10	☒	UB	1.35*LC1 + 1.50*LC2 + 0.90*LC5
LG11	☒	UB	1.35*LC1 + 1.50*LC2 + 0.90*LC6
LG12	☒	UB	1.35*LC1 + 1.50*LC2 + 0.90*LC7
LG13	☒	UB	1.35*LC1 + 1.50*LC2 + 0.90*LC8
LG14	☒	UB	1.35*LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC5
LG15	☒	UB	1.35*LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC6
LG16	☒	UB	1.35*LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC7
LG17	☒	UB	1.35*LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC8
LG18	☒	UB	1.35*LC1 + 1.50*LC3 + 0.90*LC5
LG19	☒	UB	1.35*LC1 + 1.50*LC3 + 0.90*LC6
LG20	☒	UB	1.35*LC1 + 1.50*LC3 + 0.90*LC7
LG21	☒	UB	1.35*LC1 + 1.50*LC3 + 0.90*LC8
LG22	☒	UB	1.35*LC1 + 1.50*LC4
LG23	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC4
LG24	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC5
LG25	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC6
LG26	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC7
LG27	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC8
LG28	☒	UB	1.35*LC1 + 1.50*LC4 + 0.90*LC5
LG29	☒	UB	1.35*LC1 + 1.50*LC4 + 0.90*LC6
LG30	☒	UB	1.35*LC1 + 1.50*LC4 + 0.90*LC7
LG31	☒	UB	1.35*LC1 + 1.50*LC4 + 0.90*LC8
LG32	☒	UB	1.35*LC1 + 1.50*LC5
LG33	☒	UB	1.35*LC1 + 1.50*LC6
LG34	☒	UB	1.35*LC1 + 1.50*LC7
LG35	☒	UB	1.35*LC1 + 1.50*LC8
LG36	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC5
LG37	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC6
LG38	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC7
LG39	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC8
LG40	☒	UB	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC5
LG41	☒	UB	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC6
LG42	☒	UB	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC7
LG43	☒	UB	1.35*LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC8
LG44	☒	UB	1.35*LC1 + 1.05*LC3 + 1.50*LC5
LG45	☒	UB	1.35*LC1 + 1.05*LC3 + 1.50*LC6

2.2 BY LOAD CASES

LG No.	Apply	LG Type	Load Group
LG46	☒	UB	1.35*LC1 + 1.05*LC3 + 1.50*LC7
LG47	☒	UB	1.35*LC1 + 1.05*LC3 + 1.50*LC8
LG48	☒	UB	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC5
LG49	☒	UB	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC6
LG50	☒	UB	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC7
LG51	☒	UB	1.35*LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC8
LG52	☒	UB	1.35*LC1 + 0.75*LC4 + 1.50*LC5
LG53	☒	UB	1.35*LC1 + 0.75*LC4 + 1.50*LC6
LG54	☒	UB	1.35*LC1 + 0.75*LC4 + 1.50*LC7
LG55	☒	UB	1.35*LC1 + 0.75*LC4 + 1.50*LC8
LG56	☐	UB	LC1
LG57	☐	UB	LC1 + 1.50*LC2
LG58	☐	UB	LC1 + 1.50*LC2 + 1.50*LC3
LG59	☐	UB	LC1 + 1.50*LC3
LG60	☐	UB	LC1 + 1.50*LC2 + 0.75*LC4
LG61	☐	UB	LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC5
LG62	☐	UB	LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC6
LG63	☐	UB	LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC7
LG64	☐	UB	LC1 + 1.50*LC2 + 0.75*LC4 + 0.90*LC8
LG65	☐	UB	LC1 + 1.50*LC2 + 0.90*LC5
LG66	☐	UB	LC1 + 1.50*LC2 + 0.90*LC6
LG67	☐	UB	LC1 + 1.50*LC2 + 0.90*LC7
LG68	☐	UB	LC1 + 1.50*LC2 + 0.90*LC8
LG69	☐	UB	LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC5
LG70	☐	UB	LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC6
LG71	☐	UB	LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC7
LG72	☐	UB	LC1 + 1.50*LC2 + 1.50*LC3 + 0.90*LC8
LG73	☐	UB	LC1 + 1.50*LC3 + 0.90*LC5
LG74	☐	UB	LC1 + 1.50*LC3 + 0.90*LC6
LG75	☐	UB	LC1 + 1.50*LC3 + 0.90*LC7
LG76	☐	UB	LC1 + 1.50*LC3 + 0.90*LC8
LG77	☐	UB	LC1 + 1.50*LC4
LG78	☐	UB	LC1 + 1.05*LC2 + 1.50*LC4
LG79	☐	UB	LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC5
LG80	☐	UB	LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC6
LG81	☐	UB	LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC7
LG82	☐	UB	LC1 + 1.05*LC2 + 1.50*LC4 + 0.90*LC8
LG83	☐	UB	LC1 + 1.50*LC4 + 0.90*LC5
LG84	☐	UB	LC1 + 1.50*LC4 + 0.90*LC6
LG85	☐	UB	LC1 + 1.50*LC4 + 0.90*LC7
LG86	☐	UB	LC1 + 1.50*LC4 + 0.90*LC8
LG87	☒	UB	LC1 + 1.50*LC5
LG88	☒	UB	LC1 + 1.50*LC6
LG89	☒	UB	LC1 + 1.50*LC7
LG90	☒	UB	LC1 + 1.50*LC8
LG91	☐	UB	LC1 + 1.05*LC2 + 1.50*LC5
LG92	☐	UB	LC1 + 1.05*LC2 + 1.50*LC6
LG93	☐	UB	LC1 + 1.05*LC2 + 1.50*LC7
LG94	☐	UB	LC1 + 1.05*LC2 + 1.50*LC8
LG95	☐	UB	LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC5
LG96	☐	UB	LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC6
LG97	☐	UB	LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC7
LG98	☐	UB	LC1 + 1.05*LC2 + 1.05*LC3 + 1.50*LC8
LG99	☐	UB	LC1 + 1.05*LC3 + 1.50*LC5
LG100	☐	UB	LC1 + 1.05*LC3 + 1.50*LC6
LG101	☐	UB	LC1 + 1.05*LC3 + 1.50*LC7
LG102	☐	UB	LC1 + 1.05*LC3 + 1.50*LC8
LG103	☐	UB	LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC5
LG104	☐	UB	LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC6
LG105	☐	UB	LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC7
LG106	☐	UB	LC1 + 1.05*LC2 + 0.75*LC4 + 1.50*LC8
LG107	☐	UB	LC1 + 0.75*LC4 + 1.50*LC5
LG108	☐	UB	LC1 + 0.75*LC4 + 1.50*LC6
LG109	☐	UB	LC1 + 0.75*LC4 + 1.50*LC7
LG110	☐	UB	LC1 + 0.75*LC4 + 1.50*LC8
LG111	☒	US	LC1 + LC10
LG112	☒	US	LC1 + LC11
LG113	☒	US	LC1 + LC14
LG114	☒	US	LC1 + LC17
LG115	☒	US	LC1 + LC20
LG116	☒	US	LC1 + LC21

2.2 BY LOAD CASES

LG No.	Apply	LG Type	Load Group
LG117	☒	US	LC1 + 0.60*LC2 + LC10
LG118	☒	US	LC1 + 0.60*LC2 + LC11
LG119	☒	US	LC1 + 0.60*LC2 + LC14
LG120	☒	US	LC1 + 0.60*LC2 + LC17
LG121	☒	US	LC1 + 0.60*LC2 + LC20
LG122	☒	US	LC1 + 0.60*LC2 + LC21
LG123	☒	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC10
LG124	☒	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC11
LG125	☒	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC14
LG126	☒	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC17
LG127	☒	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC20
LG128	☒	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC21
LG129	☒	US	LC1 + 0.60*LC3 + LC10
LG130	☒	US	LC1 + 0.60*LC3 + LC11
LG131	☒	US	LC1 + 0.60*LC3 + LC14
LG132	☒	US	LC1 + 0.60*LC3 + LC17
LG133	☒	US	LC1 + 0.60*LC3 + LC20
LG134	☒	US	LC1 + 0.60*LC3 + LC21
LG135	☐	US	LC1 + 0.60*LC2 + LC10
LG136	☐	US	LC1 + 0.60*LC2 + LC11
LG137	☐	US	LC1 + 0.60*LC2 + LC14
LG138	☐	US	LC1 + 0.60*LC2 + LC17
LG139	☐	US	LC1 + 0.60*LC2 + LC20
LG140	☐	US	LC1 + 0.60*LC2 + LC21
LG141	☐	US	LC1 + 0.60*LC2 + LC10
LG142	☐	US	LC1 + 0.60*LC2 + LC11
LG143	☐	US	LC1 + 0.60*LC2 + LC14
LG144	☐	US	LC1 + 0.60*LC2 + LC17
LG145	☐	US	LC1 + 0.60*LC2 + LC20
LG146	☐	US	LC1 + 0.60*LC2 + LC21
LG147	☐	US	LC1 + 0.60*LC2 + LC10
LG148	☐	US	LC1 + 0.60*LC2 + LC11
LG149	☐	US	LC1 + 0.60*LC2 + LC14
LG150	☐	US	LC1 + 0.60*LC2 + LC17
LG151	☐	US	LC1 + 0.60*LC2 + LC20
LG152	☐	US	LC1 + 0.60*LC2 + LC21
LG153	☐	US	LC1 + 0.60*LC2 + LC10
LG154	☐	US	LC1 + 0.60*LC2 + LC11
LG155	☐	US	LC1 + 0.60*LC2 + LC14
LG156	☐	US	LC1 + 0.60*LC2 + LC17
LG157	☐	US	LC1 + 0.60*LC2 + LC20
LG158	☐	US	LC1 + 0.60*LC2 + LC21
LG159	☐	US	LC1 + 0.60*LC2 + LC10
LG160	☐	US	LC1 + 0.60*LC2 + LC11
LG161	☐	US	LC1 + 0.60*LC2 + LC14
LG162	☐	US	LC1 + 0.60*LC2 + LC17
LG163	☐	US	LC1 + 0.60*LC2 + LC20
LG164	☐	US	LC1 + 0.60*LC2 + LC21
LG165	☐	US	LC1 + 0.60*LC2 + LC10
LG166	☐	US	LC1 + 0.60*LC2 + LC11
LG167	☐	US	LC1 + 0.60*LC2 + LC14
LG168	☐	US	LC1 + 0.60*LC2 + LC17
LG169	☐	US	LC1 + 0.60*LC2 + LC20
LG170	☐	US	LC1 + 0.60*LC2 + LC21
LG171	☐	US	LC1 + 0.60*LC2 + LC10
LG172	☐	US	LC1 + 0.60*LC2 + LC11
LG173	☐	US	LC1 + 0.60*LC2 + LC14
LG174	☐	US	LC1 + 0.60*LC2 + LC17
LG175	☐	US	LC1 + 0.60*LC2 + LC20
LG176	☐	US	LC1 + 0.60*LC2 + LC21
LG177	☐	US	LC1 + 0.60*LC2 + LC10
LG178	☐	US	LC1 + 0.60*LC2 + LC11
LG179	☐	US	LC1 + 0.60*LC2 + LC14
LG180	☐	US	LC1 + 0.60*LC2 + LC17
LG181	☐	US	LC1 + 0.60*LC2 + LC20
LG182	☐	US	LC1 + 0.60*LC2 + LC21
LG183	☐	US	LC1 + 0.60*LC2 + LC10
LG184	☐	US	LC1 + 0.60*LC2 + LC11
LG185	☐	US	LC1 + 0.60*LC2 + LC14
LG186	☐	US	LC1 + 0.60*LC2 + LC17
LG187	☐	US	LC1 + 0.60*LC2 + LC20

2.2 BY LOAD CASES

LG No.	Apply	LG Type	Load Group
LG188	☐	US	LC1 + 0.60*LC2 + LC21
LG189	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC10
LG190	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC11
LG191	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC14
LG192	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC17
LG193	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC20
LG194	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC21
LG195	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC10
LG196	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC11
LG197	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC14
LG198	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC17
LG199	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC20
LG200	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC21
LG201	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC10
LG202	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC11
LG203	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC14
LG204	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC17
LG205	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC20
LG206	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC21
LG207	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC10
LG208	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC11
LG209	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC14
LG210	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC17
LG211	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC20
LG212	☐	US	LC1 + 0.60*LC2 + 0.60*LC3 + LC21
LG213	☐	US	LC1 + 0.60*LC3 + LC10
LG214	☐	US	LC1 + 0.60*LC3 + LC11
LG215	☐	US	LC1 + 0.60*LC3 + LC14
LG216	☐	US	LC1 + 0.60*LC3 + LC17
LG217	☐	US	LC1 + 0.60*LC3 + LC20
LG218	☐	US	LC1 + 0.60*LC3 + LC21
LG219	☐	US	LC1 + 0.60*LC3 + LC10
LG220	☐	US	LC1 + 0.60*LC3 + LC11
LG221	☐	US	LC1 + 0.60*LC3 + LC14
LG222	☐	US	LC1 + 0.60*LC3 + LC17
LG223	☐	US	LC1 + 0.60*LC3 + LC20
LG224	☐	US	LC1 + 0.60*LC3 + LC21
LG225	☐	US	LC1 + 0.60*LC3 + LC10
LG226	☐	US	LC1 + 0.60*LC3 + LC11
LG227	☐	US	LC1 + 0.60*LC3 + LC14
LG228	☐	US	LC1 + 0.60*LC3 + LC17
LG229	☐	US	LC1 + 0.60*LC3 + LC20
LG230	☐	US	LC1 + 0.60*LC3 + LC21
LG231	☐	US	LC1 + 0.60*LC3 + LC10
LG232	☐	US	LC1 + 0.60*LC3 + LC11
LG233	☐	US	LC1 + 0.60*LC3 + LC14
LG234	☐	US	LC1 + 0.60*LC3 + LC17
LG235	☐	US	LC1 + 0.60*LC3 + LC20
LG236	☐	US	LC1 + 0.60*LC3 + LC21
LG237	☐	US	LC1 + LC10
LG238	☐	US	LC1 + LC11
LG239	☐	US	LC1 + LC14
LG240	☐	US	LC1 + LC17
LG241	☐	US	LC1 + LC20
LG242	☐	US	LC1 + LC21
LG243	☐	US	LC1 + LC10
LG244	☐	US	LC1 + LC11
LG245	☐	US	LC1 + LC14
LG246	☐	US	LC1 + LC17
LG247	☐	US	LC1 + LC20
LG248	☐	US	LC1 + LC21
LG249	☐	US	LC1 + LC10
LG250	☐	US	LC1 + LC11
LG251	☐	US	LC1 + LC14
LG252	☐	US	LC1 + LC17
LG253	☐	US	LC1 + LC20
LG254	☐	US	LC1 + LC21
LG255	☐	US	LC1 + LC10
LG256	☐	US	LC1 + LC11
LG257	☐	US	LC1 + LC14
LG258	☐	US	LC1 + LC17

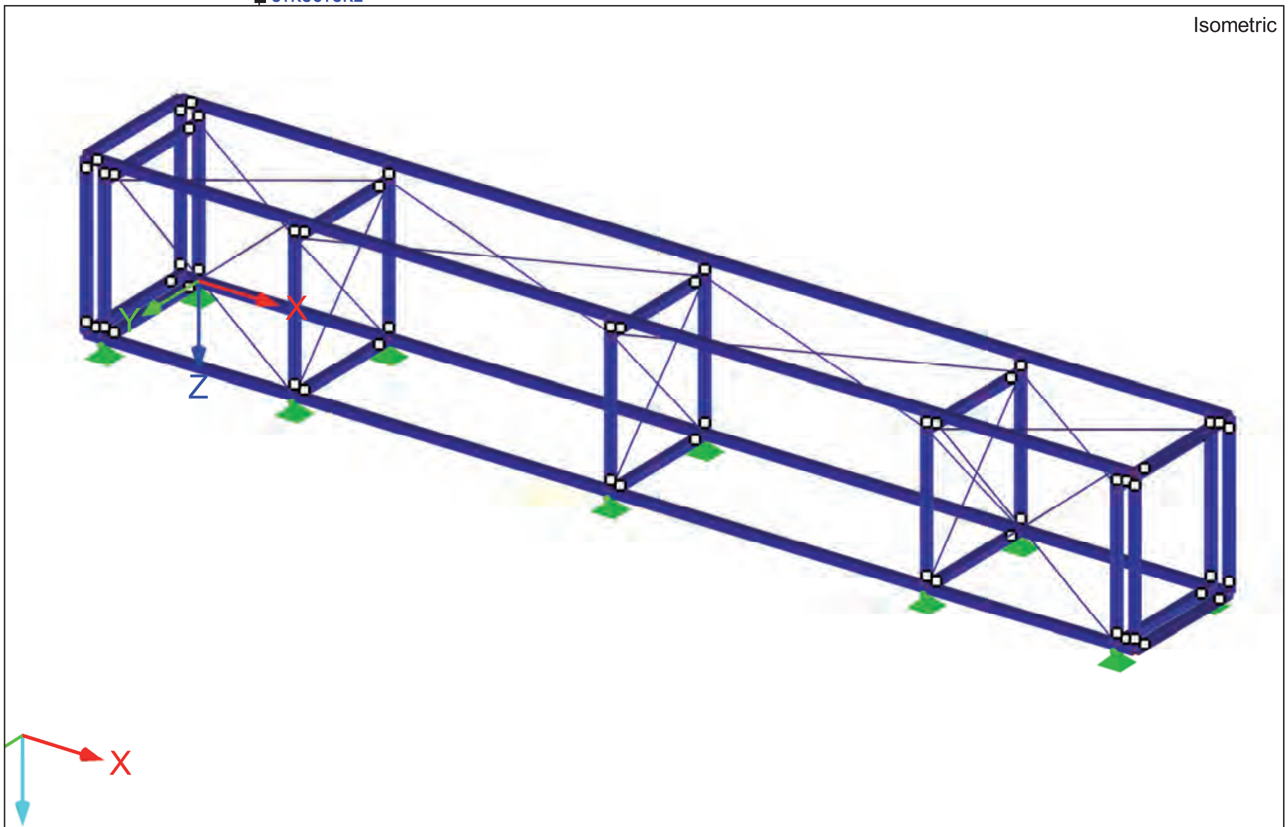
2.2 BY LOAD CASES

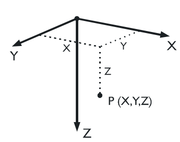
LG No.	Apply	LG Type	Load Group
LG259	☐	US	LC1 + LC20
LG260	☐	US	LC1 + LC21
LG261	☐	US	LC1 + LC10
LG262	☐	US	LC1 + LC11
LG263	☐	US	LC1 + LC14
LG264	☐	US	LC1 + LC17
LG265	☐	US	LC1 + LC20
LG266	☐	US	LC1 + LC21
LG267	☐	US	LC1 + LC10
LG268	☐	US	LC1 + LC11
LG269	☐	US	LC1 + LC14
LG270	☐	US	LC1 + LC17
LG271	☐	US	LC1 + LC20
LG272	☐	US	LC1 + LC21
LG273	☐	US	LC1 + LC10
LG274	☐	US	LC1 + LC11
LG275	☐	US	LC1 + LC14
LG276	☐	US	LC1 + LC17
LG277	☐	US	LC1 + LC20
LG278	☐	US	LC1 + LC21
LG279	☐	US	LC1 + LC10
LG280	☐	US	LC1 + LC11
LG281	☐	US	LC1 + LC14
LG282	☐	US	LC1 + LC17
LG283	☐	US	LC1 + LC20
LG284	☐	US	LC1 + LC21
LG285	☐	US	LC1 + LC10
LG286	☐	US	LC1 + LC11
LG287	☐	US	LC1 + LC14
LG288	☐	US	LC1 + LC17
LG289	☐	US	LC1 + LC20
LG290	☐	US	LC1 + LC21
LG291	☒	SC	LC1
LG292	☒	SC	LC1 + LC2
LG293	☒	SC	LC1 + LC2 + LC3
LG294	☒	SC	LC1 + LC3
LG295	☒	SC	LC1 + LC2 + 0.50*LC4
LG296	☒	SC	LC1 + LC2 + 0.50*LC4 + 0.60*LC5
LG297	☒	SC	LC1 + LC2 + 0.50*LC4 + 0.60*LC6
LG298	☒	SC	LC1 + LC2 + 0.50*LC4 + 0.60*LC7
LG299	☒	SC	LC1 + LC2 + 0.50*LC4 + 0.60*LC8
LG300	☒	SC	LC1 + LC2 + 0.60*LC5
LG301	☒	SC	LC1 + LC2 + 0.60*LC6
LG302	☒	SC	LC1 + LC2 + 0.60*LC7
LG303	☒	SC	LC1 + LC2 + 0.60*LC8
LG304	☒	SC	LC1 + LC2 + LC3 + 0.60*LC5
LG305	☒	SC	LC1 + LC2 + LC3 + 0.60*LC6
LG306	☒	SC	LC1 + LC2 + LC3 + 0.60*LC7
LG307	☒	SC	LC1 + LC2 + LC3 + 0.60*LC8
LG308	☒	SC	LC1 + LC3 + 0.60*LC5
LG309	☒	SC	LC1 + LC3 + 0.60*LC6
LG310	☒	SC	LC1 + LC3 + 0.60*LC7
LG311	☒	SC	LC1 + LC3 + 0.60*LC8
LG312	☒	SC	LC1 + LC4
LG313	☒	SC	LC1 + 0.70*LC2 + LC4
LG314	☒	SC	LC1 + 0.70*LC2 + LC4 + 0.60*LC5
LG315	☒	SC	LC1 + 0.70*LC2 + LC4 + 0.60*LC6
LG316	☒	SC	LC1 + 0.70*LC2 + LC4 + 0.60*LC7
LG317	☒	SC	LC1 + 0.70*LC2 + LC4 + 0.60*LC8
LG318	☒	SC	LC1 + LC4 + 0.60*LC5
LG319	☒	SC	LC1 + LC4 + 0.60*LC6
LG320	☒	SC	LC1 + LC4 + 0.60*LC7
LG321	☒	SC	LC1 + LC4 + 0.60*LC8
LG322	☒	SC	LC1 + LC5
LG323	☒	SC	LC1 + LC6
LG324	☒	SC	LC1 + LC7
LG325	☒	SC	LC1 + LC8
LG326	☒	SC	LC1 + 0.70*LC2 + LC5
LG327	☒	SC	LC1 + 0.70*LC2 + LC6
LG328	☒	SC	LC1 + 0.70*LC2 + LC7
LG329	☒	SC	LC1 + 0.70*LC2 + LC8

■ 2.2 BY LOAD CASES

LG No.	Apply	LG Type	Load Group
LG330	☒	SC	LC1 + 0.70*LC2 + 0.70*LC3 + LC5
LG331	☒	SC	LC1 + 0.70*LC2 + 0.70*LC3 + LC6
LG332	☒	SC	LC1 + 0.70*LC2 + 0.70*LC3 + LC7
LG333	☒	SC	LC1 + 0.70*LC2 + 0.70*LC3 + LC8
LG334	☒	SC	LC1 + 0.70*LC3 + LC5
LG335	☒	SC	LC1 + 0.70*LC3 + LC6
LG336	☒	SC	LC1 + 0.70*LC3 + LC7
LG337	☒	SC	LC1 + 0.70*LC3 + LC8
LG338	☒	SC	LC1 + 0.70*LC2 + 0.50*LC4 + LC5
LG339	☒	SC	LC1 + 0.70*LC2 + 0.50*LC4 + LC6
LG340	☒	SC	LC1 + 0.70*LC2 + 0.50*LC4 + LC7
LG341	☒	SC	LC1 + 0.70*LC2 + 0.50*LC4 + LC8
LG342	☒	SC	LC1 + 0.50*LC4 + LC5
LG343	☒	SC	LC1 + 0.50*LC4 + LC6
LG344	☒	SC	LC1 + 0.50*LC4 + LC7
LG345	☒	SC	LC1 + 0.50*LC4 + LC8

STRUCTURE





1.1 NODES

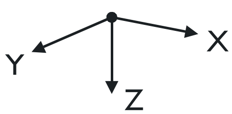
Node No.	Node Type	Reference Node	Coordinate System	Node coordinates X [m]	Y [m]	Z [m]	Comment
1	Standard	-	Cartesian	0.000	1.140	0.000	
2	Standard	-	Cartesian	1.625	1.140	0.000	
3	Standard	-	Cartesian	0.000	0.000	0.000	
4	Standard	-	Cartesian	1.625	0.000	0.000	
5	Standard	-	Cartesian	0.000	0.000	-1.220	
6	Standard	-	Cartesian	4.325	1.140	0.000	
7	Standard	-	Cartesian	8.650	1.140	0.000	
8	Standard	-	Cartesian	4.325	0.000	0.000	
9	Standard	-	Cartesian	7.025	1.140	0.000	
10	Standard	-	Cartesian	7.025	0.000	0.000	
11	Standard	-	Cartesian	0.000	0.000	-1.360	
12	Standard	-	Cartesian	8.650	0.000	0.000	
13	Standard	-	Cartesian	1.625	0.000	-1.220	
14	Standard	-	Cartesian	4.325	0.000	-1.220	
15	Standard	-	Cartesian	7.025	0.000	-1.220	
16	Standard	-	Cartesian	8.650	0.000	-1.220	
17	Standard	-	Cartesian	-0.155	0.000	-1.360	
18	Standard	-	Cartesian	0.000	1.140	-1.220	
19	Standard	-	Cartesian	0.000	1.140	-1.360	
20	Standard	-	Cartesian	1.625	0.000	-1.360	
21	Standard	-	Cartesian	4.325	0.000	-1.360	
22	Standard	-	Cartesian	1.625	1.140	-1.220	
23	Standard	-	Cartesian	4.325	1.140	-1.220	
24	Standard	-	Cartesian	7.025	1.140	-1.220	
25	Standard	-	Cartesian	8.650	1.140	-1.220	
26	Standard	-	Cartesian	1.625	1.140	-1.360	
27	Standard	-	Cartesian	7.025	0.000	-1.360	
28	Standard	-	Cartesian	4.325	1.140	-1.360	
30	Standard	-	Cartesian	7.025	1.140	-1.360	
31	Standard	-	Cartesian	8.650	0.000	-1.360	
32	Standard	-	Cartesian	8.650	1.140	-1.360	
33	Standard	-	Cartesian	-0.155	1.140	-1.360	

1.1 NODES

Node No.	Node Type	Reference Node	Coordinate System	Node coordinates X [m]	Y [m]	Z [m]	Comment
34	Standard	-	Cartesian	-0.155	1.140	0.000	
35	Standard	-	Cartesian	-0.155	0.000	0.000	
38	Standard	-	Cartesian	8.805	0.000	-1.360	
40	Standard	-	Cartesian	8.805	1.140	-1.360	
41	Standard	-	Cartesian	8.805	1.140	0.000	
42	Standard	-	Cartesian	8.805	0.000	0.000	

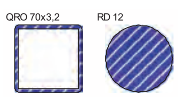
1.3 MATERIALS

Material No.	Material Description	E-Modulus E [N/mm^2]	G-Modulus G [N/mm^2]	Poisson's R. μ [-]	Sp. Weight γ [kN/m^3]	Coeff. Thermal α [1/°C]	Saf. Factor γ_M [-]
3	Steel S 355 | DIN 18800:1990-11 Material Model - Isotropic...	210000.00	81000.00	0.300	78.50	1.2000E-05	1.100



1.7 NODAL SUPPORTS

Support No.	Nodes No.	Rotation [°] Sequen.	about X	about Y	about Z	Column In Z	Support Conditions $u_{X'}$	$u_{Y'}$	$u_{Z'}$	$\varphi_{X'}$	$\varphi_{Y'}$	$\varphi_{Z'}$
1	1-4,6-10,12	XYZ	0.00	0.00	0.00	☐	☒	☒	☒	☐	☐	☒



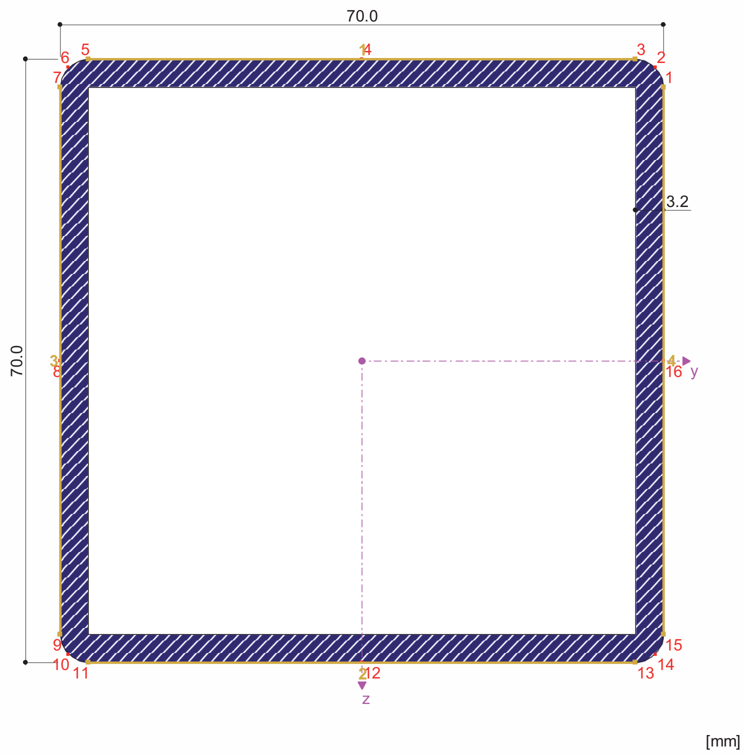
1.13 CROSS-SECTIONS

Section No.	Cross-section Description	Mater. No.	I_T [cm^4] / A [cm^2]	I_y [cm^4] / A_y [cm^2]	I_z [cm^4] / A_z [cm^2]
1	QRO 70x3,2	3	96.30 8.46	62.70 3.58	62.70 3.58
2	RD 12	3	0.20 1.13	0.10 0.95	0.10 0.95

CROSS-SECTION DETAILS

QRO 70x3,2

■ LOAD_BEARING_ELEMENTS QRO 70x3,2



QRO 70x3,2

■ CROSS-SECTION VALUES QRO 70x3,2

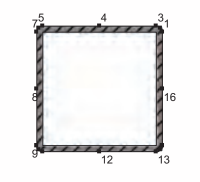
Cross-section Value Description	Symbol	Value	Unit
Outer edge length, nominal length	b	70.0	mm
Wall thickness	t	3.2	mm
Outer edge rounding	r	3.2	mm
Cross-section area	A	8.46	cm^2
Shear area	A_y	3.58	cm^2
Shear area according to EC 3	$A_{v,y}$	4.23	cm^2
Core area	A_c	44.60	cm^2
Plastic shear area	$A_{pl,y}$	4.28	cm^2
Moment of inertia	I_y	62.70	cm^4
Governing radius of gyration	r_y	27.2	mm
Polar radius of gyration	r_o	38.5	mm
Volume	V	846000.0	mm^3/m
Weight	wt	6.6	kg/m
Surface	A_{Surf}	0.275	m^2/m
Section factor	A_m/V	325.059	1/m
Torsional constant	J	96.30	cm^4
Warping constant	C_w	0.03	cm^6
Section modulus for torsion	W_t	28.50	cm^3
Elastic section modulus	S_y	17.90	cm^3
Statical moment of area	Q_y	5.28	cm^3
Plastic section modulus	Z_y	21.13	cm^3
Plastic shape factor	Z_y/S_y	1.181	
Buckling curve acc. to DIN	$BC_{y,DIN}$	a	
Buckling curve acc. to EN	$BC_{y,EN}$	a	

CROSS-SECTION VALUES

QRO 70x3,2

Cross-section Value Description	Symbol	Value	Unit
Buckling curve acc. to EN for Steel S 460	$BC_{y,EN,S460}$	a_0	
Full-plastic axial force acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$N_{pl,d}$	184.597	kN
Full-plastic shear force acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$V_{pl,d}$	53.289	kN
Full-plastic bending moment acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$M_{pl,d}$	4.611	kNm
Full-plastic torsional moment acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$M_{pl,x,d}$	3.590	kNm

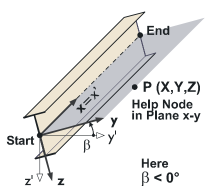
QRO 70x3,2



STRESS POINTS

QRO 70x3,2

S-Point No.	Coordinates [mm] y	z	Stat. Moments of Area [cm³] Q_y	Q_z	Thickness t [mm]	Warping W_{no} [cm²]	S_ω [cm⁴]
1	35.0	-31.8	-3.65	-3.39	3.2	-0.11	-0.03
2	34.1	-34.1	-3.52	-3.52	3.2	0.00	-0.04
3	31.8	-35.0	-3.39	-3.65	3.2	0.11	-0.03
4	0.0	-35.0	0.00	-5.26	3.2	0.00	0.02
5	-31.8	-35.0	3.39	-3.65	3.2	-0.11	-0.03
6	-34.1	-34.1	3.52	-3.52	3.2	0.00	-0.04
7	-35.0	-31.8	3.65	-3.39	3.2	0.11	-0.03
8	-35.0	0.0	5.26	0.00	3.2	0.00	0.02
9	-35.0	31.8	3.65	3.39	3.2	-0.11	-0.03
10	-34.1	34.1	3.52	3.52	3.2	0.00	-0.04
11	-31.8	35.0	3.39	3.65	3.2	0.11	-0.03
12	0.0	35.0	0.00	5.26	3.2	0.00	0.02
13	31.8	35.0	-3.39	3.65	3.2	-0.11	-0.03
14	34.1	34.1	-3.52	3.52	3.2	0.00	-0.04
15	35.0	31.8	-3.65	3.39	3.2	0.11	-0.03
16	35.0	0.0	-5.26	0.00	3.2	0.00	0.02



1.17 MEMBERS

Member No.	Line No.	Member	Rotation Type	β [°]	Cross-section Start	End	Release No. Start	End	Ecc. No.	Div. No.	Length L [m]	
1	1	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X
2	2	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X
3	3	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
4	4	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
5	5	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
6	6	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
7	7	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
8	8	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
9	9	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
10	10	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
11	11	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X
12	12	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X
13	13	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
14	14	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
15	15	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
16	16	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
17	17	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
18	18	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
19	19	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
20	20	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
21	21	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
22	22	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
23	23	Beam	Angle	0.00	1	1	1	-	-	-	1.220	Z
24	24	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X
25	25	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X
26	26	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
27	27	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
28	28	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
29	29	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
30	30	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
31	31	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
32	32	Beam	Angle	0.00	1	1	-	-	-	-	2.700	X
33	33	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
34	34	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X
35	35	Beam	Angle	0.00	1	1	-	-	-	-	1.625	X

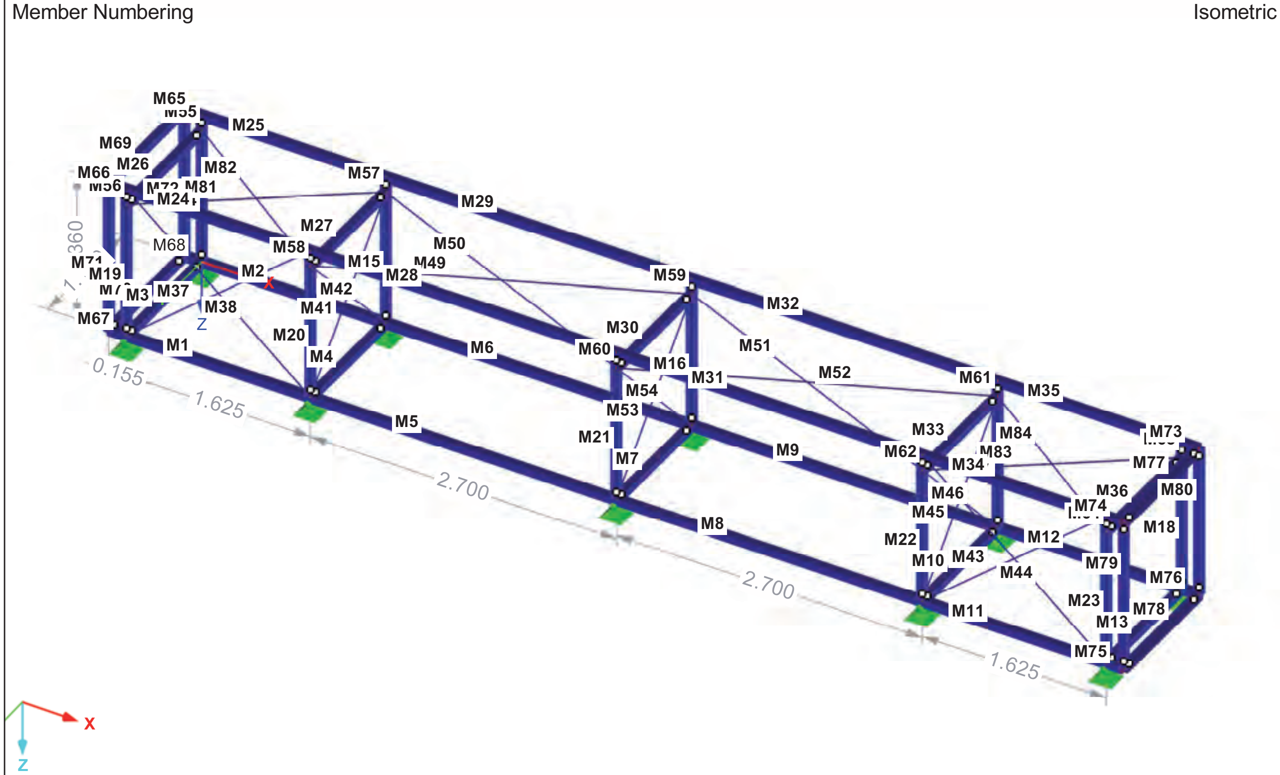
1.17 MEMBERS

Member No.	Line No.	Member	Rotation Type	β [°]	Cross-section Start	Cross-section End	Release No. Start	Release No. End	Ecc. No.	Div. No.	Length L [m]	
36	36	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
37	37	Tension	Angle	0.00	2	2	-	-	-	-	2.119	XZ
38	38	Tension	Angle	0.00	2	2	-	-	-	-	2.119	XZ
41	41	Tension	Angle	0.00	2	2	-	-	-	-	1.670	YZ
42	42	Tension	Angle	0.00	2	2	-	-	-	-	1.670	YZ
43	43	Tension	Angle	0.00	2	2	-	-	-	-	2.119	XZ
44	44	Tension	Angle	0.00	2	2	-	-	-	-	2.119	XZ
45	45	Tension	Angle	0.00	2	2	-	-	-	-	1.670	YZ
46	46	Tension	Angle	0.00	2	2	-	-	-	-	1.670	YZ
49	49	Tension	Angle	0.00	2	2	-	-	-	-	2.931	XY
50	50	Tension	Angle	0.00	2	2	-	-	-	-	2.931	XY
51	51	Tension	Angle	0.00	2	2	-	-	-	-	2.931	XY
52	52	Tension	Angle	0.00	2	2	-	-	-	-	2.931	XY
53	53	Tension	Angle	0.00	2	2	-	-	-	-	1.670	YZ
54	54	Tension	Angle	0.00	2	2	-	-	-	-	1.670	YZ
55	55	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
56	56	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
57	57	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
58	58	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
59	59	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
60	60	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
61	61	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
62	62	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
63	63	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
64	64	Beam	Angle	0.00	1	1	-	1	-	-	0.140	Z
65	65	Beam	Angle	0.00	1	1	2	-	-	-	0.155	X
66	66	Beam	Angle	0.00	1	1	2	-	-	-	0.155	X
67	67	Beam	Angle	0.00	1	1	-	-	-	-	0.155	X
68	68	Beam	Angle	0.00	1	1	-	-	-	-	0.155	X
69	69	Beam	Angle	0.00	1	1	-	-	-	-	1.140	Y
70	70	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
71	71	Beam	Angle	0.00	1	1	1	1	-	-	1.360	Z
72	72	Beam	Angle	0.00	1	1	1	1	-	-	1.360	Z
73	73	Beam	Angle	0.00	1	1	-	-	-	-	0.155	X
74	74	Beam	Angle	0.00	1	1	-	-	-	-	0.155	X
75	75	Beam	Angle	0.00	1	1	-	-	-	-	0.155	X
76	76	Beam	Angle	0.00	1	1	-	-	-	-	0.155	X
77	77	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
78	78	Beam	Angle	0.00	1	1	1	1	-	-	1.140	Y
79	79	Beam	Angle	0.00	1	1	1	1	-	-	1.360	Z
80	80	Beam	Angle	0.00	1	1	1	1	-	-	1.360	Z
81	81	Tension	Angle	0.00	2	2	-	-	-	-	1.985	XY
82	82	Tension	Angle	0.00	2	2	-	-	-	-	1.985	XY
83	83	Tension	Angle	0.00	2	2	-	-	-	-	1.985	XY
84	84	Tension	Angle	0.00	2	2	-	-	-	-	1.985	XY

STRUCTURE - MEMBERS & DIMENSIONS

Member Numbering

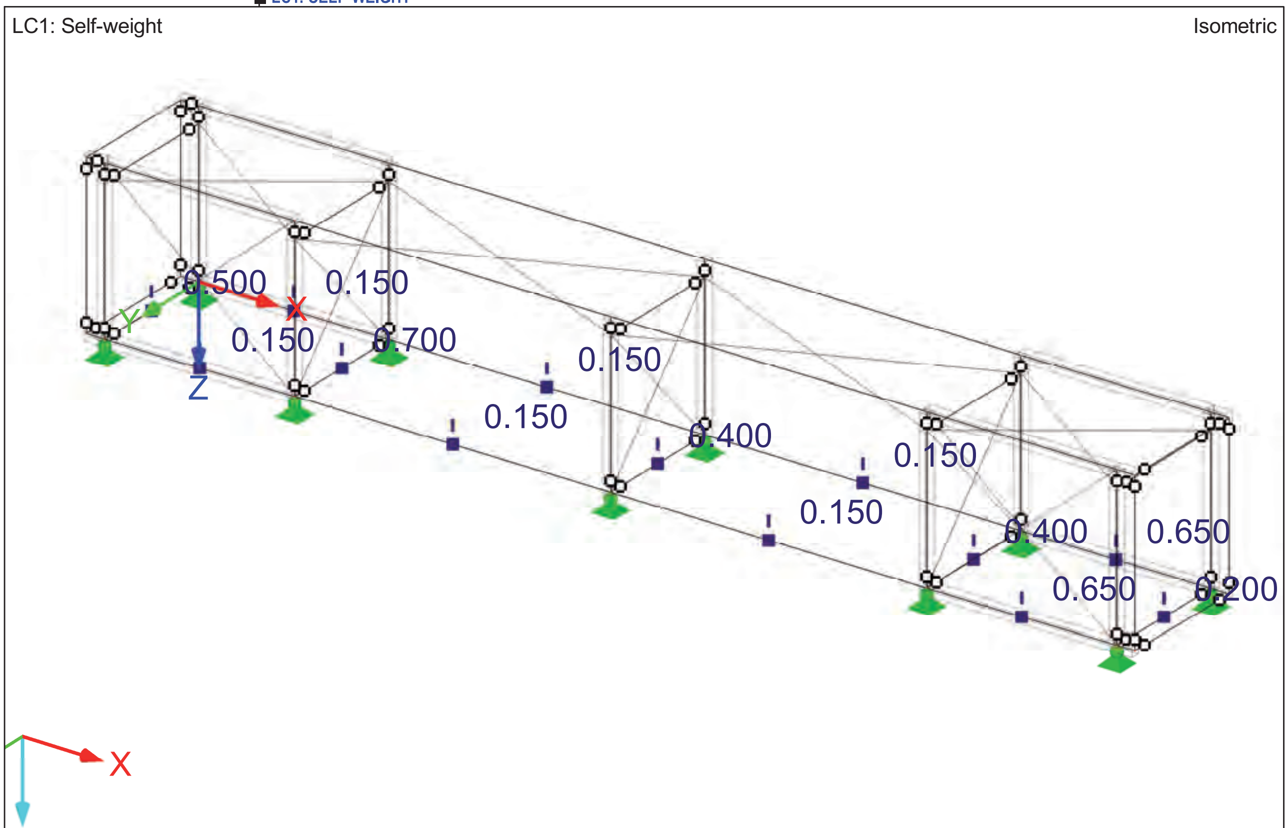
Isometric



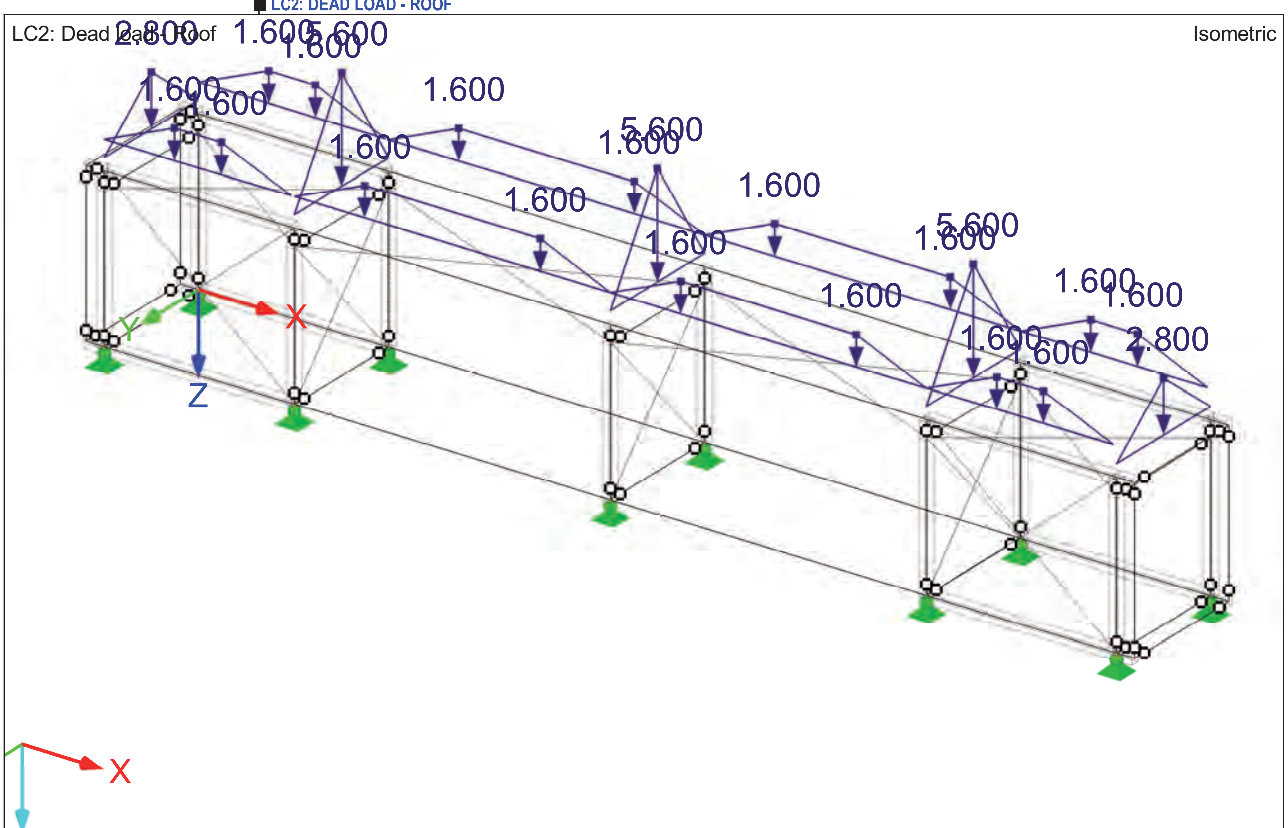
LOAD GROUPS

LG No.	LG-Description	Factor	Load Cases in LG	Method of Analysis
1	Design Internal Forces 1	1.0000	1.35*LC1 + 1.35*LC2 + 1.35*LC3 + 1.5*LC6 + LC7	Linear
2	Design Internal Forces 2	1.0000	1.35*LC1 + 1.35*LC2 + 1.35*LC4 + 1.5*LC6 + LC7	Linear
3	Design Internal Forces 3	1.0000	1.35*LC1 + 1.35*LC2 + 1.35*LC5 + 1.5*LC6 + LC7	Linear
4	Deflection analysis 1	1.0000	LC1 + LC2 + LC3 + LC7	Linear
5	Deflection analysis 2	1.0000	LC1 + LC2 + LC4 + LC7	Linear
6	Deflection analysis 3	1.0000	LC1 + LC2 + LC5 + LC7	Linear

LC1: SELF-WEIGHT



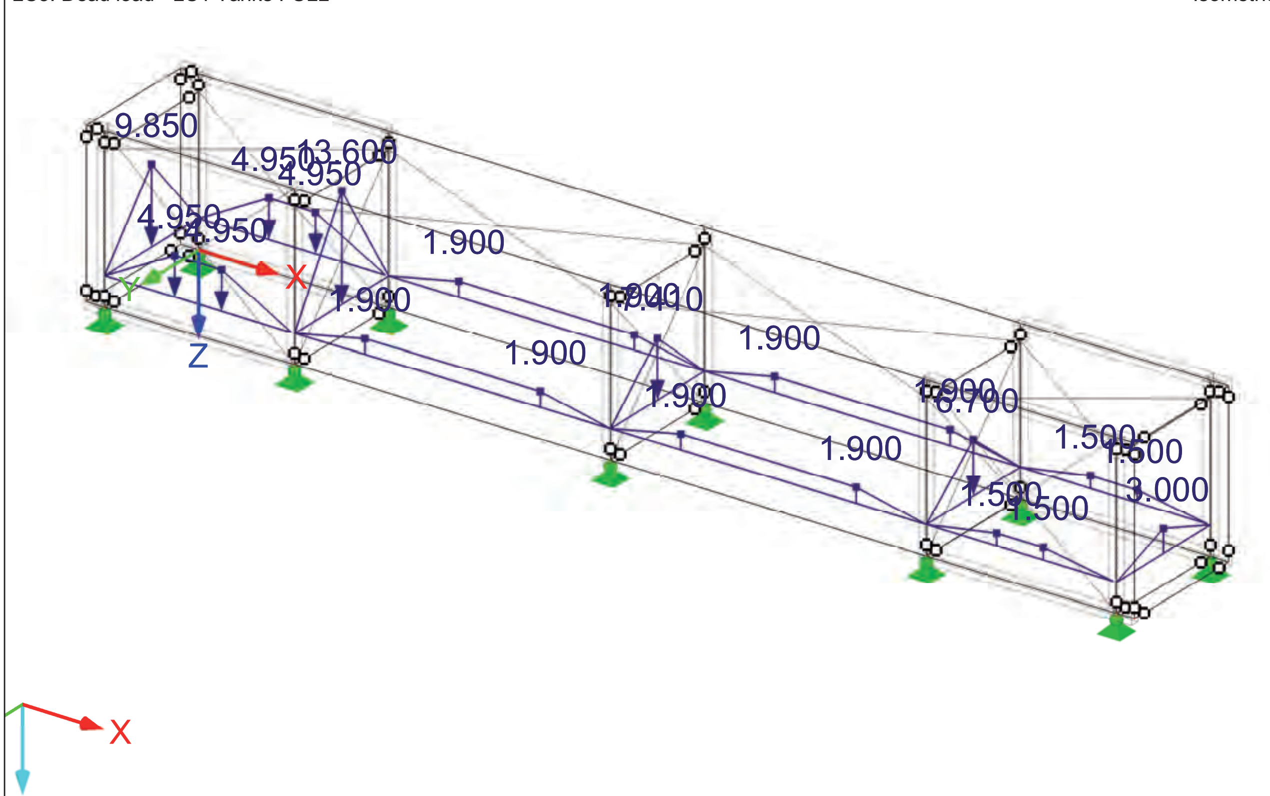
LC2: DEAD LOAD - ROOF



LC3: DEAD LOAD - LC1 TANKS FULL

LC3: Dead load - LC1 Tanks FULL

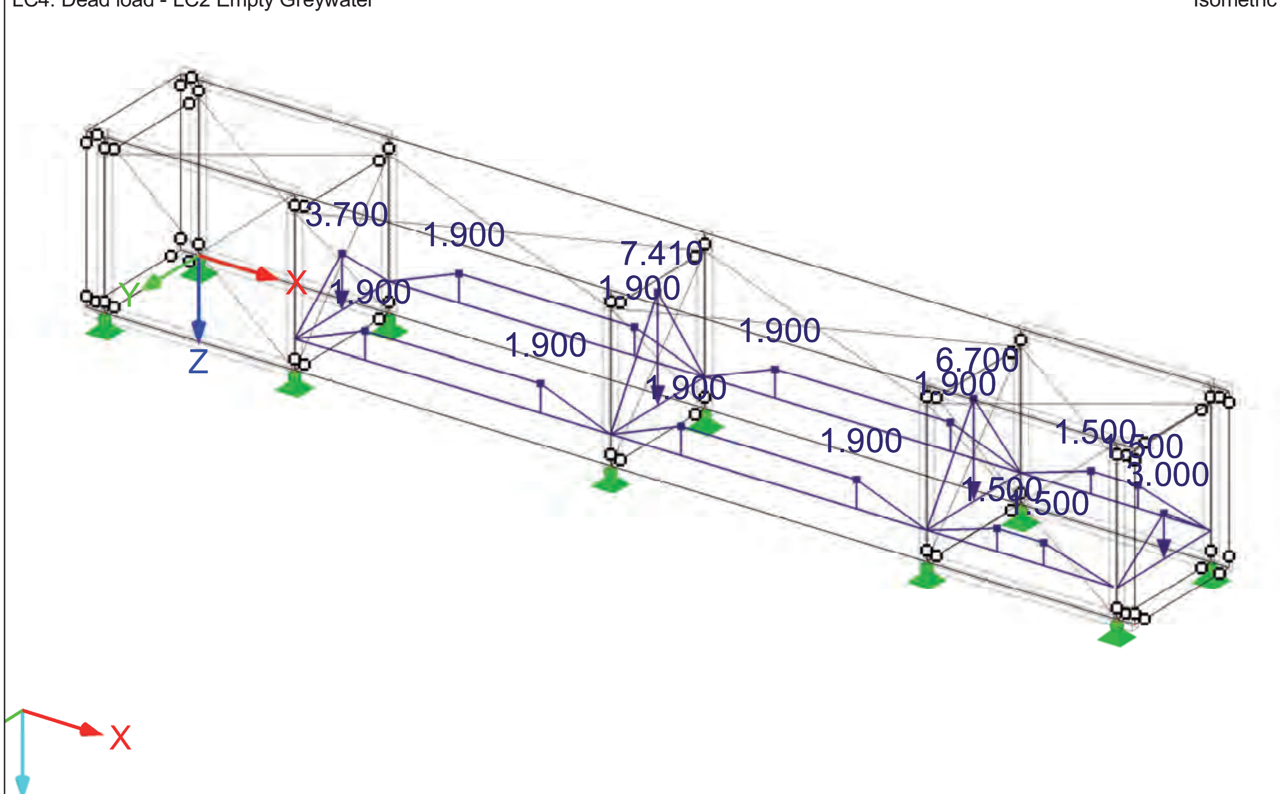
Isometric



LC4: DEAD LOAD - LC2 EMPTY GREYWATER

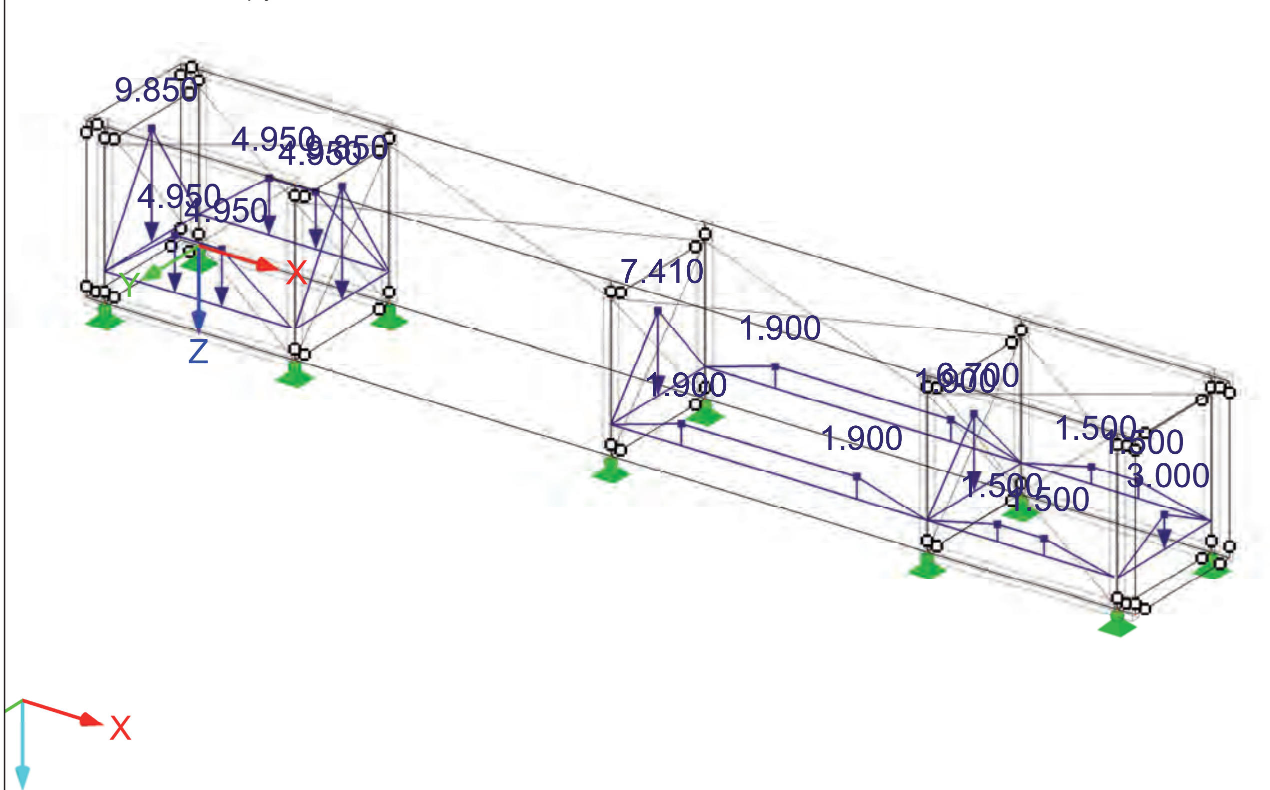
LC4: Dead load - LC2 Empty Greywater

Isometric



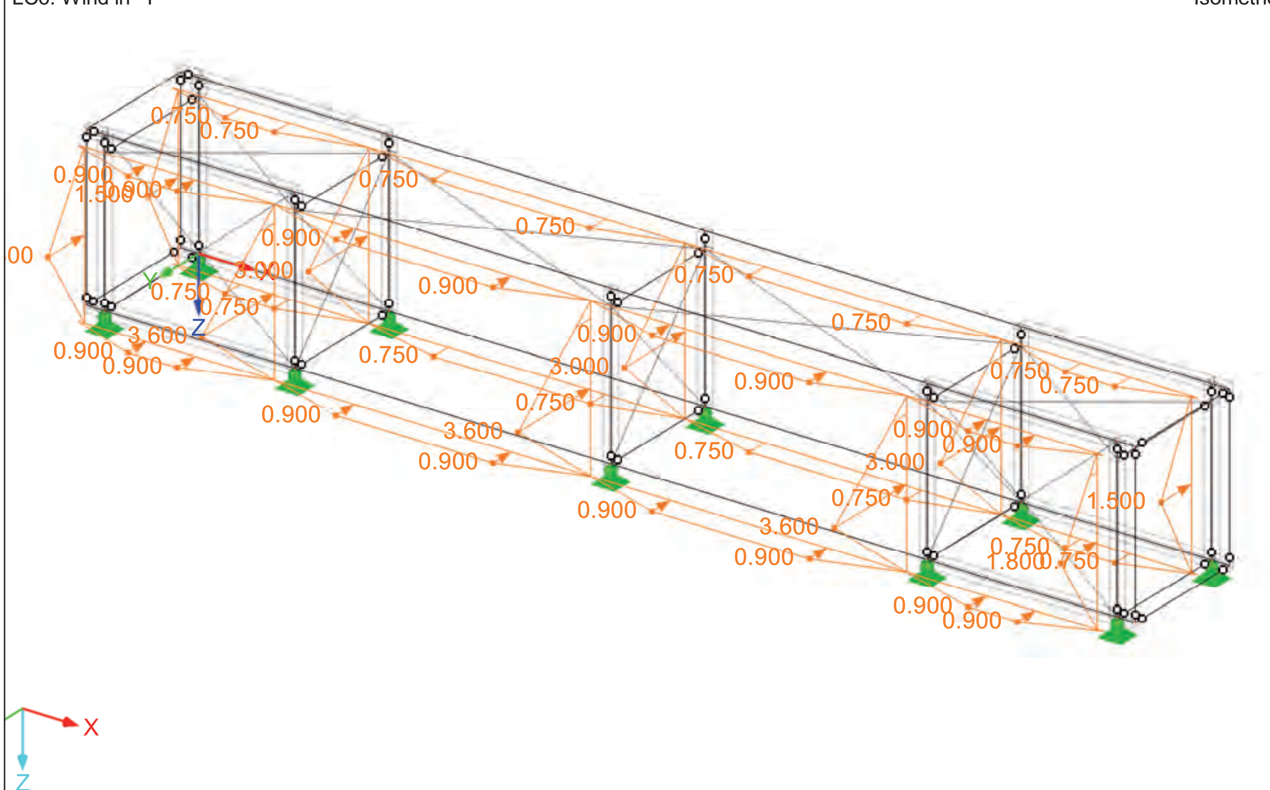
LC5: DEAD LOAD - LC3 EMPTY POTABLE

LC5: Dead load - LC3 Empty Potable | Isometric

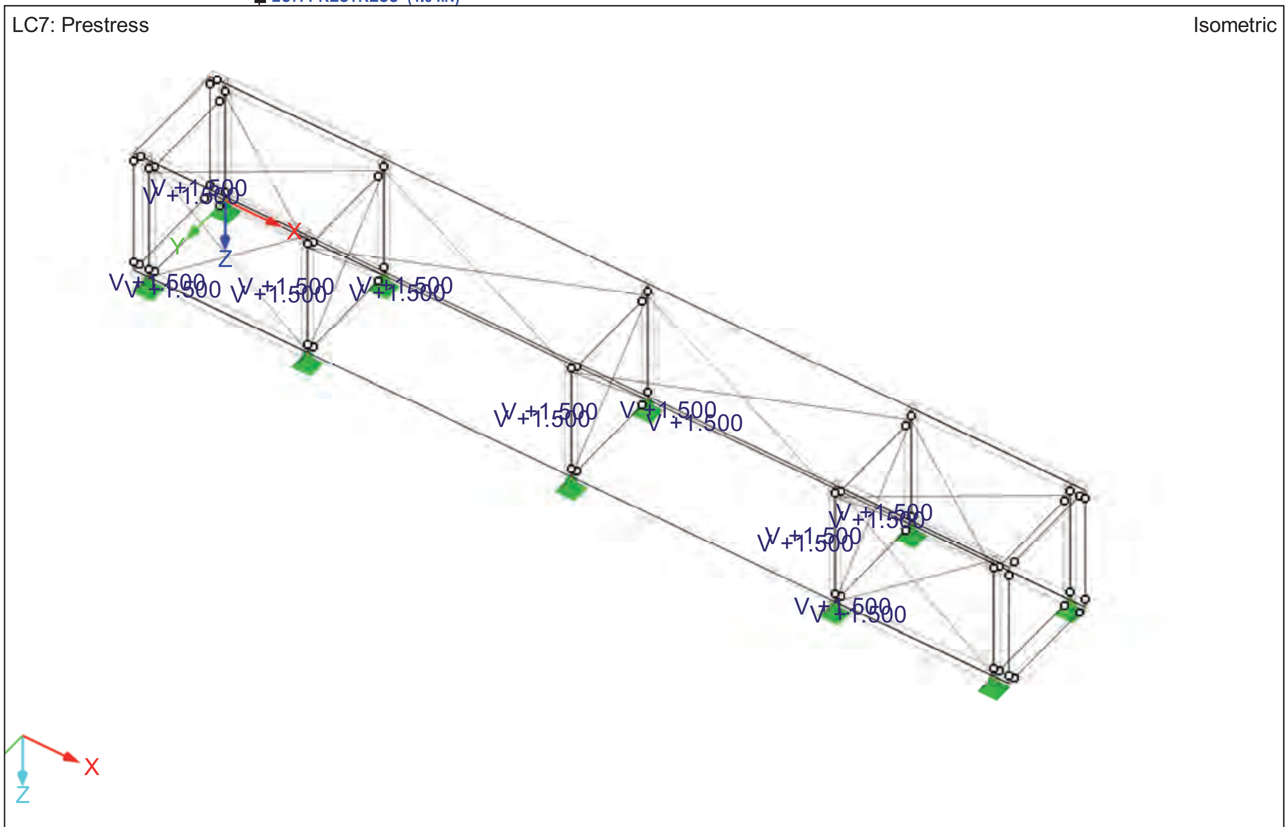


LC6: WIND IN -Y

LC6: Wind in -Y | Isometric



■ LC7: PRESTRESS (1.5 kN)



■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	LC1 - Self-weight			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	9.44	kN	
	Sum of Support Reactions in Z	9.44	kN	Deviation 0.00%
	Max Displacement in X	-0.0	mm	Member No. 84, x: 0.000 m
	Max Displacement in Y	-0.0	mm	Member No. 72, x: 0.816 m
	Max Displacement in Z	0.2	mm	Member No. 6, x: 1.350 m
	Max. Vector Displacement	0.2	mm	Member No. 6, x: 1.350 m
	Max rotation about X	-0.5	mrad	Member No. 4, x: 0.000 m
	Max rotation about Y	0.4	mrad	Member No. 12, x: 1.354 m
	Max rotation about Z	0.0	mrad	
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	3		
	LC2 - Dead load - Roof			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	32.61	kN	
	Sum of Support Reactions in Z	32.61	kN	Deviation 0.00%
	Max Displacement in X	0.0	mm	
	Max Displacement in Y	0.0	mm	
	Max Displacement in Z	2.0	mm	Member No. 29, x: 1.200 m
	Max. Vector Displacement	2.0	mm	Member No. 29, x: 1.200 m
	Max rotation about X	-1.6	mrad	Member No. 33, x: 0.000 m
	Max rotation about Y	2.2	mrad	Member No. 29, x: 2.100 m
	Max rotation about Z	0.0	mrad	
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	2		
	LC3 - Dead load - LC1 Tanks FULL			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	51.98	kN	
	Sum of Support Reactions in Z	51.98	kN	Deviation 0.00%
	Max Displacement in X	0.0	mm	Member No. 38, x: 2.119 m
	Max Displacement in Y	0.0	mm	Member No. 80, x: 0.000 m
	Max Displacement in Z	2.6	mm	Member No. 9, x: 1.350 m
	Max. Vector Displacement	2.6	mm	Member No. 9, x: 1.350 m
	Max rotation about X	-4.0	mrad	Member No. 4, x: 0.000 m
	Max rotation about Y	-2.8	mrad	Member No. 9, x: 0.600 m
	Max rotation about Z	0.0	mrad	Member No. 80, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	4		
	LC4 - Dead load - LC2 Empty Greywater			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	30.82	kN	
	Sum of Support Reactions in Z	30.82	kN	Deviation 0.00%
	Max Displacement in X	-0.0	mm	Member No. 37, x: 1.211 m
	Max Displacement in Y	-0.0	mm	
	Max Displacement in Z	2.8	mm	Member No. 6, x: 1.200 m
	Max. Vector Displacement	2.8	mm	Member No. 6, x: 1.200 m
	Max rotation about X	-2.2	mrad	Member No. 7, x: 0.000 m
	Max rotation about Y	-3.1	mrad	Member No. 6, x: 0.300 m
	Max rotation about Z	0.0	mrad	
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	4		
	LC5 - Dead load - LC3 Empty Potable			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	41.86	kN	
	Sum of Support Reactions in Z	41.86	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in X	0.0	mm	Member No. 38, x: 2.119 m
	Max Displacement in Y	0.0	mm	Member No. 80, x: 0.000 m
	Max Displacement in Z	4.1	mm	Member No. 9, x: 1.350 m
	Max. Vector Displacement	4.1	mm	Member No. 9, x: 1.350 m
	Max rotation about X	-2.9	mrad	Member No. 4, x: 0.000 m
	Max rotation about Y	-4.6	mrad	Member No. 9, x: 0.300 m
	Max rotation about Z	0.0	mrad	Member No. 80, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	4		
	LC6 - Wind in -Y			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	-38.21	kN	
	Sum of Support Reactions in Y	-38.21	kN	Deviation 0.00%
	Sum of Loads in Z	0.00	kN	
	Sum of Support Reactions in Z	0.00	kN	
	Max Displacement in X	-0.3	mm	Member No. 18, x: 0.915 m
	Max Displacement in Y	-2.3	mm	Member No. 80, x: 0.000 m
	Max Displacement in Z	0.1	mm	Member No. 29, x: 0.900 m
	Max. Vector Displacement	2.3	mm	Member No. 80, x: 0.000 m
	Max rotation about X	-2.1	mrad	Member No. 75, x: 0.000 m
	Max rotation about Y	-0.8	mrad	Member No. 63, x: 0.140 m
	Max rotation about Z	-1.1	mrad	Member No. 31, x: 0.600 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	4		
	LC7 - Prestress			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	0.00	kN	
	Sum of Support Reactions in Y	0.00	kN	
	Sum of Loads in Z	0.00	kN	
	Sum of Support Reactions in Z	0.00	kN	
	Max Displacement in X	-0.1	mm	Member No. 23, x: 0.915 m
	Max Displacement in Y	0.0	mm	Member No. 61, x: 0.070 m
	Max Displacement in Z	0.0	mm	Member No. 24, x: 1.000 m
	Max. Vector Displacement	0.1	mm	Member No. 23, x: 0.915 m
	Max rotation about X	0.0	mrad	Member No. 74, x: 0.000 m
	Max rotation about Y	-0.3	mrad	Member No. 63, x: 0.140 m
	Max rotation about Z	0.0	mrad	Member No. 79, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LG1 - Design Internal Forces 1			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	-57.32	kN	
	Sum of Support Reactions in Y	-57.32	kN	Deviation 0.00%
	Sum of Loads in Z	126.94	kN	
	Sum of Support Reactions in Z	126.94	kN	Deviation 0.00%
	Max Displacement in X	-0.5	mm	Member No. 18, x: 0.915 m
	Max Displacement in Y	-3.1	mm	Member No. 31, x: 1.500 m
	Max Displacement in Z	3.7	mm	Member No. 8, x: 1.350 m
	Max. Vector Displacement	4.2	mm	Member No. 31, x: 1.500 m
	Max rotation about X	-6.0	mrad	Member No. 4, x: 0.000 m
	Max rotation about Y	-3.9	mrad	Member No. 8, x: 0.600 m
	Max rotation about Z	-1.7	mrad	Member No. 31, x: 0.600 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	2		
	LG2 - Design Internal Forces 2			
	Sum of Loads in X	0.00	kN	
	Sum of Support Reactions in X	0.00	kN	
	Sum of Loads in Y	-57.32	kN	
	Sum of Support Reactions in Y	-57.32	kN	Deviation 0.00%
	Sum of Loads in Z	98.38	kN	
	Sum of Support Reactions in Z	98.38	kN	Deviation 0.00%
	Max Displacement in X	-0.5	mm	Member No. 18, x: 0.915 m
	Max Displacement in Y	-3.1	mm	Member No. 80, x: 0.000 m
	Max Displacement in Z	4.1	mm	Member No. 6, x: 1.200 m
	Max. Vector Displacement	4.3	mm	Member No. 5, x: 1.200 m
	Max rotation about X	-3.3	mrad	Member No. 7, x: 0.000 m
	Max rotation about Y	-4.5	mrad	Member No. 6, x: 0.300 m
	Max rotation about Z	-1.7	mrad	Member No. 31, x: 0.600 m

■ 3.0 RESULTS - SUMMARY

Description	Value	Unit	Comment
Method of Analysis	Linear		Linear Static Analysis
Number of Iterations	2		
LG3 - Design Internal Forces 3			
Sum of Loads in X	0.00	kN	
Sum of Support Reactions in X	0.00	kN	
Sum of Loads in Y	-57.32	kN	
Sum of Support Reactions in Y	-57.32	kN	Deviation 0.00%
Sum of Loads in Z	113.28	kN	
Sum of Support Reactions in Z	113.28	kN	Deviation 0.00%
Max Displacement in X	-0.5	mm	Member No. 18, x: 0.915 m
Max Displacement in Y	-3.1	mm	Member No. 31, x: 1.500 m
Max Displacement in Z	5.7	mm	Member No. 8, x: 1.350 m
Max. Vector Displacement	5.8	mm	Member No. 8, x: 1.350 m
Max rotation about X	-4.5	mrad	Member No. 4, x: 0.000 m
Max rotation about Y	-6.3	mrad	Member No. 8, x: 0.300 m
Max rotation about Z	-1.7	mrad	Member No. 31, x: 0.600 m
Method of Analysis	Linear		Linear Static Analysis
Number of Iterations	2		
LG4 - Deflection analysis 1			
Sum of Loads in X	0.00	kN	
Sum of Support Reactions in X	0.00	kN	
Sum of Loads in Y	0.00	kN	
Sum of Support Reactions in Y	0.00	kN	
Sum of Loads in Z	94.03	kN	
Sum of Support Reactions in Z	94.03	kN	Deviation 0.00%
Max Displacement in X	0.1	mm	Member No. 19, x: 0.915 m
Max Displacement in Y	0.0	mm	Member No. 80, x: 0.000 m
Max Displacement in Z	2.7	mm	Member No. 8, x: 1.350 m
Max. Vector Displacement	2.7	mm	Member No. 8, x: 1.350 m
Max rotation about X	-4.4	mrad	Member No. 4, x: 0.000 m
Max rotation about Y	-2.9	mrad	Member No. 8, x: 0.600 m
Max rotation about Z	0.0	mrad	Member No. 79, x: 0.000 m
Method of Analysis	Linear		Linear Static Analysis
Number of Iterations	1		
LG5 - Deflection analysis 2			
Sum of Loads in X	0.00	kN	
Sum of Support Reactions in X	0.00	kN	
Sum of Loads in Y	0.00	kN	
Sum of Support Reactions in Y	0.00	kN	
Sum of Loads in Z	72.87	kN	
Sum of Support Reactions in Z	72.87	kN	Deviation 0.00%
Max Displacement in X	-0.1	mm	Member No. 23, x: 0.915 m
Max Displacement in Y	0.0	mm	Member No. 61, x: 0.070 m
Max Displacement in Z	3.0	mm	Member No. 5, x: 1.200 m
Max. Vector Displacement	3.0	mm	Member No. 5, x: 1.200 m
Max rotation about X	-2.4	mrad	Member No. 7, x: 0.000 m
Max rotation about Y	-3.3	mrad	Member No. 5, x: 0.300 m
Max rotation about Z	0.0	mrad	Member No. 79, x: 0.000 m
Method of Analysis	Linear		Linear Static Analysis
Number of Iterations	1		
LG6 - Deflection analysis 3			
Sum of Loads in X	0.00	kN	
Sum of Support Reactions in X	0.00	kN	
Sum of Loads in Y	0.00	kN	
Sum of Support Reactions in Y	0.00	kN	
Sum of Loads in Z	83.91	kN	
Sum of Support Reactions in Z	83.91	kN	Deviation 0.00%
Max Displacement in X	0.1	mm	Member No. 19, x: 0.915 m
Max Displacement in Y	0.0	mm	Member No. 71, x: 1.088 m
Max Displacement in Z	4.2	mm	Member No. 8, x: 1.350 m
Max. Vector Displacement	4.2	mm	Member No. 8, x: 1.350 m
Max rotation about X	-3.3	mrad	Member No. 4, x: 0.000 m
Max rotation about Y	-4.7	mrad	Member No. 8, x: 0.300 m
Max rotation about Z	0.0	mrad	Member No. 74, x: 0.077 m
Method of Analysis	Linear		Linear Static Analysis
Number of Iterations	1		
Summary			
Max Displacement in X	-0.5	mm	LG2, Member No. 18, x: 0.915 m
Max Displacement in Y	-3.1	mm	LG2, Member No. 80, x: 0.000 m
Max Displacement in Z	5.7	mm	LG3, Member No. 8, x: 1.350 m
Max. Vector Displacement	5.8	mm	LG3, Member No. 8, x: 1.350 m

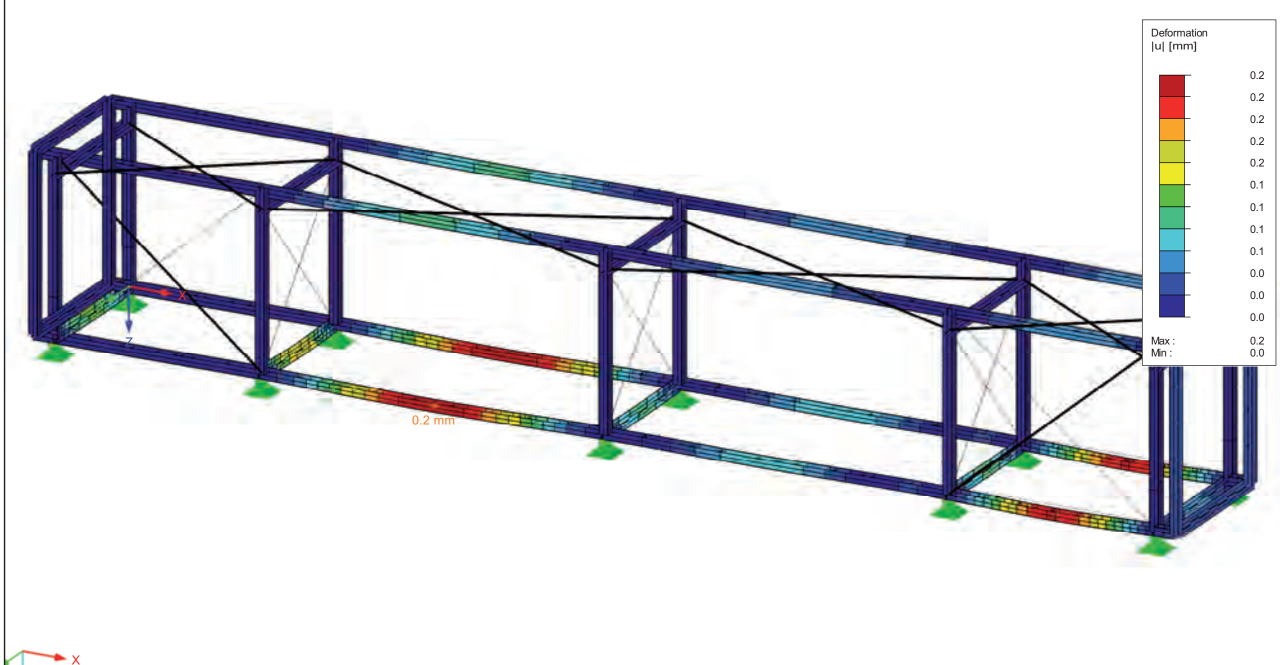
■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about X	-6.0	mrad	LG1, Member No. 4, x: 0.000 m
	Max rotation about Y	-6.3	mrad	LG3, Member No. 8, x: 0.300 m
	Max rotation about Z	-1.7	mrad	LG1, Member No. 31, x: 0.600 m
	Number of 1D Finite Elements	80		
	Number of 2D Finite Elements	0		
	Number of 3D Finite Elements	0		
	Number of FE Mesh Nodes	38		
	Number of Equations	228		
	Matrix Solver Method	Direct		
	Max Number of Iterations	100		
	Number of Load Increments	1		
	Number of Divisions for Member Results	10		
	Solver Version 64-bit			
	Division of Cable/Foundation/Tapered Members	10		
	Activate shear rigidity (A-y, A-z) of members	No		
	Bending Theory	Mindlin		
	Activate Failed Members	Yes		
	Accuracy of convergence criteria in the non-line	1		

■ **DEFORMATIONS U, LC1: SELF-WEIGHT**

LC1: Self-weight
u

Isometric

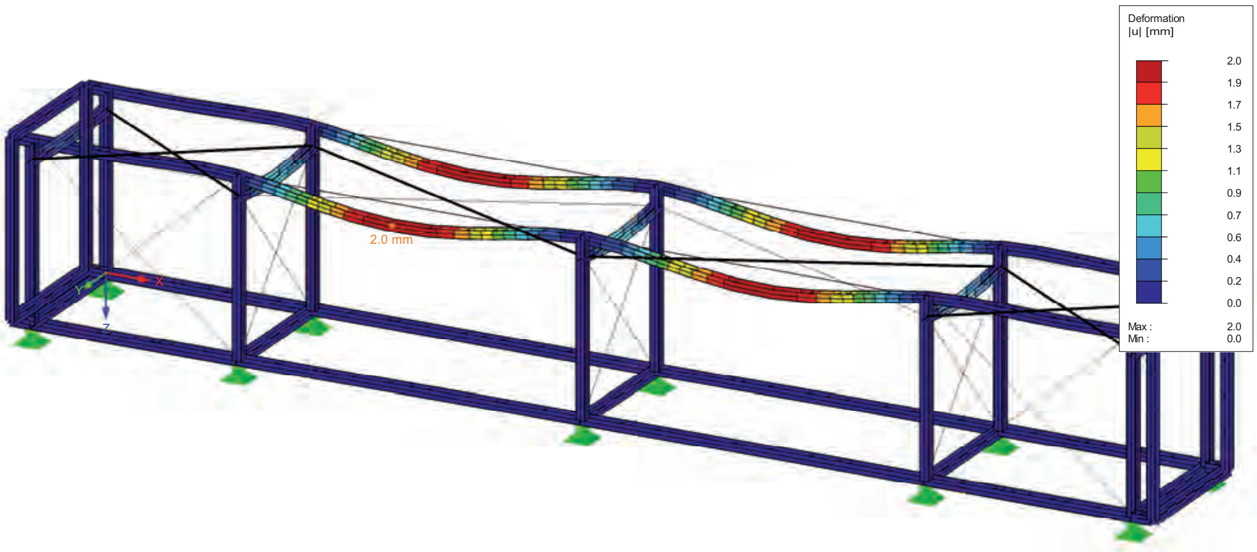


Max u: 0.2, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LC2: DEAD LOAD - ROOF

LC2: Dead load - Roof
u

Isometric

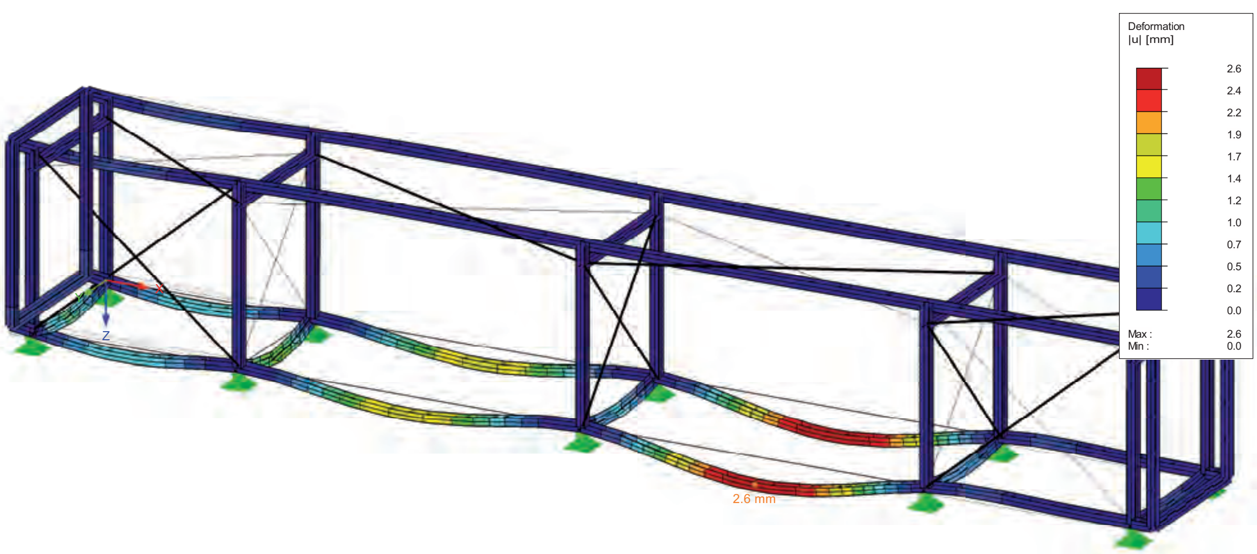


Max u: 2.0, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LC3: DEAD LOAD - LC1 TANKS FULL

LC3: Dead load - LC1 Tanks FULL
u

Isometric

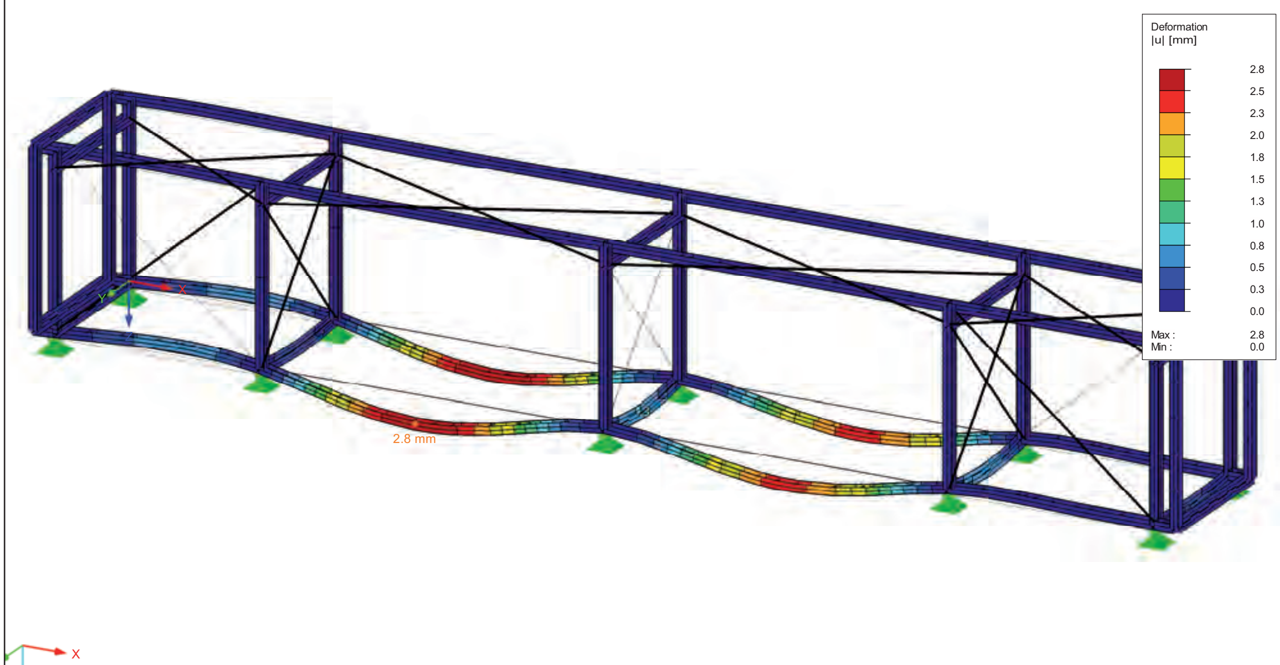


Max u: 2.6, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LC4: DEAD LOAD - LC2 EMPTY GREYWATER

LC4: Dead load - LC2 Empty Greywater
u

Isometric

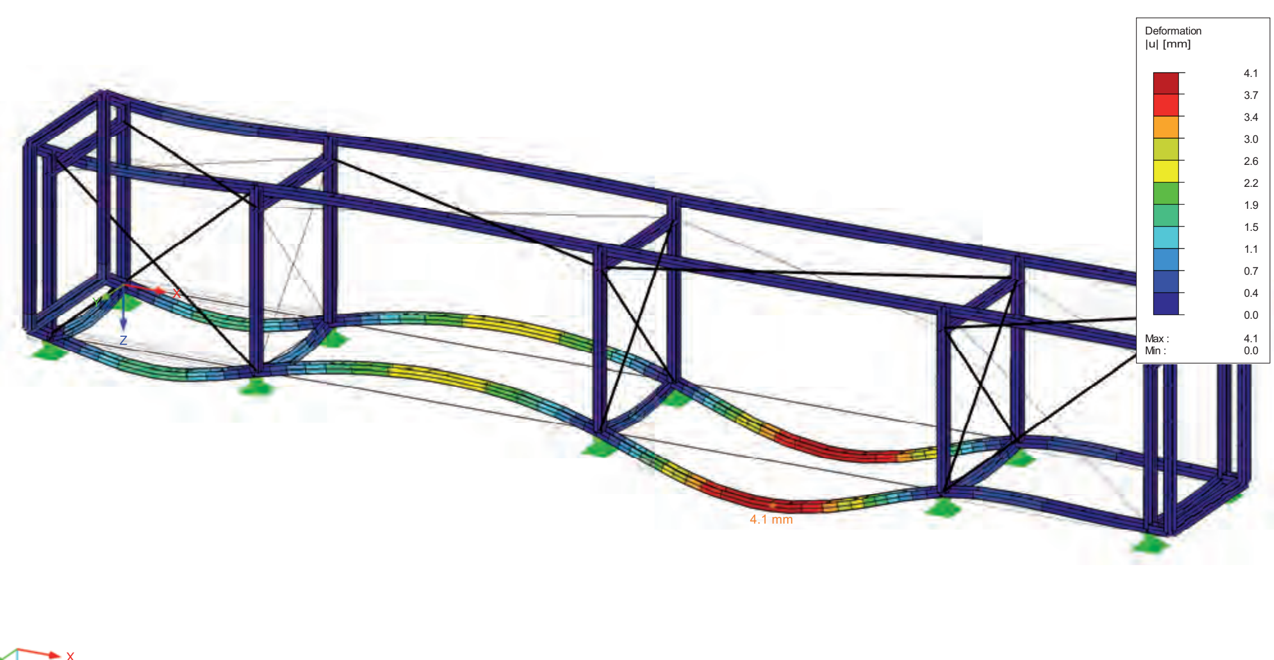


Max u: 2.8, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LC5: DEAD LOAD - LC3 EMPTY POTABLE

LC5: Dead load - LC3 Empty Potable
u

Isometric

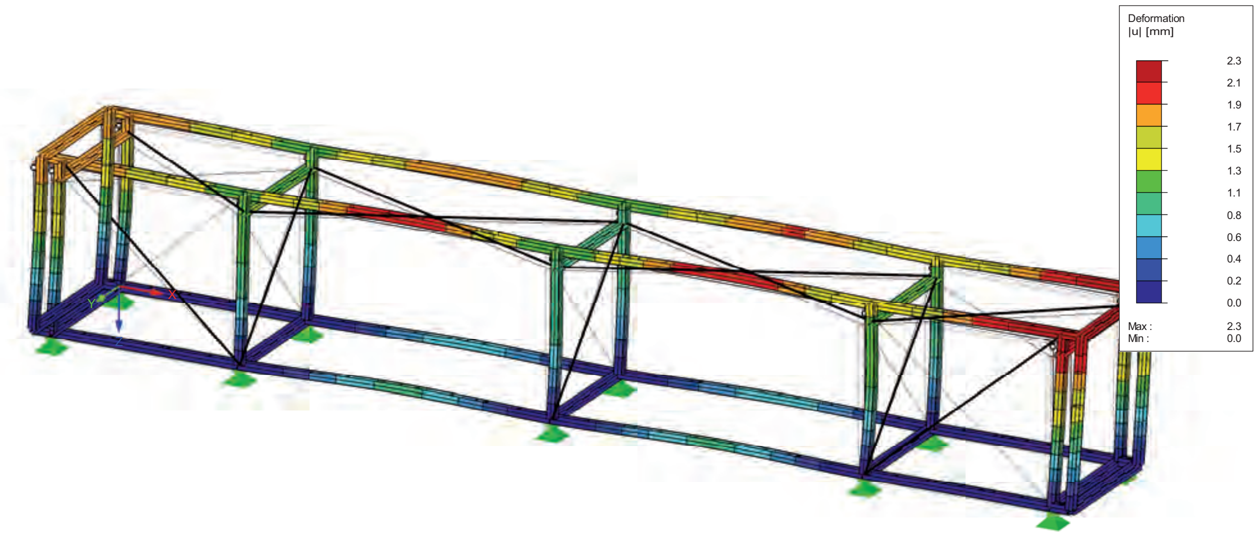


Max u: 4.1, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LC6: WIND IN -Y

LC6: Wind in -Y
u

Isometric

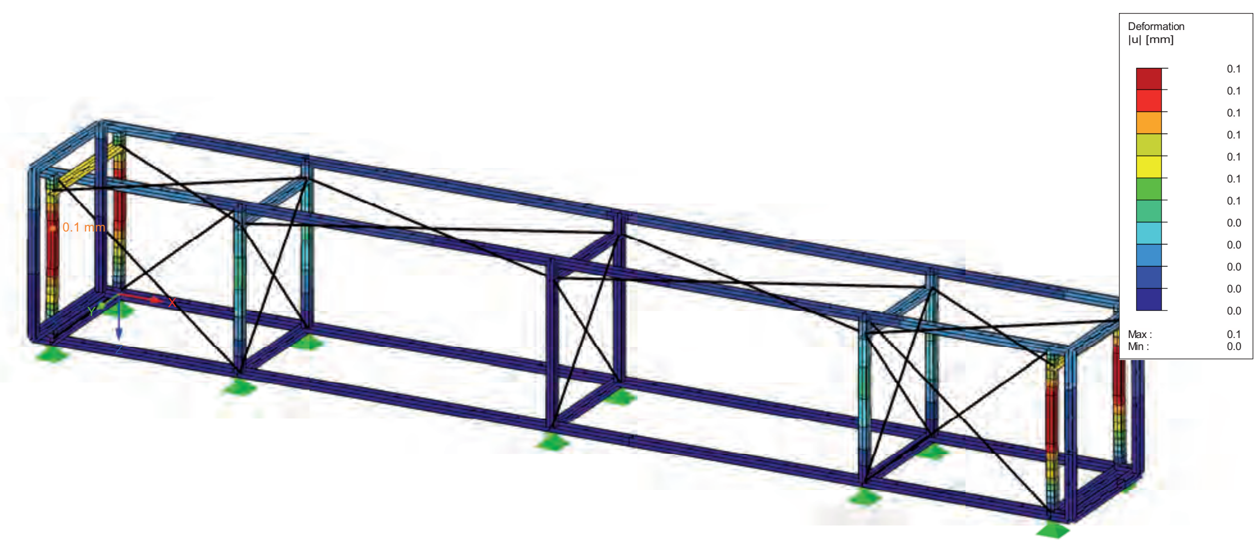


Max u: 2.3, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LC7: PRESTRESS

LC7: Prestress
u

Isometric

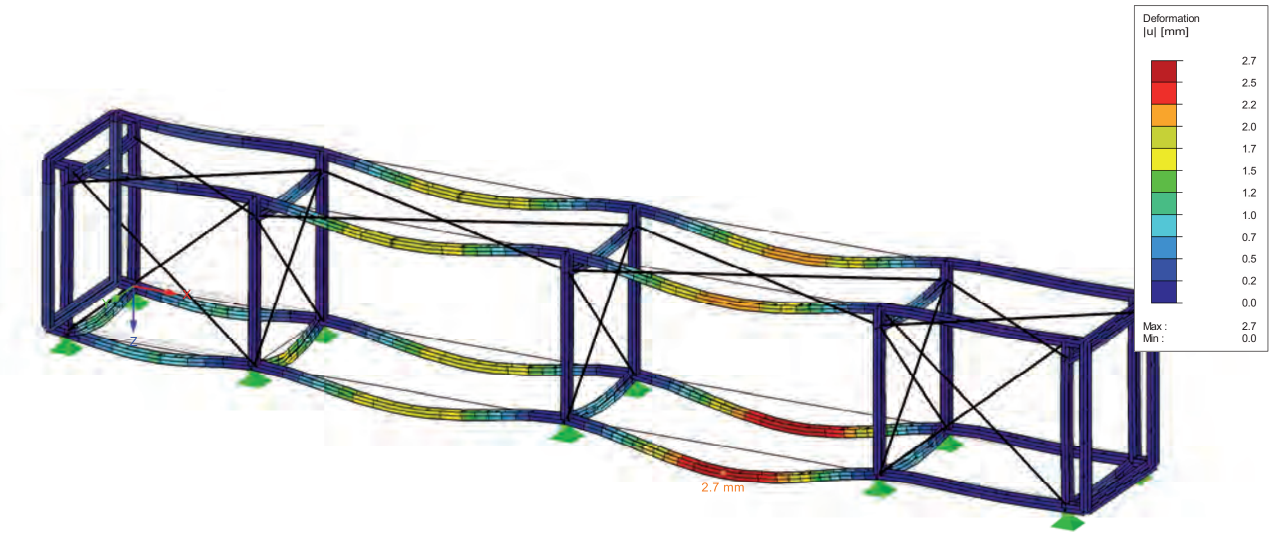


Max u: 0.1, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LG4: DEFLECTION ANALYSIS 1

LG4: Deflection analysis 1
u

Isometric

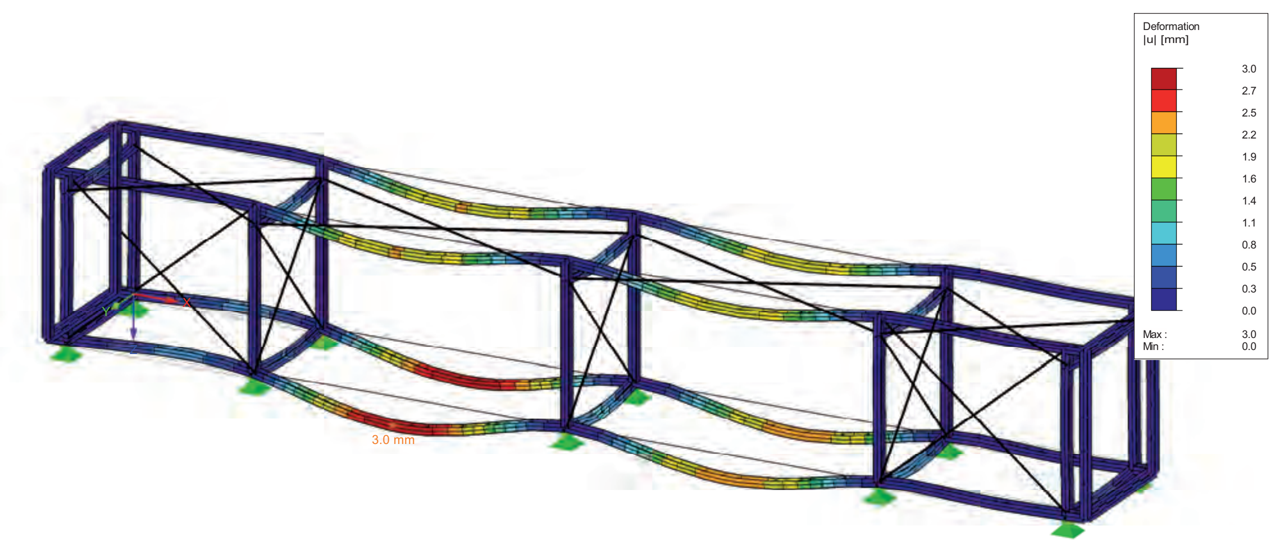


Max u: 2.7, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LG5: DEFLECTION ANALYSIS 2

LG5: Deflection analysis 2
u

Isometric

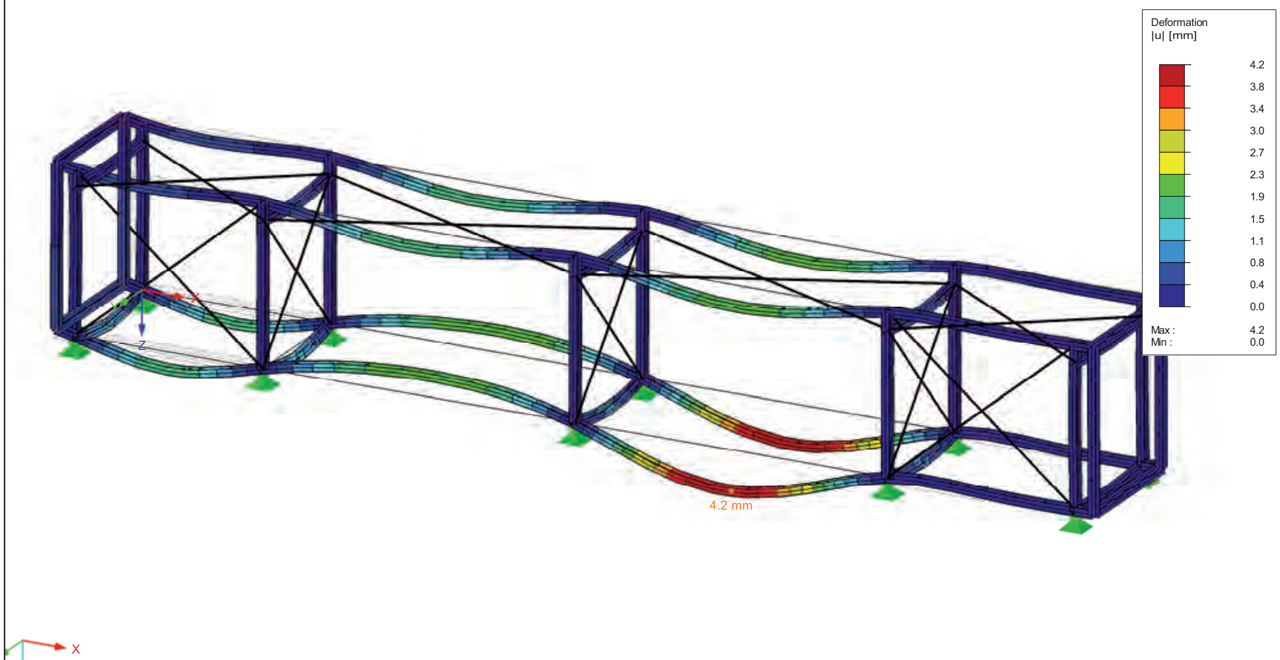


Max u: 3.0, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

DEFORMATIONS U, LG6: DEFLECTION ANALYSIS 3

LG6: Deflection analysis 3
u

Isometric

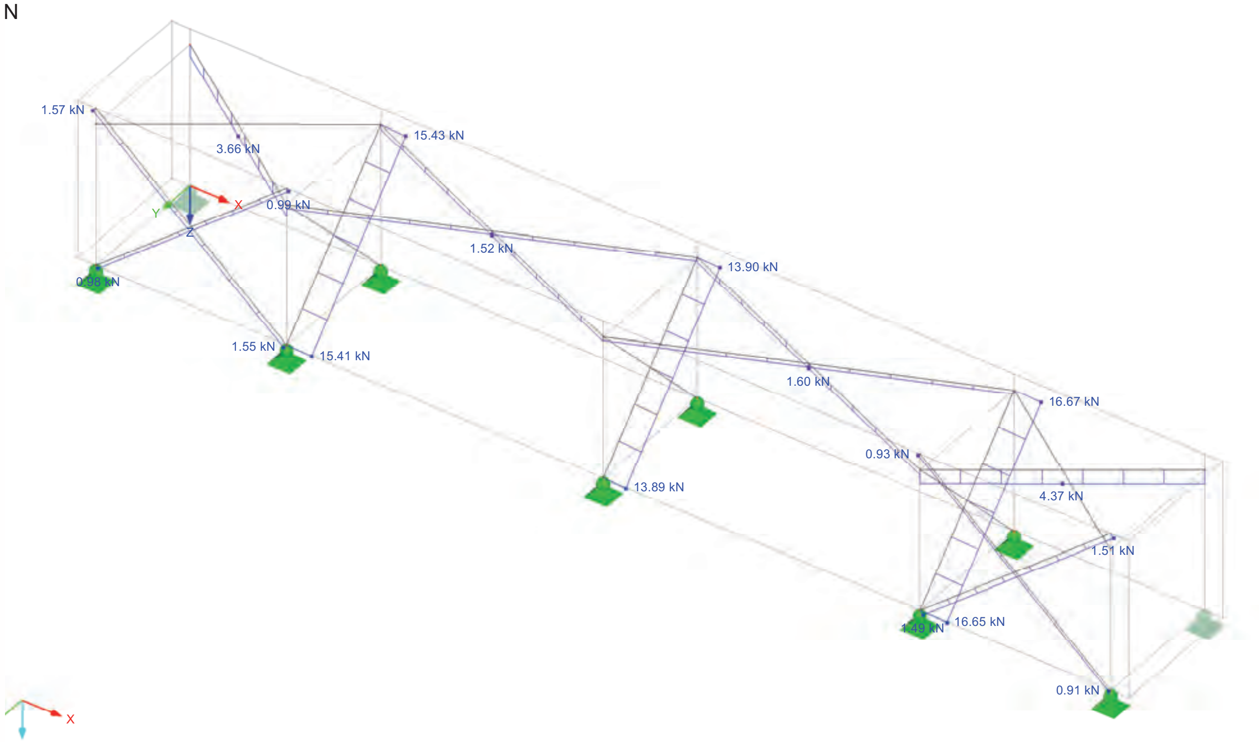


Max u: 4.2, Min u: 0.0 [mm]
Factor of deformations: 80.00
Values: u [mm]

MEMBERS N, LG1: DESIGN INTERNAL FORCES 1

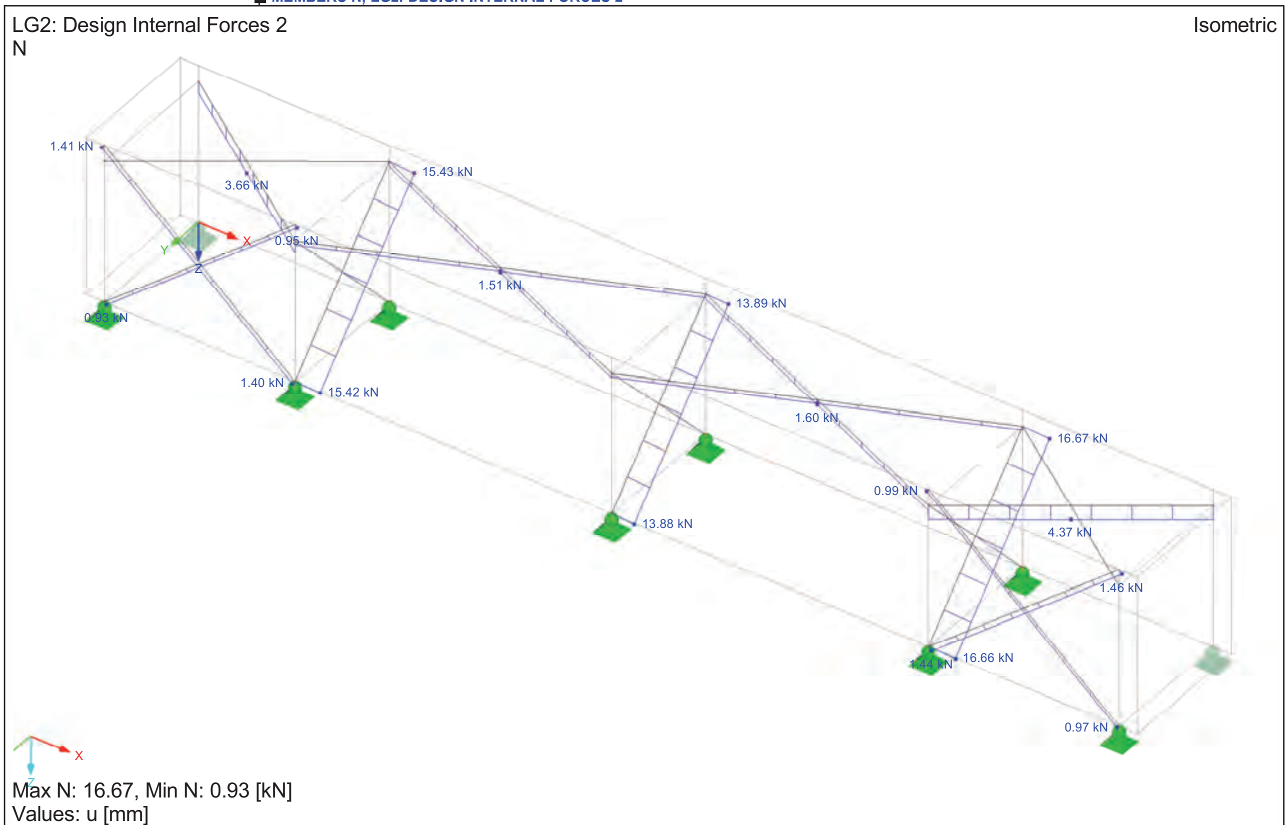
LG1: Design Internal Forces 1
N

Isometric

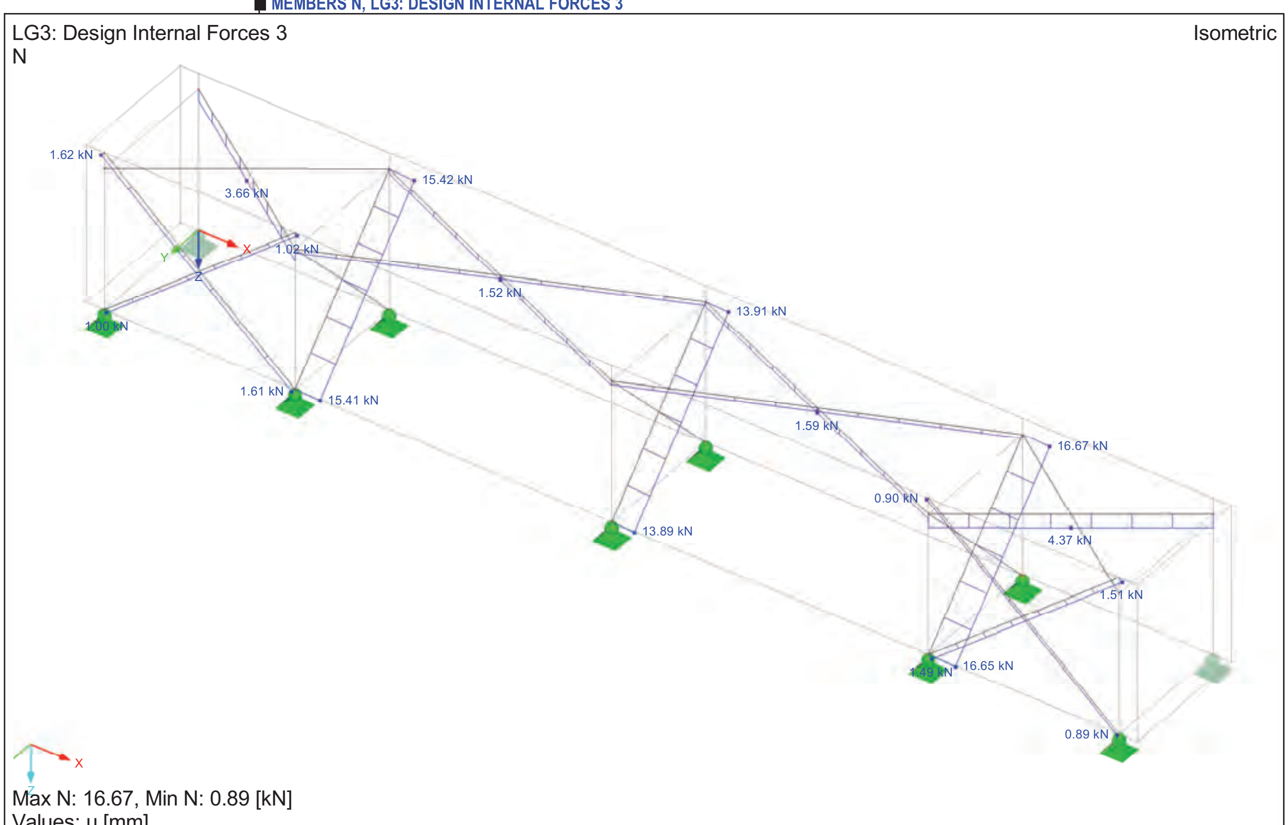


Max N: 16.67, Min N: 0.91 [kN]
Values: u [mm]

MEMBERS N, LG2: DESIGN INTERNAL FORCES 2



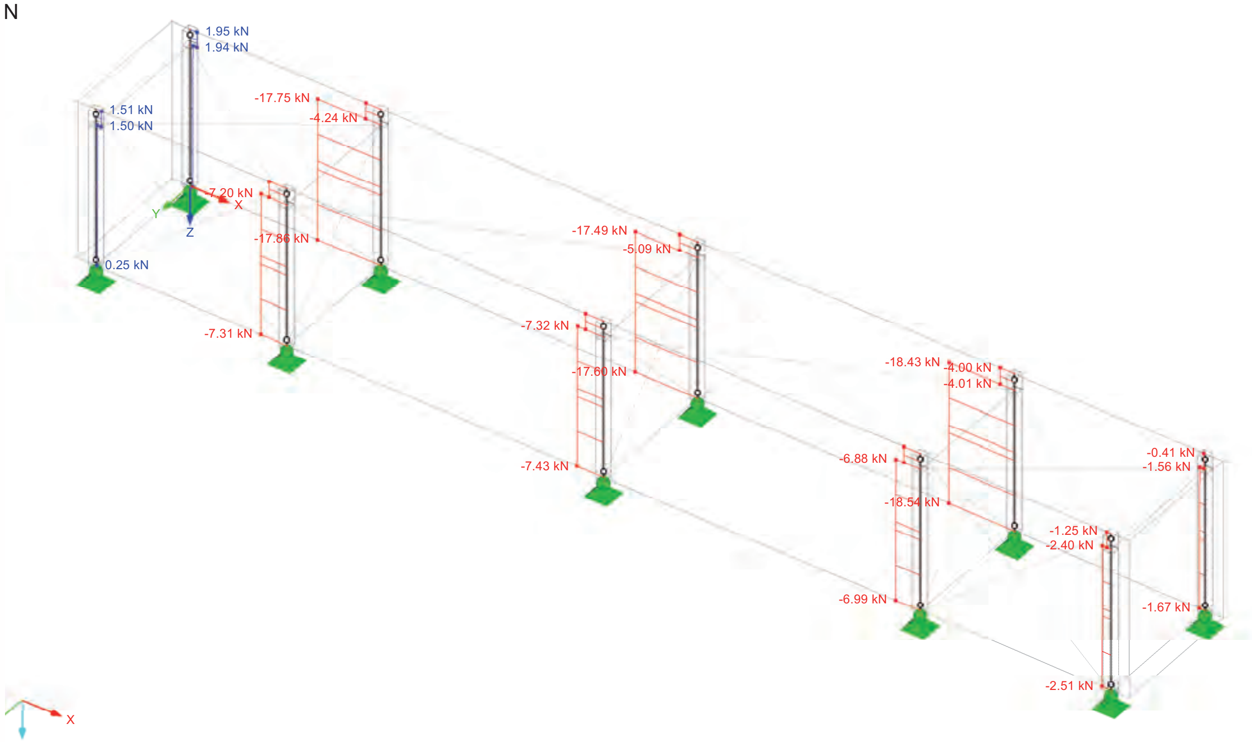
MEMBERS N, LG3: DESIGN INTERNAL FORCES 3



MEMBERS N, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
N

Isometric

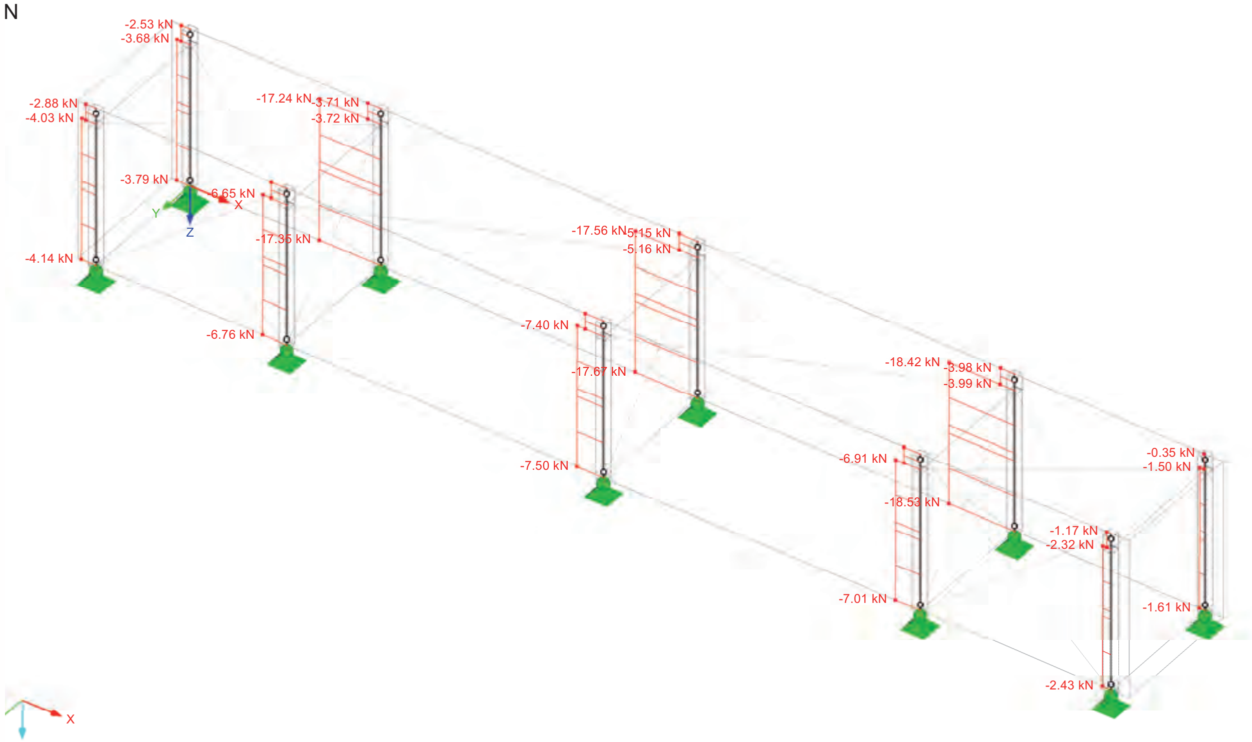


Max N: 1.95, Min N: -18.54 [kN]
Values: u [mm]

MEMBERS N, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
N

Isometric

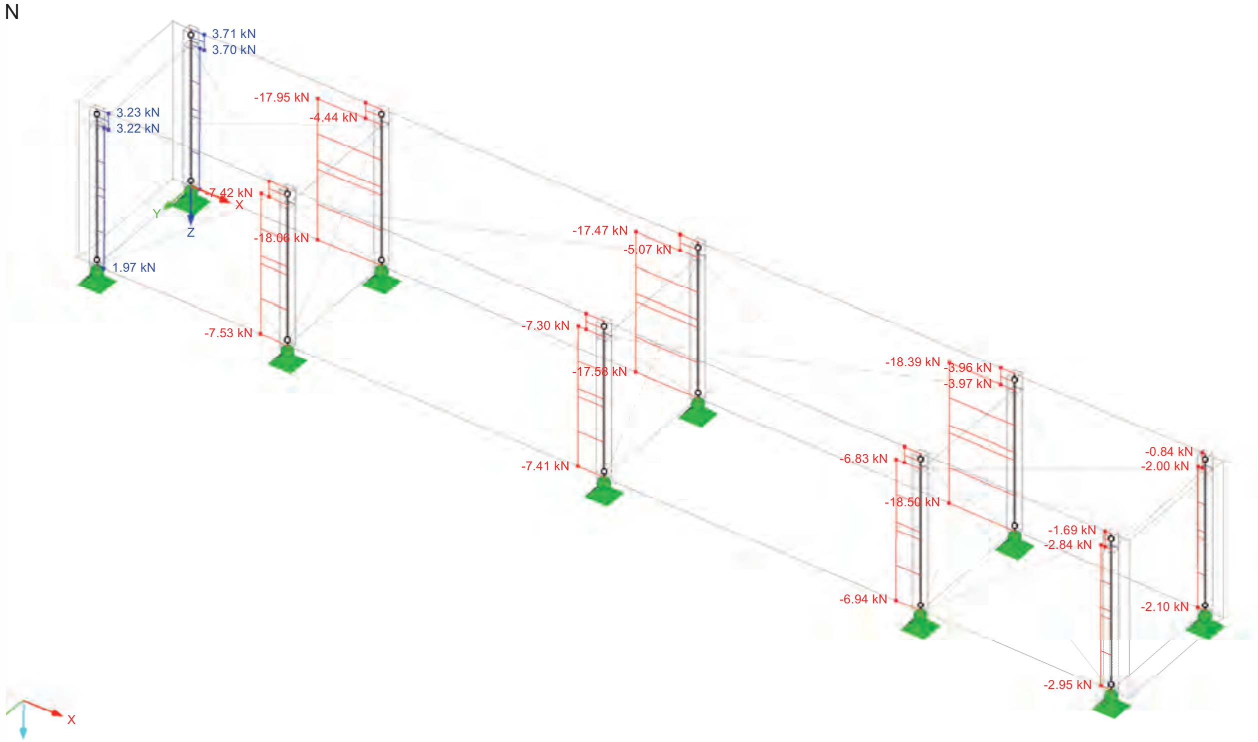


Max N: -0.35, Min N: -18.53 [kN]
Values: u [mm]

MEMBERS N, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
N

Isometric

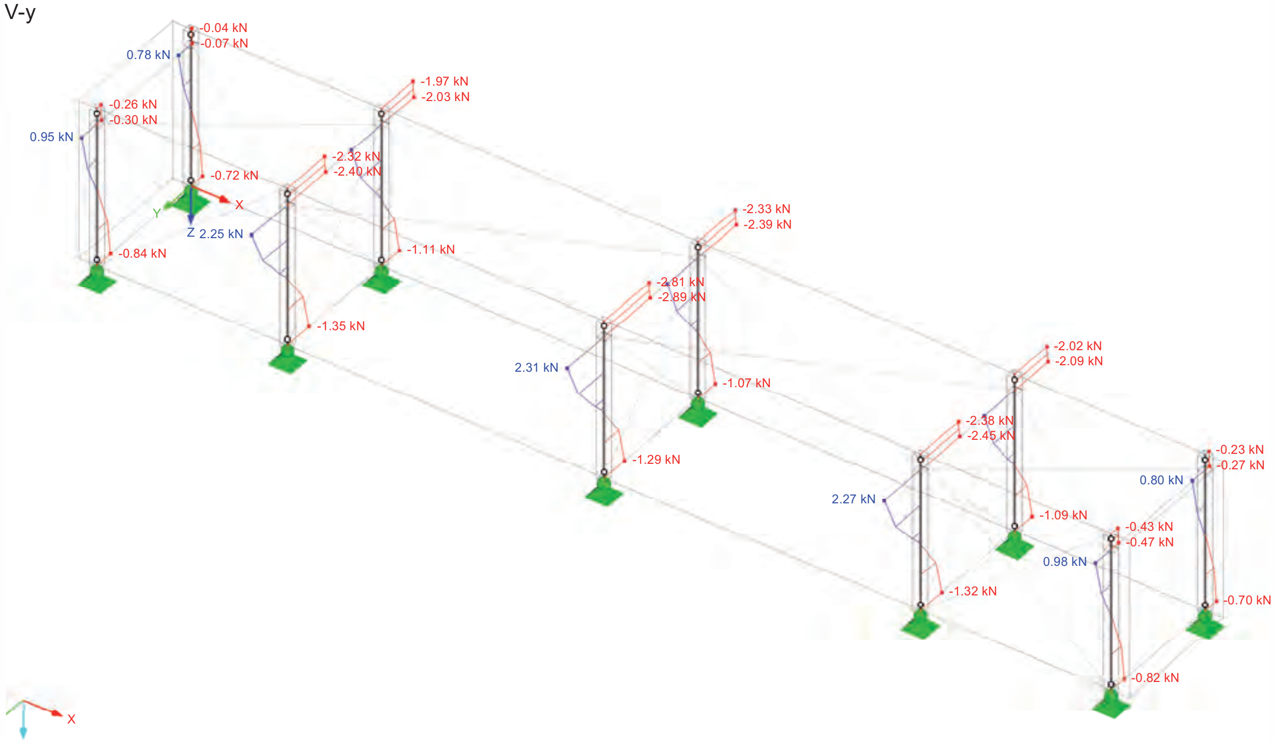


Max N: 3.71, Min N: -18.50 [kN]
Values: u [mm]

MEMBERS V-Y, LG1: DESIGN INTERNAL FORCES 1

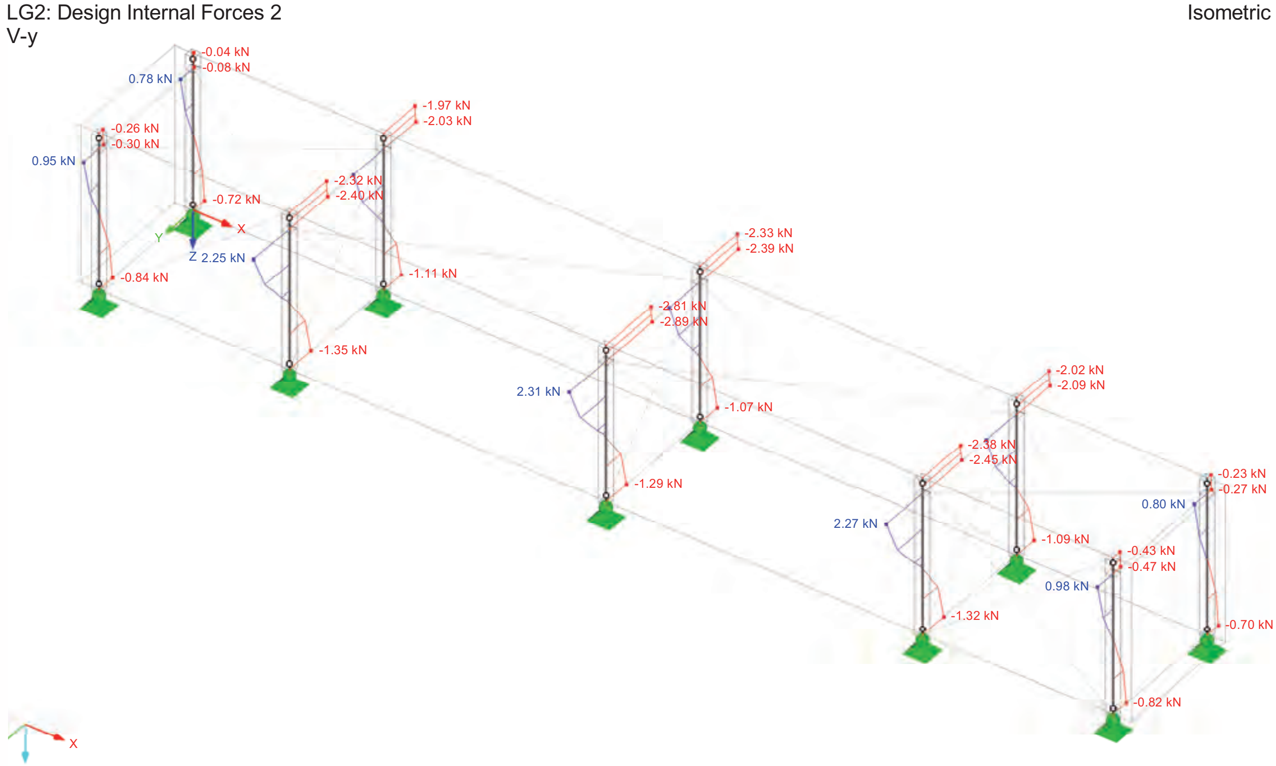
LG1: Design Internal Forces 1
V-y

Isometric



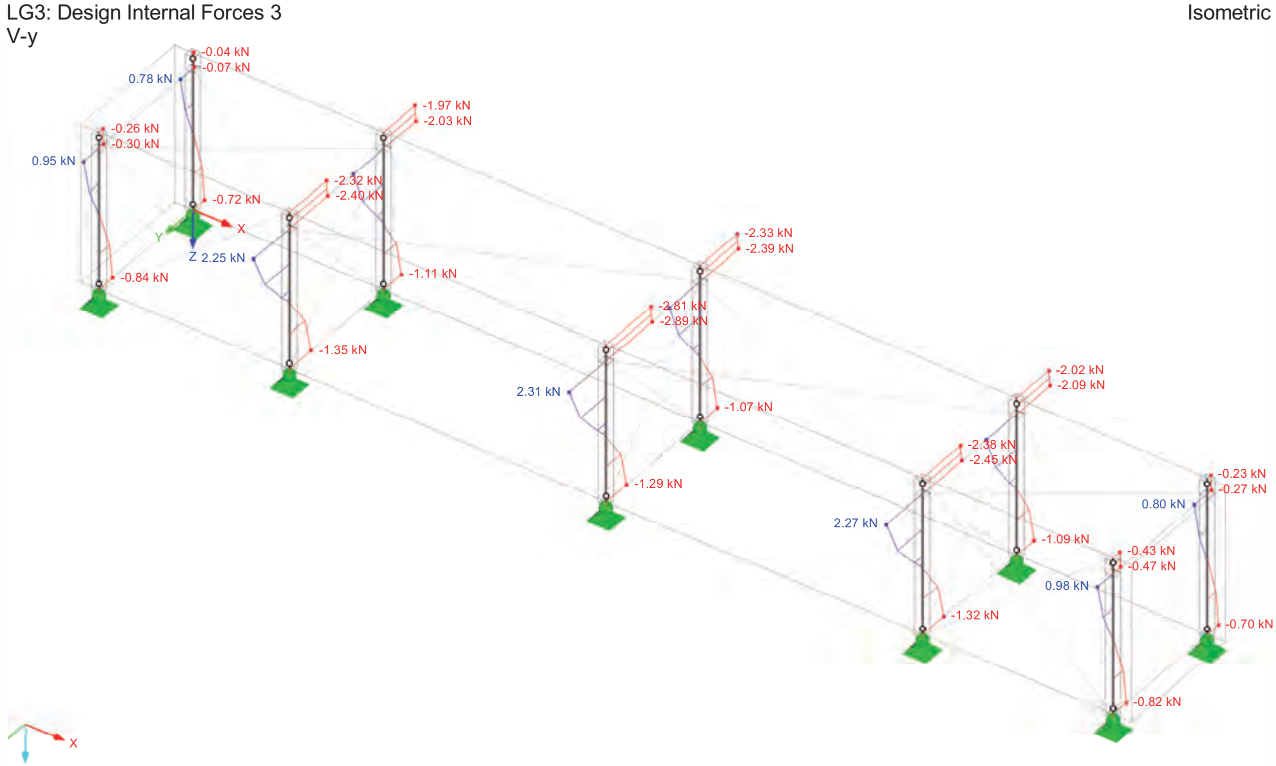
Max V-y: 2.31, Min V-y: -2.89 [kN]
Values: u [mm]

MEMBERS V-Y, LG2: DESIGN INTERNAL FORCES 2



Max V-y: 2.31, Min V-y: -2.89 [kN]
Values: u [mm]

MEMBERS V-Y, LG3: DESIGN INTERNAL FORCES 3

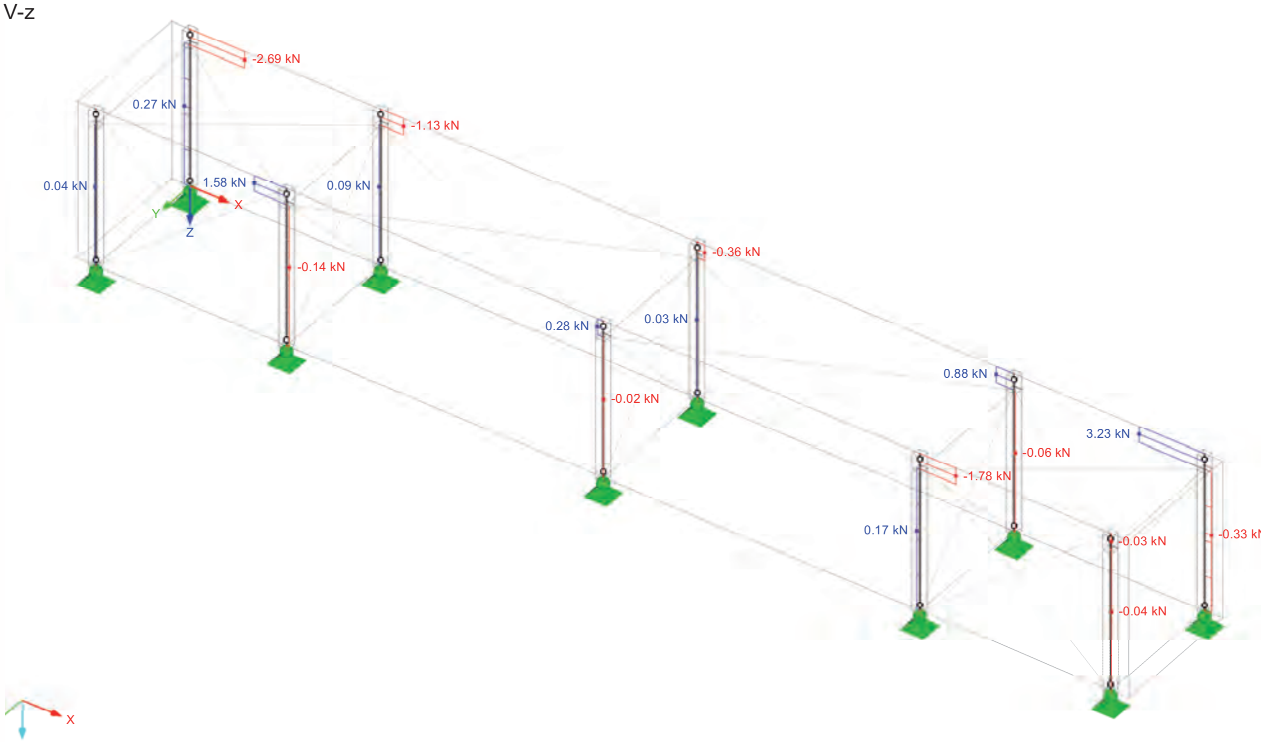


Max V-y: 2.31, Min V-y: -2.89 [kN]
Values: u [mm]

MEMBERS V-Z, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
V-z

Isometric

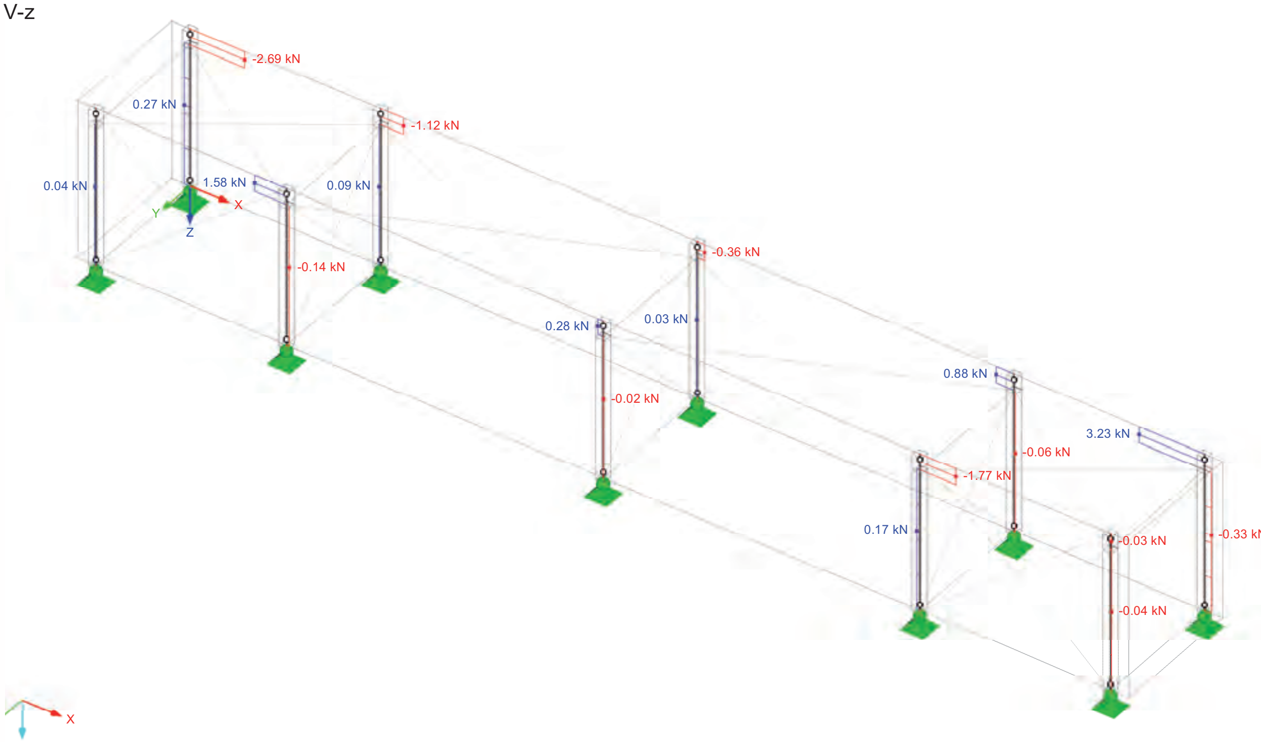


Max V-z: 3.23, Min V-z: -2.69 [kN]
Values: u [mm]

MEMBERS V-Z, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
V-z

Isometric

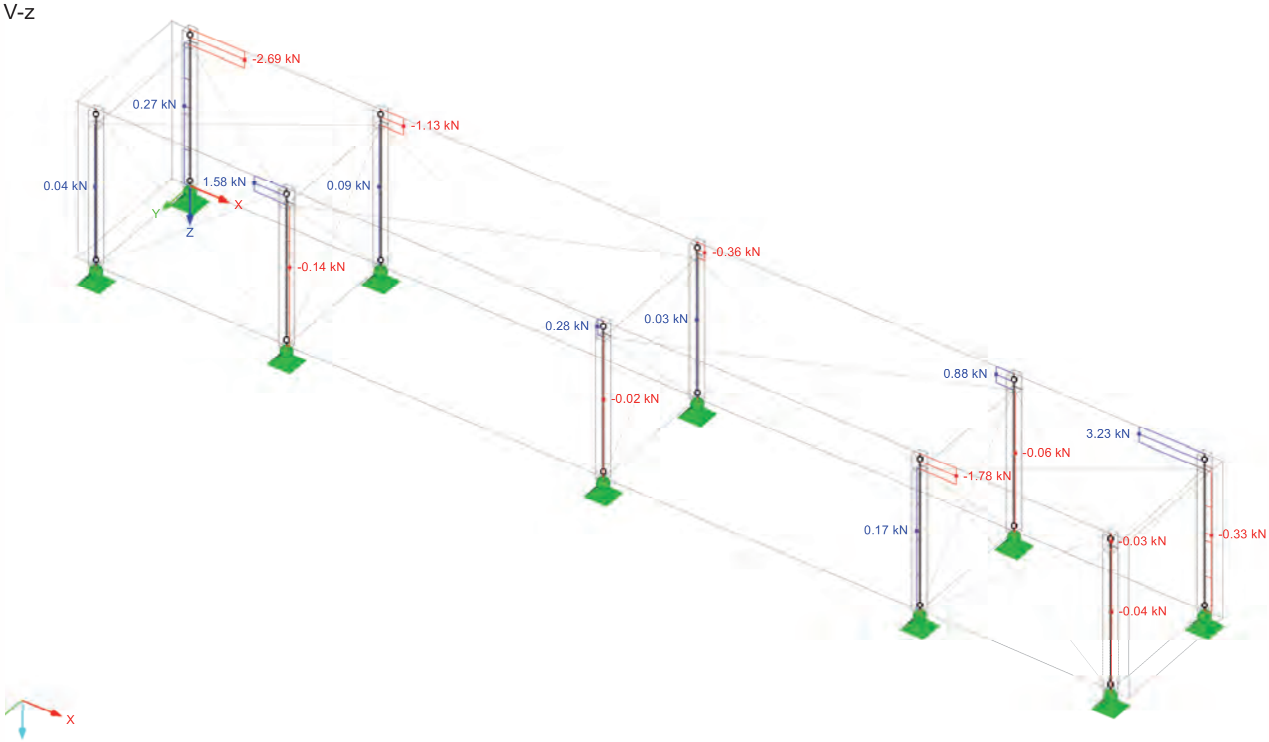


Max V-z: 3.23, Min V-z: -2.69 [kN]
Values: u [mm]

MEMBERS V-Z, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
V-z

Isometric

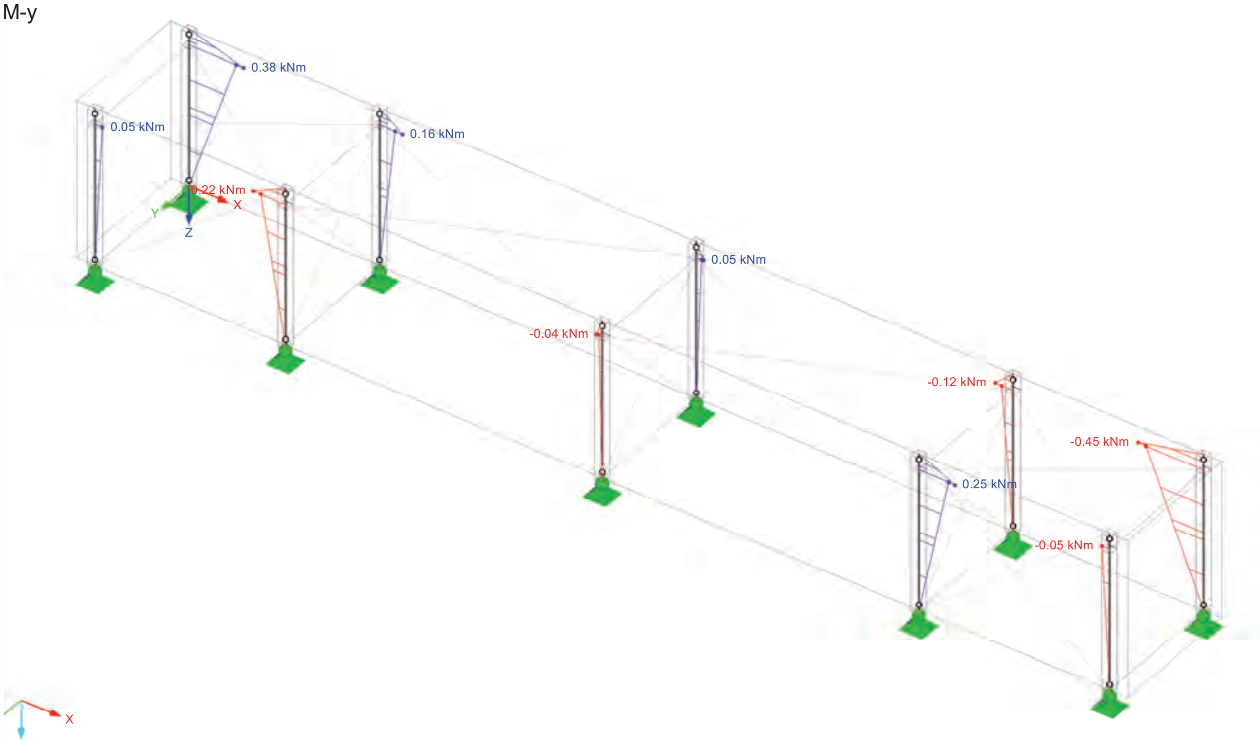


Max V-z: 3.23, Min V-z: -2.69 [kN]
Values: u [mm]

MEMBERS M-Y, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
M-y

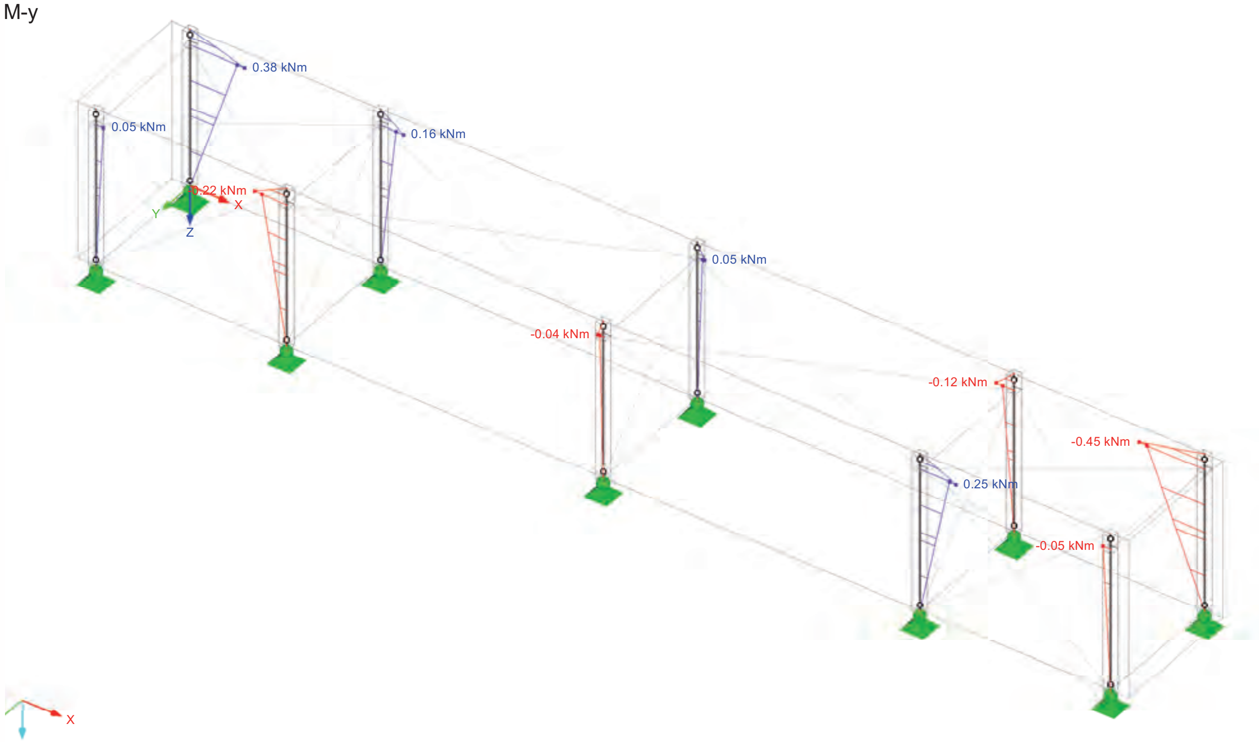
Isometric



Max M-y: 0.38, Min M-y: -0.45 [kNm]
Values: u [mm]

MEMBERS M-Y, LG2: DESIGN INTERNAL FORCES 2

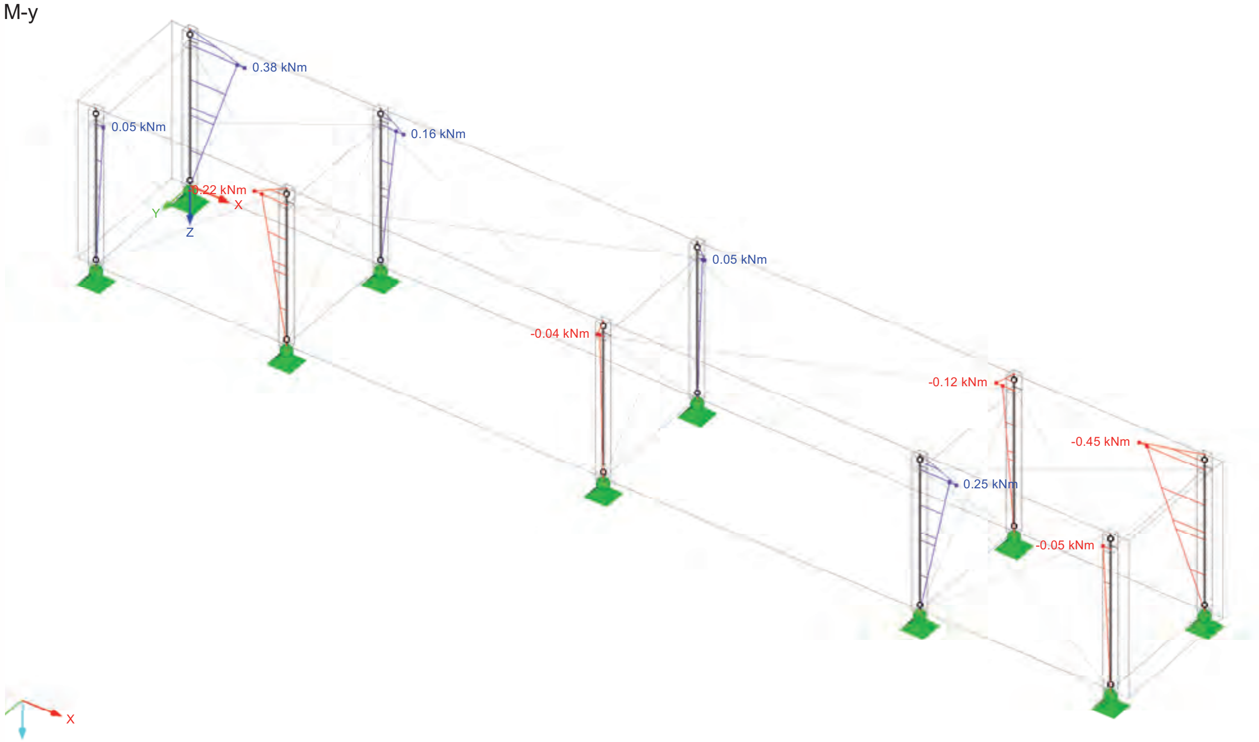
LG2: Design Internal Forces 2 Isometric
M-y



Max M-y: 0.38, Min M-y: -0.45 [kNm]
Values: u [mm]

MEMBERS M-Y, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3 Isometric
M-y

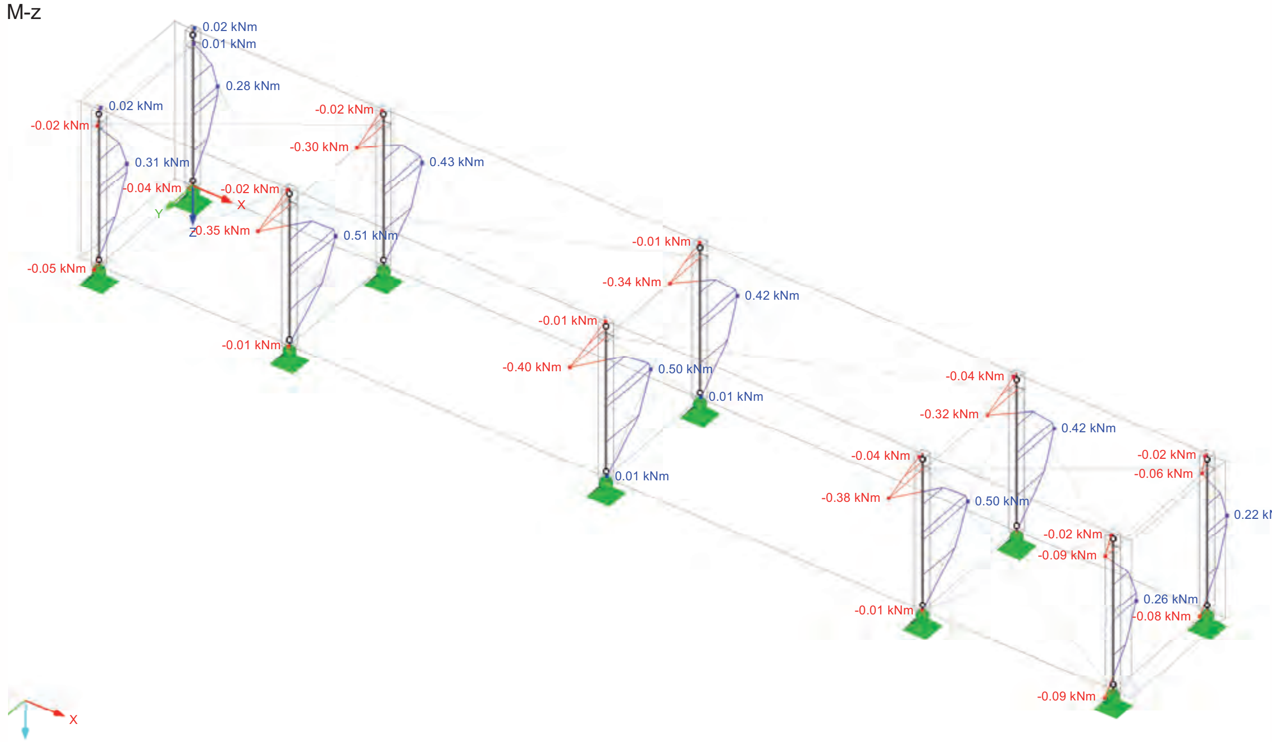


Max M-y: 0.38, Min M-y: -0.45 [kNm]
Values: u [mm]

MEMBERS M-Z, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
M-z

Isometric

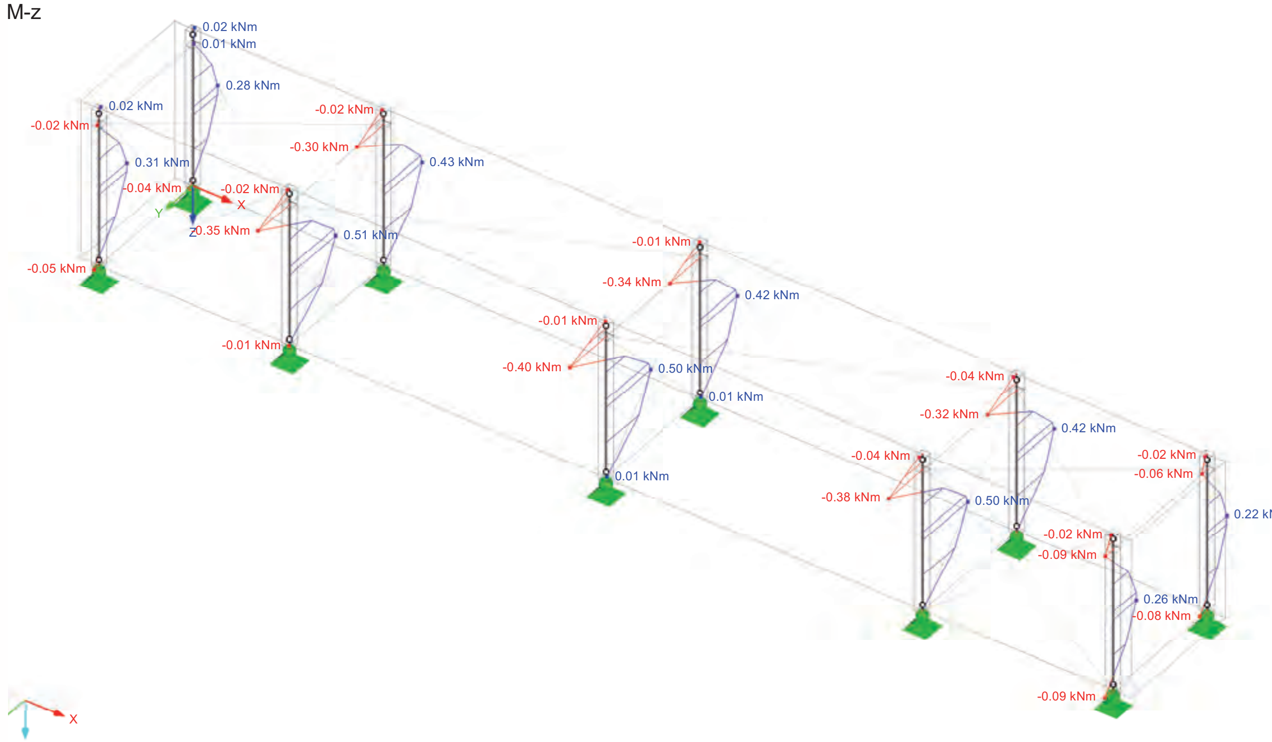


Max M-z: 0.51, Min M-z: -0.40 [kNm]
Values: u [mm]

MEMBERS M-Z, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
M-z

Isometric

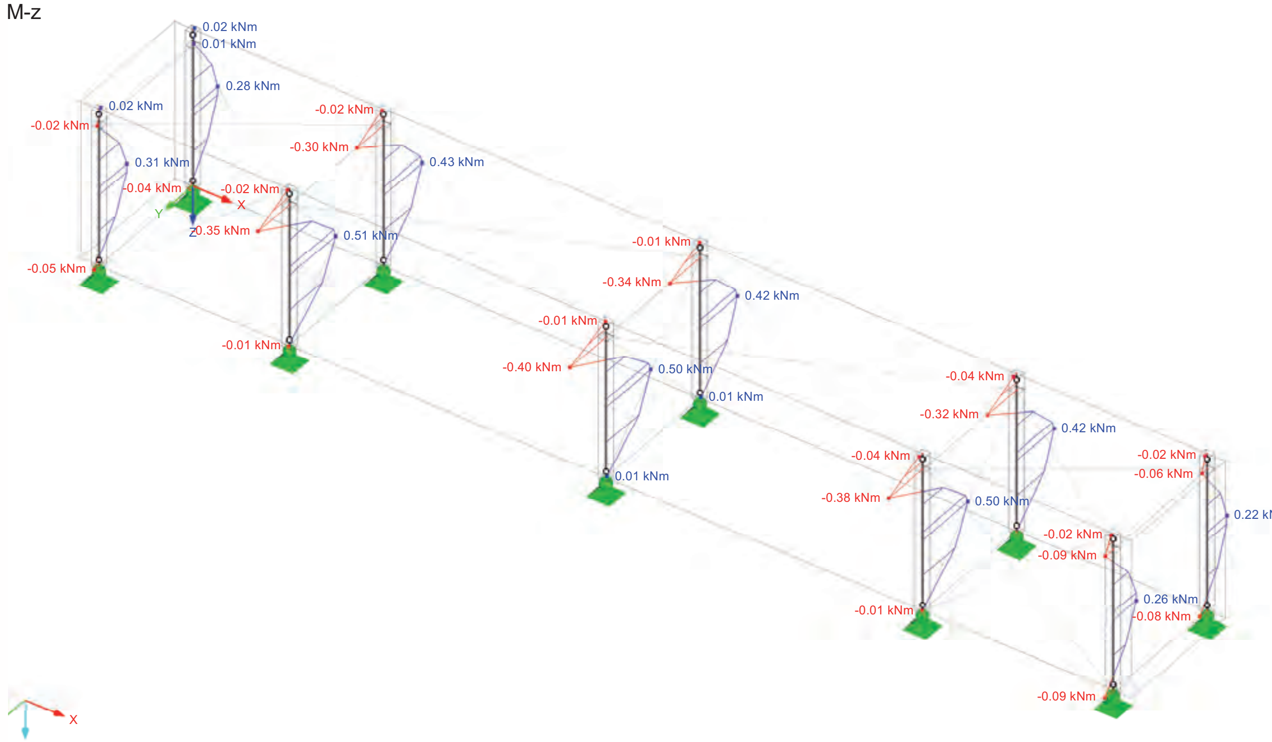


Max M-z: 0.51, Min M-z: -0.40 [kNm]
Values: u [mm]

■ MEMBERS M-Z, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
M-z

Isometric

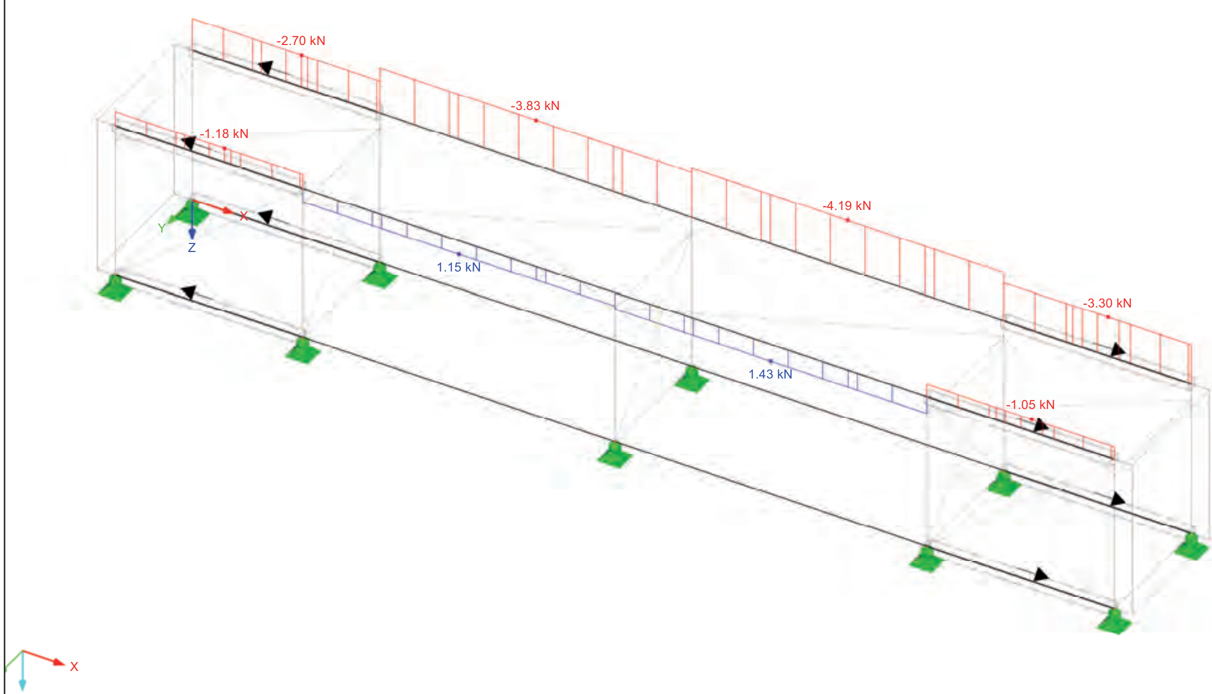


Max M-z: 0.51, Min M-z: -0.40 [kNm]
Values: u [mm]

■ MEMBERS N, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
N

Isometric

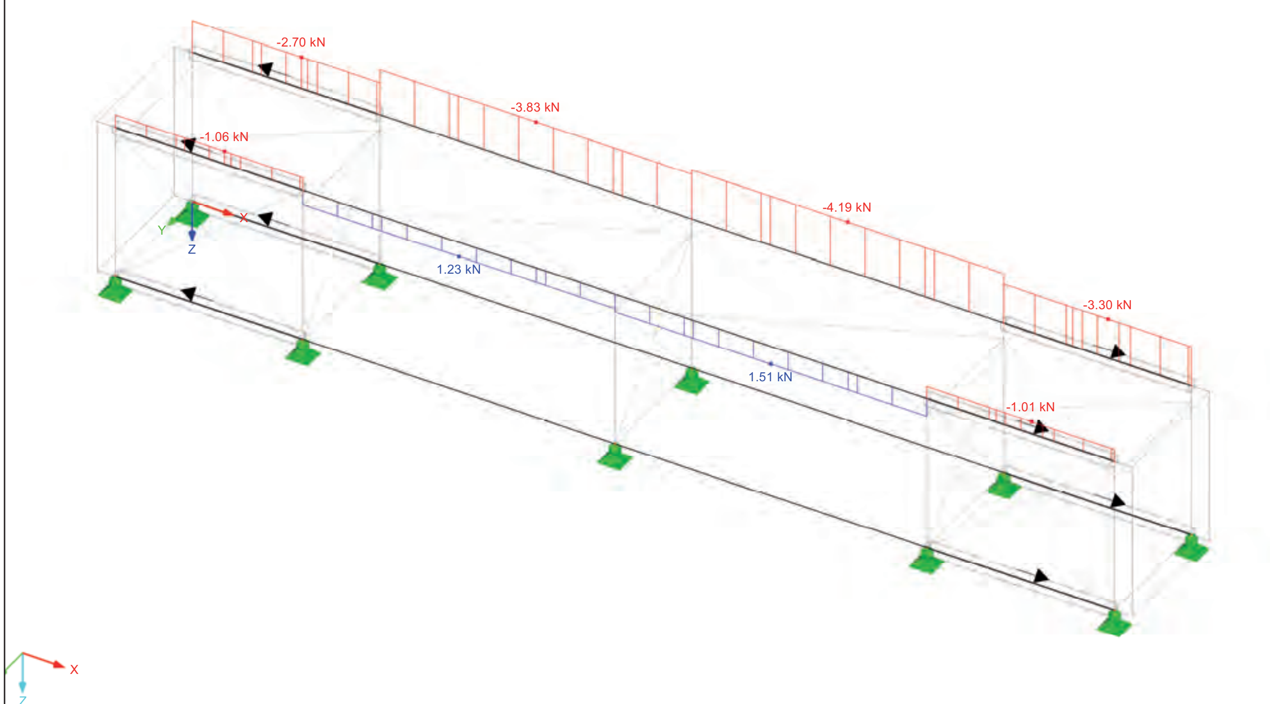


Max N: 1.43, Min N: -4.19 [kN]
Values: u [mm]

■ MEMBERS N, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
N

Isometric

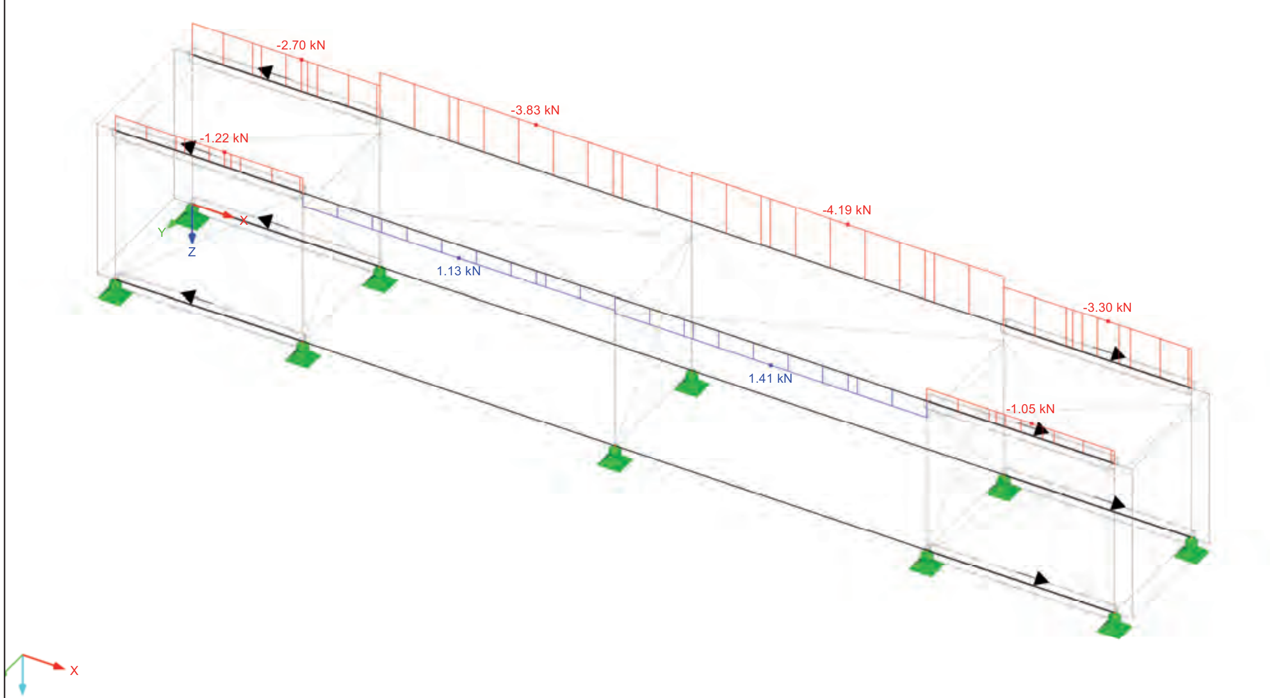


Max N: 1.51, Min N: -4.19 [kN]
Values: u [mm]

■ MEMBERS N, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
N

Isometric

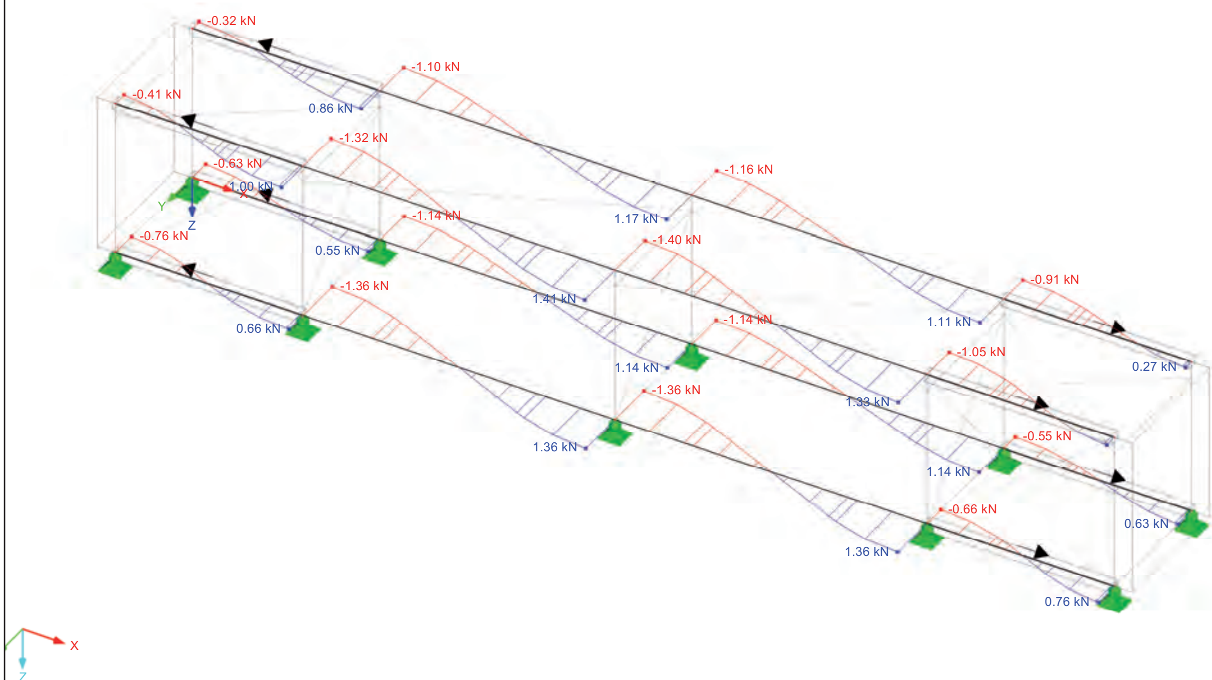


Max N: 1.41, Min N: -4.19 [kN]
Values: u [mm]

MEMBERS V-Y, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
V-y

Isometric

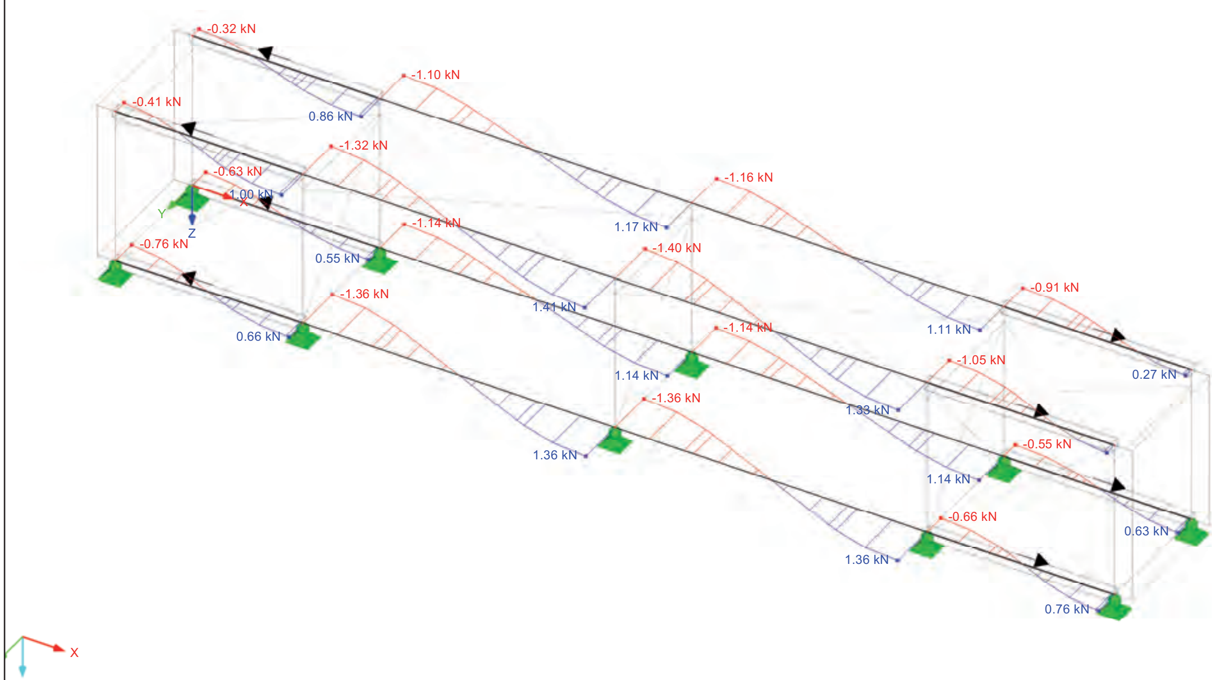


Max V-y: 1.41, Min V-y: -1.40 [kN]
Values: u [mm]

MEMBERS V-Y, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
V-y

Isometric

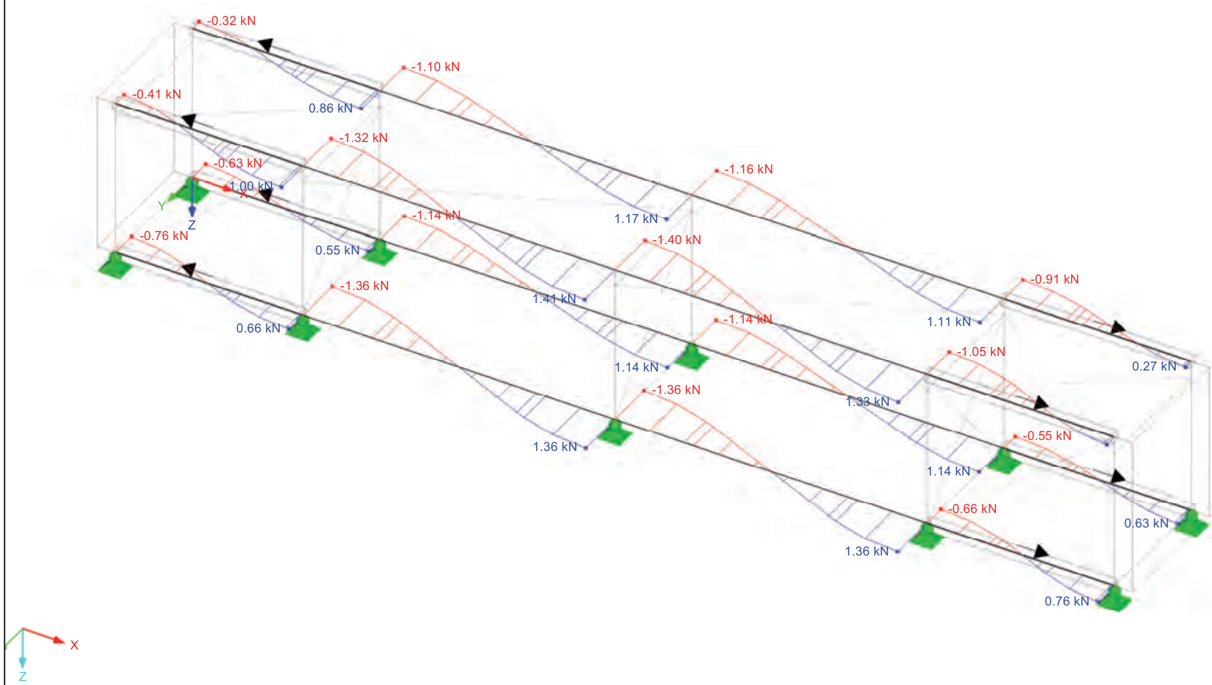


Max V-y: 1.41, Min V-y: -1.40 [kN]
Values: u [mm]

■ MEMBERS V-Y, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
V-y

Isometric

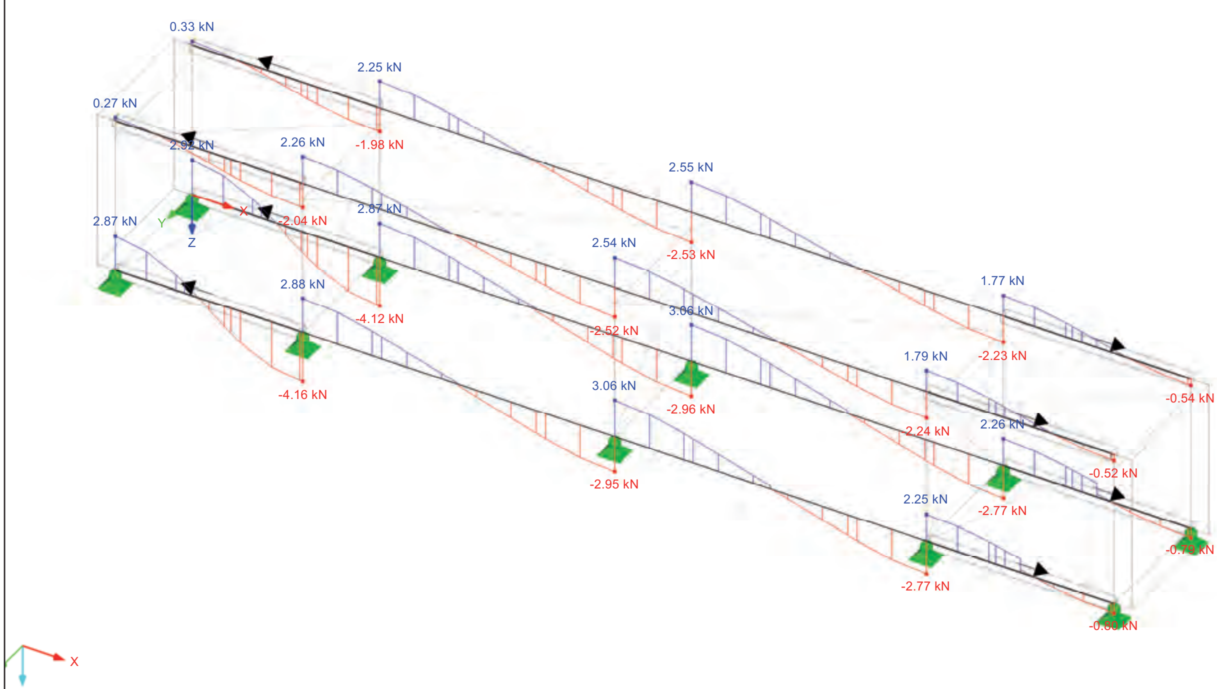


Max V-y: 1.41, Min V-y: -1.40 [kN]
Values: u [mm]

■ MEMBERS V-Z, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
V-z

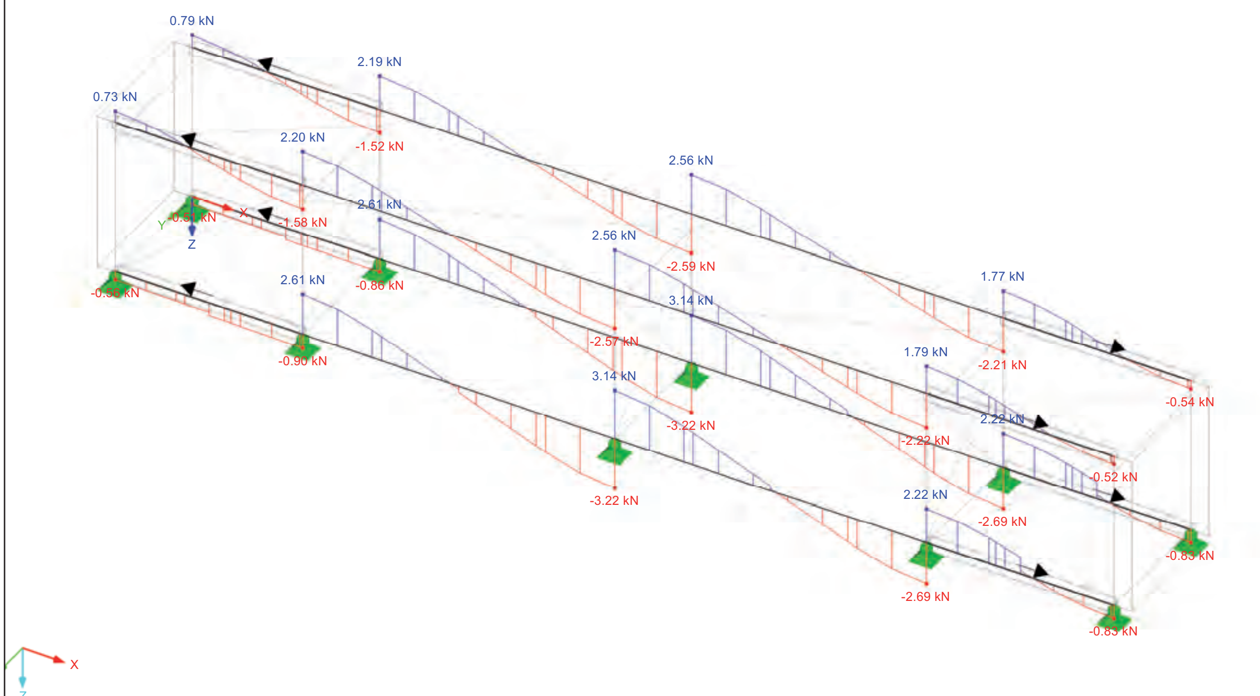
Isometric



Max V-z: 3.06, Min V-z: -4.16 [kN]
Values: u [mm]

■ MEMBERS V-Z, LG2: DESIGN INTERNAL FORCES 2

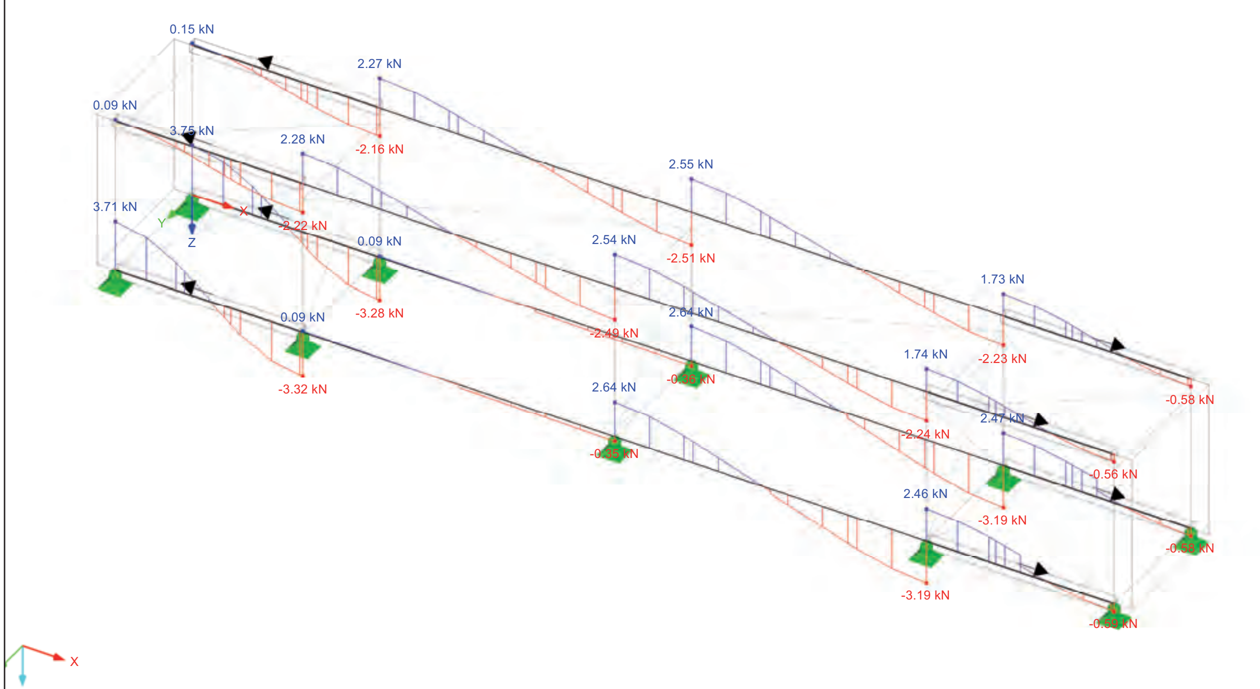
LG2: Design Internal Forces 2 | Isometric
V-z



Max V-z: 3.14, Min V-z: -3.22 [kN]
Values: u [mm]

■ MEMBERS V-Z, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3 | Isometric
V-z

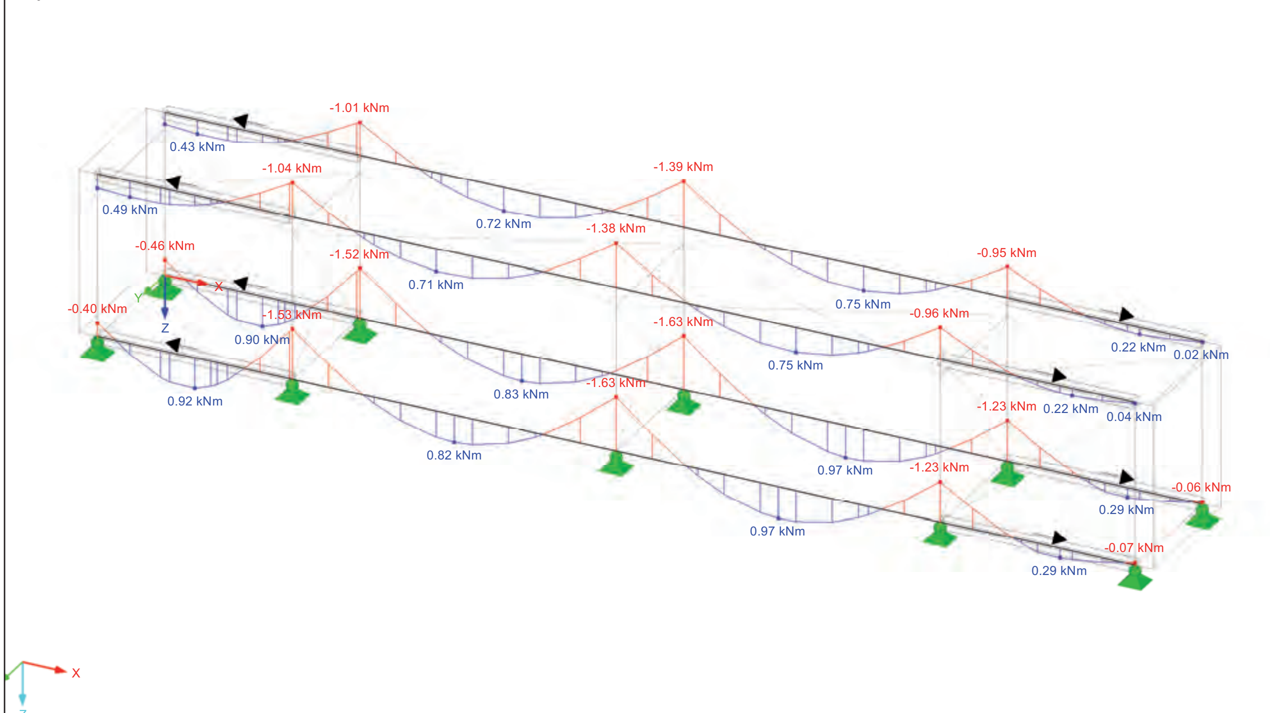


Max V-z: 3.75, Min V-z: -3.32 [kN]
Values: u [mm]

■ MEMBERS M-Y, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
M-y

Isometric

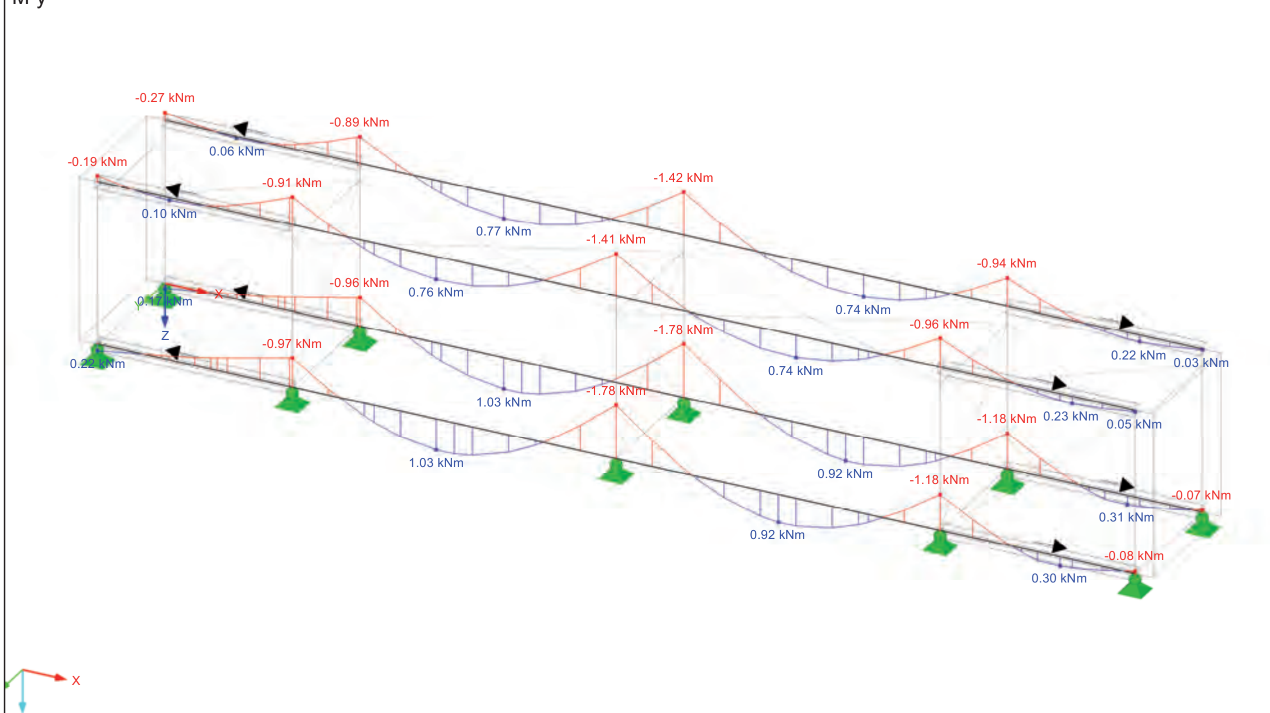


Max M-y: 0.97, Min M-y: -1.63 [kNm]
Values: u [mm]

■ MEMBERS M-Y, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
M-y

Isometric

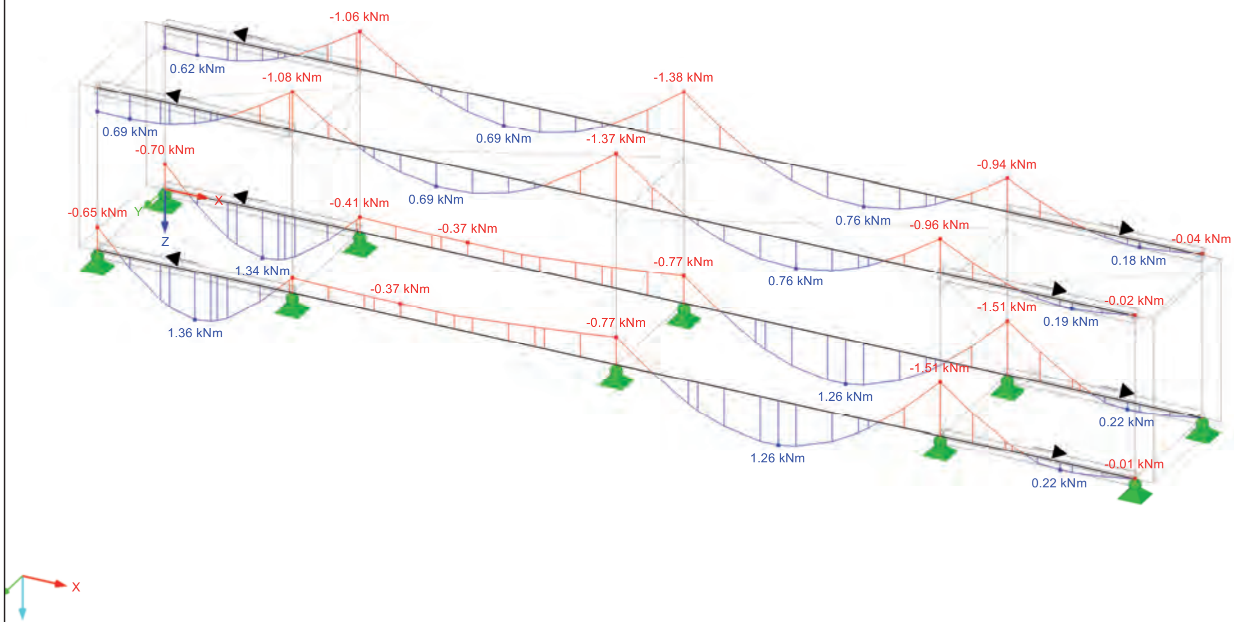


Max M-y: 1.03, Min M-y: -1.78 [kNm]
Values: u [mm]

MEMBERS M-Y, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
M-y

Isometric

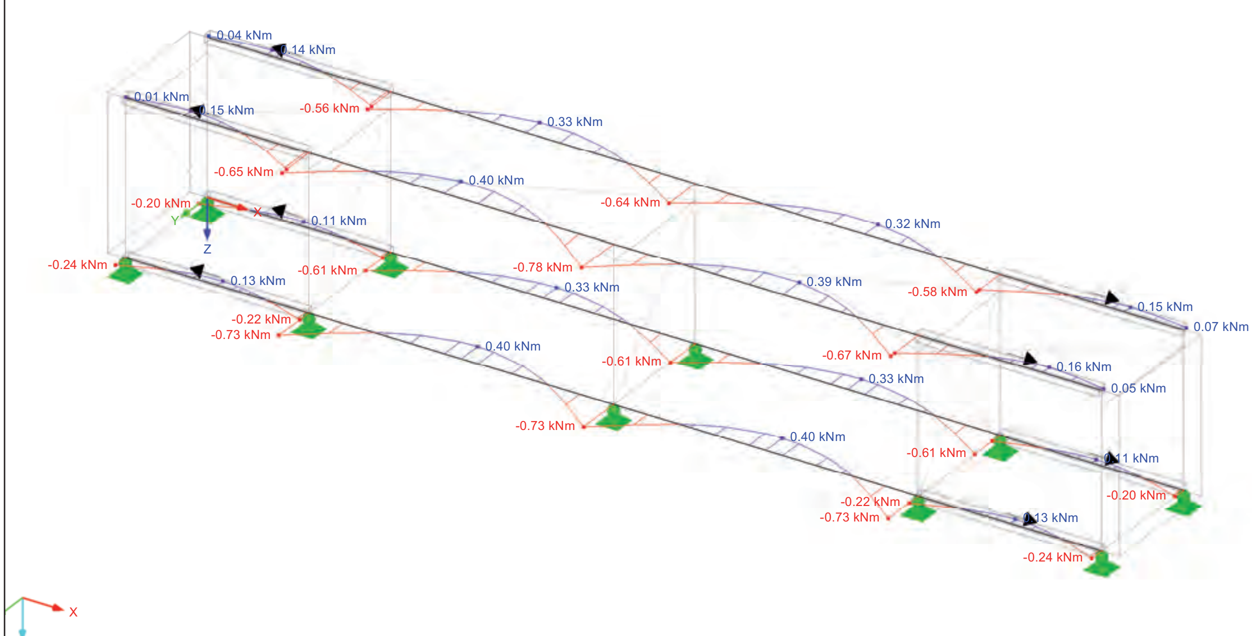


Max M-y: 1.36, Min M-y: -1.51 [kNm]
Values: u [mm]

MEMBERS M-Z, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
M-z

Isometric

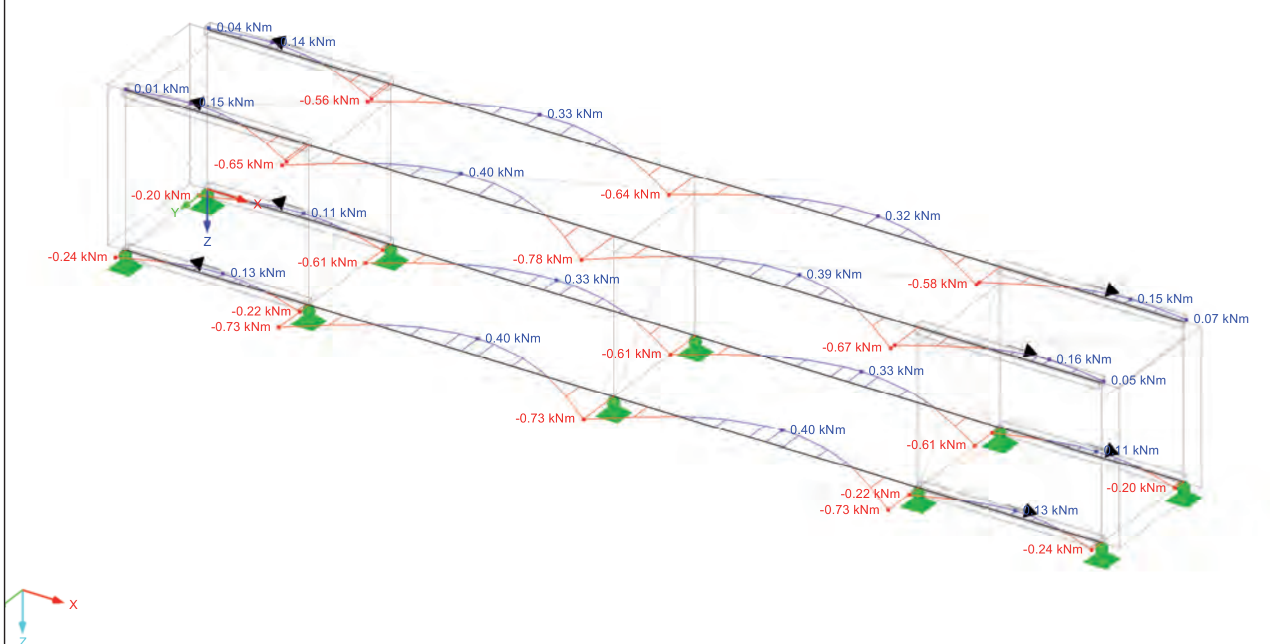


Max M-z: 0.40, Min M-z: -0.78 [kNm]
Values: u [mm]

MEMBERS M-Z, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
M-z

Isometric

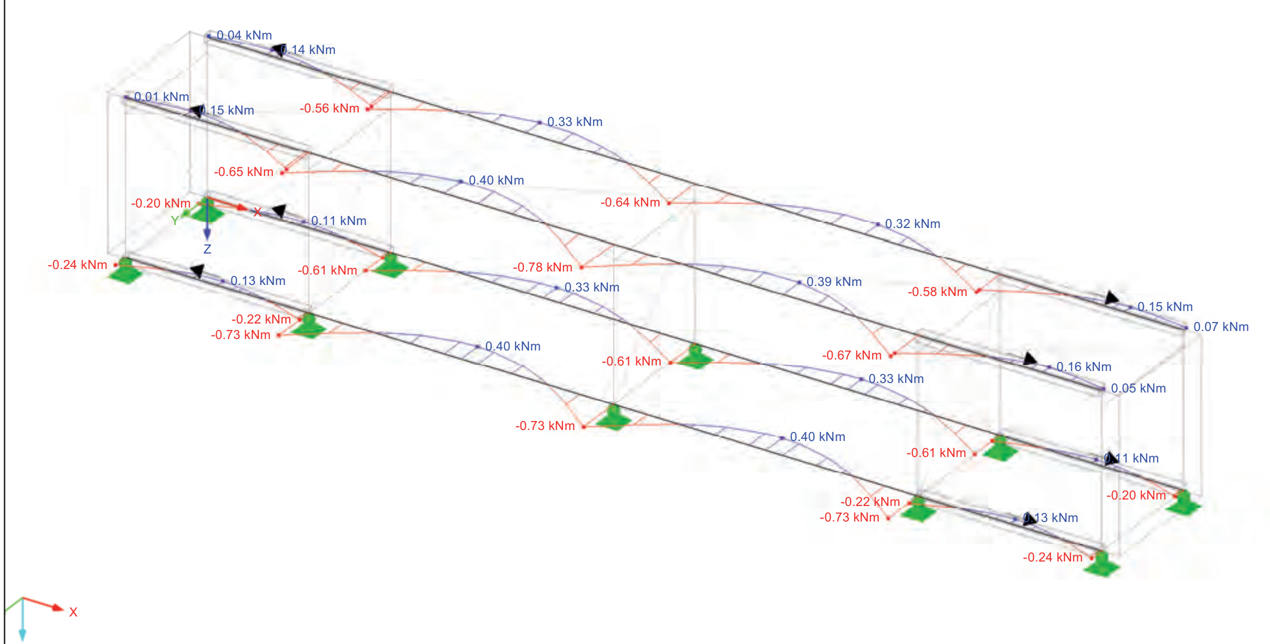


Max M-z: 0.40, Min M-z: -0.78 [kNm]
Values: u [mm]

MEMBERS M-Z, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
M-z

Isometric

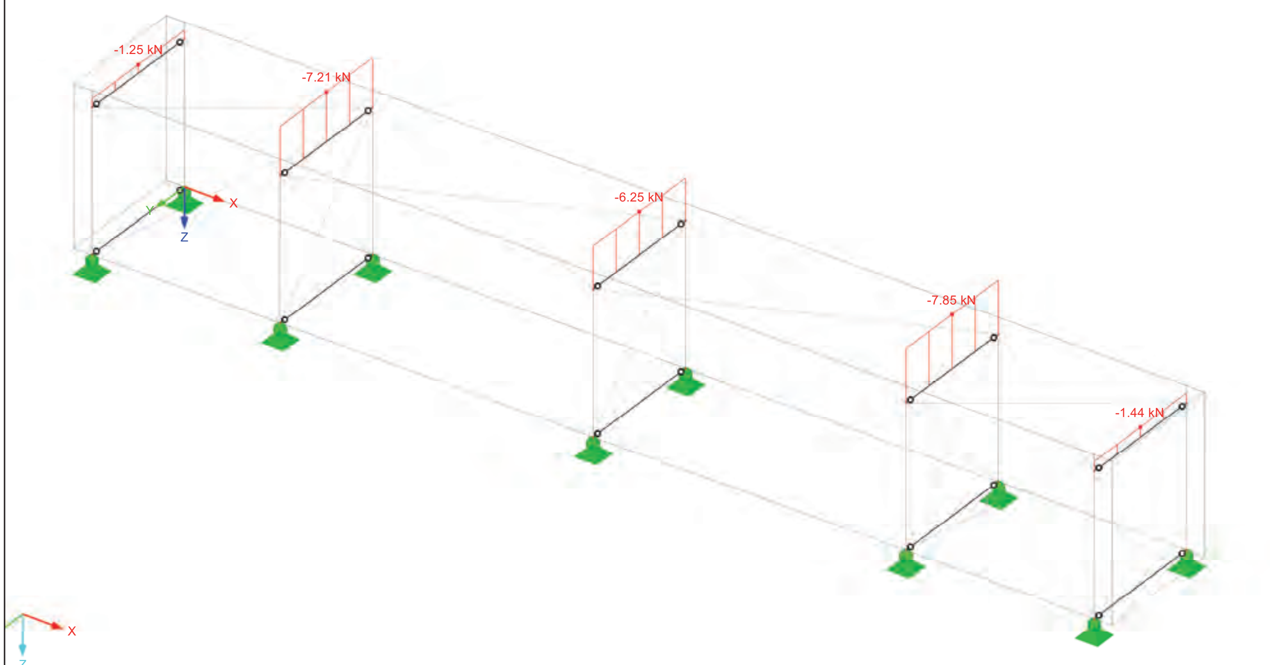


Max M-z: 0.40, Min M-z: -0.78 [kNm]
Values: u [mm]

MEMBERS N, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
N

Isometric

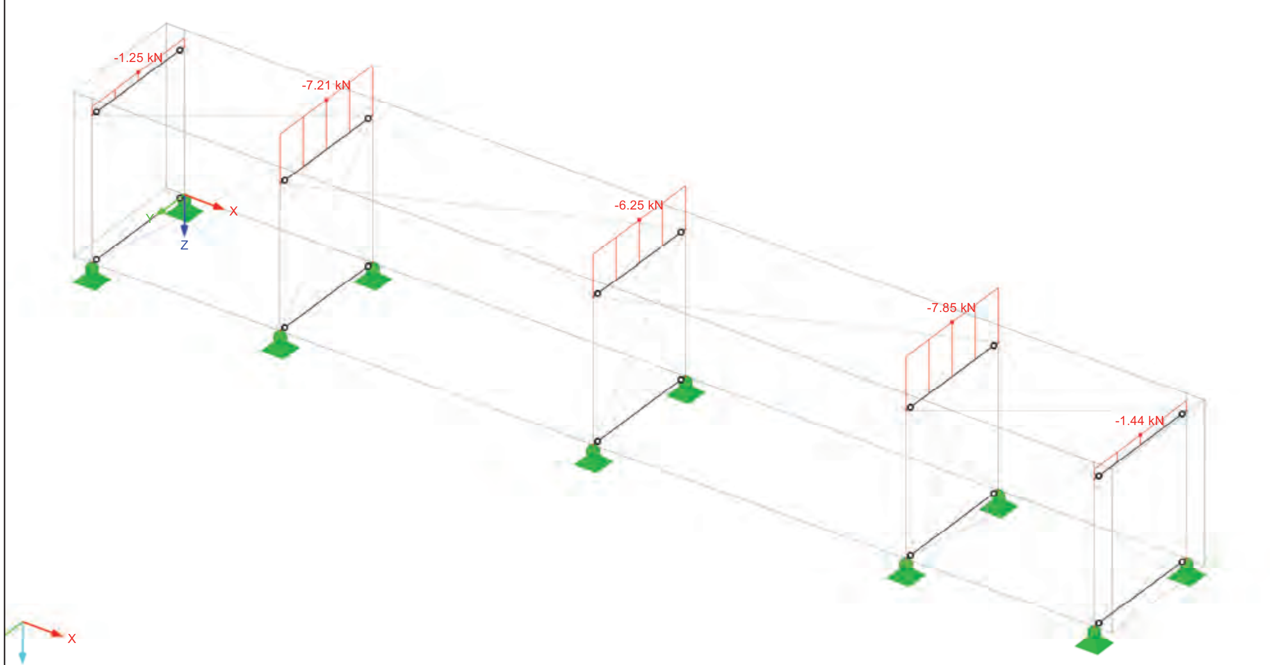


Max N: 0.00, Min N: -7.85 [kN]
Values: u [mm]

MEMBERS N, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
N

Isometric

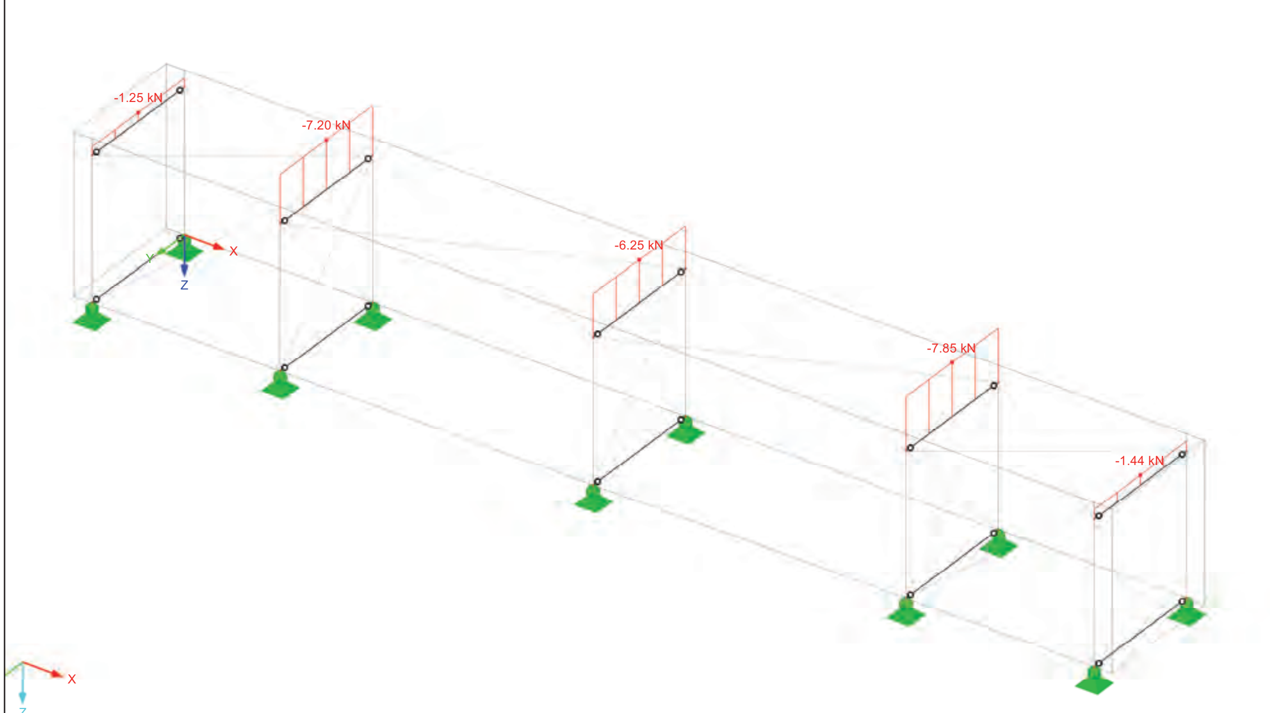


Max N: 0.00, Min N: -7.85 [kN]
Values: u [mm]

MEMBERS N, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
N

Isometric

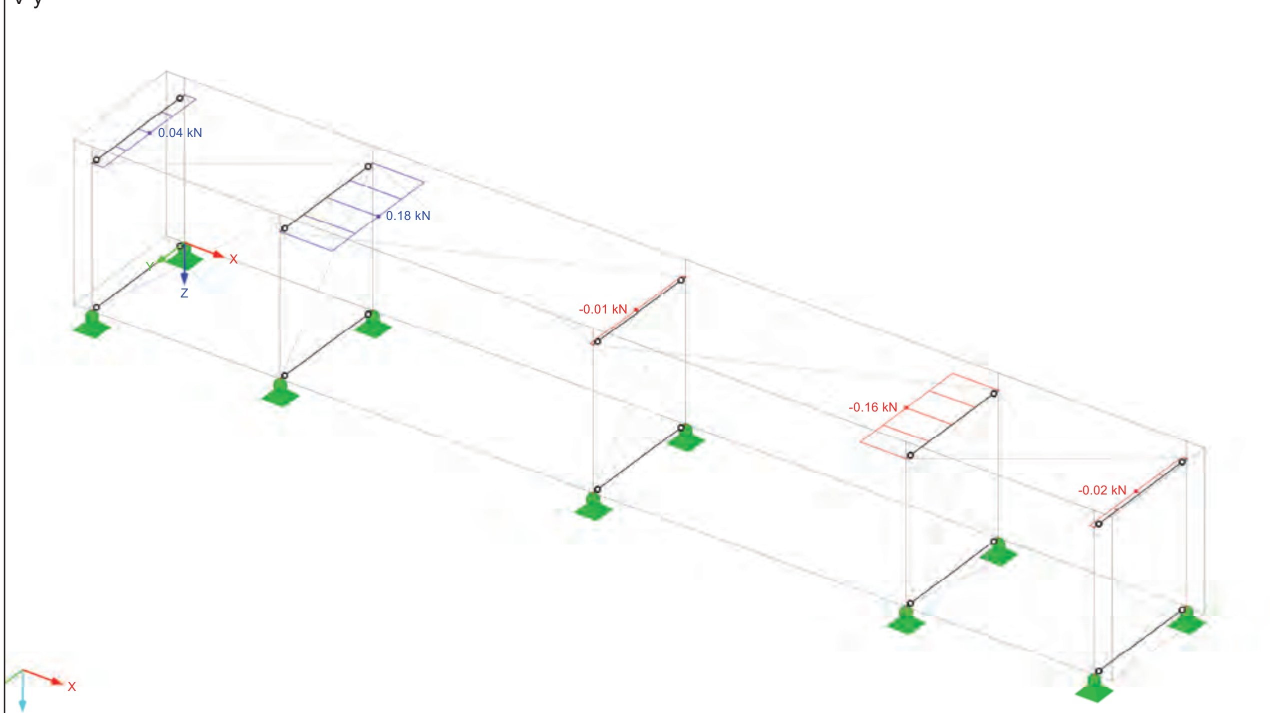


Max N: 0.00, Min N: -7.85 [kN]
Values: u [mm]

MEMBERS V-Y, LG3: DESIGN INTERNAL FORCES 3

LG3: Design Internal Forces 3
V-y

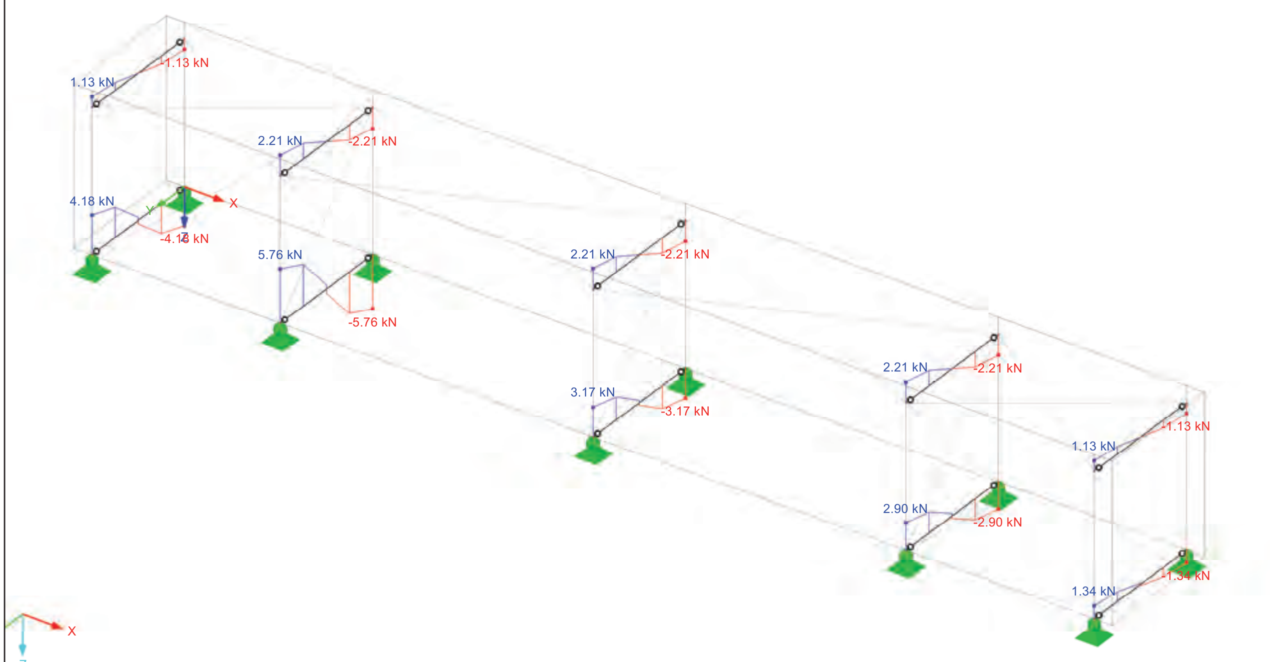
Isometric



Max V-y: 0.18, Min V-y: -0.16 [kN]
Values: u [mm]

MEMBERS V-Z, LG1: DESIGN INTERNAL FORCES 1

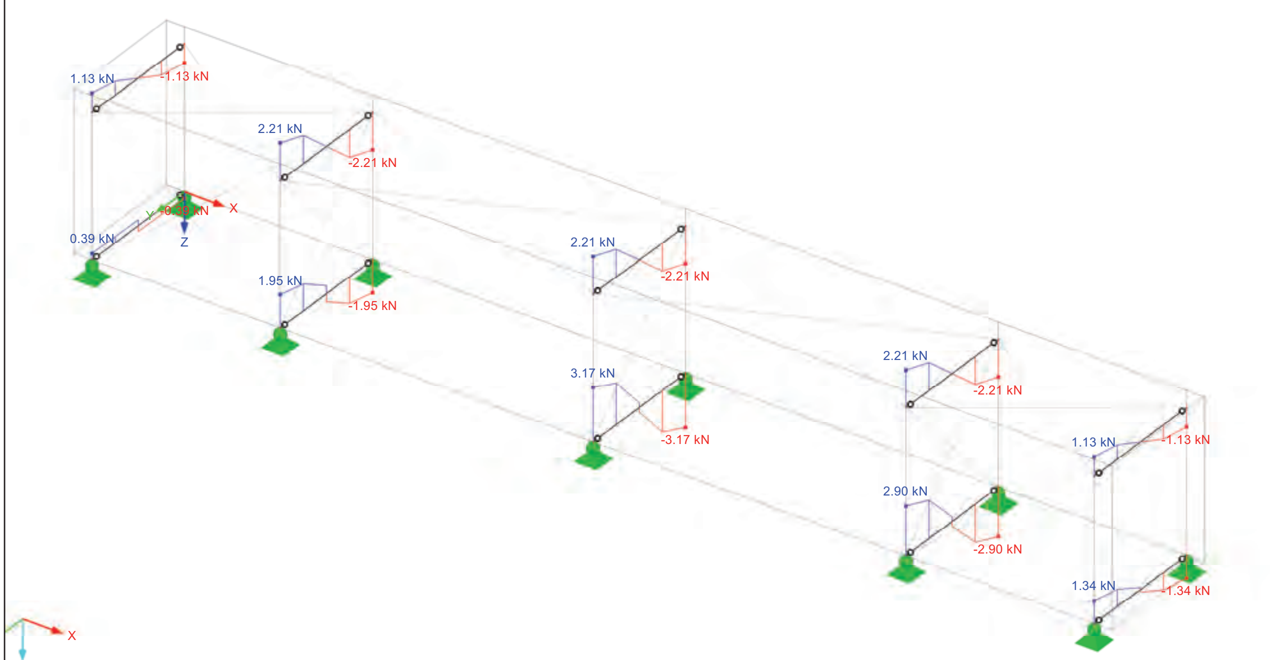
LG1: Design Internal Forces 1 Isometric
V-z



Max V-z: 5.76, Min V-z: -5.76 [kN]
Values: u [mm]

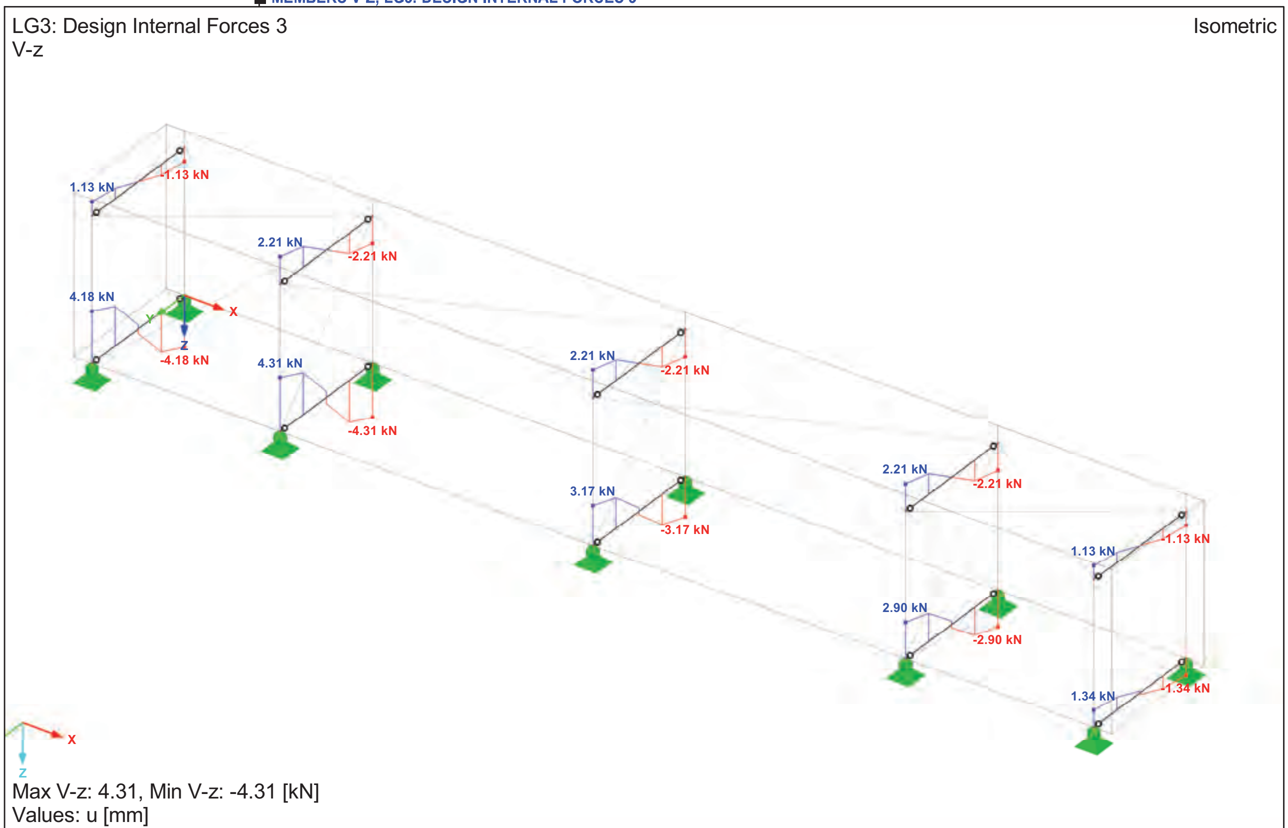
MEMBERS V-Z, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2 Isometric
V-z

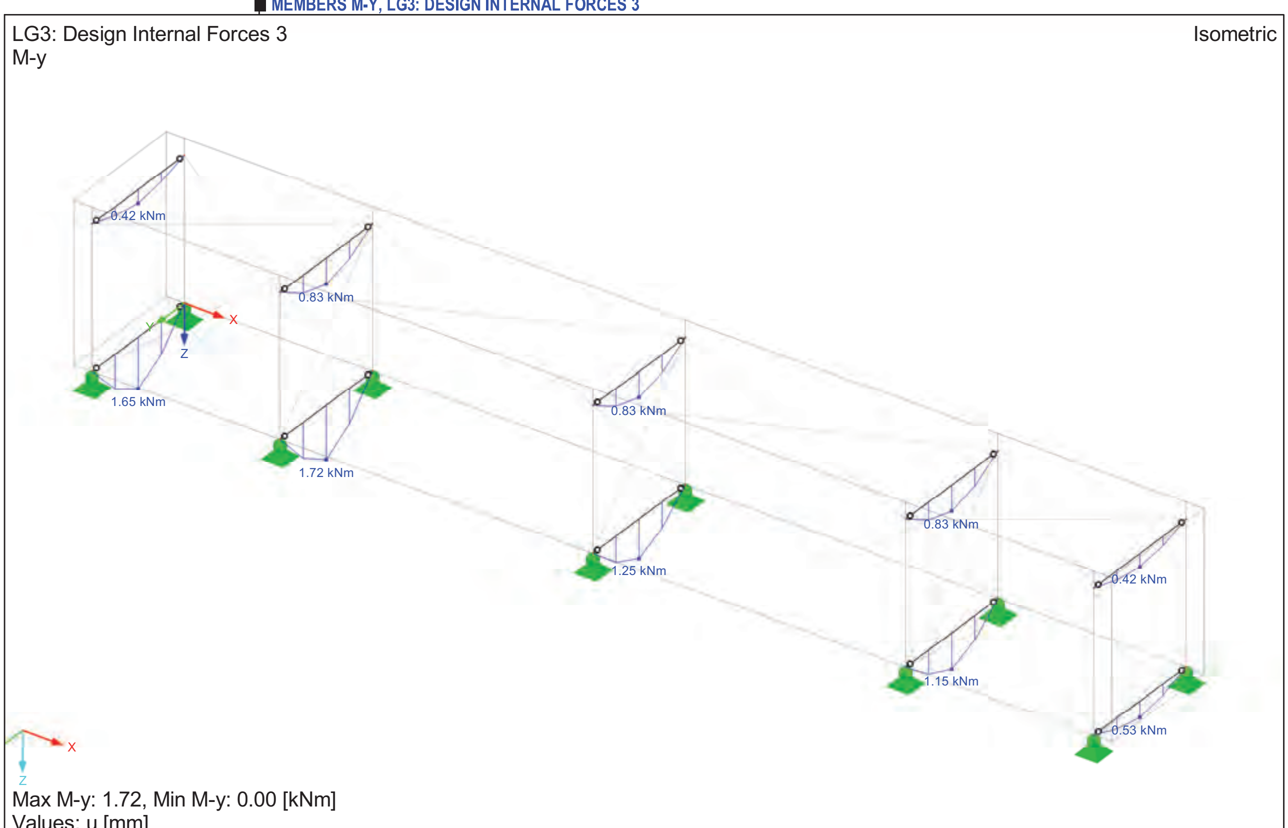


Max V-z: 3.17, Min V-z: -3.17 [kN]
Values: u [mm]

■ MEMBERS V-Z, LG3: DESIGN INTERNAL FORCES 3



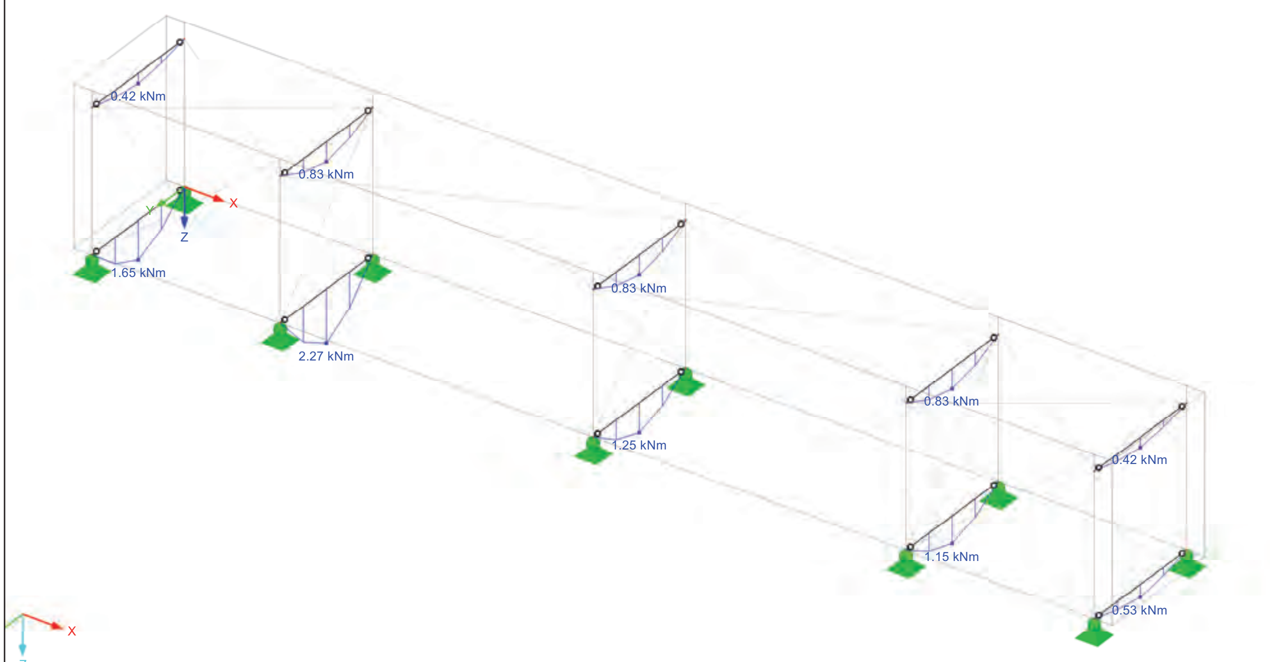
■ MEMBERS M-Y, LG3: DESIGN INTERNAL FORCES 3



■ MEMBERS M-Y, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
M-y

Isometric

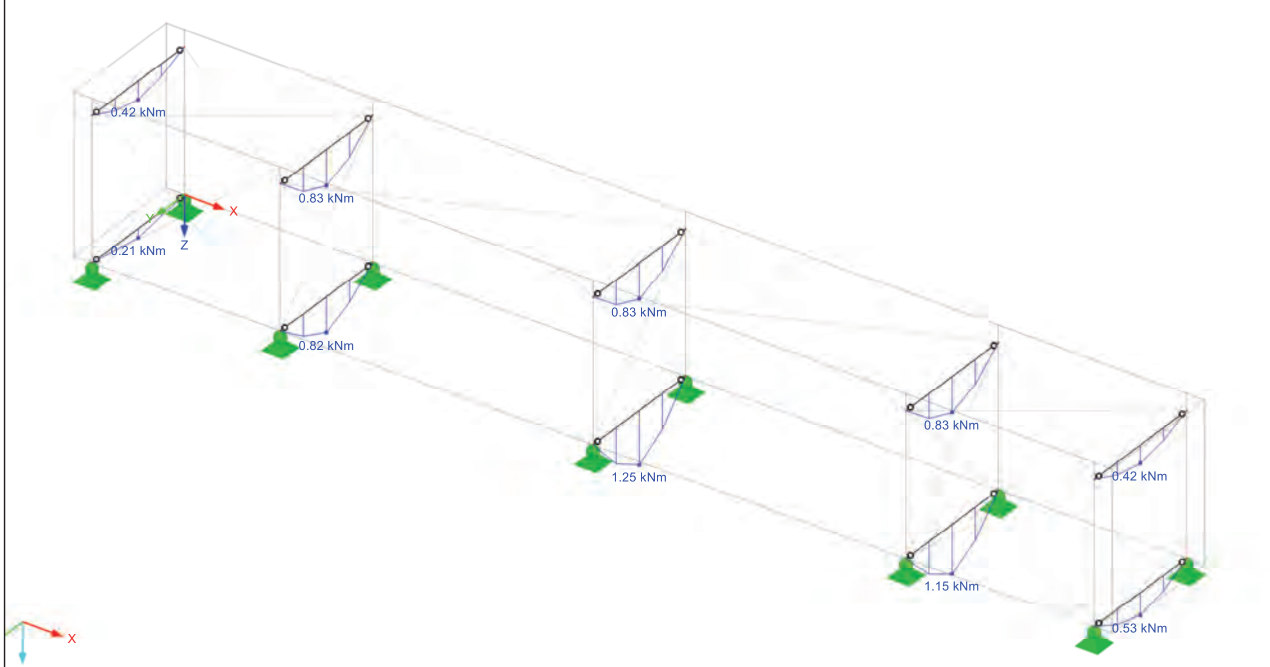


Max M-y: 2.27, Min M-y: 0.00 [kNm]
Values: u [mm]

■ MEMBERS M-Y, LG2: DESIGN INTERNAL FORCES 2

LG2: Design Internal Forces 2
M-y

Isometric

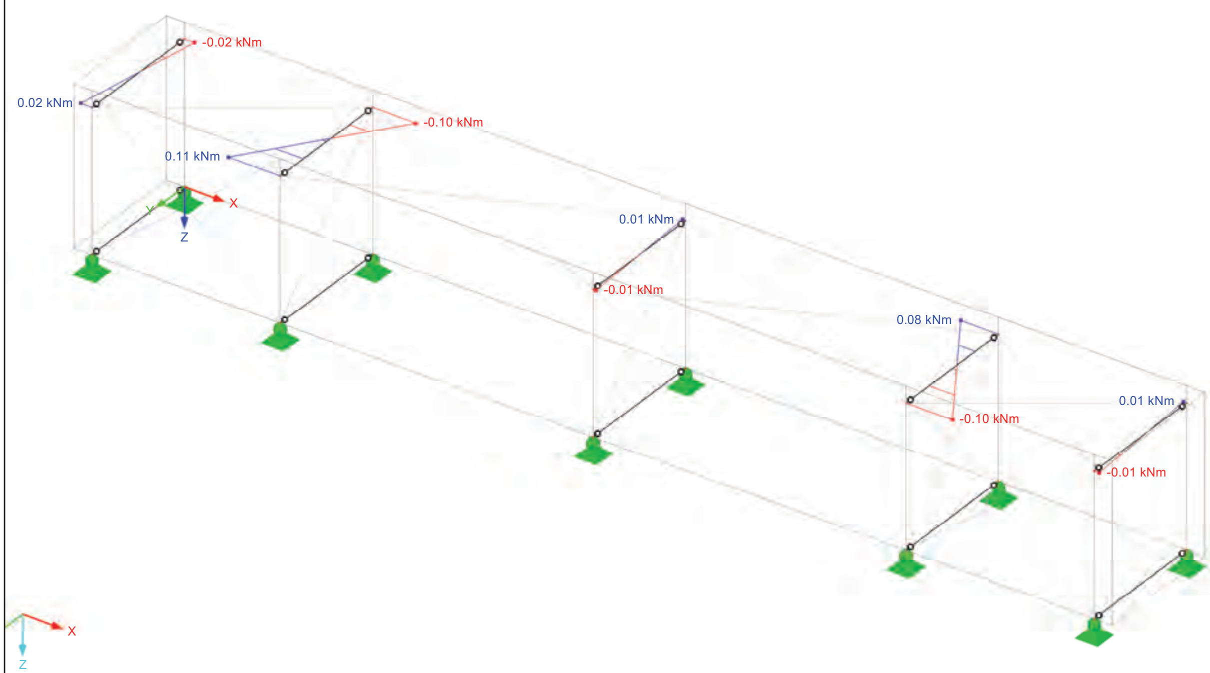


Max M-y: 1.25, Min M-y: 0.00 [kNm]
Values: u [mm]

MEMBERS M-Z, LG1: DESIGN INTERNAL FORCES 1

LG1: Design Internal Forces 1
M-z

Isometric

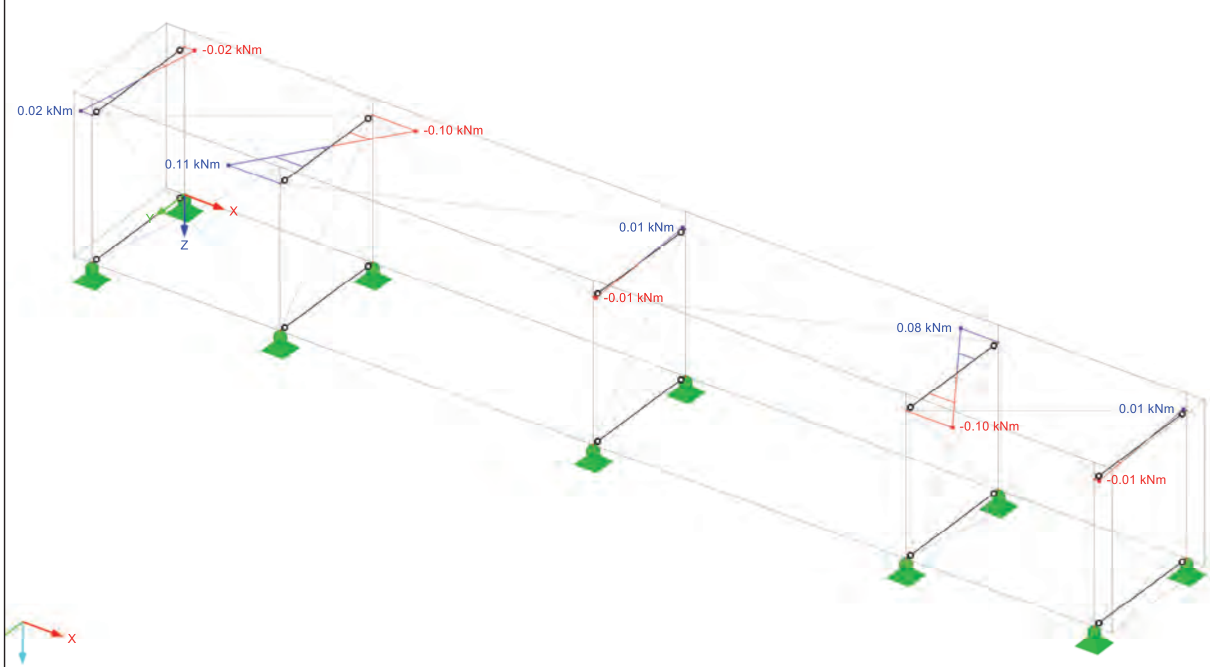


Max M-z: 0.11, Min M-z: -0.10 [kNm]
Values: u [mm]

MEMBERS M-Z, LG2: DESIGN INTERNAL FORCES 2

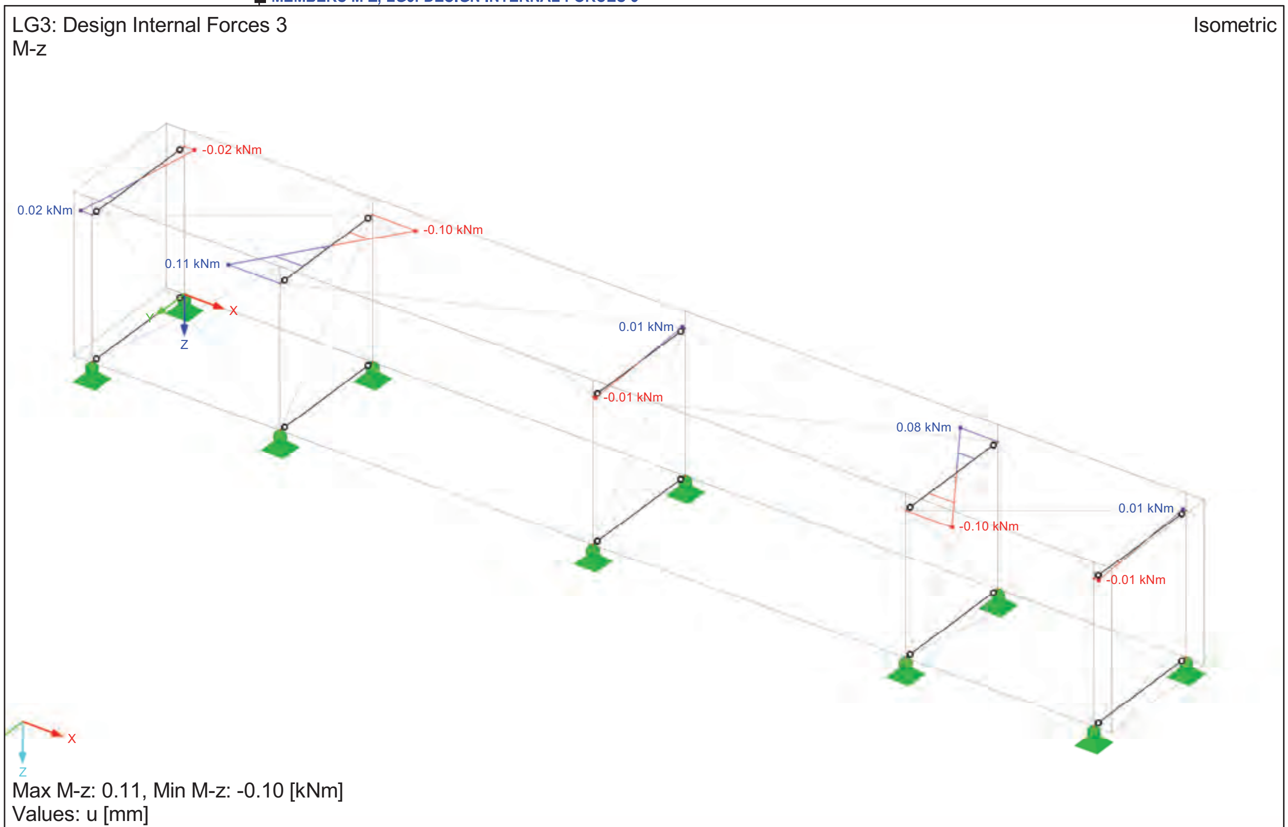
LG2: Design Internal Forces 2
M-z

Isometric



Max M-z: 0.11, Min M-z: -0.10 [kNm]
Values: u [mm]

■ MEMBERS M-Z, LG3: DESIGN INTERNAL FORCES 3



RF-STEEL Members

CA1

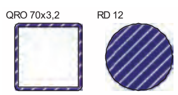
Stress Analysis

1.1.1 GENERAL DATA

Load groups to design:	LG1	Design Internal Forces 1
	LG2	Design Internal Forces 2
	LG3	Design Internal Forces 3

1.1.2 DETAILS

Allow local plastification:	☐
Calculate normal stresses with Alpha-pl:	☐
FACTORS FOR SIGMA-EQV	
Sigma	1.00
Tau	3.00
Simplified consideration of eccentric loading:	☐

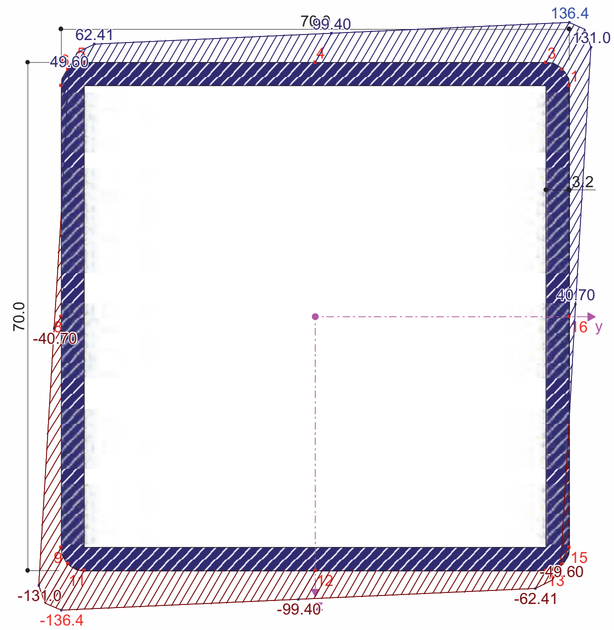


1.3.1 CROSS-SECTIONS

Sec No	Mat No	Cross-Section Description	I_t [cm^4] / A [cm^2]	I_y [cm^4] / $Alpha_{pl,y}$	I_z [cm^4] / $Alpha_{pl,z}$	Comment
1	3	QRO 70x3,2	96.30	62.70	62.70	
			8.46	1.181	1.181	
2	3	RD 12	2.036E-01	1.018E-01	1.018E-01	
			1.13	1.698	1.698	

■ **QRO 70X3,2**

1 - QRO 70x3,2
Sigma Total
Member No. 8, x: 0.000 m



Min : -136.378 MPa (11)
Max : 136.378 MPa (3)

[mm]

■ **STRESSES**

S-Point No	Stress Type	Stress [MPa] existing	Limit	Stress Ratio
1	Sigma Total	131.012	327.273	0.400
	Sigma N	0.000	327.273	0.000
	Sigma M-y	90.308	327.273	0.276
	Sigma M-z	40.704	327.273	0.124
	Sigma N+M-y	90.308	327.273	0.276
	Sigma N+M-z	40.704	327.273	0.124
	Sigma M	131.012	327.273	0.400
	Sigma Tensile	131.012	327.273	0.400
	Sigma Compressive	0.000	327.273	0.000
	Sigma Delta	51.304		
	Tau Total	3.162	188.951	0.017
	Tau V-y	-2.307	188.951	0.012
	Tau V-z	5.709	188.951	0.030
	Tau V	3.402	188.951	0.018
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	131.127	327.273	0.401
2	Sigma Total	136.348	327.273	0.417
	Sigma N	0.000	327.273	0.000
	Sigma M-y	96.734	327.273	0.296
	Sigma M-z	39.614	327.273	0.121
	Sigma N+M-y	96.734	327.273	0.296
	Sigma N+M-z	39.614	327.273	0.121
	Sigma M	136.348	327.273	0.417
	Sigma Tensile	136.348	327.273	0.417
	Sigma Compressive	0.000	327.273	0.000
	Sigma Delta	54.955		
	Tau Total	2.877	188.951	0.015
	Tau V-y	-2.395	188.951	0.013
	Tau V-z	5.513	188.951	0.029
	Tau V	3.118	188.951	0.017
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001

■ STRESSES

S-Point No	Stress Type	Stress [MPa] existing	Limit	Stress Ratio
2	Sigma-eqv	136.439	327.273	0.417
3	Sigma Total	136.378	327.273	0.417
	Sigma N	0.000	327.273	0.000
	Sigma M-y	99.396	327.273	0.304
	Sigma M-z	36.983	327.273	0.113
	Sigma N+M-y	99.396	327.273	0.304
	Sigma N+M-z	36.983	327.273	0.113
	Sigma M	136.378	327.273	0.417
	Sigma Tensile	136.378	327.273	0.417
	Sigma Compressive	0.000	327.273	0.000
	Sigma Delta	56.467		
	Tau Total	2.589	188.951	0.014
	Tau V-y	-2.481	188.951	0.013
	Tau V-z	5.310	188.951	0.028
	Tau V	2.829	188.951	0.015
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	136.452	327.273	0.417
4	Sigma Total	99.396	327.273	0.304
	Sigma N	0.000	327.273	0.000
	Sigma M-y	99.396	327.273	0.304
	Sigma M-z	0.000	327.273	0.000
	Sigma N+M-y	99.396	327.273	0.304
	Sigma N+M-z	0.000	327.273	0.000
	Sigma M	99.396	327.273	0.304
	Sigma Tensile	99.396	327.273	0.304
	Sigma Compressive	0.000	327.273	0.000
	Sigma Delta	56.466		
	Tau Total	-3.818	188.951	0.020
	Tau V-y	-3.578	188.951	0.019
	Tau V-z	0.000	188.951	0.000
	Tau V	-3.578	188.951	0.019
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	99.615	327.273	0.304
5	Sigma Total	62.414	327.273	0.191
	Sigma N	0.000	327.273	0.000
	Sigma M-y	99.396	327.273	0.304
	Sigma M-z	-36.983	327.273	0.113
	Sigma N+M-y	99.396	327.273	0.304
	Sigma N+M-z	-36.983	327.273	0.113
	Sigma M	62.414	327.273	0.191
	Sigma Tensile	62.414	327.273	0.191
	Sigma Compressive	0.000	327.273	0.000
	Sigma Delta	56.466		
	Tau Total	-8.031	188.951	0.043
	Tau V-y	-2.481	188.951	0.013
	Tau V-z	-5.310	188.951	0.028
	Tau V	-7.790	188.951	0.041
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	63.945	327.273	0.195
6	Sigma Total	57.121	327.273	0.175
	Sigma N	0.000	327.273	0.000
	Sigma M-y	96.734	327.273	0.296
	Sigma M-z	-39.614	327.273	0.121
	Sigma N+M-y	96.734	327.273	0.296
	Sigma N+M-z	-39.614	327.273	0.121
	Sigma M	57.121	327.273	0.175
	Sigma Tensile	57.121	327.273	0.175
	Sigma Compressive	0.000	327.273	0.000
	Sigma Delta	54.953		
	Tau Total	-8.147	188.951	0.043
	Tau V-y	-2.395	188.951	0.013
	Tau V-z	-5.512	188.951	0.029
	Tau V	-7.907	188.951	0.042
	Tau M-T St.Venant	0.000	188.951	0.000

■ STRESSES

S-Point No	Stress Type	Stress [MPa] existing	Limit	Stress Ratio
6	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	58.838	327.273	0.180
7	Sigma Total	49.605	327.273	0.152
	Sigma N	0.000	327.273	0.000
	Sigma M-y	90.308	327.273	0.276
	Sigma M-z	-40.704	327.273	0.124
	Sigma N+M-y	90.308	327.273	0.276
	Sigma N+M-z	-40.704	327.273	0.124
	Sigma M	49.605	327.273	0.152
	Sigma Tensile	49.605	327.273	0.152
	Sigma Compressive	-1.698	327.273	0.005
	Sigma Delta	51.303		
	Tau Total	-8.257	188.951	0.044
	Tau V-y	-2.307	188.951	0.012
	Tau V-z	-5.709	188.951	0.030
	Tau V	-8.016	188.951	0.042
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	51.625	327.273	0.158
8	Sigma Total	-40.704	327.273	0.124
	Sigma N	0.000	327.273	0.000
	Sigma M-y	0.000	327.273	0.000
	Sigma M-z	-40.704	327.273	0.124
	Sigma N+M-y	0.000	327.273	0.000
	Sigma N+M-z	-40.704	327.273	0.124
	Sigma M	-40.704	327.273	0.124
	Sigma Tensile	0.000	327.273	0.000
	Sigma Compressive	-40.704	327.273	0.124
	Sigma Delta	0.001		
	Tau Total	-8.474	188.951	0.045
	Tau V-y	0.000	188.951	0.000
	Tau V-z	-8.234	188.951	0.044
	Tau V	-8.234	188.951	0.044
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	43.270	327.273	0.132
9	Sigma Total	-131.012	327.273	0.400
	Sigma N	0.000	327.273	0.000
	Sigma M-y	-90.308	327.273	0.276
	Sigma M-z	-40.704	327.273	0.124
	Sigma N+M-y	-90.308	327.273	0.276
	Sigma N+M-z	-40.704	327.273	0.124
	Sigma M	-131.012	327.273	0.400
	Sigma Tensile	0.000	327.273	0.000
	Sigma Compressive	-131.012	327.273	0.400
	Sigma Delta	51.304		
	Tau Total	-3.643	188.951	0.019
	Tau V-y	2.307	188.951	0.012
	Tau V-z	-5.709	188.951	0.030
	Tau V	-3.402	188.951	0.018
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	131.164	327.273	0.401
10	Sigma Total	-136.348	327.273	0.417
	Sigma N	0.000	327.273	0.000
	Sigma M-y	-96.734	327.273	0.296
	Sigma M-z	-39.614	327.273	0.121
	Sigma N+M-y	-96.734	327.273	0.296
	Sigma N+M-z	-39.614	327.273	0.121
	Sigma M	-136.348	327.273	0.417
	Sigma Tensile	0.000	327.273	0.000
	Sigma Compressive	-136.348	327.273	0.417
	Sigma Delta	54.955		
	Tau Total	-3.358	188.951	0.018
	Tau V-y	2.395	188.951	0.013
	Tau V-z	-5.513	188.951	0.029

STRESSES

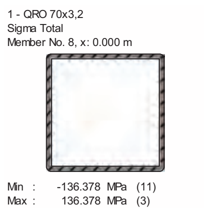
S-Point No	Stress Type	Stress [MPa] existing	Limit	Stress Ratio
10	Tau V	-3.118	188.951	0.017
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	136.472	327.273	0.417
11	Sigma Total	-136.378	327.273	0.417
	Sigma N	0.000	327.273	0.000
	Sigma M-y	-99.396	327.273	0.304
	Sigma M-z	-36.983	327.273	0.113
	Sigma N+M-y	-99.396	327.273	0.304
	Sigma N+M-z	-36.983	327.273	0.113
	Sigma M	-136.378	327.273	0.417
	Sigma Tensile	0.000	327.273	0.000
	Sigma Compressive	-136.378	327.273	0.417
	Sigma Delta	56.467		
	Tau Total	-3.070	188.951	0.016
	Tau V-y	2.481	188.951	0.013
	Tau V-z	-5.310	188.951	0.028
	Tau V	-2.829	188.951	0.015
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	136.482	327.273	0.417
12	Sigma Total	-99.396	327.273	0.304
	Sigma N	0.000	327.273	0.000
	Sigma M-y	-99.396	327.273	0.304
	Sigma M-z	0.000	327.273	0.000
	Sigma N+M-y	-99.396	327.273	0.304
	Sigma N+M-z	0.000	327.273	0.000
	Sigma M	-99.396	327.273	0.304
	Sigma Tensile	0.000	327.273	0.000
	Sigma Compressive	-99.396	327.273	0.304
	Sigma Delta	56.466		
	Tau Total	3.339	188.951	0.018
	Tau V-y	3.578	188.951	0.019
	Tau V-z	0.000	188.951	0.000
	Tau V	3.578	188.951	0.019
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	99.563	327.273	0.304
13	Sigma Total	-62.414	327.273	0.191
	Sigma N	0.000	327.273	0.000
	Sigma M-y	-99.396	327.273	0.304
	Sigma M-z	36.983	327.273	0.113
	Sigma N+M-y	-99.396	327.273	0.304
	Sigma N+M-z	36.983	327.273	0.113
	Sigma M	-62.414	327.273	0.191
	Sigma Tensile	0.000	327.273	0.000
	Sigma Compressive	-62.414	327.273	0.191
	Sigma Delta	56.466		
	Tau Total	7.550	188.951	0.040
	Tau V-y	2.481	188.951	0.013
	Tau V-z	5.310	188.951	0.028
	Tau V	7.790	188.951	0.041
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	63.769	327.273	0.195
14	Sigma Total	-57.121	327.273	0.175
	Sigma N	0.000	327.273	0.000
	Sigma M-y	-96.734	327.273	0.296
	Sigma M-z	39.614	327.273	0.121
	Sigma N+M-y	-96.734	327.273	0.296
	Sigma N+M-z	39.614	327.273	0.121
	Sigma M	-57.121	327.273	0.175
	Sigma Tensile	0.000	327.273	0.000
	Sigma Compressive	-57.121	327.273	0.175
	Sigma Delta	54.953		
	Tau Total	7.666	188.951	0.041

■ STRESSES

S-Point No	Stress Type	Stress [MPa] existing	Limit	Stress Ratio
14	Tau V-y	2.395	188.951	0.013
	Tau V-z	5.512	188.951	0.029
	Tau V	7.907	188.951	0.042
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	58.644	327.273	0.179
15	Sigma Total	-49.605	327.273	0.152
	Sigma N	0.000	327.273	0.000
	Sigma M-y	-90.308	327.273	0.276
	Sigma M-z	40.704	327.273	0.124
	Sigma N+M-y	-90.308	327.273	0.276
	Sigma N+M-z	40.704	327.273	0.124
	Sigma M	-49.605	327.273	0.152
	Sigma Tensile	1.698	327.273	0.005
	Sigma Compressive	-49.605	327.273	0.152
	Sigma Delta	51.303		
	Tau Total	7.776	188.951	0.041
	Tau V-y	2.307	188.951	0.012
	Tau V-z	5.709	188.951	0.030
	Tau V	8.016	188.951	0.042
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	51.400	327.273	0.157
16	Sigma Total	40.704	327.273	0.124
	Sigma N	0.000	327.273	0.000
	Sigma M-y	0.000	327.273	0.000
	Sigma M-z	40.704	327.273	0.124
	Sigma N+M-y	0.000	327.273	0.000
	Sigma N+M-z	40.704	327.273	0.124
	Sigma M	40.704	327.273	0.124
	Sigma Tensile	40.704	327.273	0.124
	Sigma Compressive	0.000	327.273	0.000
	Sigma Delta	0.001		
	Tau Total	7.993	188.951	0.042
	Tau V-y	0.000	188.951	0.000
	Tau V-z	8.234	188.951	0.044
	Tau V	8.234	188.951	0.044
	Tau M-T St.Venant	0.000	188.951	0.000
	Tau M-T Bredt	-0.241	188.951	0.001
	Tau M-T	-0.241	188.951	0.001
	Sigma-eqv	42.994	327.273	0.131
Min	Sigma Total	-136.378		
	Sigma N	0.000		
	Sigma M-y	-99.396		
	Sigma M-z	-40.704		
	Sigma N+M-y	-99.396		
	Sigma N+M-z	-40.704		
	Sigma M	-136.378		
	Sigma Tensile	0.000		
	Sigma Compressive	-136.378		
	Sigma Delta	0.001		
	Tau Total	-8.474		
	Tau V-y	-3.578		
	Tau V-z	-8.234		
	Tau V	-8.234		
	Tau M-T St.Venant	0.000		
	Tau M-T Bredt	-0.241		
	Tau M-T	-0.241		
	Sigma-eqv	42.994		
Max	Sigma Total	136.378		
	Sigma N	0.000		
	Sigma M-y	99.396		
	Sigma M-z	40.704		
	Sigma N+M-y	99.396		
	Sigma N+M-z	40.704		
	Sigma M	136.378		
	Sigma Tensile	136.378		
	Sigma Compressive	0.000		

■ STRESSES

S-Point No	Stress Type	Stress [MPa] existing	Stress [MPa] Limit	Stress Ratio
Max	Sigma Delta	56.467		
	Tau Total	7.993		
	Tau V-y	3.578		
	Tau V-z	8.234		
	Tau V	8.234		
	Tau M-T St.Venant	0.000		
	Tau M-T Bredt	-0.241		
	Tau M-T	-0.241		
	Sigma-eqv	136.482		



■ **CROSS-SECTION VALUES** QRO 70x3,2

Cross-section Value Description	Symbol	Value	Unit
Outer edge length, nominal length	b	70.0	mm
Wall thickness	t	3.2	mm
Outer edge rounding	r	3.2	mm
Cross-section area	A	8.46	cm^2
Shear area	A_y	3.58	cm^2
Shear area according to EC 3	$A_{v,y}$	4.23	cm^2
Core area	A_c	44.60	cm^2
Plastic shear area	$A_{pl,y}$	4.28	cm^2
Moment of inertia	I_y	62.70	cm^4
Governing radius of gyration	r_y	27.2	mm
Polar radius of gyration	r_o	38.5	mm
Volume	V	846.00	cm^3/m
Weight	wt	6.64	kg/m
Surface	A_{Surf}	0.28	m^2/m
Section factor	A_m/V	325.059	1/m
Torsional constant	J	96.30	cm^4
Warping constant	C_w	0.0322	cm^6
Section modulus for torsion	W_t	28.50	cm^3
Elastic section modulus	S_y	17.90	cm^3
Statical moment of area	Q_y	5.28	cm^3
Plastic section modulus	Z_y	21.13	cm^3
Plastic shape factor	Z_y/S_y	1.181	
Buckling curve acc. to DIN	$BC_{y,DIN}$	a	
Buckling curve acc. to EN	$BC_{y,EN}$	a	
Buckling curve acc. to EN for Steel S 460	$BC_{y,EN,S460}$	a_0	
Full-plastic axial force acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$N_{pl,d}$	184.597	kN
Full-plastic shear force acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$V_{pl,d}$	53.289	kN
Full-plastic bending moment acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$M_{pl,d}$	4.611	kNm
Full-plastic torsional moment acc. to DIN 18800-1 for $f_{y,d}$ = 21,82 kN/cm²	$M_{pl,x,d}$	3.590	kNm

RF-STEEL Members

CA1

Stress Analysis

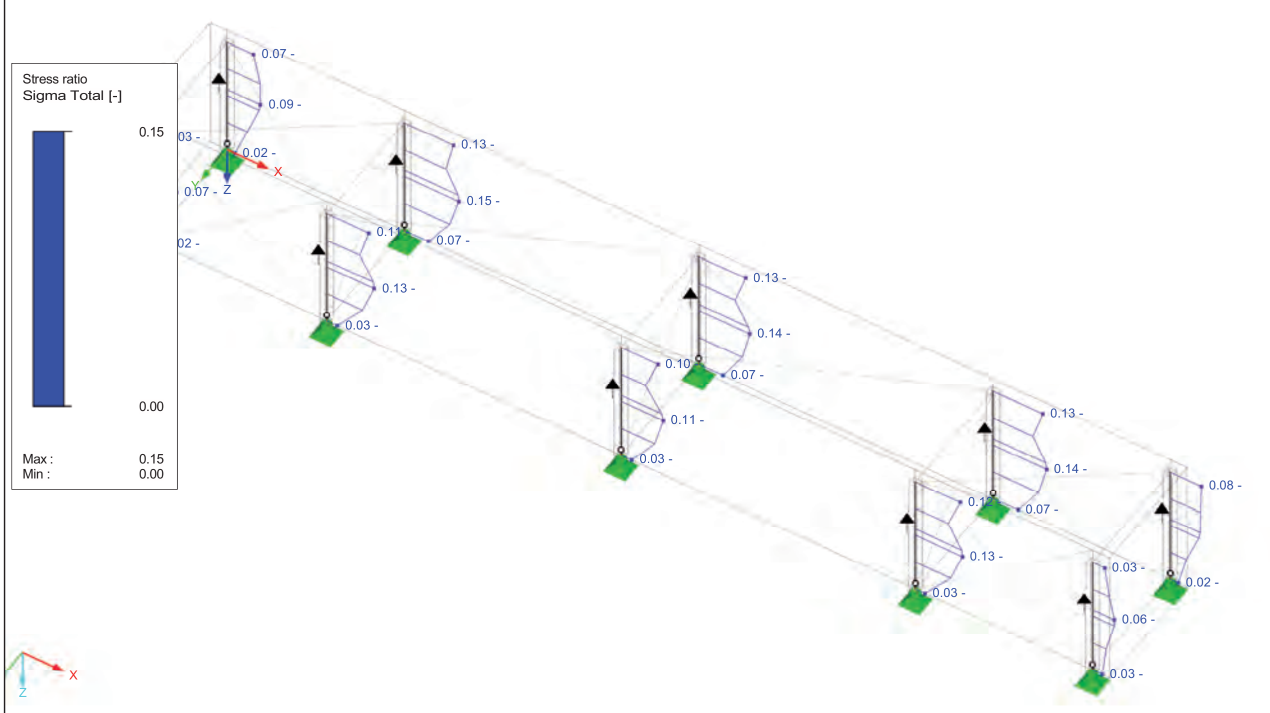
■ **2.1 STRESSES BY CROSS-SECTION**

Sec No	Member No	Loc x [m]	S-Point No	Load Case	Stress Type	Stress [MPa] existing	Stress [MPa] Limit	Stress Ratio
1	**QRO 70x3.2**							
	8	0.000	3	LG2	Sigma Total	136.378	327.273	0.42
	4	0.000	16	LG1	Tau Total	15.216	188.951	0.08
	8	0.000	11	LG2	Sigma-eqv	136.482	327.273	0.42
2	**RD 12**							
	45	1.670	37	LG2	Sigma Total	147.540	327.273	0.45
	37	0.000	1	LG1	Tau Total	0.000	188.951	0.00
	45	1.670	37	LG2	Sigma-eqv	147.540	327.273	0.45

■ RF-STEEL MEMBERS - MEMBERS SIGMA TOTAL, CA1

RF-STEEL Members CA1
Sigma Total

Isometric

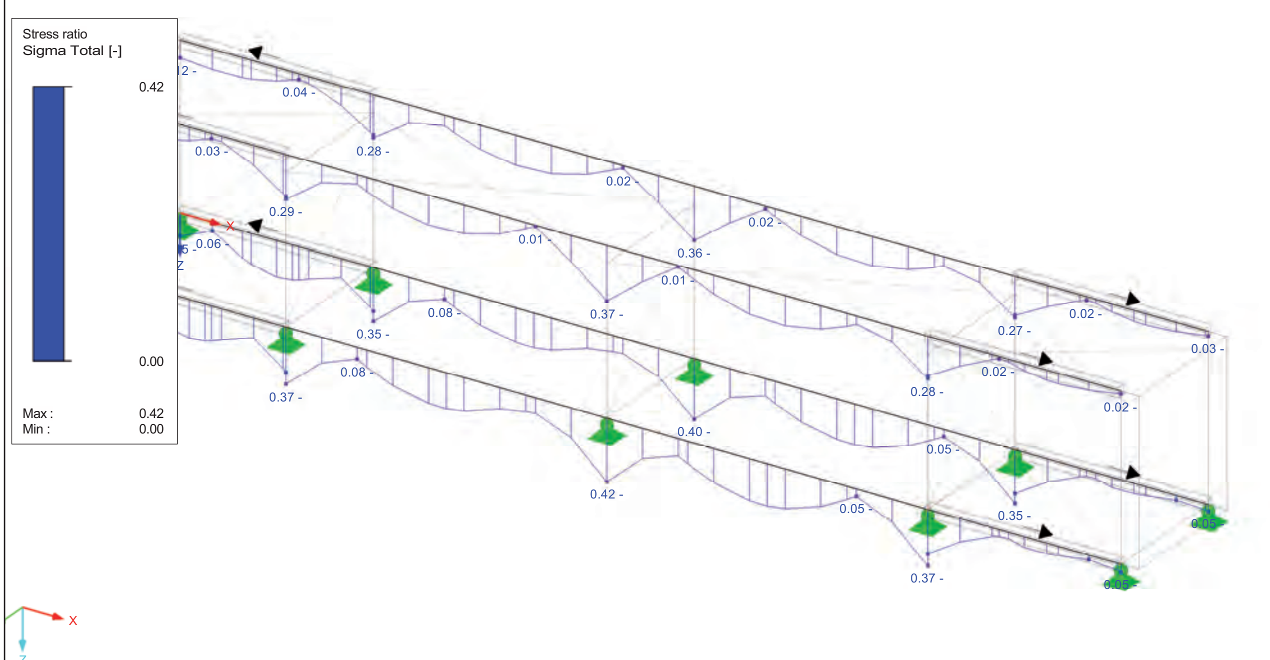


Max Sigma Total: 0.15, Min Sigma Total: 0.00

■ RF-STEEL MEMBERS - MEMBERS SIGMA TOTAL, CA1

RF-STEEL Members CA1
Sigma Total

Isometric

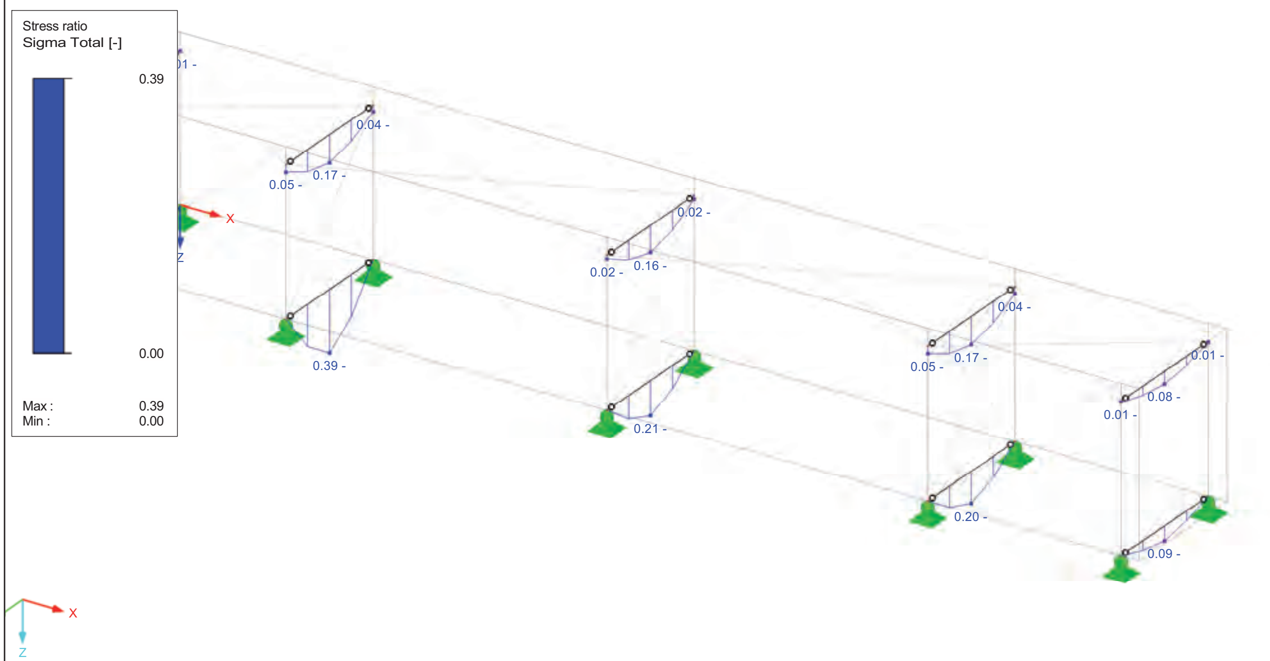


Max Sigma Total: 0.42, Min Sigma Total: 0.00

■ RF-STEEL MEMBERS - MEMBERS SIGMA TOTAL, CA1

RF-STEEL Members CA1
Sigma Total

Isometric



Max Sigma Total: 0.39, Min Sigma Total: 0.00

RF-STEEL EC3

CA1

Combination 1

1.1.1 GENERAL DATA

Ultimate Limit State Design		
Load groups to design:	LG1	Design Internal Forces 1
	LG2	Design Internal Forces 2
	LG3	Design Internal Forces 3

1.1.2 DETAILS

Stability Analysis	
Stability Check	☒
Bending About the Major y-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Bending About the Minor z-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Determination of elastic critical moment for lateral-torsional buckling	
For members:	Automatically by Eigenvalue Method
Load application of positive transverse loads:	On cross-section edge directed to shear center (e.g. top flange, destabilizing effect)
Limit Load for Special Cases	
Unsymmetric cross-sections with compression and bending	
$M_{y,Ed}$ / $M_{pl,y,Rd} \leq$	0.01
$M_{z,Ed}$ / $M_{pl,z,Rd} \leq$	0.01
$N_{c,Ed}$ / $N_{pl} \leq$	0.01
Non-Symmetrical Cross-Sections, Tapered Members or Sets of Members	
$M_{z,Ed}$ / $M_{pl,z,Rd} \leq$	0.05
Cross-Sections with Torsion	
$\tau_{t,Ed}$ / $\tau_{t,Rd} \leq$	0.05
Stability analysis method of sets of members acc. to	6.3.4 General Method
Options	
Elastic Design (also for cross-sections of Class 1 or 2)	☐
Member Slendernesses	
Members with	λ_{limit}
Tension only:	300
Compression / flexure:	200
Design of Welds	
Allow Design of Welds	☐
Fire Design Settings	
$t_{fi, requ}$ [min]	15.00
Unprotected Members Δt [s]	5.00
Protected Members Δt [s]	30.00
Temperature Curve for Determination of Temperature of Gases	
Nominal temperature curves	Standard temperature-time curve
αc [W/m^{2}K]	25.00
Thermal Actions for Temperature Analysis	
Φ	1.00
ε_m	0.70
ε_f	1.00
Fire Properties	
$\gamma_{M,fi}$	1.00

1.1.3 NATIONAL ANNEX - CEN

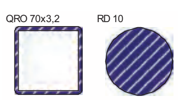
Partial Factors acc. to 6.1, Note 2B		
For resistance of cross-sections γ_{M0} :		1.00
For resistance of members to buckling (assessed for checks in Clause 6.3) γ_{M1} :		1.00
For resistance of cross-sections in tension to fracture γ_{M2} :		1.25
Shear acc. to 6.2.6(3) and shear buckling acc. to EN 1993-1-5		
Factor η :		1.20
Parameters for Lateral-Torsional Buckling		
Imperfection coefficients of lateral-torsional buckling curves acc. to Table 6.3		
Buckling Curve a :		0.21
Buckling Curve b :		0.34
Buckling Curve c :		0.49
Buckling Curve d :		0.76
Use factor f for modification of χ_{LT} according to 6.3.2.3(2)		☒
Parameters for Φ_{LT} acc. to 6.3.2.3(1):		
Rolled I-sections		
$\lambda_{LT,0}$:		0.40
β :		0.75
Welded I-Sections		
$\lambda_{LT,0}$:		0.40
β :		0.75
Determine lateral-torsional buckling curves:		If possible, acc. to 6.3.2.3, Eq. (6.57), otherwise acc. to 6.3.2.2, Eq. (6.56)
Determine interaction factors for 6.3.3(4) according to Method:		2 according to Annex B
Serviceability Limits (Deflections) acc. to 7.2		
Combination of actions (Table A1.4 of EN 1990):		
		Cantilevers
CH : Characteristic	L / 300	L_c / 150
FR : Frequent	L / 200	L_c / 100
QP : Quasi-permanent	L / 200	L_c / 100
General Method according to 6.3.4		
Use General Method also for non-I-sections		☒
Always use General Method for stability design according to 6.3.4		☐
Use Europan lateral-torsional buckling curve according to [5]		☐
Use the method of Johannes Caspar Naumes for assessing the out-of-plane stability		☐
Partial Factors acc. to 5.1		
For resistance of cross-sections		
γ_{M0}		1.100
For resistance of members to buckling (assessed for proofs in Clause 6.3)		
γ_{M1}		1.100
For resistance of cross-sections to fracture due to tension		
γ_{M2}		1.250
Shear According to 5.6(2) and Shear Buckling		
η		1.200
Parameters for Stability Design		
Imperfection Coefficient Buckling		α

1.1.3 NATIONAL ANNEX - CEN

Cold formed open sections	0.490
Hollow sections (welded or seamless)	0.490
Welded open sections (about the major axis)	0.490
Welded open sections (about the minor axis)	0.760
Torsional and Lateral-Torsional Buckling	
All structural members	0.340
Parameter for Φ Buckling	λ_0
Cold formed open sections	0.400
Hollow sections (welded or seamless)	0.400
Welded open sections (about the major axis)	0.200
Welded open sections (about the minor axis)	0.200
Torsional and Lateral-Torsional Buckling	
All structural members	0.200
Imperfection Coefficient	α_{LT}
Cold formed sections and hollow sections (welded and seamless)	0.340
Welded open sections and other sections	0.760

1.2.1 MATERIALS

Material No	Material Description	Comment
3	Steel S 355	



1.3.1 CROSS-SECTIONS

Cross-s. No	Material No	Cross-section Description [mm]	Comment
1	3	QRO 70x3,2	
2	3	RD 10	

Type General - only Class 3 and Class 4 possible

1.5 EFFECTIVE LENGTHS - MEMBERS

Member No	Buckling Possible	Buckling About Axis y Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Buckling About Axis z Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Lateral-Torsional Buckling Possible	k_z	k_w	L_w [m]	L_T [m]
1	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
2	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
3	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
4	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
5	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
6	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
7	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
8	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
9	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
10	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
11	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
12	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
13	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
14	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
15	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
16	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
17	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
18	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
19	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
20	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
21	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
22	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220
23	☒	☒	1.00	1.220	☒	1.00	1.220	☐	1.0	1.0	1.220	1.220

■ 1.5 EFFECTIVE LENGTHS - MEMBERS

Member No	Buckling Possible	Buckling About Axis y Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Buckling About Axis z Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Lateral-Torsional Buckling Possible	k_z	k_w	L_w [m]	L_T [m]
24	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
25	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
26	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
27	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
28	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
29	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
30	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
31	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
32	☒	☒	1.00	2.700	☒	1.00	2.700	☐	1.0	1.0	2.700	2.700
33	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
34	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
35	☒	☒	1.00	1.625	☒	1.00	1.625	☐	1.0	1.0	1.625	1.625
36	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
37	☐	☐	1.00	2.119	☐	1.00	2.119	☐	1.0	1.0	2.119	2.119
	Members of this type are not allowed for stability calculation.											
38	☐	☐	1.00	2.119	☐	1.00	2.119	☐	1.0	1.0	2.119	2.119
	Members of this type are not allowed for stability calculation.											
41	☐	☐	1.00	1.670	☐	1.00	1.670	☐	1.0	1.0	1.670	1.670
	Members of this type are not allowed for stability calculation.											
42	☐	☐	1.00	1.670	☐	1.00	1.670	☐	1.0	1.0	1.670	1.670
	Members of this type are not allowed for stability calculation.											
43	☐	☐	1.00	2.119	☐	1.00	2.119	☐	1.0	1.0	2.119	2.119
	Members of this type are not allowed for stability calculation.											
44	☐	☐	1.00	2.119	☐	1.00	2.119	☐	1.0	1.0	2.119	2.119
	Members of this type are not allowed for stability calculation.											
45	☐	☐	1.00	1.670	☐	1.00	1.670	☐	1.0	1.0	1.670	1.670
	Members of this type are not allowed for stability calculation.											
46	☐	☐	1.00	1.670	☐	1.00	1.670	☐	1.0	1.0	1.670	1.670
	Members of this type are not allowed for stability calculation.											
49	☐	☐	1.00	2.931	☐	1.00	2.931	☐	1.0	1.0	2.931	2.931
	Members of this type are not allowed for stability calculation.											
50	☐	☐	1.00	2.931	☐	1.00	2.931	☐	1.0	1.0	2.931	2.931
	Members of this type are not allowed for stability calculation.											
51	☐	☐	1.00	2.931	☐	1.00	2.931	☐	1.0	1.0	2.931	2.931
	Members of this type are not allowed for stability calculation.											
52	☐	☐	1.00	2.931	☐	1.00	2.931	☐	1.0	1.0	2.931	2.931
	Members of this type are not allowed for stability calculation.											
53	☐	☐	1.00	1.670	☐	1.00	1.670	☐	1.0	1.0	1.670	1.670
	Members of this type are not allowed for stability calculation.											
54	☐	☐	1.00	1.670	☐	1.00	1.670	☐	1.0	1.0	1.670	1.670
	Members of this type are not allowed for stability calculation.											
55	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
56	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
57	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
58	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
59	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
60	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
61	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
62	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
63	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
64	☒	☒	1.00	0.140	☒	1.00	0.140	☐	1.0	1.0	0.140	0.140
65	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
66	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
67	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
68	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
69	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
70	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
71	☒	☒	1.00	1.360	☒	1.00	1.360	☐	1.0	1.0	1.360	1.360
72	☒	☒	1.00	1.360	☒	1.00	1.360	☐	1.0	1.0	1.360	1.360
73	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
74	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
75	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
76	☒	☒	1.00	0.155	☒	1.00	0.155	☐	1.0	1.0	0.155	0.155
77	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
78	☒	☒	1.00	1.140	☒	1.00	1.140	☐	1.0	1.0	1.140	1.140
79	☒	☒	1.00	1.360	☒	1.00	1.360	☐	1.0	1.0	1.360	1.360
80	☒	☒	1.00	1.360	☒	1.00	1.360	☐	1.0	1.0	1.360	1.360
81	☐	☐	1.00	1.985	☐	1.00	1.985	☐	1.0	1.0	1.985	1.985
	Members of this type are not allowed for stability calculation.											
82	☐	☐	1.00	1.985	☐	1.00	1.985	☐	1.0	1.0	1.985	1.985

■ 1.5 EFFECTIVE LENGTHS - MEMBERS

Member No	Buckling Possible	Buckling About Axis y			Buckling About Axis z			Lateral-Torsional Buckling				
		Possible	$k_{cr,y}$	$L_{cr,y}$ [m]	Possible	$k_{cr,z}$	$L_{cr,z}$ [m]	Possible	k_z	k_w	L_w [m]	L_T [m]
	Members of this type are not allowed for stability calculation.											
83	☐	☐	1.00	1.985	☐	1.00	1.985	☐	1.0	1.0	1.985	1.985
	Members of this type are not allowed for stability calculation.											
84	☐	☐	1.00	1.985	☐	1.00	1.985	☐	1.0	1.0	1.985	1.985
	Members of this type are not allowed for stability calculation.											

RF-STEEL EC3

CA1

Combination 1

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
Ultimate Limit State Design							
LG1	Design Internal Forces 1	45	1.670	0.60	≤ 1	101)	ULS
	Cross-section check - Tension acc. to 6.2.3						
	Design Internal Forces						
	N_{Ed} 16.67 kN	$V_{z,Ed}$ 0.00 kN		$M_{y,Ed}$ 0.00 kNm			
	$V_{y,Ed}$ 0.00 kN	T_{Ed} 0.00 kNm		$M_{z,Ed}$ 0.00 kNm			
	Design Ratio						
	$N_{t,Ed}$ 16.67 kN	$N_{pl,Rd}$ 28.26 kN		$N_{u,Rd}$ 27.69 kN			
	A 0.79 cm^2	A_{net} 0.79 cm^2		$N_{t,Rd}$ 27.69 kN			
	f_y 36.00 kN/cm^2	f_u 49.00 kN/cm^2		η 0.60			
	γ_{M0} 1.000	γ_{M2} 1.250					
LG2	Design Internal Forces 2	45	1.670	0.60	≤ 1	101)	ULS
	Cross-section check - Tension acc. to 6.2.3						
	Design Internal Forces						
	N_{Ed} 16.67 kN	$V_{z,Ed}$ 0.00 kN		$M_{y,Ed}$ 0.00 kNm			
	$V_{y,Ed}$ 0.00 kN	T_{Ed} 0.00 kNm		$M_{z,Ed}$ 0.00 kNm			
	Design Ratio						
	$N_{t,Ed}$ 16.67 kN	$N_{pl,Rd}$ 28.26 kN		$N_{u,Rd}$ 27.69 kN			
	A 0.79 cm^2	A_{net} 0.79 cm^2		$N_{t,Rd}$ 27.69 kN			
	f_y 36.00 kN/cm^2	f_u 49.00 kN/cm^2		η 0.60			
	γ_{M0} 1.000	γ_{M2} 1.250					
LG3	Design Internal Forces 3	45	1.670	0.60	≤ 1	101)	ULS
	Cross-section check - Tension acc. to 6.2.3						
	Design Internal Forces						
	N_{Ed} 16.67 kN	$V_{z,Ed}$ 0.00 kN		$M_{y,Ed}$ 0.00 kNm			
	$V_{y,Ed}$ 0.00 kN	T_{Ed} 0.00 kNm		$M_{z,Ed}$ 0.00 kNm			
	Design Ratio						
	$N_{t,Ed}$ 16.67 kN	$N_{pl,Rd}$ 28.26 kN		$N_{u,Rd}$ 27.69 kN			
	A 0.79 cm^2	A_{net} 0.79 cm^2		$N_{t,Rd}$ 27.69 kN			
	f_y 36.00 kN/cm^2	f_u 49.00 kN/cm^2		η 0.60			
	γ_{M0} 1.000	γ_{M2} 1.250					

2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design		Acc. to Formula	
1	**QRO 70x3,2**						
	77	0.570	LG1	0.00	≤ 1	100)	Negligible internal forces
	Design Internal Forces						
	N_{Ed} 0.04 kN		$V_{z,Ed}$ 0.00 kN			$M_{y,Ed}$ 0.01 kNm	
	$V_{y,Ed}$ 0.07 kN		T_{Ed} 0.00 kNm			$M_{z,Ed}$ 0.00 kNm	
	Design Ratio						
	η 0.00						
	55	0.140	LG3	0.01	≤ 1	101)	Cross-section check - Tension acc. to 6.2.3
	Design Internal Forces						
	N_{Ed} 3.71 kN		$V_{z,Ed}$ -2.69 kN			$M_{y,Ed}$ 0.00 kNm	
	$V_{y,Ed}$ -0.04 kN		T_{Ed} 0.02 kNm			$M_{z,Ed}$ 0.02 kNm	
	Design Ratio						
	$N_{t,Ed}$ 3.71 kN		$N_{pl,Rd}$ 304.56 kN			$N_{u,Rd}$ 298.47 kN	
	A 8.46 cm^2		A_{net} 8.46 cm^2			$N_{t,Rd}$ 298.47 kN	
	f_y 36.00 kN/cm^2		f_u 49.00 kN/cm^2			η 0.01	
	γ_{M0} 1.000		γ_{M2} 1.250				

■ 2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design		Acc. to Formula	
	17	0.000	LG1	0.06	≤ 1	102)	Cross-section check - Compression acc. to 6.2.4

Design Internal Forces

N_{Ed}	-18.54 kN	$V_{z,Ed}$	-0.06 kN	$M_{y,Ed}$	0.00 kNm
$V_{y,Ed}$	-1.09 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

$N_{c,Ed}$	18.54 kN	f_y	36.00 kN/cm^2	$N_{c,Rd}$	304.56 kN
A	8.46 cm^2	γ_{M0}	1.000	η	0.06

	4	0.570	LG1	0.30	≤ 1	111)	Cross-section check - Bending about y-axis acc. to 6.2.5 - Class 1 or 2

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	0.47 kN	$M_{y,Ed}$	2.27 kNm
$V_{y,Ed}$	0.00 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

$M_{y,Ed}$	2.27 kNm	$M_{pl,y,Rd}$	7.61 kNm	v_z	0.005
$W_{pl,y}$	21.13 cm^3	$V_{z,Ed}$	0.47 kN	$M_{c,y,Rd}$	7.61 kNm
f_y	36.00 kN/cm^2	$A_{v,z}$	4.23 cm^2	η	0.30
γ_{M0}	1.000	$V_{pl,z,Rd}$	87.92 kN		

	8	0.300	LG3	0.04	≤ 1	116)	Cross-section check - Bending about z-axis acc. to 6.2.5 - Class 1 or 2

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	2.42 kN	$M_{y,Ed}$	0.00 kNm
$V_{y,Ed}$	-1.27 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	-0.33 kNm

Design Ratio

$M_{z,Ed}$	0.33 kNm	$M_{pl,z,Rd}$	7.61 kNm	v_y	0.014
$W_{pl,z}$	21.13 cm^3	$V_{y,Ed}$	1.27 kN	$M_{c,z,Rd}$	7.61 kNm
f_y	36.00 kN/cm^2	$A_{v,y}$	4.23 cm^2	η	0.04
γ_{M0}	1.000	$V_{pl,y,Rd}$	87.92 kN		

	4	0.000	LG1	0.07	≤ 1	121)	Cross-section check - Shear force in z-axis acc. to 6.2.6

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	5.76 kN	$M_{y,Ed}$	0.00 kNm
$V_{y,Ed}$	0.00 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

$V_{z,Ed}$	5.76 kN	f_y	36.00 kN/cm^2	$V_{pl,z,Rd}$	87.92 kN
$A_{v,z}$	4.23 cm^2	γ_{M0}	1.000	η	0.07

	60	0.000	LG3	0.03	≤ 1	123)	Cross-section check - Shear force in y-axis acc. to 6.2.6

Design Internal Forces

N_{Ed}	-5.05 kN	$V_{z,Ed}$	0.28 kN	$M_{y,Ed}$	-0.04 kNm
$V_{y,Ed}$	-2.89 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.40 kNm

Design Ratio

$V_{y,Ed}$	2.89 kN	f_y	36.00 kN/cm^2	$V_{pl,y,Rd}$	87.92 kN
$A_{v,y}$	4.23 cm^2	γ_{M0}	1.000	η	0.03

	1	0.000	LG1	0.00	≤ 1	126)	Cross-section check - Shear buckling acc. to 6.2.6(6)

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	2.87 kN	$M_{y,Ed}$	-0.40 kNm
$V_{y,Ed}$	-0.76 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	-0.24 kNm

Design Ratio

2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design		Acc. to Formula	

h_w 63.6 mm | ε 0.808 | h_w/t_w 19.87
t_w 3.2 mm | η 1.200
f_y 36.00 kN/cm² | 72ε/η 48.48

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	Description
58	0.000	LG2	0.02	≤ 1	131)	Cross-section check - Torsion acc. to 6.2.7

Design Internal Forces

N_{Ed}	-4.41 kN	$V_{z,Ed}$	1.58 kN	$M_{y,Ed}$	-0.22 kNm
$V_{y,Ed}$	-2.40 kN	T_{Ed}	0.12 kNm	$M_{z,Ed}$	-0.35 kNm

Design Ratio

T_{Ed}	0.12 kNm	$\tau_{t,Ed}$	0.42 kN/cm²	τ_{Rd}	20.78 kN/cm²
A_c	44.62 cm²	f_y	36.00 kN/cm²	η	0.02
t_{min}	3.2 mm	γ_{M0}	1.000		

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	Description
68	0.155	LG3	0.05	≤ 1	132)	Cross-section check - Torsion and shear force acc. to 6.2.7(9)

Design Internal Forces

N_{Ed}	-0.01 kN	$V_{z,Ed}$	-4.71 kN	$M_{y,Ed}$	-0.71 kNm
$V_{y,Ed}$	0.22 kN	T_{Ed}	-0.04 kNm	$M_{z,Ed}$	-0.03 kNm

Design Ratio

$V_{z,Ed}$	4.71 kN	$V_{pl,z,Rd}$	87.92 kN	$\tau_{t,Ed}$	0.13 kN/cm²
$A_{v,z}$	4.23 cm²	T_{Ed}	0.04 kNm	$V_{pl,z,T,Rd}$	87.37 kN
f_y	36.00 kN/cm²	A_c	44.62 cm²	η	0.05
γ_{M0}	1.000	t	3.2 mm		

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	Description
62	0.000	LG2	0.03	≤ 1	137)	Cross-section check - Torsion and shear force acc. to 6.2.7(9)

Design Internal Forces

N_{Ed}	-4.66 kN	$V_{z,Ed}$	-1.77 kN	$M_{y,Ed}$	0.25 kNm
$V_{y,Ed}$	-2.45 kN	T_{Ed}	-0.10 kNm	$M_{z,Ed}$	-0.38 kNm

Design Ratio

$V_{y,Ed}$	2.45 kN	$V_{pl,y,Rd}$	87.92 kN	$\tau_{t,Ed}$	0.34 kN/cm²
$A_{v,y}$	4.23 cm²	T_{Ed}	0.10 kNm	$V_{pl,y,T,Rd}$	86.46 kN
f_y	36.00 kN/cm²	A_c	44.62 cm²	η	0.03
γ_{M0}	1.000	t	3.2 mm		

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	Description
4	0.570	LG1	0.30	≤ 1	141)	Cross-section check - Bending and shear force acc. to 6.2.5 and 6.2.8

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	0.47 kN	$M_{y,Ed}$	2.27 kNm
$V_{y,Ed}$	0.00 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

$M_{y,Ed}$	2.27 kNm	$M_{pl,y,Rd}$	7.61 kNm	v_z	0.005
$W_{pl,y}$	21.13 cm³	$V_{z,Ed}$	0.47 kN	$M_{c,y,Rd}$	7.61 kNm
f_y	36.00 kN/cm²	$A_{v,z}$	4.23 cm²	η	0.30
γ_{M0}	1.000	$V_{pl,z,Rd}$	87.92 kN		

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	Description
3	0.570	LG1	0.22	≤ 1	146)	Cross-section check - Bending, shear force and torsion acc. to 6.2.5 to 6.2.8

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	0.34 kN	$M_{y,Ed}$	1.65 kNm
$V_{y,Ed}$	0.00 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

$M_{y,Ed}$	1.65 kNm	$V_{z,Ed}$	0.34 kN	t	3.2 mm
$W_{pl,y}$	21.13 cm³	$A_{v,z}$	4.23 cm²	$\tau_{t,Ed}$	0.04 kN/cm²

■ 2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design		Acc. to Formula	

f_y	36.00	kN/cm²	$V_{pl,z,Rd}$	87.92	kN	$V_{pl,z,T,Rd}$	87.73	kN
γ_{M0}	1.000		T_{Ed}	0.01	kNm	$v_{z,T}$	0.004	
$M_{pl,y,Rd}$	7.61	kNm	A_c	44.62	cm²	η	0.22	

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
8	0.300	LG3	0.04	≤ 1	151)	Cross-section check - Bending about z-axis and shear force acc. to 6.2.5 and 6.2.8

Design Internal Forces

N_{Ed}	0.00	kN	$V_{z,Ed}$	2.42	kN	$M_{y,Ed}$	0.00	kNm
$V_{y,Ed}$	-1.27	kN	T_{Ed}	-0.01	kNm	$M_{z,Ed}$	-0.33	kNm

Design Ratio

$M_{z,Ed}$	0.33	kNm	$M_{pl,z,Rd}$	7.61	kNm	v_y	0.014	
$W_{pl,z}$	21.13	cm³	$V_{y,Ed}$	1.27	kN	η	0.04	
f_y	36.00	kN/cm²	$A_{v,y}$	4.23	cm²			
γ_{M0}	1.000		$V_{pl,y,Rd}$	87.92	kN			

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
80	1.360	LG3	0.01	≤ 1	156)	Cross-section check - Bending about z-axis, shear force and torsion acc. to 6.2.5 to 6.2.8

Design Internal Forces

N_{Ed}	0.08	kN	$V_{z,Ed}$	0.00	kN	$M_{y,Ed}$	0.00	kNm
$V_{y,Ed}$	0.00	kN	T_{Ed}	0.01	kNm	$M_{z,Ed}$	0.07	kNm

Design Ratio

$M_{z,Ed}$	0.07	kNm	$V_{y,Ed}$	0.00	kN	$t_{V,y}$	3.2	mm
$W_{pl,z}$	21.13	cm³	$A_{v,y}$	4.23	cm²	$\tau_{t,Ed}$	0.04	kN/cm²
f_y	36.00	kN/cm²	$V_{pl,y,Rd}$	87.92	kN	$V_{pl,y,T,Rd}$	87.74	kN
γ_{M0}	1.000		T_{Ed}	0.01	kNm	$v_{y,T}$	0.000	
$M_{pl,z,Rd}$	7.61	kNm	A_c	44.62	cm²	η	0.01	

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
8	0.000	LG2	0.33	≤ 1	161)	Cross-section check - Biaxial bending and shear force acc. to 6.2.6, 6.2.7 and 6.2.9

Design Internal Forces

N_{Ed}	0.00	kN	$V_{z,Ed}$	3.14	kN	$M_{y,Ed}$	-1.78	kNm
$V_{y,Ed}$	-1.36	kN	T_{Ed}	-0.01	kNm	$M_{z,Ed}$	-0.73	kNm

Design Ratio

$M_{y,Ed}$	1.78	kNm	v_z	0.036		α	1.660	
$W_{pl,y}$	21.13	cm³	$M_{z,Ed}$	0.73	kNm	β	1.660	
f_y	36.00	kN/cm²	$W_{pl,z}$	21.13	cm³	η_{My}	0.09	
γ_{M0}	1.000		$M_{pl,z,Rd}$	7.61	kNm	η_{Mz}	0.02	
$M_{pl,y,Rd}$	7.61	kNm	$V_{y,Ed}$	1.36	kN	η_M	0.11	
$V_{z,Ed}$	3.14	kN	$A_{v,y}$	4.23	cm²	η	0.33	
$A_{v,z}$	4.23	cm²	$V_{pl,y,Rd}$	87.92	kN			
$V_{pl,z,Rd}$	87.92	kN	v_y	0.016				

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
68	0.155	LG3	0.10	≤ 1	166)	Cross-section check - Biaxial bending, shear force and torsion acc. to 6.2.5 to 6.2.8

Design Internal Forces

N_{Ed}	-0.01	kN	$V_{z,Ed}$	-4.71	kN	$M_{y,Ed}$	-0.71	kNm
$V_{y,Ed}$	0.22	kN	T_{Ed}	-0.04	kNm	$M_{z,Ed}$	-0.03	kNm

Design Ratio

$M_{y,Ed}$	0.71	kNm	$t_{V,z}$	3.2	mm	$t_{V,y}$	3.2	mm
$W_{pl,y}$	21.13	cm³	τ_{t,w_Ed}	0.13	kN/cm²	$\tau_{t,f,Ed}$	0.13	kN/cm²
f_y	36.00	kN/cm²	$V_{pl,z,T,Rd}$	87.37	kN	$V_{pl,y,T,Rd}$	87.37	kN
γ_{M0}	1.000		$v_{z,T}$	0.054		$v_{y,T}$	0.003	
$M_{pl,y,Rd}$	7.61	kNm	$M_{z,Ed}$	0.03	kNm	α	1.660	
$V_{z,Ed}$	4.71	kN	$W_{pl,z}$	21.13	cm³	β	1.660	

■ 2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design		Acc. to Formula	

$A_{v,z}$	4.23 cm²	$M_{pl,z,Rd}$	7.61 kNm	η_{My}	0.02
$V_{pl,z,Rd}$	87.92 kN	$V_{y,Ed}$	0.22 kN	η_{Mz}	0.00
T_{Ed}	0.04 kNm	$A_{v,y}$	4.23 cm²	η_{M}	0.02
I_t	96.30 cm⁴	$V_{pl,y,Rd}$	87.92 kN	η	0.10

	14	1.220	LG2	0.04	≤ 1	181)	Cross-section check - Bending, shear and axial force acc. to 6.2.9.1

Design Internal Forces

N_{Ed}	-3.68 kN	$V_{z,Ed}$	0.27 kN	$M_{y,Ed}$	0.33 kNm
$V_{y,Ed}$	0.78 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	0.01 kNm

Design Ratio

$M_{y,Ed}$	0.33 kNm	$V_{pl,z,Rd}$	87.92 kN	$N_{pl,Rd}$	304.56 kN
$W_{pl,y}$	21.13 cm³	v_z	0.003	n	0.012
f_y	36.00 kN/cm²	A	8.46 cm²	$M_{N,pl,y,Rd}$	7.61 kNm
γ_{M0}	1.000	b	70.0 mm	η_{My}	0.04
$M_{pl,y,Rd}$	7.61 kNm	t	3.2 mm	η	0.04
$V_{z,Ed}$	0.27 kN	a_w	0.470		
$A_{v,z}$	4.23 cm²	N_{Ed}	-3.68 kN		

	33	0.570	LG2	0.11	≤ 1	186)	Cross-section check - Bending, shear, torsion and axial force acc. to 6.2.9.1

Design Internal Forces

N_{Ed}	-7.85 kN	$V_{z,Ed}$	0.00 kN	$M_{y,Ed}$	0.83 kNm
$V_{y,Ed}$	-0.16 kN	T_{Ed}	0.04 kNm	$M_{z,Ed}$	-0.01 kNm

Design Ratio

$M_{y,Ed}$	0.83 kNm	T_{Ed}	0.04 kNm	t	3.2 mm
$W_{pl,y}$	21.13 cm³	A_c	44.62 cm²	a_w	0.470
f_y	36.00 kN/cm²	$t_{V,z}$	3.2 mm	N_{Ed}	-7.85 kN
γ_{M0}	1.000	$\tau_{t,Ed}$	0.16 kN/cm²	$N_{pl,Rd}$	304.56 kN
$M_{pl,y,Rd}$	7.61 kNm	$V_{pl,z,T,Rd}$	87.26 kN	n	0.026
$V_{z,Ed}$	0.00 kN	$v_{z,T}$	0.000	$M_{N,pl,y,Rd}$	7.61 kNm
$A_{v,z}$	4.23 cm²	A	8.46 cm²	η_{My}	0.11
$V_{pl,z,Rd}$	87.92 kN	b	70.0 mm	η	0.11

	16	0.305	LG2	0.09	≤ 1	201)	Cross-section check - Bending about z-axis, shear and axial force acc. to 6.2.9.1

Design Internal Forces

N_{Ed}	-17.64 kN	$V_{z,Ed}$	0.03 kN	$M_{y,Ed}$	0.01 kNm
$V_{y,Ed}$	-0.76 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	0.31 kNm

Design Ratio

$M_{z,Ed}$	0.31 kNm	$A_{v,y}$	4.23 cm²	h	70.0 mm
$W_{pl,z}$	21.13 cm³	$V_{pl,y,Rd}$	87.92 kN	t	3.2 mm
f_y	36.00 kN/cm²	v_y	0.009	a_f	0.470
γ_{M0}	1.000	N_{Ed}	-17.64 kN	$M_{N,pl,z,Rd}$	7.61 kNm
$M_{pl,z,Rd}$	7.61 kNm	A	8.46 cm²	η_{Mz}	0.04
$V_{y,Ed}$	0.76 kN	$N_{pl,Rd}$	304.56 kN	η	0.09

	33	0.000	LG2	0.04	≤ 1	206)	Cross-section check - Bending about z-axis, shear, torsion and axial force acc. to 6.2.9.1

Design Internal Forces

N_{Ed}	-7.85 kN	$V_{z,Ed}$	2.21 kN	$M_{y,Ed}$	0.00 kNm
$V_{y,Ed}$	-0.16 kN	T_{Ed}	0.04 kNm	$M_{z,Ed}$	-0.10 kNm

Design Ratio

$M_{z,Ed}$	0.10 kNm	I_t	96.30 cm⁴	t_w	3.2 mm

■ 2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design			Acc. to Formula	

$W_{pl,z}$	21.13 cm^3	$t_{V,y}$	3.2 mm	n	0.026
f_y	36.00 kN/cm^2	$\tau_{t,Ed}$	0.16 kN/cm^2	h	70.0 mm
γ_{M0}	1.000	$V_{pl,y,T,Rd}$	87.26 kN	t	3.2 mm
$M_{pl,z,Rd}$	7.61 kNm	$v_{y,T}$	0.002	a_f	0.470
$V_{y,Ed}$	0.16 kN	N_{Ed}	-7.85 kN	$M_{N,pl,z,Rd}$	7.61 kNm
$A_{v,y}$	4.23 cm^2	A	8.46 cm^2	η_{Mz}	0.01
$V_{pl,y,Rd}$	87.92 kN	$N_{pl,Rd}$	304.56 kN	η	0.04
T_{Ed}	0.04 kNm	h_w	63.6 mm		

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
31	0.000	LG2	0.29	≤ 1	221)	Cross-section check - Biaxial bending, shear and axial force acc. to 6.2.10 and 6.2.9

Design Internal Forces

N_{Ed}	1.51 kN	$V_{z,Ed}$	2.56 kN	$M_{y,Ed}$	-1.41 kNm
$V_{y,Ed}$	-1.40 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	-0.77 kNm

Design Ratio

$M_{y,Ed}$	1.41 kNm	h_w	63.6 mm	$V_{pl,y,Rd}$	87.92 kN
$W_{pl,y}$	21.13 cm^3	t_w	3.2 mm	v_y	0.016
f_y	36.00 kN/cm^2	n	0.005	h	70.0 mm
γ_{M0}	1.000	b	70.0 mm	t	3.2 mm
$M_{pl,y,Rd}$	7.61 kNm	t	3.2 mm	a_f	0.470
$V_{z,Ed}$	2.56 kN	a_w	0.470	$M_{N,pl,z,Rd}$	7.61 kNm
$A_{v,z}$	4.23 cm^2	$M_{N,pl,y,Rd}$	7.61 kNm	α	1.660
$V_{pl,z,Rd}$	87.92 kN	$M_{z,Ed}$	0.77 kNm	β	1.660
v_z	0.029	$W_{pl,z}$	21.13 cm^3	η_{My}	0.06
N_{Ed}	1.51 kN	$M_{pl,z,Rd}$	7.61 kNm	η_{Mz}	0.02
A	8.46 cm^2	$V_{y,Ed}$	1.40 kN	η_M	0.08
$N_{pl,Rd}$	304.56 kN	$A_{v,y}$	4.23 cm^2	η	0.29

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
24	1.625	LG3	0.22	≤ 1	226)	Cross-section check - Biaxial bending, shear, torsion and axial force acc. to 6.2.10 and 6.2.9

Design Internal Forces

N_{Ed}	-1.22 kN	$V_{z,Ed}$	-2.22 kN	$M_{y,Ed}$	-1.08 kNm
$V_{y,Ed}$	1.00 kN	T_{Ed}	0.02 kNm	$M_{z,Ed}$	-0.53 kNm

Design Ratio

$M_{y,Ed}$	1.08 kNm	A	8.46 cm^2	$t_{V,y}$	3.2 mm
$W_{pl,y}$	21.13 cm^3	$N_{pl,Rd}$	304.56 kN	$\tau_{t,f,Ed}$	0.07 kN/cm^2
f_y	36.00 kN/cm^2	h_w	63.6 mm	$V_{pl,y,T,Rd}$	87.61 kN
γ_{M0}	1.000	t_w	3.2 mm	$v_{y,T}$	0.011
$M_{pl,y,Rd}$	7.61 kNm	n	0.004	h	70.0 mm
$V_{z,Ed}$	2.22 kN	b	70.0 mm	t	3.2 mm
$A_{v,z}$	4.23 cm^2	t	3.2 mm	a_f	0.470
$V_{pl,z,Rd}$	87.92 kN	a_w	0.470	$M_{N,pl,z,Rd}$	7.61 kNm
T_{Ed}	0.02 kNm	$M_{N,pl,y,Rd}$	7.61 kNm	α	1.660
I_t	96.30 cm^4	$M_{z,Ed}$	0.53 kNm	β	1.660
$t_{V,z}$	3.2 mm	$W_{pl,z}$	21.13 cm^3	η_{My}	0.04
τ_{t,w_Ed}	0.07 kN/cm^2	$M_{pl,z,Rd}$	7.61 kNm	η_{Mz}	0.01
$V_{pl,z,T,Rd}$	87.61 kN	$V_{y,Ed}$	1.00 kN	η_M	0.05
$v_{z,T}$	0.025	$A_{v,y}$	4.23 cm^2	η	0.22
N_{Ed}	-1.22 kN	$V_{pl,y,Rd}$	87.92 kN		

Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
17	0.000	LG1	0.07	≤ 1	301)	Stability analysis - Flexural buckling about y-axis acc. to 6.3.1.1 and 6.3.1.2(4)

Design Internal Forces

N_{Ed}	-18.54 kN	$V_{z,Ed}$	-0.06 kN	$M_{y,Ed}$	0.00 kNm

2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design		Acc. to Formula	

$V_{y,Ed}$	-1.09 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

E	21000.00 kN/cm²	$N_{cr,y}$	873.11 kN	γ_{M1}	1.000
I_y	62.70 cm⁴	A	8.46 cm²	N_{Ed}	18.54 kN
$L_{cr,y}$	1.220 m	f_y	36.00 kN/cm²	$\eta_{N,cr}$	0.021

Cross-s. No	Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
	17	0.000	LG1	0.07	≤ 1	311)	Stability analysis - Flexural buckling about z-axis acc. to 6.3.1.1 and 6.3.1.2(4)

Design Internal Forces

N_{Ed}	-18.54 kN	$V_{z,Ed}$	-0.06 kN	$M_{y,Ed}$	0.00 kNm
$V_{y,Ed}$	-1.09 kN	T_{Ed}	0.01 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

E	21000.00 kN/cm²	$N_{cr,z}$	873.11 kN	γ_{M1}	1.000
I_z	62.70 cm⁴	A	8.46 cm²	N_{Ed}	18.54 kN
$L_{cr,z}$	1.220 m	f_y	36.00 kN/cm²	$\eta_{N,cr}$	0.021

Cross-s. No	Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
	8	0.000	LG3	0.16	≤ 1	363)	Stability analysis - Biaxial bending acc. to 6.3.3, Method 2

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	2.64 kN	$M_{y,Ed}$	-0.77 kNm
$V_{y,Ed}$	-1.36 kN	T_{Ed}	-0.01 kNm	$M_{z,Ed}$	-0.73 kNm

Design Ratio

Type	Non-sway	$M_{h,z}$	-0.73 kNm	W_y	21.13 cm³
Diagr M_y	2) Max on Edge	$M_{s,z}$	0.40 kNm	$M_{y,Rk}$	7.61 kNm
ψ_y	0.510	$\alpha_{s,z}$	-0.544	γ_{M1}	1.000
$M_{h,y}$	-1.51 kNm	Load y	Unif. Dist. Load	η_{My}	0.20
$M_{s,y}$	1.27 kNm	C_{mz}	0.536	$M_{z,Ed}$	0.73 kNm
$\alpha_{s,y}$	-0.841	Component	Torsion. Rigid	W_z	21.13 cm³
Load z	Sing. Load	k_{yy}	0.673	$M_{z,Rk}$	7.61 kNm
C_{my}	0.673	k_{yz}	0.321	η_{Mz}	0.10
Type	Non-sway	k_{zy}	0.404	η_1	0.16
Diagr M_z	2) Max on Edge	k_{zz}	0.536	η_2	0.13
ψ_z	1.000	$M_{y,Ed}$	1.51 kNm		

Cross-s. No	Member No	Location x [m]	LC/LG/CO	Design		Acc. to Formula	
	4	0.285	LG1	0.27	≤ 1	364)	Stability analysis - Bending and compression acc. to 6.3.3, Method 2

Design Internal Forces

N_{Ed}	0.00 kN	$V_{z,Ed}$	4.42 kN	$M_{y,Ed}$	1.51 kNm
$V_{y,Ed}$	0.00 kN	T_{Ed}	0.00 kNm	$M_{z,Ed}$	0.00 kNm

Design Ratio

E	21000.00 kN/cm²	α_z	0.210	k_{yy}	0.900
I_y	62.70 cm⁴	Φ_z	0.689	k_{yz}	0.360
$L_{cr,y}$	1.140 m	χ_z	0.907	k_{zy}	0.540
$N_{cr,y}$	999.95 kN	Type	Non-sway	k_{zz}	0.600
A	8.46 cm²	Diagr M_y	3) Max in Span	N_{Ed}	0.00 kN
f_y	36.00 kN/cm²	ψ_y	1.000	γ_{M1}	1.000
λ_y	0.552	$M_{h,y}$	0.00 kNm	$M_{y,Ed}$	2.27 kNm
BC_y	a	$M_{s,y}$	2.27 kNm	W_y	21.13 cm³
α_y	0.210	$\alpha_{h,y}$	0.000	$M_{y,Rk}$	7.61 kNm

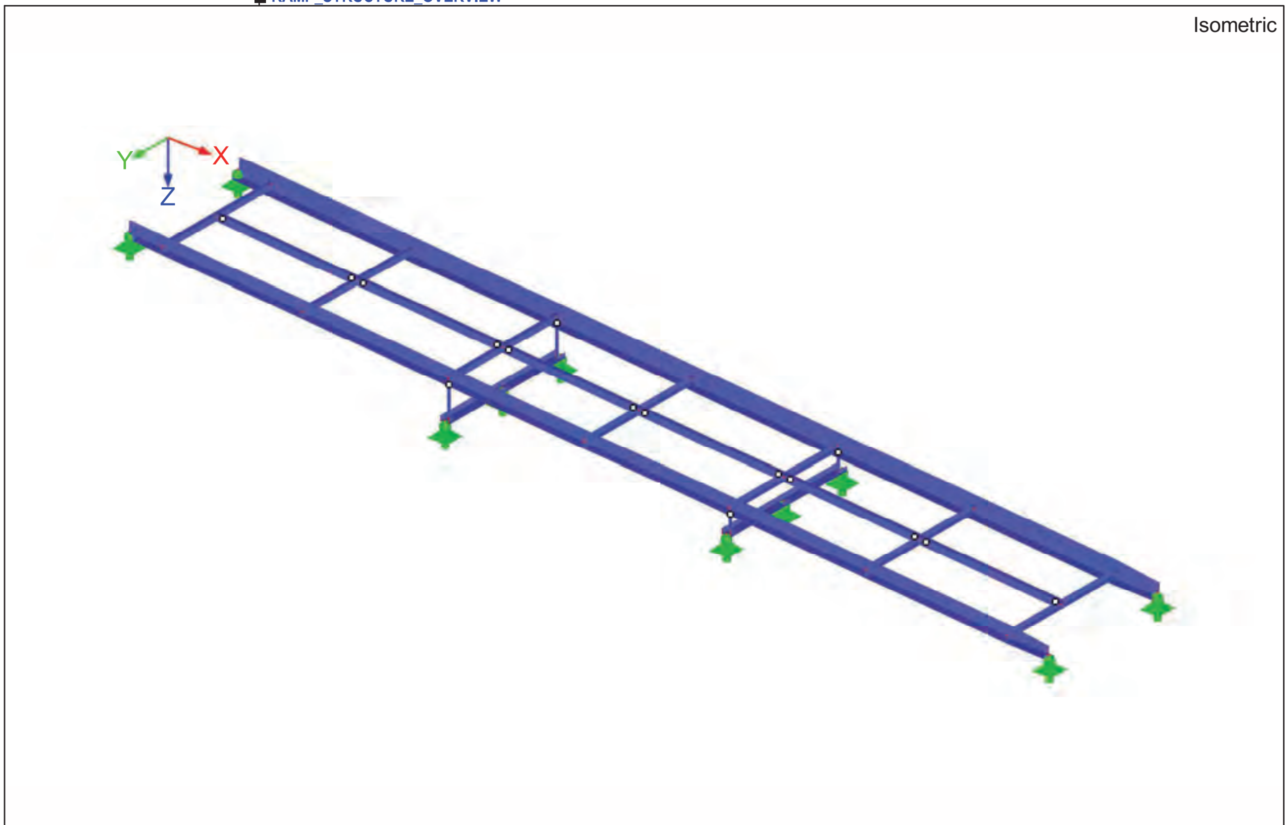
2.2 DESIGN BY CROSS-SECTION

Cross-s. No	Member No	Location x x [m]	LC/LG/ CO	Design		Acc. to Formula	
	Φ_y 0.689			Load z Sing. Load		η_{My} 0.30	
	χ_y 0.907			C_{my} 0.900		W_z 21.13 cm^3	
	I_z 62.70 cm^4			Type Non-sway		$M_{z,Rk}$ 7.61 kNm	
	$L_{cr,z}$ 1.140 m			Diagr M_z 1) Linear		η_{Mz} 0.00	
	$N_{cr,z}$ 999.95 kN			ψ_z 0.000		η_1 0.27	
	λ_z 0.552			C_{mz} 0.600		η_2 0.16	
	BC_z a			Component Torsion. Rigid			
2	**RD 10**						
	46	0.000	LG1	0.00	≤ 1	100)	Negligible internal forces
	Design Internal Forces						
	N_{Ed} -0.01 kN			$V_{z,Ed}$ 0.00 kN		$M_{y,Ed}$ 0.00 kNm	
	$V_{y,Ed}$ 0.00 kN			T_{Ed} 0.00 kNm		$M_{z,Ed}$ 0.00 kNm	
	Design Ratio						
	η 0.00						
	45	1.670	LG2	0.60	≤ 1	101)	Cross-section check - Tension acc. to 6.2.3
	Design Internal Forces						
	N_{Ed} 16.67 kN			$V_{z,Ed}$ 0.00 kN		$M_{y,Ed}$ 0.00 kNm	
	$V_{y,Ed}$ 0.00 kN			T_{Ed} 0.00 kNm		$M_{z,Ed}$ 0.00 kNm	
	Design Ratio						
	$N_{t,Ed}$ 16.67 kN			$N_{pl,Rd}$ 28.26 kN		$N_{u,Rd}$ 27.69 kN	
	A 0.79 cm^2			A_{net} 0.79 cm^2		$N_{t,Rd}$ 27.69 kN	
	f_y 36.00 kN/cm^2			f_u 49.00 kN/cm^2		η 0.60	
	γ_{M0} 1.000			γ_{M2} 1.250			

4.1 PARTS LIST BY MEMBER

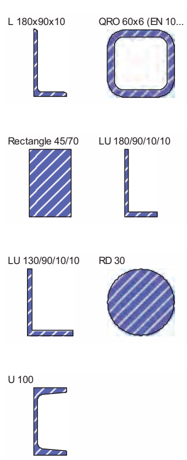
Part No	Cross-Section Description	Number Members	Length [m]	Tot. Length [m]	Surf. Area [m^2]	Volume [kNm]	Unit Weight [kg/m]	Weight [kg]	Tot. Weight [t]
1	1 - QRO 70x3,2	8	1.63	13.00	3.58	0.00	6.64	10.79	0.086
2	1 - QRO 70x3,2	14	1.14	15.96	4.39	0.00	6.64	7.57	0.106
3	1 - QRO 70x3,2	8	2.70	21.60	5.94	0.00	6.64	17.93	0.143
4	1 - QRO 70x3,2	10	1.22	12.20	3.36	0.00	6.64	8.10	0.081
5	2 - RD 10	4	2.12	8.48	0.27	0.00	0.62	1.31	0.005
6	2 - RD 10	6	1.67	10.02	0.31	0.00	0.62	1.03	0.006
7	2 - RD 10	4	2.93	11.72	0.37	0.00	0.62	1.81	0.007
8	1 - QRO 70x3,2	10	0.14	1.40	0.38	0.00	6.64	0.93	0.009
9	1 - QRO 70x3,2	8	0.16	1.24	0.34	0.00	6.64	1.03	0.008
10	1 - QRO 70x3,2	4	1.36	5.44	1.50	0.00	6.64	9.03	0.036
11	2 - RD 10	4	1.99	7.94	0.25	0.00	0.62	1.22	0.005
Sum		80		109.00	20.68	0.00			0.494

RAMP_STRUCTURE_OVERVIEW



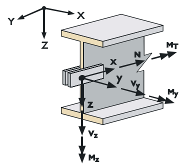
1.2 MATERIALS

Material No.	Material Description	E-Modulus E [MPa]	G-Modulus G [MPa]	Sp. Weight γ [kN/m³]	Coeff. Thermal α [1/°C]	Saf. Factor γM [-]
1	Steel S 235 | DIN 18800:1990-11	210000.00	81000.000	78.50	1.2000E-05	1.100



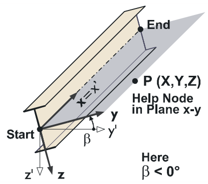
1.3 CROSS-SECTIONS

Section No.	Cross-section Description	Mater. No.	I_T [mm⁴] A [mm²]	$I_{y/u}$ [mm⁴] $A_{y/u}$ [mm²]	$I_{z/v}$ [mm⁴] $A_{z/v}$ [mm²]	Principal axis α [°]	Crossec. Rot. α' [°]
1	L 180x90x10	1	89266.7 2620.0	9340000.0 635.8	974000.0 1412.1	-14.57	0.00
2	QRO 60x6 (EN 10219-2)	1	957728.9 1172.4	532754.7 551.5	532754.7 551.5	0.00	0.00
3	Rectangle 45/70	1	1277258.0 3150.0	1286250.0 2625.0	531562.5 2625.0	0.00	0.00
4	LU 180/90/10/10	1	84566.7 2600.0	9438102.0 646.4	993308.3 1413.5	-15.06	0.00
5	LU 130/90/10/10	1	67900.0 2100.0	4255481.0 738.5	805233.8 976.9	-25.41	0.00
6	RD 30	1	79521.6 707.0	39760.8 593.9	39760.8 593.9	0.00	0.00
7	U 100	1	28100.0 1350.0	2060000.0 461.3	293000.0 486.4	0.00	0.00



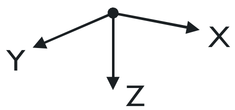
1.4 MEMBER RELEASES

Release No.	Reference System	Force Release or Spring [kN/m] N	Vy	Vz	Moment Release or Spring [kNm/rad] MT	My	Mz
1	Local x,y,z	☐	☐	☐	☐	☒	☒
2	Local x,y,z	☐	☐	☐	☒	☒	☒



1.7 MEMBERS

Member No.	Member	Node Start	Node End	Rotation Type	β[°] / Plane	Cross-section Start	Cross-section End	Release No. Start	Release No. End	Ecc. No.	Div. No.	Taper Shape	
1	Beam	54	57	Angle	0.00	1	1	-	-	-	-	-	XZ
2	Beam	19	5	Angle	0.00	1	1	-	-	-	-	-	XZ
3	Beam	5	8	Angle	0.00	1	1	-	-	-	-	-	XZ
4	Beam	8	10	Angle	0.00	1	1	-	-	-	-	-	XZ
6	Beam	10	3	Angle	0.00	1	1	-	-	-	-	-	XZ
7	Beam	5	17	Angle	0.00	2	2	-	-	-	-	-	Y
8	Beam	52	23	Angle	0.00	1	1	-	-	-	-	-	XZ
9	Beam	8	16	Angle	0.00	2	2	-	-	-	-	-	Y
10	Beam	14	52	Angle	0.00	1	1	-	-	-	-	-	XZ
12	Beam	57	14	Angle	0.00	1	1	-	-	-	-	-	XZ
13	Beam	10	6	Angle	0.00	2	2	-	-	-	-	-	Y
17	Beam	6	57	Angle	0.00	2	2	-	-	-	-	-	Y
20	Beam	6	16	Angle	0.00	3	3	1	1	-	-	-	XZ
21	Beam	16	14	Angle	0.00	2	2	-	-	-	-	-	Y
22	Beam	16	17	Angle	0.00	3	3	1	1	-	-	-	XZ
23	Beam	17	52	Angle	0.00	2	2	-	-	-	-	-	Y
24	Beam	17	22	Angle	0.00	3	3	1	1	-	-	-	XZ
25	Beam	23	26	Angle	0.00	1	1	-	-	-	-	-	XZ
26	Beam	50	34	Angle	0.00	5	4	-	-	-	-	Linear	XZ
27	Beam	19	22	Node	3 / x-y	2	2	-	-	-	-	-	Y
28	Beam	22	23	Node	3 / x-y	2	2	-	-	-	-	-	Y
29	Beam	26	18	Angle	0.00	1	1	-	-	-	-	-	XZ
30	Beam	18	24	Angle	0.00	1	1	-	-	-	-	-	XZ
31	Beam	24	21	Angle	0.00	4	5	-	-	-	-	Linear	XZ
32	Beam	30	31	Node	3 / x-y	2	2	-	-	-	-	-	Y
33	Beam	31	26	Node	3 / x-y	2	2	-	-	-	-	-	Y
34	Beam	30	19	Angle	0.00	1	1	-	-	-	-	-	XZ
35	Beam	32	33	Node	3 / x-y	2	2	-	-	-	-	-	Y
36	Beam	33	18	Node	3 / x-y	2	2	-	-	-	-	-	Y
37	Beam	32	30	Angle	0.00	1	1	-	-	-	-	-	XZ
38	Beam	34	35	Node	3 / x-y	2	2	-	-	-	-	-	Y
39	Beam	35	24	Node	3 / x-y	2	2	-	-	-	-	-	Y
40	Beam	34	32	Angle	0.00	1	1	-	-	-	-	-	XZ
41	Beam	22	31	Angle	0.00	3	3	1	1	-	-	-	XZ
42	Beam	31	33	Angle	0.00	3	3	1	1	-	-	-	XZ
43	Beam	33	35	Angle	0.00	3	3	1	1	-	-	-	XZ
46	Beam	9	5	Angle	0.00	6	6	-	2	-	-	-	Z
47	Beam	29	52	Angle	0.00	6	6	-	2	-	-	-	Z
48	Beam	38	30	Angle	0.00	6	6	-	2	-	-	-	Z
49	Beam	39	26	Angle	0.00	6	6	-	2	-	-	-	Z
50	Beam	29	41	Angle	-90.00	7	7	-	-	-	-	-	Y
51	Beam	9	40	Angle	-90.00	7	7	-	-	-	-	-	Y
52	Beam	37	29	Angle	-90.00	7	7	-	-	-	-	-	Y
53	Beam	41	9	Angle	-90.00	7	7	-	-	-	-	-	Y
54	Beam	39	45	Angle	-90.00	7	7	-	-	-	-	-	Y
55	Beam	38	44	Angle	-90.00	7	7	-	-	-	-	-	Y
56	Beam	43	39	Angle	-90.00	7	7	-	-	-	-	-	Y
57	Beam	45	38	Angle	-90.00	7	7	-	-	-	-	-	Y



1.8 NODAL SUPPORTS

Support No.	Nodes No.	Rotation [°] Sequen.	about X	about Y	about Z	Support Conditions uX'	uY'	uZ'	φX'	φY'	φZ'
1	3,21,50,54	XYZ	0.00	0.00	0.00	☒	☒	☒	☐	☐	☐
2	37,40,41,43-45	XYZ	0.00	0.00	0.00	☒	☒	☒	☐	☐	☐

■ LOAD CASES

LC No.	LC Description	LC Factor	Property of load case	Self-weight	Method of Analysis
1	SELF_WEIGHT	1.0000	Permanent	1.00	Linear
2	IMPOSED_LOADS	1.0000	Variable	-	Linear
3	SNOW	1.0000	Variable	-	Linear
4	WIND	1.0000	Variable	-	Linear
5	SEISMIC_X-DIRECTION	1.0000	Exceptional	0.60/0.00/0.00	Linear
6	SEISMIC_Y-DIRECTION	1.0000	Exceptional	0.00/0.60/0.00	Linear
7	SEISMIC_Z-DIRECTION	1.0000	Exceptional	0.60	Linear

LC1

SELF_WEIGHT

■ 2.2 MEMBER LOADS

LC1

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	1-4,6,8,10,12, 25,26,29-31,34 37,40	Force	Uniform	Z	True Length	p	0.200	kN/m
2	Members From area load p: 0.220 kN/m² (direction: 'z')	1	Force	Uniform	z	True Length	p	0.081	kN/m
3	Members From area load p: 0.220 kN/m² (direction: 'z')	2	Force	Uniform	z	True Length	p	0.061	kN/m
4	Members From area load p: 0.220 kN/m² (direction: 'z')	3	Force	Uniform	z	True Length	p	0.061	kN/m
5	Members From area load p: 0.220 kN/m² (direction: 'z')	4	Force	Uniform	z	True Length	p	0.061	kN/m
6	Members From area load p: 0.220 kN/m² (direction: 'z')	6	Force	Uniform	z	True Length	p	0.081	kN/m
7	Members From area load p: 0.220 kN/m² (direction: 'z')	8	Force	Uniform	z	True Length	p	0.061	kN/m
8	Members From area load p: 0.220 kN/m² (direction: 'z')	10	Force	Uniform	z	True Length	p	0.061	kN/m
9	Members From area load p: 0.220 kN/m² (direction: 'z')	12	Force	Uniform	z	True Length	p	0.061	kN/m
10	Members From area load p: 0.220 kN/m² (direction: 'z')	20	Force	Uniform	z	True Length	p	0.203	kN/m
11	Members From area load p: 0.220 kN/m² (direction: 'z')	22	Force	Uniform	z	True Length	p	0.203	kN/m
12	Members From area load p: 0.220 kN/m² (direction: 'z')	24	Force	Uniform	z	True Length	p	0.203	kN/m
13	Members From area load p: 0.220 kN/m² (direction: 'z')	25	Force	Uniform	z	True Length	p	0.061	kN/m
14	Members From area load p: 0.220 kN/m² (direction: 'z')	26	Force	Uniform	z	True Length	p	0.081	kN/m
15	Members From area load p: 0.220 kN/m² (direction: 'z')	29	Force	Uniform	z	True Length	p	0.061	kN/m
16	Members From area load p: 0.220 kN/m² (direction: 'z')	30	Force	Uniform	z	True Length	p	0.061	kN/m
17	Members From area load p: 0.220 kN/m² (direction: 'z')	31	Force	Uniform	z	True Length	p	0.081	kN/m
18	Members From area load p: 0.220 kN/m² (direction: 'z')	34	Force	Uniform	z	True Length	p	0.061	kN/m
19	Members From area load p: 0.220 kN/m² (direction: 'z')	37	Force	Uniform	z	True Length	p	0.061	kN/m
20	Members From area load p: 0.220 kN/m² (direction: 'z')	40	Force	Uniform	z	True Length	p	0.061	kN/m
21	Members From area load p: 0.220 kN/m² (direction: 'z')	41	Force	Uniform	z	True Length	p	0.203	kN/m
22	Members From area load p: 0.220 kN/m² (direction: 'z')	42	Force	Uniform	z	True Length	p	0.203	kN/m
23	Members From area load p: 0.220 kN/m² (direction: 'z')	43	Force	Uniform	z	True Length	p	0.203	kN/m

LC2

IMPOSED_LOADS

2.2 MEMBER LOADS LC2

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	1	Force	Uniform	z	True Length	p	1.767	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
2	Members	2	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
3	Members	3	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
4	Members	4	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
5	Members	6	Force	Uniform	z	True Length	p	1.767	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
6	Members	8	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
7	Members	10	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
8	Members	12	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
9	Members	20	Force	Uniform	z	True Length	p	4.416	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
10	Members	22	Force	Uniform	z	True Length	p	4.416	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
11	Members	24	Force	Uniform	z	True Length	p	4.416	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
12	Members	25	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
13	Members	26	Force	Uniform	z	True Length	p	1.767	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
14	Members	29	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
15	Members	30	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
16	Members	31	Force	Uniform	z	True Length	p	1.767	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
17	Members	34	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
18	Members	37	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
19	Members	40	Force	Uniform	z	True Length	p	1.325	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
20	Members	41	Force	Uniform	z	True Length	p	4.416	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
21	Members	42	Force	Uniform	z	True Length	p	4.416	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								
22	Members	43	Force	Uniform	z	True Length	p	4.416	kN/m
	From area load p: 4.790 kN/m ^{2} (direction: 'z')								

LC3

SNOW

2.2 MEMBER LOADS LC3

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	1	Force	Uniform	z	True Length	p	0.354	kN/m
	From area load p: 0.960 kN/m ^{2} (direction: 'z')								
2	Members	2	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m ^{2} (direction: 'z')								
3	Members	3	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m ^{2} (direction: 'z')								
4	Members	4	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m ^{2} (direction: 'z')								
5	Members	6	Force	Uniform	z	True Length	p	0.354	kN/m
	From area load p: 0.960 kN/m ^{2} (direction: 'z')								

LC3

SNOW

2.2 MEMBER LOADS

LC3

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
6	Members	8	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
7	Members	10	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
8	Members	12	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
9	Members	20	Force	Uniform	z	True Length	p	0.885	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
10	Members	22	Force	Uniform	z	True Length	p	0.885	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
11	Members	24	Force	Uniform	z	True Length	p	0.885	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
12	Members	25	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
13	Members	26	Force	Uniform	z	True Length	p	0.354	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
14	Members	29	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
15	Members	30	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
16	Members	31	Force	Uniform	z	True Length	p	0.354	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
17	Members	34	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
18	Members	37	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
19	Members	40	Force	Uniform	z	True Length	p	0.266	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
20	Members	41	Force	Uniform	z	True Length	p	0.885	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
21	Members	42	Force	Uniform	z	True Length	p	0.885	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								
22	Members	43	Force	Uniform	z	True Length	p	0.885	kN/m
	From area load p: 0.960 kN/m^2 (direction: 'z')								

LC4

WIND

2.2 MEMBER LOADS

LC4

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
1	Members	1	Force	Uniform	z	True Length	p	0.059	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
2	Members	2	Force	Uniform	z	True Length	p	0.044	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
3	Members	3	Force	Uniform	z	True Length	p	0.044	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
4	Members	4	Force	Uniform	z	True Length	p	0.044	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
5	Members	6	Force	Uniform	z	True Length	p	0.059	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
6	Members	8	Force	Uniform	z	True Length	p	0.044	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
7	Members	10	Force	Uniform	z	True Length	p	0.044	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
8	Members	12	Force	Uniform	z	True Length	p	0.044	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
9	Members	20	Force	Uniform	z	True Length	p	0.148	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								
10	Members	22	Force	Uniform	z	True Length	p	0.148	kN/m
	From area load p: 0.160 kN/m^2 (direction: 'z')								

LC4

WIND

■ 2.2 MEMBER LOADS LC4

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
11	Members From area load p: 0.160 kN/m² (direction: 'z')	24	Force	Uniform	z	True Length	p	0.148	kN/m
12	Members From area load p: 0.160 kN/m² (direction: 'z')	25	Force	Uniform	z	True Length	p	0.044	kN/m
13	Members From area load p: 0.160 kN/m² (direction: 'z')	26	Force	Uniform	z	True Length	p	0.059	kN/m
14	Members From area load p: 0.160 kN/m² (direction: 'z')	29	Force	Uniform	z	True Length	p	0.044	kN/m
15	Members From area load p: 0.160 kN/m² (direction: 'z')	30	Force	Uniform	z	True Length	p	0.044	kN/m
16	Members From area load p: 0.160 kN/m² (direction: 'z')	31	Force	Uniform	z	True Length	p	0.059	kN/m
17	Members From area load p: 0.160 kN/m² (direction: 'z')	34	Force	Uniform	z	True Length	p	0.044	kN/m
18	Members From area load p: 0.160 kN/m² (direction: 'z')	37	Force	Uniform	z	True Length	p	0.044	kN/m
19	Members From area load p: 0.160 kN/m² (direction: 'z')	40	Force	Uniform	z	True Length	p	0.044	kN/m
20	Members From area load p: 0.160 kN/m² (direction: 'z')	41	Force	Uniform	z	True Length	p	0.148	kN/m
21	Members From area load p: 0.160 kN/m² (direction: 'z')	42	Force	Uniform	z	True Length	p	0.148	kN/m
22	Members From area load p: 0.160 kN/m² (direction: 'z')	43	Force	Uniform	z	True Length	p	0.148	kN/m

LC5

SEISMIC_X-DIRECTION

■ **2.2 MEMBER LOADS** LC5

No.	Reference to	On members No. On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
6	Members	1-4,6,8,10,12, 25,26,29-31,34 37,40	Force	Uniform	X	True Length	p	0.120	kN/m
7	Members From area load p: 0.140 kN/m² (direction: 'XL')	1	Force	Uniform	X	True Length	p	0.052	kN/m
8	Members From area load p: 0.140 kN/m² (direction: 'XL')	2	Force	Uniform	X	True Length	p	0.039	kN/m
9	Members From area load p: 0.140 kN/m² (direction: 'XL')	3	Force	Uniform	X	True Length	p	0.039	kN/m
10	Members From area load p: 0.140 kN/m² (direction: 'XL')	4	Force	Uniform	X	True Length	p	0.039	kN/m
11	Members From area load p: 0.140 kN/m² (direction: 'XL')	6	Force	Uniform	X	True Length	p	0.052	kN/m
12	Members From area load p: 0.140 kN/m² (direction: 'XL')	8	Force	Uniform	X	True Length	p	0.039	kN/m
13	Members From area load p: 0.140 kN/m² (direction: 'XL')	10	Force	Uniform	X	True Length	p	0.039	kN/m
14	Members From area load p: 0.140 kN/m² (direction: 'XL')	12	Force	Uniform	X	True Length	p	0.039	kN/m
15	Members From area load p: 0.140 kN/m² (direction: 'XL')	20	Force	Uniform	X	True Length	p	0.129	kN/m
16	Members From area load p: 0.140 kN/m² (direction: 'XL')	22	Force	Uniform	X	True Length	p	0.129	kN/m
17	Members From area load p: 0.140 kN/m² (direction: 'XL')	24	Force	Uniform	X	True Length	p	0.129	kN/m
18	Members From area load p: 0.140 kN/m² (direction: 'XL')	25	Force	Uniform	X	True Length	p	0.039	kN/m
19	Members From area load p: 0.140 kN/m² (direction: 'XL')	26	Force	Uniform	X	True Length	p	0.052	kN/m
20	Members	29	Force	Uniform	X	True Length	p	0.039	kN/m

LC5

SEISMIC_X-DIRECTION

2.2 MEMBER LOADS LC5

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
	From area load p: 0.140 kN/m² (direction: 'XL')								
21	Members	30	Force	Uniform	X	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								
22	Members	31	Force	Uniform	X	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								
23	Members	34	Force	Uniform	X	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								
24	Members	37	Force	Uniform	X	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								
25	Members	40	Force	Uniform	X	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								
26	Members	41	Force	Uniform	X	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								
27	Members	42	Force	Uniform	X	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								
28	Members	43	Force	Uniform	X	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m² (direction: 'XL')								

LC6

SEISMIC_Y-DIRECTION

2.2 MEMBER LOADS LC6

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Load Parameters Symbol	Value	Unit
6	Members	1-4,6,8,10,12, 25,26,29-31,34 37,40	Force	Uniform	Y	True Length	p	0.120	kN/m
7	Members	1	Force	Uniform	Y	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
8	Members	2	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
9	Members	3	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
10	Members	4	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
11	Members	6	Force	Uniform	Y	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
12	Members	8	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
13	Members	10	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
14	Members	12	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
15	Members	20	Force	Uniform	Y	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
16	Members	22	Force	Uniform	Y	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
17	Members	24	Force	Uniform	Y	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
18	Members	25	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
19	Members	26	Force	Uniform	Y	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
20	Members	29	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
21	Members	30	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
22	Members	31	Force	Uniform	Y	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								
23	Members	34	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m² (direction: 'YL')								

LC6

SEISMIC_Y-DIRECTION

2.2 MEMBER LOADS LC6

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
24	Members	37	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'YL')								
25	Members	40	Force	Uniform	Y	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'YL')								
26	Members	41	Force	Uniform	Y	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'YL')								
27	Members	42	Force	Uniform	Y	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'YL')								
28	Members	43	Force	Uniform	Y	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'YL')								

LC7

SEISMIC_Z-DIRECTION

2.2 MEMBER LOADS LC7

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
6	Members	1-4,6,8,10,12, 25,26,29-31,34 37,40	Force	Uniform	Z	True Length	p	0.120	kN/m
7	Members	1	Force	Uniform	Z	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
8	Members	2	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
9	Members	3	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
10	Members	4	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
11	Members	6	Force	Uniform	Z	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
12	Members	8	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
13	Members	10	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
14	Members	12	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
15	Members	20	Force	Uniform	Z	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
16	Members	22	Force	Uniform	Z	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
17	Members	24	Force	Uniform	Z	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
18	Members	25	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
19	Members	26	Force	Uniform	Z	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
20	Members	29	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
21	Members	30	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
22	Members	31	Force	Uniform	Z	True Length	p	0.052	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
23	Members	34	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
24	Members	37	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
25	Members	40	Force	Uniform	Z	True Length	p	0.039	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
26	Members	41	Force	Uniform	Z	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m 2 (direction: 'ZL')								
27	Members	42	Force	Uniform	Z	True Length	p	0.129	kN/m

LC7

SEISMIC_Z-DIRECTION

2.2 MEMBER LOADS LC7

No.	Reference to	On members No. / On sets of m. No.	Load Type	Load Distribution	Load Direction	Reference Length	Symbol	Value	Unit
	From area load p: 0.140 kN/m² (direction: 'ZL')								
28	Members	43	Force	Uniform	Z	True Length	p	0.129	kN/m
	From area load p: 0.140 kN/m² (direction: 'ZL')								

LOAD GROUPS

LG No.	LG-Description	Factor	Load Cases in LG	Method of Analysis
1	UB (1.35*LC1)	1.0000	1.35*LC1	2nd Order
2	UB (1.35*LC1 + 1.5*LC2)	1.0000	1.35*LC1 + 1.5*LC2	2nd Order
3	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3)	1.0000	1.35*LC1 + 1.5*LC2 + 0.75*LC3	2nd Order
4	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3 + 0.9*LC4)	1.0000	1.35*LC1 + 1.5*LC2 + 0.75*LC3 + 0.9*LC4	2nd Order
5	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC4)	1.0000	1.35*LC1 + 1.5*LC2 + 0.9*LC4	2nd Order
6	UB (1.35*LC1 + 1.5*LC3)	1.0000	1.35*LC1 + 1.5*LC3	2nd Order
7	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC3	2nd Order
8	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3 + 0.9*LC4)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC3 + 0.9*LC4	2nd Order
9	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC4)	1.0000	1.35*LC1 + 1.5*LC3 + 0.9*LC4	2nd Order
10	UB (1.35*LC1 + 1.5*LC4)	1.0000	1.35*LC1 + 1.5*LC4	2nd Order
11	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	1.0000	1.35*LC1 + 1.05*LC2 + 1.5*LC4	2nd Order
12	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC3 + 1.5*LC4)	1.0000	1.35*LC1 + 1.05*LC2 + 0.75*LC3 + 1.5*LC4	2nd Order
13	UB (1.35*LC1 + 0.75*LC3 + 1.5*LC4)	1.0000	1.35*LC1 + 0.75*LC3 + 1.5*LC4	2nd Order
14	US (LC1 + LC5)	1.0000	LC1 + LC5	2nd Order
15	US (LC1 + LC6)	1.0000	LC1 + LC6	2nd Order
16	US (LC1 + LC7)	1.0000	LC1 + LC7	2nd Order
17	US (LC1 + 0.6*LC2 + LC5)	1.0000	LC1 + 0.6*LC2 + LC5	2nd Order
18	US (LC1 + 0.6*LC2 + LC6)	1.0000	LC1 + 0.6*LC2 + LC6	2nd Order
19	US (LC1 + 0.6*LC2 + LC7)	1.0000	LC1 + 0.6*LC2 + LC7	2nd Order

SETTINGS FOR NON-LINEAR ANALYSIS

LG No.	LG-Description	Favorable effects due to Tension Forces	Divide results back by LG Factor	Reduction of Stiffnes by Gamma-M
1	UB (1.35*LC1)	☒	☐	☒
2	UB (1.35*LC1 + 1.5*LC2)	☒	☐	☒
3	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3)	☒	☐	☒
4	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3 + 0.9*LC4)	☒	☐	☒
5	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC4)	☒	☐	☒
6	UB (1.35*LC1 + 1.5*LC3)	☒	☐	☒
7	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3)	☒	☐	☒
8	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3 + 0.9*LC4)	☒	☐	☒
9	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC4)	☒	☐	☒
10	UB (1.35*LC1 + 1.5*LC4)	☒	☐	☒
11	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	☒	☐	☒
12	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC3 + 1.5*LC4)	☒	☐	☒
13	UB (1.35*LC1 + 0.75*LC3 + 1.5*LC4)	☒	☐	☒
14	US (LC1 + LC5)	☒	☐	☒
15	US (LC1 + LC6)	☒	☐	☒
16	US (LC1 + LC7)	☒	☐	☒

■ SETTINGS FOR NON-LINEAR ANALYSIS

LG No.	LG-Description	Favorable effects due to Tension Forces	Divide results back by LG Factor	Reduction of Stiffnes by Gamma-M
17	US (LC1 + 0.6*LC2 + LC5)	☒	☐	☒
18	US (LC1 + 0.6*LC2 + LC6)	☒	☐	☒
19	US (LC1 + 0.6*LC2 + LC7)	☒	☐	☒

■ **LOAD COMBINATIONS**

CO No.	CO Description	Combination Criteria
1	Ultimate limit state	LG1/P or LG2/P or LG3/P or LG4/P or LG5/P or LG6/P or LG7/P or LG8/P or LG9/P or LG10/P or LG11/P or LG12/P or LG13/P or LG14/P or LG15/P or LG16/P or LG17/P or LG18/P or LG19/P

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	LC1 - SELF_WEIGHT			
	Sum of Loads in X	-0.225	kN	
	Sum of Support Reactions in X	-0.225	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	14.499	kN	
	Sum of Support Reactions in Z	14.499	kN	Deviation 0.00%
	Max Displacement in X	-0.1	mm	Member No. 22, x: 0.232 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	0.8	mm	Member No. 22, x: 0.232 m
	Max Vectorial Displacement	0.8	mm	Member No. 22, x: 0.232 m
	Max rotation about X	-0.05	°	Member No. 3, x: 1.317 m
	Max Rotation about Y	-0.03	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.00	°	Member No. 34, x: 0.388 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LC2 - IMPOSED_LOADS			
	Sum of Loads in X	-4.896	kN	
	Sum of Support Reactions in X	-4.896	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	66.242	kN	
	Sum of Support Reactions in Z	66.242	kN	Deviation 0.00%
	Max Displacement in X	-0.4	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.1	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	5.7	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	5.8	mm	Member No. 22, x: 0.542 m
	Max rotation about X	-0.42	°	Member No. 3, x: 1.395 m
	Max Rotation about Y	-0.24	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.03	°	Member No. 34, x: 0.388 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LC3 - SNOW			
	Sum of Loads in X	-0.981	kN	
	Sum of Support Reactions in X	-0.981	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	13.276	kN	
	Sum of Support Reactions in Z	13.276	kN	Deviation 0.00%
	Max Displacement in X	-0.1	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	1.2	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	1.2	mm	Member No. 22, x: 0.542 m
	Max rotation about X	-0.09	°	Member No. 3, x: 1.395 m
	Max Rotation about Y	-0.05	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.01	°	Member No. 34, x: 0.388 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LC4 - WIND			
	Sum of Loads in X	-0.164	kN	
	Sum of Support Reactions in X	-0.164	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	2.213	kN	
	Sum of Support Reactions in Z	2.213	kN	Deviation 0.00%
	Max Displacement in X	-0.0	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	0.2	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	0.2	mm	Member No. 22, x: 0.542 m
	Max rotation about X	-0.01	°	Member No. 3, x: 1.395 m
	Max Rotation about Y	-0.01	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.00	°	Member No. 34, x: 0.388 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LC5 - SEISMIC_X-DIRECTION			
	Sum of Loads in X	8.815	kN	
	Sum of Support Reactions in X	8.815	kN	Deviation 0.00%
	Sum of Loads in Y	0.000	kN	
	Sum of Support Reactions in Y	0.000	kN	
	Sum of Loads in Z	0.000	kN	
	Sum of Support Reactions in Z	0.000	kN	

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in X	0.1	mm	Member No. 22, x: 0.517 m
	Max Displacement in Y	0.0	mm	Member No. 12, x: 1.125 m
	Max Displacement in Z	-0.0	mm	Member No. 22, x: 0.232 m
	Max Vectorial Displacement	0.1	mm	Member No. 22, x: 0.310 m
	Max rotation about X	0.00	°	Member No. 3, x: 0.775 m
	Max Rotation about Y	-0.00	°	Member No. 54, x: 0.707 m
	Max Rotation about Z	0.01	°	Member No. 13, x: 0.318 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LC6 - SEISMIC_Y-DIRECTION			
	Sum of Loads in X	0.000	kN	
	Sum of Support Reactions in X	0.000	kN	
	Sum of Loads in Y	8.815	kN	
	Sum of Support Reactions in Y	8.815	kN	Deviation 0.00%
	Sum of Loads in Z	0.000	kN	
	Sum of Support Reactions in Z	0.000	kN	
	Max Displacement in X	0.2	mm	Member No. 13, x: 0.283 m
	Max Displacement in Y	2.7	mm	Member No. 22, x: 0.852 m
	Max Displacement in Z	-0.2	mm	Member No. 57, x: 0.424 m
	Max Vectorial Displacement	2.7	mm	Member No. 22, x: 0.852 m
	Max rotation about X	0.54	°	Member No. 46, x: 0.375 m
	Max Rotation about Y	-0.01	°	Member No. 31, x: 0.450 m
	Max Rotation about Z	0.09	°	Member No. 20, x: 0.000 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LC7 - SEISMIC_Z-DIRECTION			
	Sum of Loads in X	0.000	kN	
	Sum of Support Reactions in X	0.000	kN	
	Sum of Loads in Y	0.000	kN	
	Sum of Support Reactions in Y	0.000	kN	
	Sum of Loads in Z	8.815	kN	
	Sum of Support Reactions in Z	8.815	kN	Deviation 0.00%
	Max Displacement in X	-0.0	mm	Member No. 22, x: 0.232 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	0.5	mm	Member No. 22, x: 0.232 m
	Max Vectorial Displacement	0.5	mm	Member No. 22, x: 0.232 m
	Max rotation about X	-0.03	°	Member No. 3, x: 1.317 m
	Max Rotation about Y	-0.02	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.00	°	Member No. 34, x: 0.388 m
	Method of Analysis	Linear		Linear Static Analysis
	Number of Iterations	1		
	LG1 - UB (1.35*LC1)			
	Sum of Loads in X	-0.304	kN	
	Sum of Support Reactions in X	-0.304	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	19.574	kN	
	Sum of Support Reactions in Z	19.574	kN	Deviation 0.00%
	Max Displacement in X	-0.1	mm	Member No. 22, x: 0.232 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	1.2	mm	Member No. 22, x: 0.232 m
	Max Vectorial Displacement	1.2	mm	Member No. 22, x: 0.232 m
	Max rotation about X	-0.07	°	Member No. 3, x: 1.240 m
	Max Rotation about Y	-0.04	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.01	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG2 - UB (1.35*LC1 + 1.5*LC2)			
	Sum of Loads in X	-7.648	kN	
	Sum of Support Reactions in X	-7.648	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	118.937	kN	
	Sum of Support Reactions in Z	118.937	kN	Deviation 0.00%

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in X	-0.8	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.2	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	10.6	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	10.6	mm	Member No. 22, x: 0.542 m
	Max rotation about X	0.78	°	Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.44	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.06	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG3 - UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3)			
	Sum of Loads in X	-8.384	kN	
	Sum of Support Reactions in X	-8.384	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	128.894	kN	
	Sum of Support Reactions in Z	128.894	kN	Deviation 0.00%
	Max Displacement in X	-0.8	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.2	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	11.6	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	11.6	mm	Member No. 22, x: 0.542 m
	Max rotation about X	0.85	°	Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.48	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.07	°	Member No. 34, x: 0.310 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG4 - UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3 + 0.9*			
	Sum of Loads in X	-8.531	kN	
	Sum of Support Reactions in X	-8.531	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	130.886	kN	
	Sum of Support Reactions in Z	130.886	kN	Deviation 0.00%
	Max Displacement in X	-0.9	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.2	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	11.8	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	11.8	mm	Member No. 22, x: 0.542 m
	Max rotation about X	0.86	°	Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.49	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.07	°	Member No. 34, x: 0.310 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG5 - UB (1.35*LC1 + 1.5*LC2 + 0.9*LC4)			
	Sum of Loads in X	-7.795	kN	
	Sum of Support Reactions in X	-7.795	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	120.929	kN	
	Sum of Support Reactions in Z	120.929	kN	Deviation 0.00%
	Max Displacement in X	-0.8	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.2	mm	Member No. 46, x: 0.169 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Displacement in Z	10.8	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	10.8	mm	Member No. 22, x: 0.542 m
	Max rotation about X	0.79	°	Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.45	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.06	°	Member No. 34, x: 0.310 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG6 - UB (1.35*LC1 + 1.5*LC3)			
	Sum of Loads in X	-1.775	kN	
	Sum of Support Reactions in X	-1.775	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	39.488	kN	
	Sum of Support Reactions in Z	39.488	kN	Deviation 0.00%
	Max Displacement in X	-0.2	mm	Member No. 22, x: 0.465 m
	Max Displacement in Y	-0.1	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	3.0	mm	Member No. 22, x: 0.465 m
	Max Vectorial Displacement	3.0	mm	Member No. 22, x: 0.465 m
	Max rotation about X	-0.21	°	Member No. 2, x: 1.305 m
	Max Rotation about Y	-0.12	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.02	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG7 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3)			
	Sum of Loads in X	-6.916	kN	
	Sum of Support Reactions in X	-6.916	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	109.043	kN	
	Sum of Support Reactions in Z	109.043	kN	Deviation 0.00%
	Max Displacement in X	-0.7	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.2	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	9.7	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	9.7	mm	Member No. 22, x: 0.542 m
	Max rotation about X	0.71	°	Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.40	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.06	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG8 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3 + 0.9*			
	Sum of Loads in X	-7.064	kN	
	Sum of Support Reactions in X	-7.064	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	111.034	kN	
	Sum of Support Reactions in Z	111.034	kN	Deviation 0.00%
	Max Displacement in X	-0.7	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.2	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	9.9	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	9.9	mm	Member No. 22, x: 0.542 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max rotation about X	0.72	°	Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.41	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.06	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG9 - UB (1.35*LC1 + 1.5*LC3 + 0.9*LC4)			
	Sum of Loads in X	-1.923	kN	
	Sum of Support Reactions in X	-1.923	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	41.480	kN	
	Sum of Support Reactions in Z	41.480	kN	Deviation 0.00%
	Max Displacement in X	-0.2	mm	Member No. 22, x: 0.465 m
	Max Displacement in Y	-0.1	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	3.2	mm	Member No. 22, x: 0.465 m
	Max Vectorial Displacement	3.2	mm	Member No. 22, x: 0.465 m
	Max rotation about X	-0.23	°	Member No. 2, x: 1.377 m
	Max Rotation about Y	-0.13	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.02	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG10 - UB (1.35*LC1 + 1.5*LC4)			
	Sum of Loads in X	-0.549	kN	
	Sum of Support Reactions in X	-0.549	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	22.893	kN	
	Sum of Support Reactions in Z	22.893	kN	Deviation 0.00%
	Max Displacement in X	-0.1	mm	Member No. 22, x: 0.344 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	1.5	mm	Member No. 22, x: 0.344 m
	Max Vectorial Displacement	1.5	mm	Member No. 22, x: 0.344 m
	Max rotation about X	-0.10	°	Member No. 3, x: 1.240 m
	Max Rotation about Y	-0.06	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.01	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG11 - UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)			
	Sum of Loads in X	-5.690	kN	
	Sum of Support Reactions in X	-5.690	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	92.447	kN	
	Sum of Support Reactions in Z	92.447	kN	Deviation 0.00%
	Max Displacement in X	-0.6	mm	Member No. 22, x: 0.517 m
	Max Displacement in Y	-0.1	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	8.1	mm	Member No. 22, x: 0.517 m
	Max Vectorial Displacement	8.1	mm	Member No. 22, x: 0.517 m
	Max rotation about X	-0.59	°	Member No. 3, x: 0.000 m
	Max Rotation about Y	-0.33	°	Member No. 20, x: 0.000 m

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Max Rotation about Z	-0.05	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG12 - UB (1.35*LC1 + 1.05*LC2 + 0.75*LC3 + 1.			
	Sum of Loads in X	-6.426	kN	
	Sum of Support Reactions in X	-6.426	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	102.404	kN	
	Sum of Support Reactions in Z	102.404	kN	Deviation 0.00%
	Max Displacement in X	-0.7	mm	Member No. 22, x: 0.542 m
	Max Displacement in Y	-0.2	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	9.0	mm	Member No. 22, x: 0.542 m
	Max Vectorial Displacement	9.1	mm	Member No. 22, x: 0.542 m
	Max rotation about X	0.66	°	Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.37	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.05	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG13 - UB (1.35*LC1 + 0.75*LC3 + 1.5*LC4)			
	Sum of Loads in X	-1.285	kN	
	Sum of Support Reactions in X	-1.285	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	32.850	kN	
	Sum of Support Reactions in Z	32.850	kN	Deviation 0.00%
	Max Displacement in X	-0.2	mm	Member No. 22, x: 0.465 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	2.4	mm	Member No. 22, x: 0.465 m
	Max Vectorial Displacement	2.4	mm	Member No. 22, x: 0.465 m
	Max rotation about X	-0.17	°	Member No. 2, x: 1.289 m
	Max Rotation about Y	-0.10	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.01	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG14 - US (LC1 + LC5)			
	Sum of Loads in X	8.591	kN	
	Sum of Support Reactions in X	8.591	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	14.499	kN	
	Sum of Support Reactions in Z	14.499	kN	Deviation 0.00%
	Max Displacement in X	0.1	mm	Member No. 13, x: 0.707 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	0.8	mm	Member No. 22, x: 0.232 m
	Max Vectorial Displacement	0.8	mm	Member No. 22, x: 0.232 m
	Max rotation about X	-0.05	°	Member No. 3, x: 1.550 m
	Max Rotation about Y	-0.03	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	0.01	°	Member No. 13, x: 0.354 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Consider favorable effects of tensile forces	Yes	°	Second-Order Analysis (Non-linear, Timoshenko)
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG15 - US (LC1 + LC6)			
	Sum of Loads in X	-0.225	kN	
	Sum of Support Reactions in X	-0.225	kN	Deviation 0.00%
	Sum of Loads in Y	8.815	kN	
	Sum of Support Reactions in Y	8.815	kN	Deviation 0.00%
	Sum of Loads in Z	14.499	kN	
	Sum of Support Reactions in Z	14.499	kN	Deviation 0.00%
	Max Displacement in X	-0.2	mm	Member No. 17, x: 0.389 m
	Max Displacement in Y	3.0	mm	Member No. 22, x: 0.852 m
	Max Displacement in Z	0.9	mm	Member No. 9, x: 0.637 m
	Max Vectorial Displacement	3.1	mm	Member No. 22, x: 0.775 m
	Max rotation about X	0.61	°	Member No. 46, x: 0.375 m
	Max Rotation about Y	0.04	°	Member No. 26, x: 0.000 m
	Max Rotation about Z	0.10	°	Member No. 20, x: 0.000 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	3		
	Calculate critical load factor	No		
	LG16 - US (LC1 + LC7)			
	Sum of Loads in X	-0.225	kN	
	Sum of Support Reactions in X	-0.225	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	23.315	kN	
	Sum of Support Reactions in Z	23.315	kN	Deviation 0.00%
	Max Displacement in X	-0.1	mm	Member No. 22, x: 0.232 m
	Max Displacement in Y	-0.0	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	1.4	mm	Member No. 22, x: 0.232 m
	Max Vectorial Displacement	1.4	mm	Member No. 22, x: 0.232 m
	Max rotation about X	-0.09	°	Member No. 3, x: 1.240 m
	Max Rotation about Y	-0.05	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.01	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG17 - US (LC1 + 0.6*LC2 + LC5)			
	Sum of Loads in X	5.653	kN	
	Sum of Support Reactions in X	5.653	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	54.245	kN	
	Sum of Support Reactions in Z	54.245	kN	Deviation 0.00%
	Max Displacement in X	-0.3	mm	Member No. 22, x: 0.517 m
	Max Displacement in Y	-0.1	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	4.6	mm	Member No. 22, x: 0.517 m
	Max Vectorial Displacement	4.6	mm	Member No. 22, x: 0.517 m
	Max rotation about X	-0.33	°	Member No. 7, x: 0.000 m
	Max Rotation about Y	-0.19	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.03	°	Member No. 34, x: 0.465 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		

■ 3.0 RESULTS - SUMMARY

	Description	Value	Unit	Comment
	Stiffness Reduction by Gamma-M	Yes	°	Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	LG18 - US (LC1 + 0.6*LC2 + LC6)			
	Sum of Loads in X	-3.163	kN	
	Sum of Support Reactions in X	-3.163	kN	Deviation 0.00%
	Sum of Loads in Y	8.815	kN	
	Sum of Support Reactions in Y	8.815	kN	Deviation 0.00%
	Sum of Loads in Z	54.245	kN	
	Sum of Support Reactions in Z	54.245	kN	Deviation 0.00%
	Max Displacement in X	-0.3	mm	Member No. 21, x: 0.212 m
	Max Displacement in Y	3.1	mm	Member No. 22, x: 0.861 m
	Max Displacement in Z	4.6	mm	Member No. 22, x: 0.517 m
	Max Vectorial Displacement	5.5	mm	Member No. 22, x: 0.542 m
	Max rotation about X	0.66	°	Member No. 46, x: 0.375 m
	Max Rotation about Y	-0.19	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	0.12	°	Member No. 12, x: 0.600 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	3		
	Calculate critical load factor	No		
	LG19 - US (LC1 + 0.6*LC2 + LC7)			
	Sum of Loads in X	-3.163	kN	
	Sum of Support Reactions in X	-3.163	kN	Deviation 0.00%
	Sum of Loads in Y	-0.000	kN	
	Sum of Support Reactions in Y	-0.000	kN	
	Sum of Loads in Z	63.060	kN	
	Sum of Support Reactions in Z	63.060	kN	Deviation 0.00%
	Max Displacement in X	-0.4	mm	Member No. 22, x: 0.517 m
	Max Displacement in Y	-0.1	mm	Member No. 46, x: 0.169 m
	Max Displacement in Z	5.1	mm	Member No. 22, x: 0.517 m
	Max Vectorial Displacement	5.2	mm	Member No. 22, x: 0.517 m
	Max rotation about X	-0.37	°	Member No. 2, x: 1.450 m
	Max Rotation about Y	-0.21	°	Member No. 20, x: 0.000 m
	Max Rotation about Z	-0.03	°	Member No. 34, x: 0.388 m
	Method of Analysis	2nd Order		Second-Order Analysis (Non-linear, Timoshenko)
	Consider favorable effects of tensile forces	Yes		
	Divide results back by LG factor	No		
	Stiffness Reduction by Gamma-M	Yes		
	Consider favorable effects due to tension forces	Yes		
	Divide results back by LG factor	No		
	Reduction of stiffness by safety factor	Yes		
	Number of Iterations	2		
	Calculate critical load factor	No		
	Summary			
	Max Displacement in X	-0.9	mm	LG4, Member No. 22, x: 0.542 m
	Max Displacement in Y	3.1	mm	LG18, Member No. 22, x: 0.861 m
	Max Displacement in Z	11.8	mm	LG4, Member No. 22, x: 0.542 m
	Max Vectorial Displacement	11.8	mm	LG4, Member No. 22, x: 0.542 m
	Max rotation about X	0.86	°	LG4, Member No. 29, x: 0.000 m
	Max Rotation about Y	-0.49	°	LG4, Member No. 20, x: 0.000 m
	Max Rotation about Z	0.12	°	LG18, Member No. 12, x: 0.600 m
	Number of 1D Finite Elements (member elemen	48		
	Number of FE nodes	37		
	Number of Equations	222		
	Matrix Solver Method	Direct		
	Max Number of Iterations	100		
	Number of Load Increments	1		
	Divisions of members for member results	10		
	Divisions of cable, foundation or tapered membe	10		
	Refer Internal Forces to Deformed Structure	Yes		
	Activate shear rigidity (A-y, A-z) of members	No		

■ 3.4 NODES - SUPPORT FORCES

Node No.	LC/LG	Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
3	LC1	-0.057	-0.254	0.986	0.000	0.000	0.000
	LC2	-1.226	-1.064	4.415	0.000	0.000	0.000
	LC3	-0.246	-0.213	0.885	0.000	0.000	0.000
	LC4	-0.041	-0.036	0.147	0.000	0.000	0.000
	LC5	2.173	-0.130	0.116	0.000	0.000	0.000
	LC6	-0.837	0.954	-0.148	0.000	0.000	0.000
	LC7	0.000	-0.158	0.601	0.000	0.000	0.000
	LG1	-0.077	-0.342	1.331	0.000	0.000	0.000
	LG2	-1.918	-1.940	7.953	0.000	0.000	0.000
	LG3	-2.103	-2.100	8.616	0.000	0.000	0.000
	LG4	-2.140	-2.132	8.749	0.000	0.000	0.000
	LG5	-1.955	-1.972	8.085	0.000	0.000	0.000
	LG6	-0.446	-0.662	2.658	0.000	0.000	0.000
	LG7	-1.735	-1.780	7.293	0.000	0.000	0.000
	LG8	-1.772	-1.812	7.426	0.000	0.000	0.000
	LG9	-0.483	-0.694	2.791	0.000	0.000	0.000
	LG10	-0.139	-0.396	1.552	0.000	0.000	0.000
	LG11	-1.427	-1.514	6.187	0.000	0.000	0.000
	LG12	-1.612	-1.674	6.851	0.000	0.000	0.000
	LG13	-0.323	-0.556	2.216	0.000	0.000	0.000
	LG14	2.116	-0.383	1.102	0.000	0.000	0.000
	LG15	-0.901	0.703	0.836	0.000	0.000	0.000
	LG16	-0.057	-0.411	1.587	0.000	0.000	0.000
	LG17	1.380	-1.021	3.752	0.000	0.000	0.000
	LG18	-1.658	0.077	3.479	0.000	0.000	0.000
	LG19	-0.793	-1.050	4.236	0.000	0.000	0.000
21	LC1	-0.055	0.249	0.953	0.000	0.000	0.000
	LC2	-1.222	1.139	4.254	0.000	0.000	0.000
	LC3	-0.245	0.228	0.853	0.000	0.000	0.000
	LC4	-0.041	0.038	0.142	0.000	0.000	0.000
	LC5	2.128	-0.112	0.114	0.000	0.000	0.000
	LC6	-0.689	0.703	-0.073	0.000	0.000	0.000
	LC7	0.000	0.148	0.581	0.000	0.000	0.000
	LG1	-0.075	0.337	1.287	0.000	0.000	0.000
	LG2	-1.910	2.044	7.668	0.000	0.000	0.000
	LG3	-2.094	2.215	8.308	0.000	0.000	0.000
	LG4	-2.130	2.249	8.436	0.000	0.000	0.000
	LG5	-1.946	2.078	7.796	0.000	0.000	0.000
	LG6	-0.442	0.679	2.566	0.000	0.000	0.000
	LG7	-1.727	1.874	7.033	0.000	0.000	0.000
	LG8	-1.764	1.908	7.161	0.000	0.000	0.000
	LG9	-0.479	0.713	2.693	0.000	0.000	0.000
	LG10	-0.136	0.394	1.500	0.000	0.000	0.000
	LG11	-1.420	1.589	5.967	0.000	0.000	0.000
	LG12	-1.604	1.760	6.606	0.000	0.000	0.000
	LG13	-0.320	0.565	2.139	0.000	0.000	0.000
	LG14	2.073	0.138	1.067	0.000	0.000	0.000
	LG15	-0.751	0.953	0.879	0.000	0.000	0.000
	LG16	-0.055	0.398	1.534	0.000	0.000	0.000
	LG17	1.340	0.822	3.619	0.000	0.000	0.000
	LG18	-1.502	1.638	3.430	0.000	0.000	0.000
	LG19	-0.789	1.081	4.087	0.000	0.000	0.000
37	LC1	0.000	-0.045	2.388	0.000	0.000	0.000
	LC2	0.000	-0.202	11.179	0.000	0.000	0.000

■ 3.4 NODES - SUPPORT FORCES

Node No.	LC/LG	Support forces [kN]			Support moments [kNm]		
		PX'	PY'	PZ'	MX'	MY'	MZ'
37	LC3	0.000	-0.040	2.240	0.000	0.000	0.000
	LC4	0.000	-0.007	0.373	0.000	0.000	0.000
	LC5	0.024	0.002	-0.105	0.000	0.000	0.000
	LC6	0.000	0.944	-0.681	0.000	0.000	0.000
	LC7	0.000	-0.027	1.450	0.000	0.000	0.000
	LG1	0.000	-0.060	3.223	0.000	0.000	0.000
	LG2	0.001	-0.355	19.987	0.000	0.000	0.000
	LG3	0.001	-0.384	21.667	0.000	0.000	0.000
	LG4	0.002	-0.390	22.003	0.000	0.000	0.000
	LG5	0.001	-0.361	20.323	0.000	0.000	0.000
	LG6	0.000	-0.120	6.584	0.000	0.000	0.000
	LG7	0.001	-0.326	18.318	0.000	0.000	0.000
	LG8	0.001	-0.332	18.654	0.000	0.000	0.000
	LG9	0.000	-0.126	6.920	0.000	0.000	0.000
	LG10	0.000	-0.070	3.783	0.000	0.000	0.000
	LG11	0.001	-0.278	15.518	0.000	0.000	0.000
	LG12	0.001	-0.307	17.198	0.000	0.000	0.000
	LG13	0.000	-0.100	5.464	0.000	0.000	0.000
	LG14	0.024	-0.043	2.282	0.000	0.000	0.000
	LG15	0.000	0.894	1.698	0.000	0.000	0.000
	LG16	0.000	-0.072	3.838	0.000	0.000	0.000
	LG17	0.024	-0.162	8.987	0.000	0.000	0.000
	LG18	0.000	0.752	8.379	0.000	0.000	0.000
	LG19	0.000	-0.191	10.544	0.000	0.000	0.000
40	LC1	0.000	0.045	2.388	0.000	0.000	0.000
	LC2	0.000	0.202	11.179	0.000	0.000	0.000
	LC3	0.000	0.040	2.240	0.000	0.000	0.000
	LC4	0.000	0.007	0.373	0.000	0.000	0.000
	LC5	0.024	-0.002	-0.105	0.000	0.000	0.000
	LC6	0.000	0.944	0.681	0.000	0.000	0.000
	LC7	0.000	0.027	1.450	0.000	0.000	0.000
	LG1	0.000	0.060	3.223	0.000	0.000	0.000
	LG2	0.001	0.355	19.987	0.000	0.000	0.000
	LG3	0.001	0.384	21.667	0.000	0.000	0.000
	LG4	0.002	0.390	22.003	0.000	0.000	0.000
	LG5	0.001	0.361	20.323	0.000	0.000	0.000
	LG6	0.000	0.120	6.584	0.000	0.000	0.000
	LG7	0.001	0.326	18.318	0.000	0.000	0.000
	LG8	0.001	0.332	18.654	0.000	0.000	0.000
	LG9	0.000	0.126	6.920	0.000	0.000	0.000
	LG10	0.000	0.070	3.783	0.000	0.000	0.000
	LG11	0.001	0.278	15.518	0.000	0.000	0.000
	LG12	0.001	0.307	17.198	0.000	0.000	0.000
	LG13	0.000	0.100	5.464	0.000	0.000	0.000
	LG14	0.024	0.043	2.282	0.000	0.000	0.000
	LG15	0.000	0.979	3.077	0.000	0.000	0.000
	LG16	0.000	0.072	3.838	0.000	0.000	0.000
	LG17	0.024	0.162	8.987	0.000	0.000	0.000
	LG18	0.000	1.077	9.809	0.000	0.000	0.000
	LG19	0.000	0.191	10.544	0.000	0.000	0.000
41	LC1	0.000	0.000	0.539	0.000	0.000	0.000
	LC2	0.000	0.000	2.098	0.000	0.000	0.000
	LC3	0.000	0.000	0.421	0.000	0.000	0.000
	LC4	0.000	0.000	0.070	0.000	0.000	0.000

■ 3.4 NODES - SUPPORT FORCES

Node No.	LC/LG	Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
41	LC5	0.061	0.000	-0.020	0.000	0.000	0.000
	LC6	0.000	0.178	0.000	0.000	0.000	0.000
	LC7	0.000	0.000	0.327	0.000	0.000	0.000
	LG1	0.000	0.000	0.728	0.000	0.000	0.000
	LG2	0.000	0.000	3.889	0.000	0.000	0.000
	LG3	0.000	0.000	4.207	0.000	0.000	0.000
	LG4	0.000	0.000	4.271	0.000	0.000	0.000
	LG5	0.000	0.000	3.953	0.000	0.000	0.000
	LG6	0.000	0.000	1.360	0.000	0.000	0.000
	LG7	0.000	0.000	3.574	0.000	0.000	0.000
	LG8	0.000	0.000	3.637	0.000	0.000	0.000
	LG9	0.000	0.000	1.423	0.000	0.000	0.000
	LG10	0.000	0.000	0.833	0.000	0.000	0.000
	LG11	0.000	0.000	3.045	0.000	0.000	0.000
	LG12	0.000	0.000	3.362	0.000	0.000	0.000
	LG13	0.000	0.000	1.149	0.000	0.000	0.000
	LG14	0.061	0.000	0.519	0.000	0.000	0.000
	LG15	0.000	0.177	0.539	0.000	0.000	0.000
	LG16	0.000	0.000	0.866	0.000	0.000	0.000
	LG17	0.061	0.000	1.781	0.000	0.000	0.000
	LG18	0.000	0.174	1.801	0.000	0.000	0.000
	LG19	0.000	0.000	2.129	0.000	0.000	0.000
43	LC1	0.000	-0.113	2.402	0.000	0.000	0.000
	LC2	0.000	-0.509	11.258	0.000	0.000	0.000
	LC3	0.000	-0.102	2.256	0.000	0.000	0.000
	LC4	0.000	-0.017	0.376	0.000	0.000	0.000
	LC5	0.021	0.005	-0.106	0.000	0.000	0.000
	LC6	0.000	1.583	-0.358	0.000	0.000	0.000
	LC7	0.000	-0.068	1.459	0.000	0.000	0.000
	LG1	0.000	-0.152	3.243	0.000	0.000	0.000
	LG2	0.002	-0.910	20.124	0.000	0.000	0.000
	LG3	0.002	-0.986	21.815	0.000	0.000	0.000
	LG4	0.002	-1.001	22.153	0.000	0.000	0.000
	LG5	0.002	-0.925	20.462	0.000	0.000	0.000
	LG6	0.000	-0.305	6.627	0.000	0.000	0.000
	LG7	0.002	-0.835	18.443	0.000	0.000	0.000
	LG8	0.002	-0.850	18.781	0.000	0.000	0.000
	LG9	0.000	-0.320	6.965	0.000	0.000	0.000
	LG10	0.000	-0.177	3.807	0.000	0.000	0.000
	LG11	0.001	-0.709	15.624	0.000	0.000	0.000
	LG12	0.001	-0.785	17.316	0.000	0.000	0.000
	LG13	0.000	-0.254	5.499	0.000	0.000	0.000
	LG14	0.021	-0.108	2.297	0.000	0.000	0.000
	LG15	0.000	1.473	2.042	0.000	0.000	0.000
	LG16	0.000	-0.181	3.862	0.000	0.000	0.000
	LG17	0.021	-0.412	9.051	0.000	0.000	0.000
	LG18	0.000	1.178	8.790	0.000	0.000	0.000
	LG19	0.000	-0.485	10.615	0.000	0.000	0.000
44	LC1	0.000	0.113	2.402	0.000	0.000	0.000
	LC2	0.000	0.509	11.258	0.000	0.000	0.000
	LC3	0.000	0.102	2.256	0.000	0.000	0.000
	LC4	0.000	0.017	0.376	0.000	0.000	0.000
	LC5	0.021	-0.005	-0.106	0.000	0.000	0.000
	LC6	0.000	1.583	0.358	0.000	0.000	0.000

■ 3.4 NODES - SUPPORT FORCES

Node No.	LC/LG	Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
44	LC7	0.000	0.068	1.459	0.000	0.000	0.000
	LG1	0.000	0.152	3.243	0.000	0.000	0.000
	LG2	0.002	0.910	20.124	0.000	0.000	0.000
	LG3	0.002	0.986	21.815	0.000	0.000	0.000
	LG4	0.002	1.001	22.153	0.000	0.000	0.000
	LG5	0.002	0.925	20.462	0.000	0.000	0.000
	LG6	0.000	0.305	6.627	0.000	0.000	0.000
	LG7	0.002	0.835	18.443	0.000	0.000	0.000
	LG8	0.002	0.850	18.781	0.000	0.000	0.000
	LG9	0.000	0.320	6.965	0.000	0.000	0.000
	LG10	0.000	0.177	3.807	0.000	0.000	0.000
	LG11	0.001	0.709	15.624	0.000	0.000	0.000
	LG12	0.001	0.785	17.316	0.000	0.000	0.000
	LG13	0.000	0.254	5.499	0.000	0.000	0.000
	LG14	0.021	0.108	2.297	0.000	0.000	0.000
	LG15	0.000	1.700	2.763	0.000	0.000	0.000
	LG16	0.000	0.181	3.862	0.000	0.000	0.000
	LG17	0.021	0.412	9.051	0.000	0.000	0.000
	LG18	0.000	2.014	9.522	0.000	0.000	0.000
	LG19	0.000	0.485	10.615	0.000	0.000	0.000
45	LC1	0.000	0.000	0.502	0.000	0.000	0.000
	LC2	0.000	0.000	1.933	0.000	0.000	0.000
	LC3	0.000	0.000	0.387	0.000	0.000	0.000
	LC4	0.000	0.000	0.065	0.000	0.000	0.000
	LC5	0.061	0.000	-0.018	0.000	0.000	0.000
	LC6	0.000	0.269	0.000	0.000	0.000	0.000
	LC7	0.000	0.000	0.304	0.000	0.000	0.000
	LG1	0.000	0.000	0.678	0.000	0.000	0.000
	LG2	0.000	0.000	3.585	0.000	0.000	0.000
	LG3	0.000	0.000	3.876	0.000	0.000	0.000
	LG4	0.001	0.000	3.935	0.000	0.000	0.000
	LG5	0.000	0.000	3.643	0.000	0.000	0.000
	LG6	0.000	0.000	1.260	0.000	0.000	0.000
	LG7	0.000	0.000	3.295	0.000	0.000	0.000
	LG8	0.000	0.000	3.353	0.000	0.000	0.000
	LG9	0.000	0.000	1.318	0.000	0.000	0.000
	LG10	0.000	0.000	0.775	0.000	0.000	0.000
	LG11	0.000	0.000	2.809	0.000	0.000	0.000
	LG12	0.000	0.000	3.100	0.000	0.000	0.000
	LG13	0.000	0.000	1.066	0.000	0.000	0.000
	LG14	0.061	0.000	0.484	0.000	0.000	0.000
	LG15	0.000	0.269	0.502	0.000	0.000	0.000
	LG16	0.000	0.000	0.807	0.000	0.000	0.000
	LG17	0.061	0.000	1.646	0.000	0.000	0.000
	LG18	0.000	0.270	1.663	0.000	0.000	0.000
	LG19	0.000	0.000	1.968	0.000	0.000	0.000
50	LC1	-0.055	-0.249	0.953	0.000	0.000	0.000
	LC2	-1.222	-1.139	4.254	0.000	0.000	0.000
	LC3	-0.245	-0.228	0.853	0.000	0.000	0.000
	LC4	-0.041	-0.038	0.142	0.000	0.000	0.000
	LC5	2.128	0.112	0.114	0.000	0.000	0.000
	LC6	0.689	0.703	0.073	0.000	0.000	0.000
	LC7	0.000	-0.148	0.581	0.000	0.000	0.000
	LG1	-0.075	-0.337	1.287	0.000	0.000	0.000

■ 3.4 NODES - SUPPORT FORCES

Node No.	LC/LG	Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
50	LG2	-1.909	-2.044	7.668	0.000	0.000	0.000
	LG3	-2.093	-2.215	8.308	0.000	0.000	0.000
	LG4	-2.130	-2.249	8.436	0.000	0.000	0.000
	LG5	-1.946	-2.078	7.796	0.000	0.000	0.000
	LG6	-0.442	-0.679	2.566	0.000	0.000	0.000
	LG7	-1.727	-1.874	7.033	0.000	0.000	0.000
	LG8	-1.763	-1.908	7.161	0.000	0.000	0.000
	LG9	-0.479	-0.713	2.693	0.000	0.000	0.000
	LG10	-0.136	-0.394	1.500	0.000	0.000	0.000
	LG11	-1.420	-1.589	5.967	0.000	0.000	0.000
	LG12	-1.604	-1.760	6.606	0.000	0.000	0.000
	LG13	-0.320	-0.565	2.139	0.000	0.000	0.000
	LG14	2.073	-0.138	1.067	0.000	0.000	0.000
	LG15	0.640	0.453	1.027	0.000	0.000	0.000
	LG16	-0.055	-0.398	1.534	0.000	0.000	0.000
	LG17	1.340	-0.822	3.619	0.000	0.000	0.000
	LG18	-0.076	-0.229	3.582	0.000	0.000	0.000
	LG19	-0.789	-1.081	4.087	0.000	0.000	0.000
54	LC1	-0.057	0.254	0.986	0.000	0.000	0.000
	LC2	-1.226	1.064	4.415	0.000	0.000	0.000
	LC3	-0.246	0.213	0.885	0.000	0.000	0.000
	LC4	-0.041	0.036	0.147	0.000	0.000	0.000
	LC5	2.173	0.130	0.116	0.000	0.000	0.000
	LC6	0.837	0.954	0.148	0.000	0.000	0.000
	LC7	0.000	0.158	0.601	0.000	0.000	0.000
	LG1	-0.077	0.342	1.331	0.000	0.000	0.000
	LG2	-1.918	1.940	7.953	0.000	0.000	0.000
	LG3	-2.102	2.100	8.616	0.000	0.000	0.000
	LG4	-2.139	2.132	8.749	0.000	0.000	0.000
	LG5	-1.955	1.972	8.085	0.000	0.000	0.000
	LG6	-0.446	0.662	2.658	0.000	0.000	0.000
	LG7	-1.734	1.780	7.293	0.000	0.000	0.000
	LG8	-1.771	1.812	7.426	0.000	0.000	0.000
	LG9	-0.483	0.694	2.791	0.000	0.000	0.000
	LG10	-0.139	0.396	1.552	0.000	0.000	0.000
	LG11	-1.427	1.514	6.187	0.000	0.000	0.000
	LG12	-1.611	1.674	6.851	0.000	0.000	0.000
	LG13	-0.323	0.556	2.216	0.000	0.000	0.000
	LG14	2.116	0.383	1.102	0.000	0.000	0.000
	LG15	0.787	1.213	1.135	0.000	0.000	0.000
	LG16	-0.057	0.411	1.587	0.000	0.000	0.000
	LG17	1.380	1.021	3.752	0.000	0.000	0.000
	LG18	0.072	1.864	3.791	0.000	0.000	0.000
	LG19	-0.793	1.050	4.236	0.000	0.000	0.000
Σ Supp	LC1	-0.225	0.000	14.499			
Σ Load		-0.225	0.000	14.499			
Σ Supp	LC2	-4.896	0.000	66.242			
Σ Load		-4.896	0.000	66.242			
Σ Supp	LC3	-0.981	0.000	13.276			
Σ Load		-0.981	0.000	13.276			
Σ Supp	LC4	-0.164	0.000	2.213			
Σ Load		-0.164	0.000	2.213			
Σ Supp	LC5	8.815	0.000	0.000			
Σ Load		8.815	0.000	0.000			

■ 3.4 NODES - SUPPORT FORCES

Node No.	LC/LG	Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'
Σ Supp	LC6	0.000	8.815	0.000			
Σ Load		0.000	8.815	0.000			
Σ Supp	LC7	0.000	0.000	8.815			
Σ Load		0.000	0.000	8.815			
Σ Supp	LG1	-0.304	0.000	19.574			
Σ Load		-0.304	0.000	19.574			
Σ Supp	LG2	-7.648	0.000	118.937			
Σ Load		-7.648	0.000	118.937			
Σ Supp	LG3	-8.384	0.000	128.894			
Σ Load		-8.384	0.000	128.894			
Σ Supp	LG4	-8.531	0.000	130.886			
Σ Load		-8.531	0.000	130.886			
Σ Supp	LG5	-7.795	0.000	120.929			
Σ Load		-7.795	0.000	120.929			
Σ Supp	LG6	-1.775	0.000	39.488			
Σ Load		-1.775	0.000	39.488			
Σ Supp	LG7	-6.916	0.000	109.043			
Σ Load		-6.916	0.000	109.043			
Σ Supp	LG8	-7.064	0.000	111.034			
Σ Load		-7.064	0.000	111.034			
Σ Supp	LG9	-1.923	0.000	41.480			
Σ Load		-1.923	0.000	41.480			
Σ Supp	LG10	-0.549	0.000	22.893			
Σ Load		-0.549	0.000	22.893			
Σ Supp	LG11	-5.690	0.000	92.447			
Σ Load		-5.690	0.000	92.447			
Σ Supp	LG12	-6.426	0.000	102.404			
Σ Load		-6.426	0.000	102.404			
Σ Supp	LG13	-1.285	0.000	32.850			
Σ Load		-1.285	0.000	32.850			
Σ Supp	LG14	8.591	0.000	14.499			
Σ Load		8.591	0.000	14.499			
Σ Supp	LG15	-0.225	8.815	14.499			
Σ Load		-0.225	8.815	14.499			
Σ Supp	LG16	-0.225	0.000	23.315			
Σ Load		-0.225	0.000	23.315			
Σ Supp	LG17	5.653	0.000	54.245			
Σ Load		5.653	0.000	54.245			
Σ Supp	LG18	-3.163	8.815	54.245			
Σ Load		-3.163	8.815	54.245			
Σ Supp	LG19	-3.163	0.000	63.060			
Σ Load		-3.163	0.000	63.060			

■ **3.4 NODES - SUPPORT FORCES** Load combinations

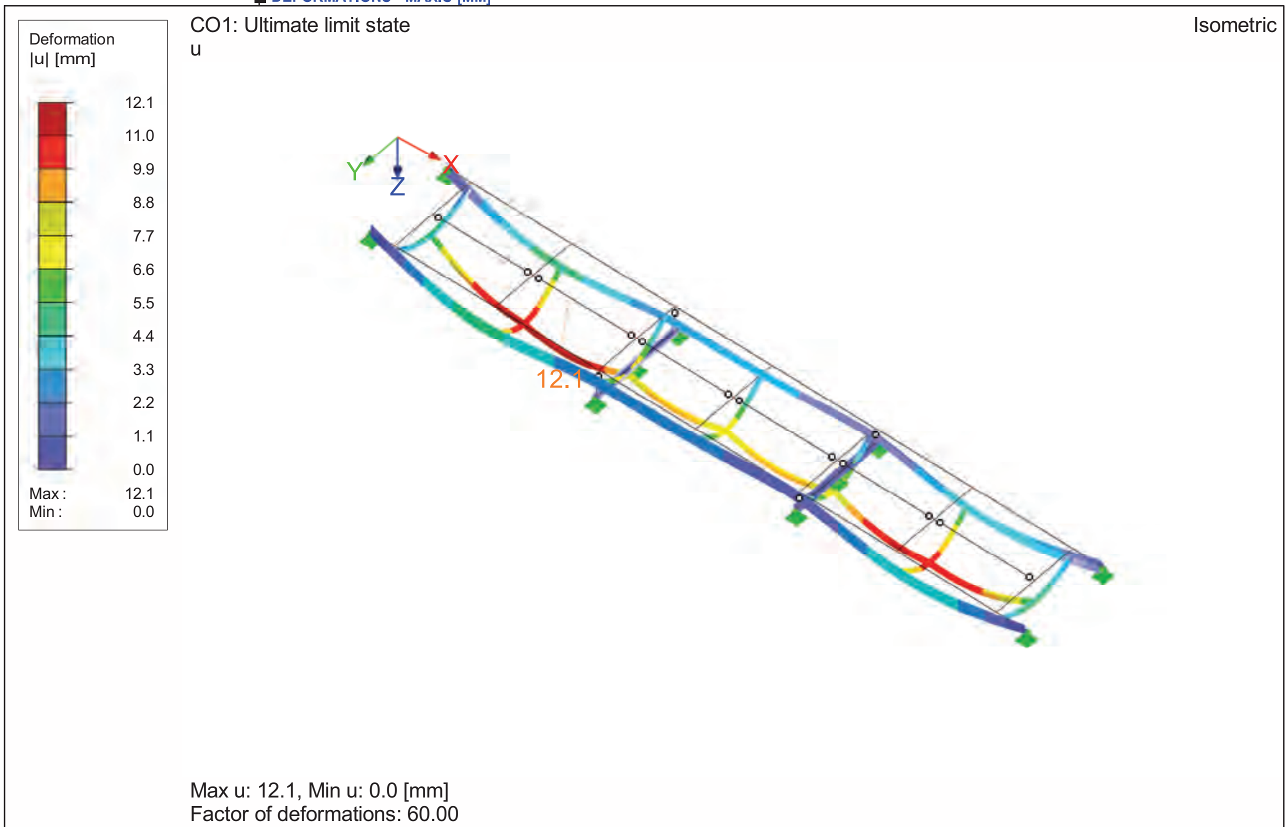
Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'	Corresponding Load Cases
3	CO1	Max PX'	2.116	-0.383	1.102	0.000	0.000	0.000	LG14
		Min PX'	-2.140	-2.132	8.749	0.000	0.000	0.000	LG4
		Max PY'	-0.901	0.703	0.836	0.000	0.000	0.000	LG15
		Min PY'	-2.140	-2.132	8.749	0.000	0.000	0.000	LG4
		Max PZ'	-2.140	-2.132	8.749	0.000	0.000	0.000	LG4
		Min PZ'	-0.901	0.703	0.836	0.000	0.000	0.000	LG15
21	CO1	Max PX'	2.073	0.138	1.067	0.000	0.000	0.000	LG14

■ 3.4 NODES - SUPPORT FORCES

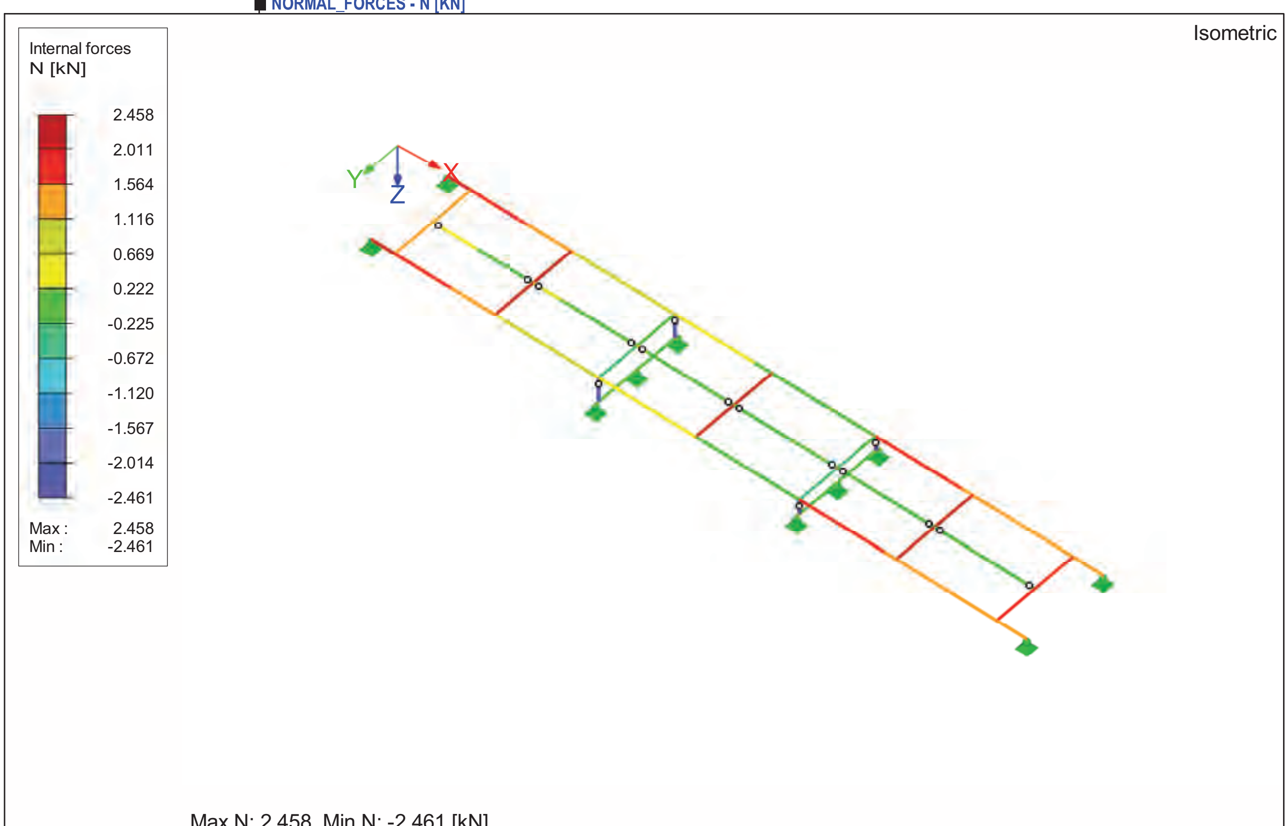
Load combinations

Node No.	CO		Support forces [kN] PX'	PY'	PZ'	Support moments [kNm] MX'	MY'	MZ'	Corresponding Load Cases
21	CO1	Min PX'	-2.130	2.249	8.436	0.000	0.000	0.000	LG4
		Max PY'	-2.130	2.249	8.436	0.000	0.000	0.000	LG4
		Min PY'	2.073	0.138	1.067	0.000	0.000	0.000	LG14
		Max PZ'	-2.130	2.249	8.436	0.000	0.000	0.000	LG4
		Min PZ'	-0.751	0.953	0.879	0.000	0.000	0.000	LG15
37	CO1	Max PX'	0.024	-0.162	8.987	0.000	0.000	0.000	LG17
		Min PX'	0.000	0.894	1.698	0.000	0.000	0.000	LG15
		Max PY'	0.000	0.894	1.698	0.000	0.000	0.000	LG15
		Min PY'	0.002	-0.390	22.003	0.000	0.000	0.000	LG4
		Max PZ'	0.002	-0.390	22.003	0.000	0.000	0.000	LG4
		Min PZ'	0.000	0.894	1.698	0.000	0.000	0.000	LG15
40	CO1	Max PX'	0.024	0.162	8.987	0.000	0.000	0.000	LG17
		Min PX'	0.000	0.060	3.223	0.000	0.000	0.000	LG1
		Max PY'	0.000	1.077	9.809	0.000	0.000	0.000	LG18
		Min PY'	0.024	0.043	2.282	0.000	0.000	0.000	LG14
		Max PZ'	0.002	0.390	22.003	0.000	0.000	0.000	LG4
		Min PZ'	0.024	0.043	2.282	0.000	0.000	0.000	LG14
41	CO1	Max PX'	0.061	0.000	1.781	0.000	0.000	0.000	LG17
		Min PX'	0.000	0.177	0.539	0.000	0.000	0.000	LG15
		Max PY'	0.000	0.177	0.539	0.000	0.000	0.000	LG15
		Min PY'	0.000	0.000	4.271	0.000	0.000	0.000	LG4
		Max PZ'	0.000	0.000	4.271	0.000	0.000	0.000	LG4
		Min PZ'	0.061	0.000	0.519	0.000	0.000	0.000	LG14
43	CO1	Max PX'	0.021	-0.412	9.051	0.000	0.000	0.000	LG17
		Min PX'	0.000	1.473	2.042	0.000	0.000	0.000	LG15
		Max PY'	0.000	1.473	2.042	0.000	0.000	0.000	LG15
		Min PY'	0.002	-1.001	22.153	0.000	0.000	0.000	LG4
		Max PZ'	0.002	-1.001	22.153	0.000	0.000	0.000	LG4
		Min PZ'	0.000	1.473	2.042	0.000	0.000	0.000	LG15
44	CO1	Max PX'	0.021	0.412	9.051	0.000	0.000	0.000	LG17
		Min PX'	0.000	0.152	3.243	0.000	0.000	0.000	LG1
		Max PY'	0.000	2.014	9.522	0.000	0.000	0.000	LG18
		Min PY'	0.021	0.108	2.297	0.000	0.000	0.000	LG14
		Max PZ'	0.002	1.001	22.153	0.000	0.000	0.000	LG4
		Min PZ'	0.021	0.108	2.297	0.000	0.000	0.000	LG14
45	CO1	Max PX'	0.061	0.000	1.646	0.000	0.000	0.000	LG17
		Min PX'	0.000	0.269	0.502	0.000	0.000	0.000	LG15
		Max PY'	0.000	0.270	1.663	0.000	0.000	0.000	LG18
		Min PY'	0.001	0.000	3.935	0.000	0.000	0.000	LG4
		Max PZ'	0.001	0.000	3.935	0.000	0.000	0.000	LG4
		Min PZ'	0.061	0.000	0.484	0.000	0.000	0.000	LG14
50	CO1	Max PX'	2.073	-0.138	1.067	0.000	0.000	0.000	LG14
		Min PX'	-2.130	-2.249	8.436	0.000	0.000	0.000	LG4
		Max PY'	0.640	0.453	1.027	0.000	0.000	0.000	LG15
		Min PY'	-2.130	-2.249	8.436	0.000	0.000	0.000	LG4
		Max PZ'	-2.130	-2.249	8.436	0.000	0.000	0.000	LG4
		Min PZ'	0.640	0.453	1.027	0.000	0.000	0.000	LG15
54	CO1	Max PX'	2.116	0.383	1.102	0.000	0.000	0.000	LG14
		Min PX'	-2.139	2.132	8.749	0.000	0.000	0.000	LG4
		Max PY'	-2.139	2.132	8.749	0.000	0.000	0.000	LG4
		Min PY'	-0.077	0.342	1.331	0.000	0.000	0.000	LG1
		Max PZ'	-2.139	2.132	8.749	0.000	0.000	0.000	LG4
		Min PZ'	2.116	0.383	1.102	0.000	0.000	0.000	LG14

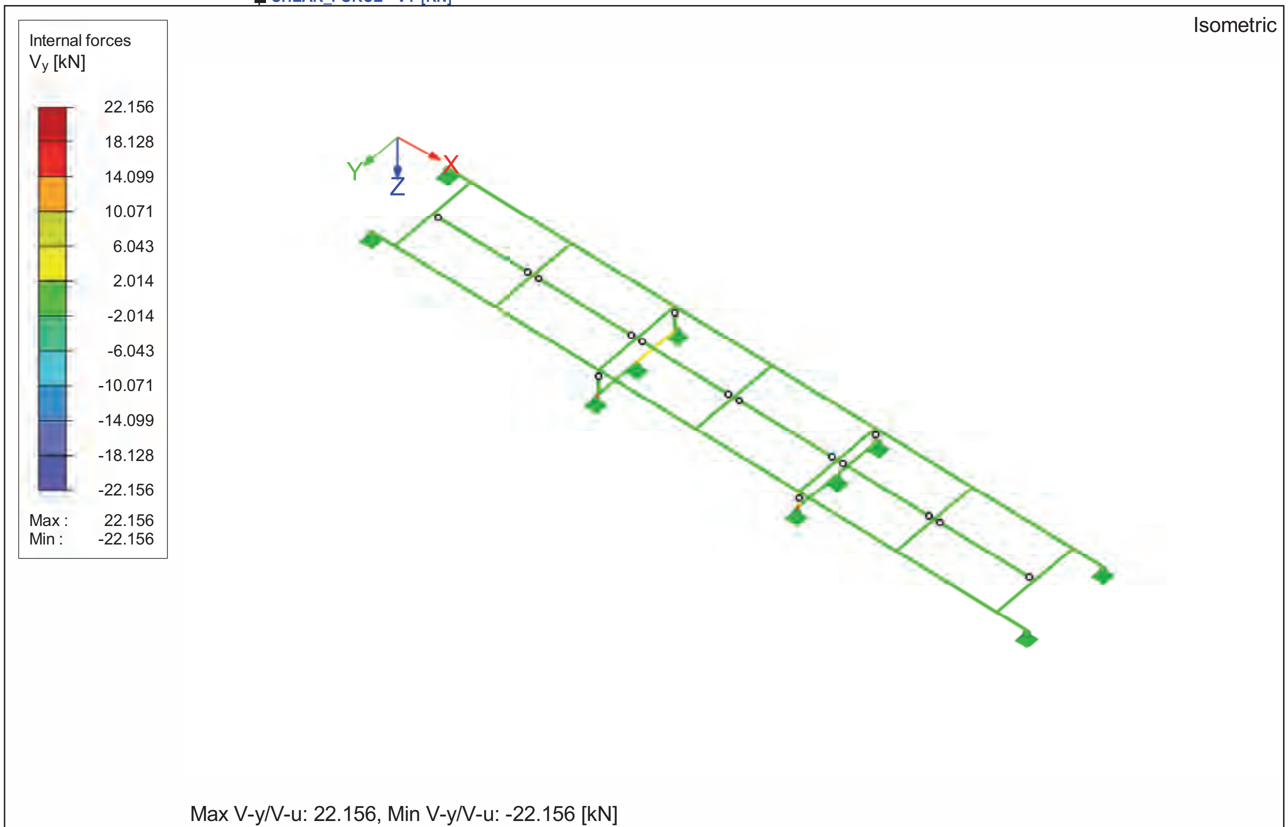
DEFORMATIONS - MAX.U [MM]



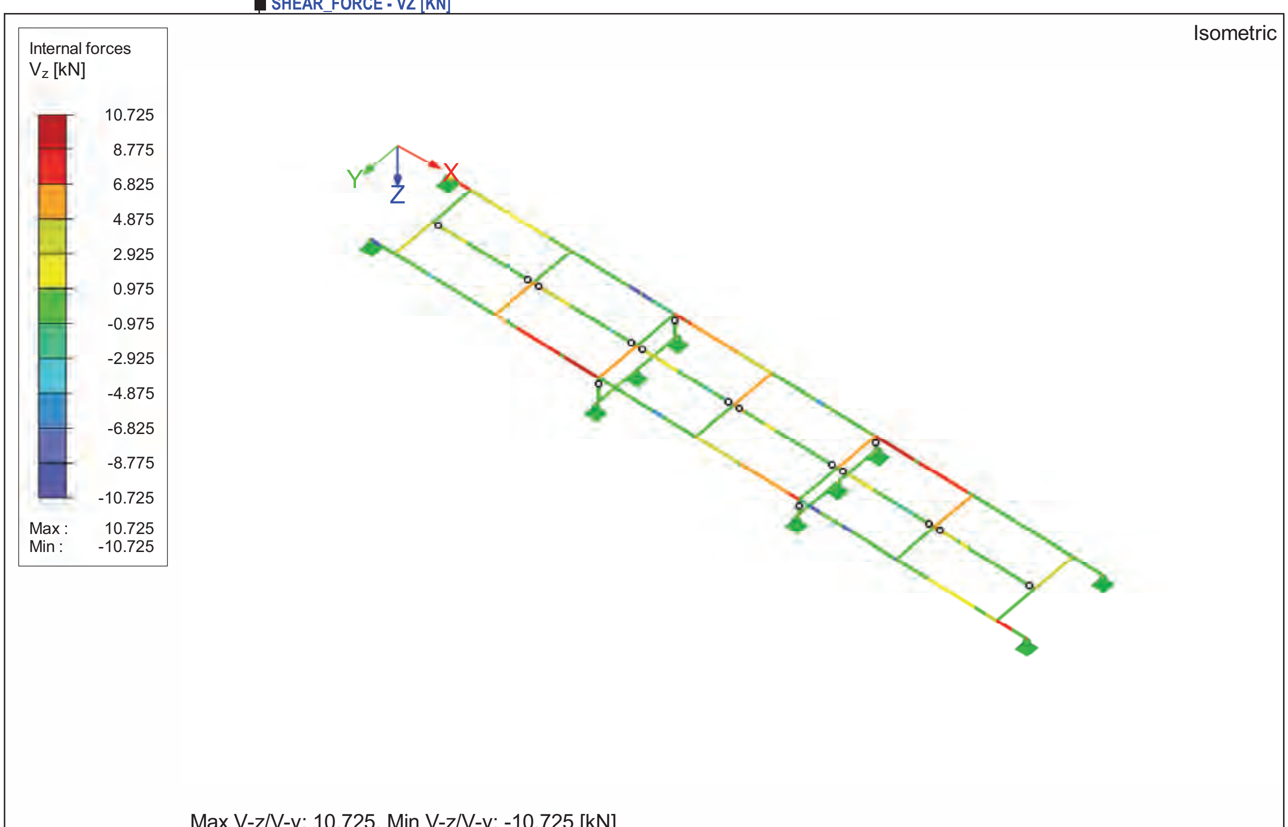
NORMAL_FORCES - N [KN]



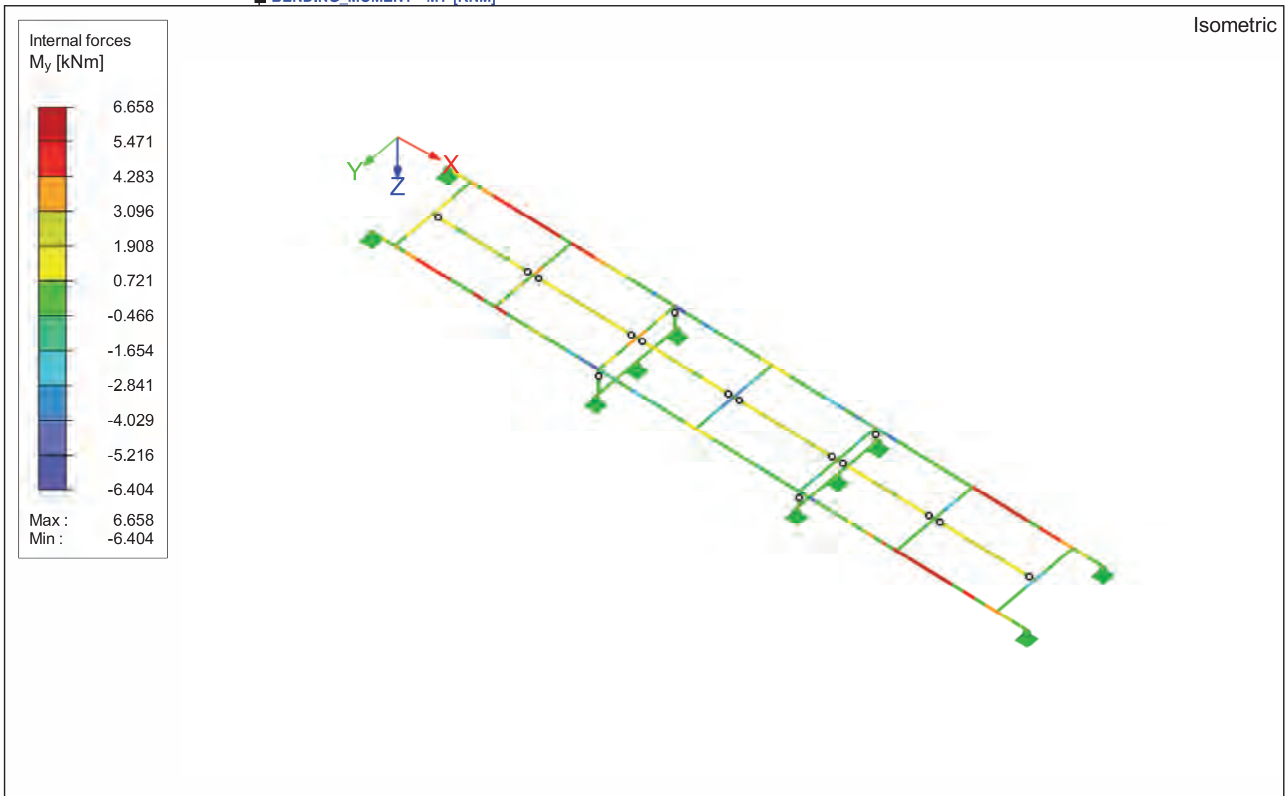
SHEAR_FORCE - VY [KN]



SHEAR_FORCE - VZ [KN]

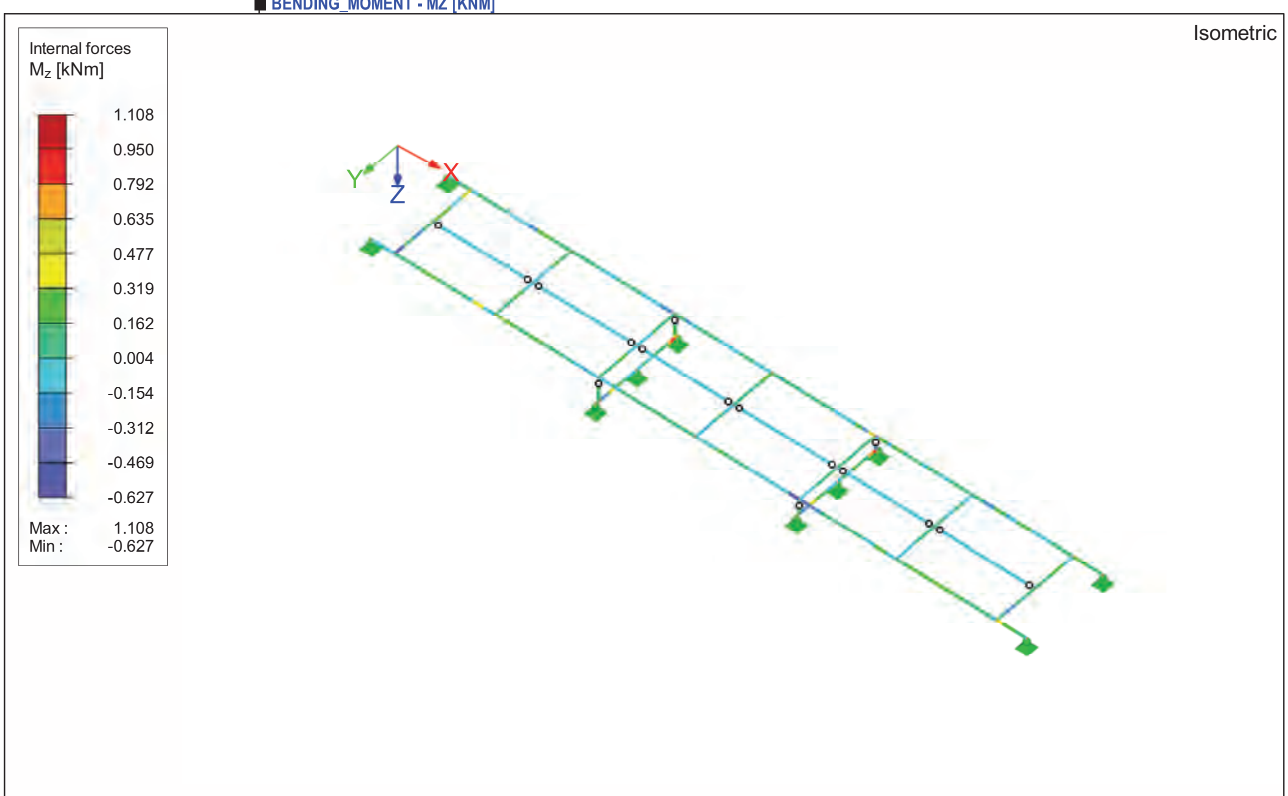


BENDING_MOMENT - MY [KNM]



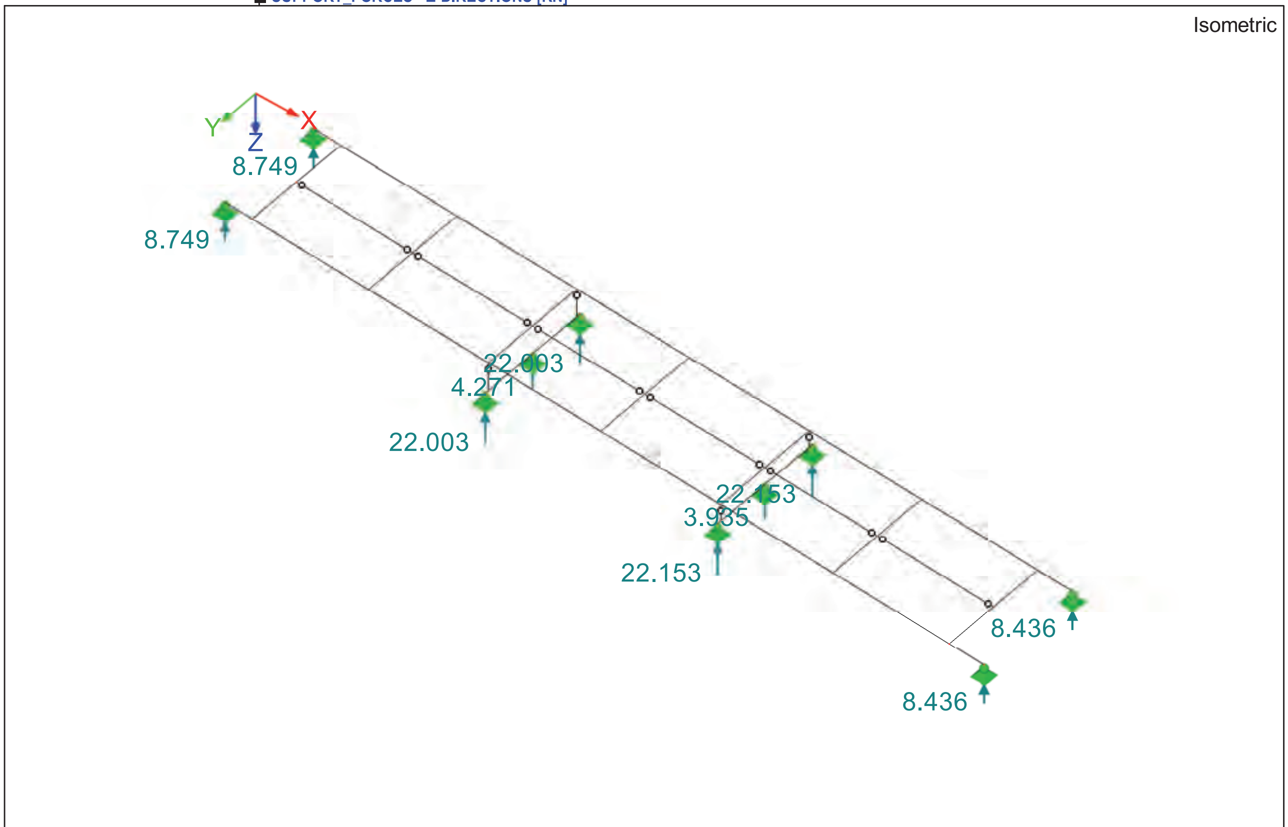
Max M-y/M-u: 6.658, Min M-y/M-u: -6.404 [kNm]

BENDING_MOMENT - MZ [KNM]

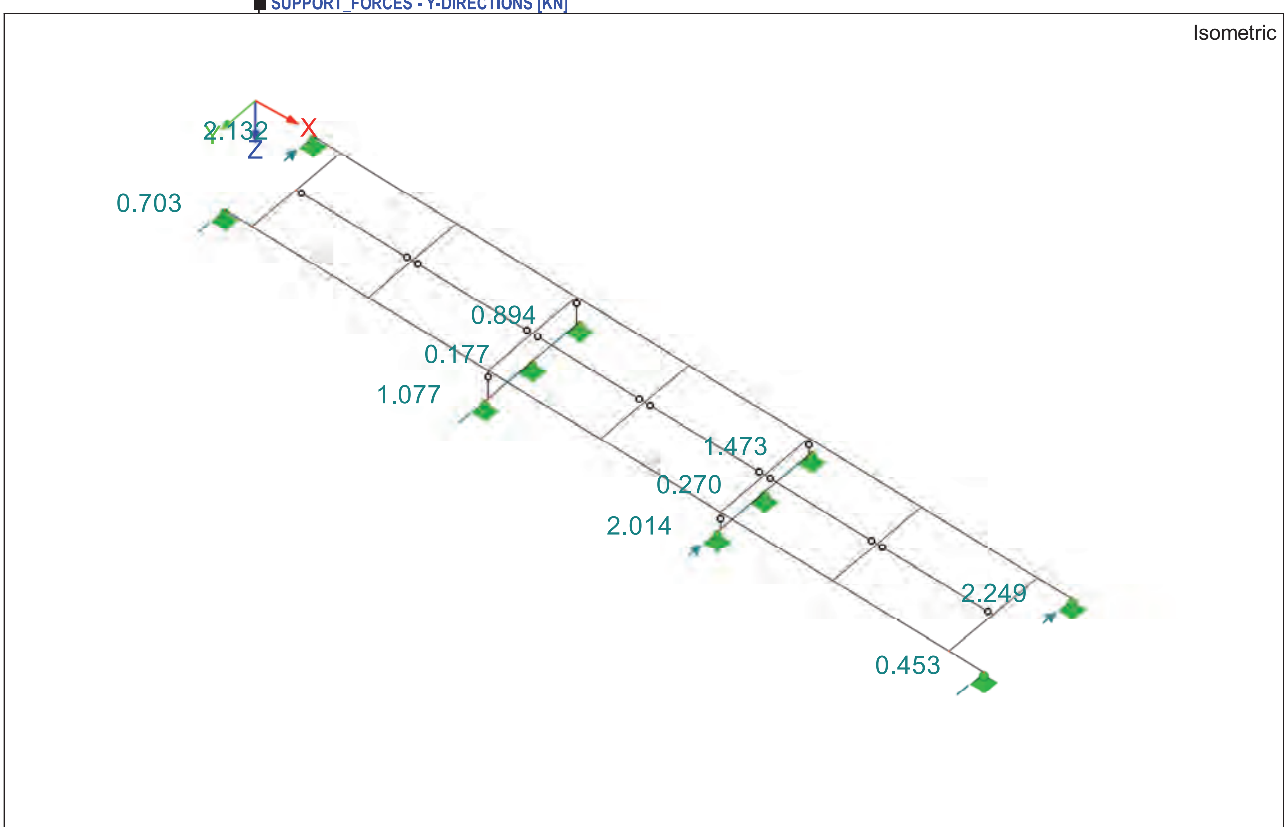


Max M-z/M-v: 1.108, Min M-z/M-v: -0.627 [kNm]

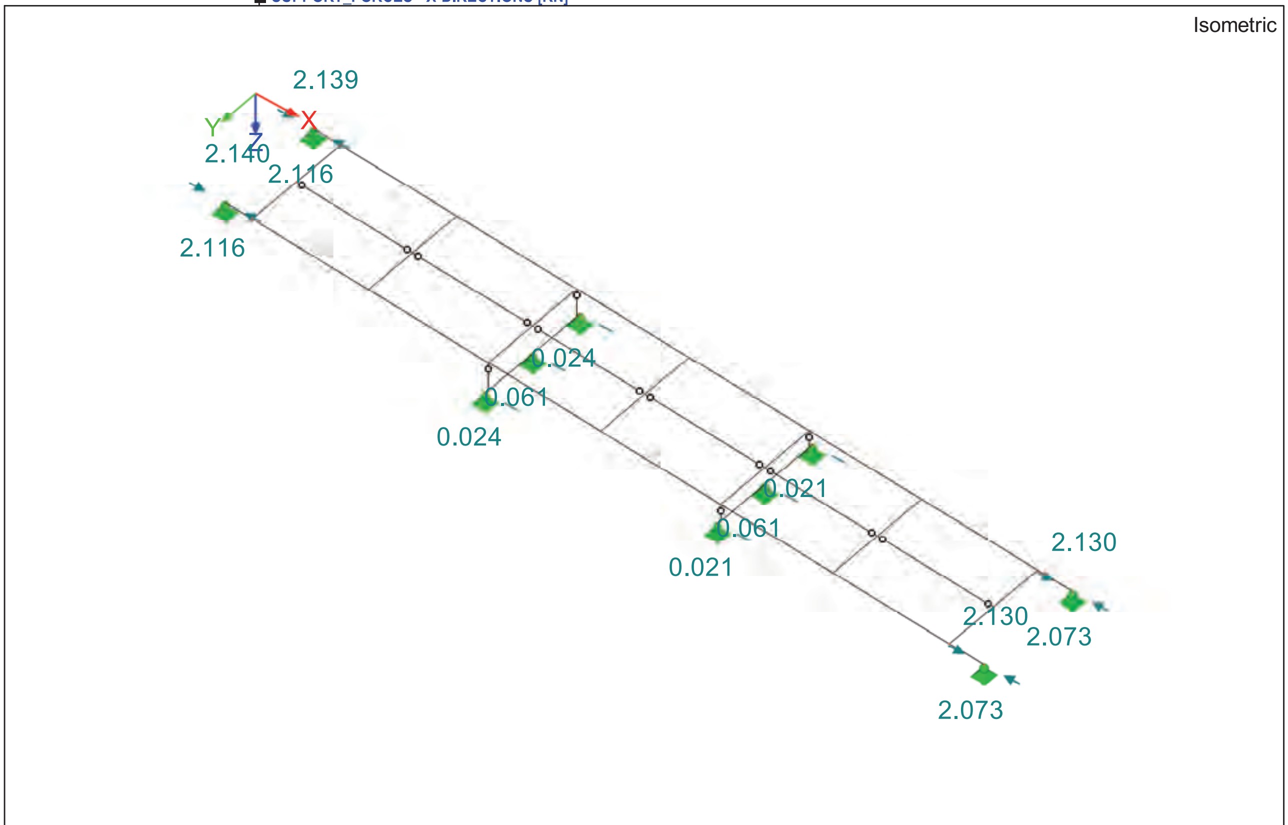
SUPPORT_FORCES - Z-DIRECTIONS [KN]



SUPPORT_FORCES - Y-DIRECTIONS [KN]



■ SUPPORT_FORCES - X-DIRECTIONS [KN]



STEEL EC3

CA1

ULTIMATE_LIMIT_STATES

1.1.1 GENERAL DATA

Members to design:	All	
Ultimate Limit State Design		
Load groups to design:	LG1	UB (1.35*LC1)
	LG2	UB (1.35*LC1 + 1.5*LC2)
	LG3	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3)
	LG4	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3 + 0.9*LC4)
	LG5	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC4)
	LG6	UB (1.35*LC1 + 1.5*LC3)
	LG7	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3)
	LG8	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3 + 0.9*LC4)
	LG9	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC4)
	LG10	UB (1.35*LC1 + 1.5*LC4)
	LG11	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)
	LG12	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC3 + 1.5*LC4)
	LG13	UB (1.35*LC1 + 0.75*LC3 + 1.5*LC4)
Load combinations to design:	CO1	Ultimate limit state

1.1.2 DETAILS

Stability Analysis	
Stability Check	☒
Bending About the Major y-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Bending About the Minor z-Axis	
Equivalent Member Method acc. to 6.	☒
Include effects from second order theory acc. to 5.2.2(4) by increasing bending moment	☐
Determination of elastic critical moment for lateral-torsional buckling	
For members:	Automatically by Eigenvalue Method
Load application of positive transverse loads:	On cross-section edge directed to shear center (e.g. top flange, destabilizing effect)
Limit Load for Special Cases	
Unsymmetric cross-sections with compression and bending	
$M_{y,Ed} / M_{pl,y,Rd} \leq$	0.01
$M_{z,Ed} / M_{pl,z,Rd} \leq$	0.01
$N_{c,Ed} / N_{pl} \leq$	0.01
Non-Symmetrical Cross-Sections, Tapered Members or Sets of Members	
$M_{z,Ed} / M_{pl,z,Rd} \leq$	0.05
Cross-Sections with Torsion	
$\tau_{t,Ed} / \tau_{t,Rd} \leq$	0.05
Stability analysis method of sets of members acc. to	6.3.4 General Method
Options	
Elastic Design (also for cross-sections of Class 1 or 2)	☐
Member Slendernesses	
Members with	λ_{limit}
Tension only:	300
Compression / flexure:	200
Design of Welds	
Allow Design of Welds	☐
Fire Design Settings	
$t_{fi, requ}$ [min]	15.00
Unprotected Members Δt [s]	5.00

1.1.2 DETAILS

Protected Members Δt [s]	30.00
Temperature Curve for Determination of Temperature of Gases	
Nominal temperature curves	Standard temperature-time curve
αc [W/m^{2}K]	25.00
Thermal Actions for Temperature Analysis	
Φ	1.00
ε_m	0.70
ε_f	1.00
Fire Properties	
$\gamma_{M,fi}$	1.00

1.1.3 NATIONAL ANNEX - DIN

Partial Factors acc. to 6.1, Note 2B		
For resistance of cross-sections γ_{M0} :		1.00
For resistance of members to buckling (assessed for checks in Clause 6.3) γ_{M1} :		1.10
For resistance of cross-sections in tension to fracture γ_{M2} :		1.25
Shear acc. to 6.2.6(3) and shear buckling acc. to EN 1993-1-5		
Factor η :		1.20
Parameters for Lateral-Torsional Buckling		
Imperfection coefficients of lateral-torsional buckling curves acc. to Table 6.3		
Buckling Curve a :		0.21
Buckling Curve b :		0.34
Buckling Curve c :		0.49
Buckling Curve d :		0.76
Use factor f for modification of χ_{LT} according to 6.3.2.3(2)		☒
Parameters for Φ_{LT} acc. to 6.3.2.3(1):		
Rolled I-sections		
$\lambda_{LT,0}$:		0.40
β :		0.75
Welded I-Sections		
$\lambda_{LT,0}$:		0.40
β :		0.75
Determine lateral-torsional buckling curves:		If possible, acc. to 6.3.2.3, Eq. (6.57), otherwise acc. to 6.3.2.2, Eq. (6.56)
Determine interaction factors for 6.3.3(4) according to Method:		2 according to Annex B
Serviceability Limits (Deflections) acc. to 7.2		
Combination of actions (Table A1.4 of EN 1990):		Cantilevers
CH : Characteristic	L / 300	L_c / 150
FR : Frequent	L / 200	L_c / 100
QP : Quasi-permanent	L / 200	L_c / 100
General Method according to 6.3.4		
Use General Method also for non-I-sections		☐
Always use General Method for stability design according to 6.3.4		☐
Use Europan lateral-torsional buckling curve according to [5]		☐
Use the method of Johannes Caspar Naumes for assessing the out-of-		☐

1.1.3 NATIONAL ANNEX - DIN

plane stability

Partial Factors acc. to 5.1

For resistance of cross-sections	
γ_{M0}	1.100
For resistance of members to buckling (assessed for proofs in Clause 6.3)	
γ_{M1}	1.100
For resistance of cross-sections to fracture due to tension	
γ_{M2}	1.250

Shear According to 5.6(2) and Shear Buckling

η	1.200

Parameters for Stability Design

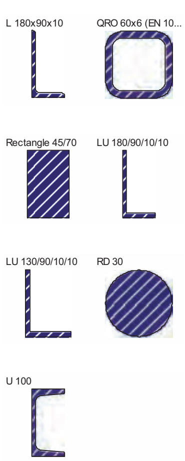
Imperfection Coefficient	α
Buckling	
Cold formed open sections	0.490
Hollow sections (welded or seamless)	0.490
Welded open sections (about the major axis)	0.490
Welded open sections (about the minor axis)	0.760
Torsional and Lateral-Torsional Buckling	
All structural members	0.340

Parameter for Φ	λ_0
Buckling	
Cold formed open sections	0.400
Hollow sections (welded or seamless)	0.400
Welded open sections (about the major axis)	0.200
Welded open sections (about the minor axis)	0.200
Torsional and Lateral-Torsional Buckling	
All structural members	0.200

Imperfection Coefficient	α_{LT}
Cold formed sections and hollow sections (welded and seamless)	0.340
Welded open sections and other sections	0.760

1.2.1 MATERIALS

Material No	Material Description	Comment
1	Ocel S 235	



1.3.1 CROSS-SECTIONS

Cross-s. No	Material No	Cross-section Description [mm]	Comment
1	1	L 180x90x10	
2	1	QRO 60x6 (EN 10219-2)	
3	1	Rectangle 45/70	
		Type General - only Class 3 and Class 4 possible	
4	1	LU 180/90/10/10	
5	1	LU 130/90/10/10	
6	1	RD 30	
		Type General - only Class 3 and Class 4 possible	
7	1	U 100	

1.5 EFFECTIVE LENGTHS - MEMBERS

Member No	Buckling Possible	Buckling About Axis y/u			Buckling About Axis z/v			Lateral-Torsional Buckling				
		Possible	$k_{cr,y/u}$	$L_{cr,y/u}$ [m]	Possible	$k_{cr,z/v}$	$L_{cr,z/v}$ [m]	Possible	k_z	k_w	L_w [m]	L_T [m]
1	☒	☒	1.00	0.350	☒	1.00	0.350	☒	1.0	1.0	0.350	0.350
2	☒	☒	1.00	1.450	☒	1.00	1.450	☒	1.0	1.0	1.450	1.450
3	☒	☒	1.00	1.550	☒	1.00	1.550	☒	1.0	1.0	1.550	1.550
4	☒	☒	1.00	1.500	☒	1.00	1.500	☒	1.0	1.0	1.500	1.500
6	☒	☒	1.00	0.350	☒	1.00	0.350	☒	1.0	1.0	0.350	0.350
7	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
8	☒	☒	1.00	1.450	☒	1.00	1.450	☒	1.0	1.0	1.450	1.450
9	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
10	☒	☒	1.00	1.550	☒	1.00	1.550	☒	1.0	1.0	1.550	1.550
12	☒	☒	1.00	1.500	☒	1.00	1.500	☒	1.0	1.0	1.500	1.500
13	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
17	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
20	☒	☒	1.00	1.500	☒	1.00	1.500	☒	1.0	1.0	1.500	1.500
21	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
22	☒	☒	1.00	1.550	☒	1.00	1.550	☒	1.0	1.0	1.550	1.550
23	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
24	☒	☒	1.00	1.450	☒	1.00	1.450	☒	1.0	1.0	1.450	1.450
25	☒	☒	1.00	1.550	☒	1.00	1.550	☒	1.0	1.0	1.550	1.550
26	☒	☒	1.00	0.450	☒	1.00	0.450	☒	1.0	1.0	0.450	0.450
27	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
28	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
29	☒	☒	1.00	1.450	☒	1.00	1.450	☒	1.0	1.0	1.450	1.450
30	☒	☒	1.00	1.500	☒	1.00	1.500	☒	1.0	1.0	1.500	1.500
31	☒	☒	1.00	0.450	☒	1.00	0.450	☒	1.0	1.0	0.450	0.450
32	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
33	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
34	☒	☒	1.00	1.550	☒	1.00	1.550	☒	1.0	1.0	1.550	1.550
35	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
36	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
37	☒	☒	1.00	1.450	☒	1.00	1.450	☒	1.0	1.0	1.450	1.450
38	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
39	☒	☒	1.00	0.707	☒	1.00	0.707	☐	1.0	1.0	0.707	0.707
40	☒	☒	1.00	1.500	☒	1.00	1.500	☒	1.0	1.0	1.500	1.500
41	☒	☒	1.00	1.550	☒	1.00	1.550	☒	1.0	1.0	1.550	1.550
42	☒	☒	1.00	1.450	☒	1.00	1.450	☒	1.0	1.0	1.450	1.450
43	☒	☒	1.00	1.500	☒	1.00	1.500	☒	1.0	1.0	1.500	1.500
46	☒	☒	1.00	0.375	☒	1.00	0.375	☒	1.0	1.0	0.375	0.375
47	☒	☒	1.00	0.375	☒	1.00	0.375	☒	1.0	1.0	0.375	0.375
48	☒	☒	1.00	0.225	☒	1.00	0.225	☒	1.0	1.0	0.225	0.225
49	☒	☒	1.00	0.225	☒	1.00	0.225	☒	1.0	1.0	0.225	0.225
50	☒	☒	1.00	0.707	☒	1.00	0.707	☒	1.0	1.0	0.707	0.707
51	☒	☒	1.00	0.050	☒	1.00	0.050	☒	1.0	1.0	0.050	0.050
52	☒	☒	1.00	0.050	☒	1.00	0.050	☒	1.0	1.0	0.050	0.050
53	☒	☒	1.00	0.707	☒	1.00	0.707	☒	1.0	1.0	0.707	0.707
54	☒	☒	1.00	0.707	☒	1.00	0.707	☒	1.0	1.0	0.707	0.707
55	☒	☒	1.00	0.050	☒	1.00	0.050	☒	1.0	1.0	0.050	0.050
56	☒	☒	1.00	0.050	☒	1.00	0.050	☒	1.0	1.0	0.050	0.050
57	☒	☒	1.00	0.707	☒	1.00	0.707	☒	1.0	1.0	0.707	0.707

STEEL EC3

CA1

ULTIMATE_LIMIT_STATES

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
Ultimate Limit State Design							
LG1	UB (1.35*LC1)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.013 kN	$V_{v,Ed}$	-0.345 kN	$M_{u,Ed}$	0.175 kNm
$V_{u,Ed}$	-0.097 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.023 kNm

Cross-section Classification - Class 4

σ	-1.929 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	0.964 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.029

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG2	UB (1.35*LC1 + 1.5*LC2)	1	0.018	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	-1.327 kN	$V_{v,Ed}$	8.249 kN	$M_{u,Ed}$	0.140 kNm
$V_{u,Ed}$	-0.141 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	0.001 kNm

Cross-section Classification - Class 4

σ	-2.299 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	154.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	2.299 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	-0.029 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	-0.013	$\sigma_{b,1}$	-0.444 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.573	$\sigma_{b,2}$	-0.450 MPa	e_{Nv}	0.0 mm
λ_a	0.734			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	2.711 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.082

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG3	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3)	1	0.018	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	-1.462 kN	$V_{v,Ed}$	8.940 kN	$M_{u,Ed}$	0.152 kNm
$V_{u,Ed}$	-0.155 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	0.002 kNm

Cross-section Classification - Class 4

σ	-2.502 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4

STEEL EC3
CA1
ULTIMATE_LIMIT_STATES

2.1 DESIGN BY LOAD CASE

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

c 156.0 mm $\lambda_{3,b}$ 11.380
t 10.0 mm c/t 15.600

Effective Cross-Section Properties

		$b_{eff,a}$	154.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	2.299 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	-0.029 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	-0.013	$\sigma_{b,1}$	-0.444 MPa	e_{Nu}	0.0 mm
$k\sigma_a$	0.573	$\sigma_{b,2}$	-0.450 MPa	e_{Nv}	0.0 mm
λ_a	0.734			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	2.938 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.089

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG4	UB (1.35*LC1 + 1.5*LC2 + 0.75*LC3 + 0.9*LC4)	1	0.018	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	-1.489 kN	$V_{v,Ed}$	9.078 kN	$M_{u,Ed}$	0.155 kNm
$V_{u,Ed}$	-0.158 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	0.002 kNm

Cross-section Classification - Class 4

σ	-2.542 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	154.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	2.299 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	-0.029 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	-0.013	$\sigma_{b,1}$	-0.444 MPa	e_{Nu}	0.0 mm
$k\sigma_a$	0.573	$\sigma_{b,2}$	-0.450 MPa	e_{Nv}	0.0 mm
λ_a	0.734			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	2.984 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.091

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG5	UB (1.35*LC1 + 1.5*LC2 + 0.9*LC4)	1	0.018	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	-1.354 kN	$V_{v,Ed}$	8.387 kN	$M_{u,Ed}$	0.143 kNm
$V_{u,Ed}$	-0.144 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	0.001 kNm

Cross-section Classification - Class 4

σ	-2.340 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	154.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	2.299 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	-0.029 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	-0.013	$\sigma_{b,1}$	-0.444 MPa	e_{Nu}	0.0 mm
$k\sigma_a$	0.573	$\sigma_{b,2}$	-0.450 MPa	e_{Nv}	0.0 mm
λ_a	0.734			$S_{eff,u,min}$	79096.2 mm^3

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	ρ_a 1.000			$S_{eff,v,min}$ 17820.9 mm³			

Design Ratio

$M_{u,max,Ed}$	2.756 kNm	$\eta_{Mu,lim}$	0.010		
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.084		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG6	UB (1.35*LC1 + 1.5*LC3)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.012 kN	$V_{v,Ed}$	-0.908 kN	$M_{u,Ed}$	0.430 kNm
$V_{u,Ed}$	-0.146 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.032 kNm

Cross-section Classification - Class 4

σ	-5.045 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm²
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm⁴
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm⁴
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm³
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm³

Design Ratio

$M_{u,max,Ed}$	1.931 kNm	$\eta_{Mu,lim}$	0.010		
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.059		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG7	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.008 kN	$V_{v,Ed}$	-2.876 kN	$M_{u,Ed}$	1.319 kNm
$V_{u,Ed}$	-0.317 kN	T_{Ed}	0.001 kNm	$M_{v,Ed}$	-0.062 kNm

Cross-section Classification - Class 4

σ	-15.930 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm²
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm⁴
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm⁴
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm³
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm³

Design Ratio

$M_{u,max,Ed}$	5.311 kNm	η_{Mu}	0.161	$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	$M_{v,max,Ed}$	0.242 kNm	η_{Mv}	0.025
$\eta_{Mu,lim}$	0.010	$M_{pl,v,Rd}$	9.633 kNm		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG8	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC3 + 0.9*LC4)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.008 kN	$V_{v,Ed}$	-2.932 kN	$M_{u,Ed}$	1.344 kNm

STEEL EC3
CA1
ULTIMATE_LIMIT_STATES

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	$V_{u,Ed}$ -0.322 kN T_{Ed} 0.001 kNm $M_{v,Ed}$ -0.063 kNm						
	Cross-section Classification - Class 4						
	σ -16.242 MPa ε 0.990 h/t 18.000						
	h 180.0 mm λ_3 13.853 (b+h)/2t 13.500						
	b 90.0 mm $\lambda_{3,a}$ 14.843 Class 4						
	c 156.0 mm $\lambda_{3,b}$ 11.380						
	t 10.0 mm c/t 15.600						
	Effective Cross-Section Properties						
	$b_{eff,a}$ 156.0 mm A_{eff} 2620.0 mm^2						
	$\sigma_{a,1}$ 1.929 MPa $b_{red,a}$ 0.0 mm $I_{eff,u}$ 9340000. mm^4						
	$\sigma_{a,2}$ 0.042 MPa $I_{eff,v}$ 974000.0 mm^4						
	ψ_a 0.022 $\sigma_{b,1}$ -0.918 MPa e_{Nu} 0.0 mm						
	$k_{\sigma a}$ 0.565 $\sigma_{b,2}$ -2.638 MPa e_{Nv} 0.0 mm						
	λ_a 0.738 $S_{eff,u,min}$ 79096.2 mm^3						
	ρ_a 1.000 $S_{eff,v,min}$ 17820.9 mm^3						
	Design Ratio						
	$M_{u,max,Ed}$ 5.408 kNm η_{Mu} 0.164 $\eta_{Mv,lim}$ 0.010						
	$M_{pl,u,Rd}$ 32.968 kNm $M_{v,max,Ed}$ 0.247 kNm η_{Mv} 0.026						
	$\eta_{Mu,lim}$ 0.010 $M_{pl,v,Rd}$ 9.633 kNm						
LG9	UB (1.35*LC1 + 1.5*LC3 + 0.9*LC4)	2	0.000	Non-designable	> 1	1052)	ULS
	Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p						
	Design Internal Forces						
	N_{Ed} 0.012 kN $V_{v,Ed}$ -0.964 kN $M_{u,Ed}$ 0.455 kNm						
	$V_{u,Ed}$ -0.151 kN T_{Ed} 0.000 kNm $M_{v,Ed}$ -0.033 kNm						
	Cross-section Classification - Class 4						
	σ -5.357 MPa ε 0.990 h/t 18.000						
	h 180.0 mm λ_3 13.853 (b+h)/2t 13.500						
	b 90.0 mm $\lambda_{3,a}$ 14.843 Class 4						
	c 156.0 mm $\lambda_{3,b}$ 11.380						
	t 10.0 mm c/t 15.600						
	Effective Cross-Section Properties						
	$b_{eff,a}$ 156.0 mm A_{eff} 2620.0 mm^2						
	$\sigma_{a,1}$ 1.929 MPa $b_{red,a}$ 0.0 mm $I_{eff,u}$ 9340000. mm^4						
	$\sigma_{a,2}$ 0.042 MPa $I_{eff,v}$ 974000.0 mm^4						
	ψ_a 0.022 $\sigma_{b,1}$ -0.918 MPa e_{Nu} 0.0 mm						
	$k_{\sigma a}$ 0.565 $\sigma_{b,2}$ -2.638 MPa e_{Nv} 0.0 mm						
	λ_a 0.738 $S_{eff,u,min}$ 79096.2 mm^3						
	ρ_a 1.000 $S_{eff,v,min}$ 17820.9 mm^3						
	Design Ratio						
	$M_{u,max,Ed}$ 2.028 kNm η_{Mu} 0.062 $\eta_{Mv,lim}$ 0.010						
	$M_{pl,u,Rd}$ 32.968 kNm $M_{v,max,Ed}$ 0.096 kNm η_{Mv} 0.010						
	$\eta_{Mu,lim}$ 0.010 $M_{pl,v,Rd}$ 9.633 kNm						
LG10	UB (1.35*LC1 + 1.5*LC4)	2	0.000	Non-designable	> 1	1052)	ULS
	Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p						
	Design Internal Forces						
	N_{Ed} 0.012 kN $V_{v,Ed}$ -0.439 kN $M_{u,Ed}$ 0.217 kNm						
	$V_{u,Ed}$ -0.105 kN T_{Ed} 0.000 kNm $M_{v,Ed}$ -0.025 kNm						
	Cross-section Classification - Class 4						
	σ -2.448 MPa ε 0.990 h/t 18.000						
	h 180.0 mm λ_3 13.853 (b+h)/2t 13.500						
	b 90.0 mm $\lambda_{3,a}$ 14.843 Class 4						
	c 156.0 mm $\lambda_{3,b}$ 11.380						
	t 10.0 mm c/t 15.600						
	Effective Cross-Section Properties						

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	1.125 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.034

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG11	UB (1.35*LC1 + 1.05*LC2 + 1.5*LC4)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.009 kN	$V_{v,Ed}$	-2.406 kN	$M_{u,Ed}$	1.107 kNm
$V_{u,Ed}$	-0.276 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.055 kNm

Cross-section Classification - Class 4

σ	-13.333 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	4.504 kNm	η_{Mu}	0.137	$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	$M_{v,max,Ed}$	0.207 kNm	η_{Mv}	0.021
$\eta_{Mu,lim}$	0.010	$M_{pl,v,Rd}$	9.633 kNm		

LC/LG/CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG12	UB (1.35*LC1 + 1.05*LC2 + 0.75*LC3 + 1.5*LC4)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.009 kN	$V_{v,Ed}$	-2.688 kN	$M_{u,Ed}$	1.234 kNm
$V_{u,Ed}$	-0.301 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.059 kNm

Cross-section Classification - Class 4

σ	-14.891 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

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LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
	$M_{u,max,Ed}$ 4.988 kNm; η_{Mu} 0.151; $\eta_{Mv,lim}$ 0.010						
	$M_{pl,u,Rd}$ 32.968 kNm; $M_{v,max,Ed}$ 0.228 kNm; η_{Mv} 0.024						
	$\eta_{Mu,lim}$ 0.010; $M_{pl,v,Rd}$ 9.633 kNm						
LG13	UB (1.35*LC1 + 0.75*LC3 + 1.5*LC4)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.012 kN	$V_{v,Ed}$	-0.720 kN	$M_{u,Ed}$	0.345 kNm
$V_{u,Ed}$	-0.129 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.029 kNm

Cross-section Classification - Class 4

σ	-4.006 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	1.609 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.049

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG14	US (LC1 + LC5)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.141 kN	$V_{v,Ed}$	-0.255 kN	$M_{u,Ed}$	0.132 kNm
$V_{u,Ed}$	-0.111 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.048 kNm

Cross-section Classification - Class 4

σ	-1.043 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	0.690 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.021

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG15	US (LC1 + LC6)	1	0.053	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.867 kN	$V_{v,Ed}$	1.316 kN	$M_{u,Ed}$	0.068 kNm
$V_{u,Ed}$	0.894 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.047 kNm

Cross-section Classification - Class 4

σ	-0.874 MPa	ε	0.990	h/t	18.000

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■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design	Acc. to Formula	

h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	131.4 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	5.885 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	-1.100 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	-0.187	$\sigma_{b,1}$	-2.344 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.612	$\sigma_{b,2}$	-2.361 MPa	e_{Nv}	0.0 mm
λ_a	0.710			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	0.437 kNm	η_{Mu}	0.013	$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	$M_{v,max,Ed}$	0.306 kNm	η_{Mv}	0.032
$\eta_{Mu,lim}$	0.010	$M_{pl,v,Rd}$	9.633 kNm		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design	Acc. to Formula	
LG16	US (LC1 + LC7)	2	0.000	Non-designable > 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.018 kN	$V_{v,Ed}$	-0.412 kN	$M_{u,Ed}$	0.209 kNm
$V_{u,Ed}$	-0.116 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.029 kNm

Cross-section Classification - Class 4

σ	-2.293 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	1.929 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.042 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.022	$\sigma_{b,1}$	-0.918 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	0.565	$\sigma_{b,2}$	-2.638 MPa	e_{Nv}	0.0 mm
λ_a	0.738			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	1.148 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.035

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design	Acc. to Formula	
LG17	US (LC1 + 0.6*LC2 + LC5)	1	0.193	Non-designable > 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	1.591 kN	$V_{v,Ed}$	3.493 kN	$M_{u,Ed}$	0.698 kNm
$V_{u,Ed}$	0.147 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.022 kNm

Cross-section Classification - Class 4

σ	-7.956 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	123.4 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	20.145 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	-5.325 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	-0.264	$\sigma_{b,1}$	-9.893 MPa	e_{Nu}	0.0 mm

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2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

$k_{\sigma a}$	0.630		$\sigma_{b,2}$	-10.048	MPa	e_{Nv}	0.0	mm
λ_a	0.699					$S_{eff,u,min}$	79096.2	mm^3
ρ_a	1.000					$S_{eff,v,min}$	17820.9	mm^3

Design Ratio

$M_{u,max,Ed}$	1.232	kNm	$\eta_{Mu,lim}$	0.010	
$M_{pl,u,Rd}$	32.968	kNm	η_{Mu}	0.037	

LG18	US (LC1 + 0.6*LC2 + LC6)	1	0.053	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.349	kN	$V_{v,Ed}$	4.040	kN	$M_{u,Ed}$	0.209	kNm
$V_{u,Ed}$	0.859	kN	T_{Ed}	0.000	kNm	$M_{v,Ed}$	-0.045	kNm

Cross-section Classification - Class 4

σ	-1.973	MPa	ε	0.990	h/t	18.000
h	180.0	mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0	mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0	mm	$\lambda_{3,b}$	11.380		
t	10.0	mm	c/t	15.600		

Effective Cross-Section Properties

			$b_{eff,a}$	131.4	mm	A_{eff}	2620.0	mm^2
$\sigma_{a,1}$	5.885	MPa	$b_{red,a}$	0.0	mm	$I_{eff,u}$	9340000.	mm^4
$\sigma_{a,2}$	-1.100	MPa				$I_{eff,v}$	974000.0	mm^4
ψ_a	-0.187		$\sigma_{b,1}$	-2.344	MPa	e_{Nu}	0.0	mm
$k_{\sigma a}$	0.612		$\sigma_{b,2}$	-2.361	MPa	e_{Nv}	0.0	mm
λ_a	0.710					$S_{eff,u,min}$	79096.2	mm^3
ρ_a	1.000					$S_{eff,v,min}$	17820.9	mm^3

Design Ratio

$M_{u,max,Ed}$	1.347	kNm	η_{Mu}	0.041		$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968	kNm	$M_{v,max,Ed}$	0.305	kNm	η_{Mv}	0.032
$\eta_{Mu,lim}$	0.010		$M_{pl,v,Rd}$	9.633	kNm		

LG19	US (LC1 + 0.6*LC2 + LC7)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.017	kN	$V_{v,Ed}$	-1.536	kN	$M_{u,Ed}$	0.717	kNm
$V_{u,Ed}$	-0.214	kN	T_{Ed}	0.000	kNm	$M_{v,Ed}$	-0.046	kNm

Cross-section Classification - Class 4

σ	-8.513	MPa	ε	0.990	h/t	18.000
h	180.0	mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0	mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0	mm	$\lambda_{3,b}$	11.380		
t	10.0	mm	c/t	15.600		

Effective Cross-Section Properties

			$b_{eff,a}$	156.0	mm	A_{eff}	2620.0	mm^2
$\sigma_{a,1}$	1.929	MPa	$b_{red,a}$	0.0	mm	$I_{eff,u}$	9340000.	mm^4
$\sigma_{a,2}$	0.042	MPa				$I_{eff,v}$	974000.0	mm^4
ψ_a	0.022		$\sigma_{b,1}$	-0.918	MPa	e_{Nu}	0.0	mm
$k_{\sigma a}$	0.565		$\sigma_{b,2}$	-2.638	MPa	e_{Nv}	0.0	mm
λ_a	0.738					$S_{eff,u,min}$	79096.2	mm^3
ρ_a	1.000					$S_{eff,v,min}$	17820.9	mm^3

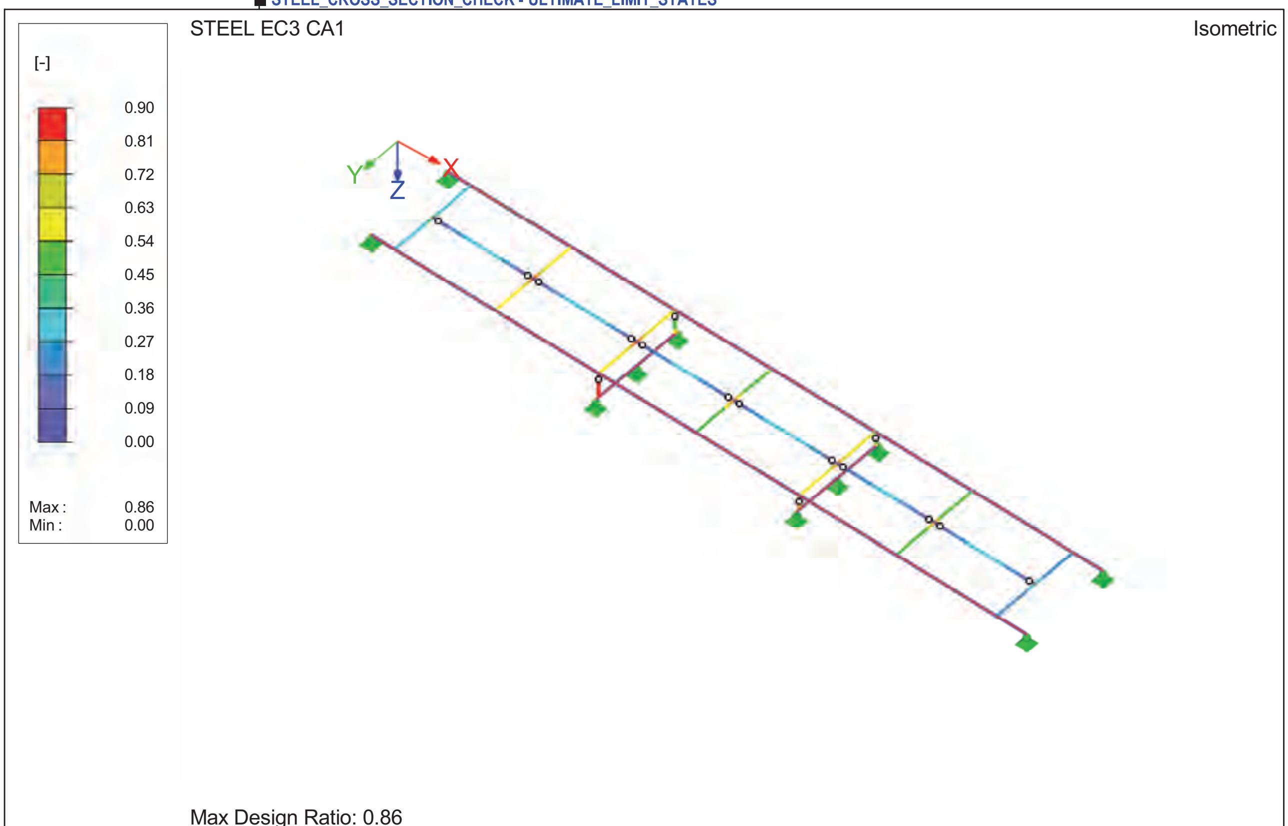
Design Ratio

$M_{u,max,Ed}$	3.079	kNm	η_{Mu}	0.093		$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968	kNm	$M_{v,max,Ed}$	0.143	kNm	η_{Mv}	0.015
$\eta_{Mu,lim}$	0.010		$M_{pl,v,Rd}$	9.633	kNm		

4.1 PARTS LIST BY MEMBER

Part No	Cross-Section Description	Number Members	Length [m]	Tot. Length [m]	Surf. Area [m^2]	Volume [kNm]	Unit Weight [kg/m]	Weight [kg]	Tot. Weight [t]
1	1 - L 180x90x10	2	0.35	0.70	0.37	0.00	20.57	7.20	0.014
2	1 - L 180x90x10	4	1.45	5.80	3.07	0.00	20.57	29.82	0.119
3	1 - L 180x90x10	4	1.55	6.20	3.29	0.00	20.57	31.88	0.128
4	1 - L 180x90x10	4	1.50	6.00	3.18	0.00	20.57	30.85	0.123
5	2 - QRO 60x6 (EN 1021	14	0.71	9.90	2.12	0.00	9.20	6.51	0.091
6	3 - Rectangle 45/70	2	1.50	3.00	0.69	0.00	24.73	37.09	0.074
7	3 - Rectangle 45/70	2	1.55	3.10	0.71	0.00	24.73	38.33	0.077
8	3 - Rectangle 45/70	2	1.45	2.90	0.67	0.00	24.73	35.85	0.072
9	4 - LU 180/90/10/10 ... 5	2	0.45	0.90	0.44	0.00	18.45	8.30	0.017
10	6 - RD 30	2	0.37	0.75	0.07	0.00	5.55	2.08	0.004
11	6 - RD 30	2	0.22	0.45	0.04	0.00	5.55	1.25	0.002
12	7 - U 100	4	0.71	2.83	1.05	0.00	10.60	7.50	0.030
13	7 - U 100	4	0.05	0.20	0.07	0.00	10.60	0.53	0.002
Sum		48		42.73	15.78	0.00			0.754

STEEL_CROSS_SECTION_CHECK - ULTIMATE_LIMIT_STATES



STEEL EC3

CA2

SEISMIC

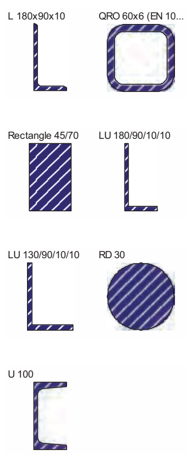
1.1.1 GENERAL DATA

Members to design:	All	
Ultimate Limit State Design		
Load groups to design:	LG14	US (LC1 + LC5)
	LG15	US (LC1 + LC6)
	LG16	US (LC1 + LC7)
	LG17	US (LC1 + 0.6*LC2 + LC5)
	LG18	US (LC1 + 0.6*LC2 + LC6)
	LG19	US (LC1 + 0.6*LC2 + LC7)

1.2.1 MATERIALS

Material No	Material Description	Comment
1	Steel S 235	

1.3.1 CROSS-SECTIONS



Cross-s. No	Material No	Cross-section Description [mm]	Comment
1	1	L 180x90x10	
2	1	QRO 60x6 (EN 10219-2)	
3	1	Rectangle 45/70	
		Type General - only Class 3 and Class 4 possible	
4	1	LU 180/90/10/10	
5	1	LU 130/90/10/10	
6	1	RD 30	
		Type General - only Class 3 and Class 4 possible	
7	1	U 100	

STEEL EC3

CA2

SEISMIC

2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

Ultimate Limit State Design

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG14	US (LC1 + LC5)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.141 kN	$V_{v,Ed}$	-0.255 kN	$M_{u,Ed}$	0.132 kNm
$V_{u,Ed}$	-0.111 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.048 kNm

Cross-section Classification - Class 4

σ	-1.043 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	145.3 mm	A_{eff}	2513.4 mm^2
$\sigma_{a,1}$	1.043 MPa	$b_{red,a}$	10.7 mm	$I_{eff,u}$	7959220. mm^4
$\sigma_{a,2}$	0.833 MPa			$I_{eff,v}$	937714.0 mm^4
ψ_a	0.799	$\sigma_{b,1}$	-0.418 MPa	e_{Nu}	1.9 mm
$k_{\sigma a}$	0.447	$\sigma_{b,2}$	-3.756 MPa	e_{Nv}	-4.4 mm
λ_a	0.830			$S_{eff,u,min}$	70956.5 mm^3
ρ_a	0.932			$S_{eff,v,min}$	17166.9 mm^3

Design Ratio

$M_{u,max,Ed}$	0.690 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.021

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG15	US (LC1 + LC6)	1	0.123	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.865 kN	$V_{v,Ed}$	1.278 kN	$M_{u,Ed}$	0.159 kNm
$V_{u,Ed}$	0.883 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.109 kNm

Cross-section Classification - Class 4

σ	-2.482 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	2.202 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.384 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.174	$\sigma_{b,1}$	-0.216 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	1.124	$\sigma_{b,2}$	-7.636 MPa	e_{Nv}	0.0 mm
λ_a	0.524			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	0.437 kNm	η_{Mu}	0.013	$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	$M_{v,max,Ed}$	0.306 kNm	η_{Mv}	0.032
$\eta_{Mu,lim}$	0.010	$M_{pl,v,Rd}$	9.633 kNm		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG16	US (LC1 + LC7)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.018 kN	$V_{v,Ed}$	-0.412 kN	$M_{u,Ed}$	0.209 kNm
$V_{u,Ed}$	-0.116 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.029 kNm

Cross-section Classification - Class 4

σ	-2.293 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500

STEEL EC3

CA2

SEISMIC

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	145.3 mm	A_{eff}	2513.4 mm^2
$\sigma_{a,1}$	1.043 MPa	$b_{red,a}$	10.7 mm	$I_{eff,u}$	7959220. mm^4
$\sigma_{a,2}$	0.833 MPa			$I_{eff,v}$	937714.0 mm^4
ψ_a	0.799	$\sigma_{b,1}$	-0.418 MPa	e_{Nu}	1.9 mm
$k_{\sigma a}$	0.447	$\sigma_{b,2}$	-3.756 MPa	e_{Nv}	-4.4 mm
λ_a	0.830			$S_{eff,u,min}$	70956.5 mm^3
ρ_a	0.932			$S_{eff,v,min}$	17166.9 mm^3

Design Ratio

$M_{u,max,Ed}$	1.148 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.035

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG17	US (LC1 + 0.6*LC2 + LC5)	1	0.193	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	1.591 kN	$V_{v,Ed}$	3.493 kN	$M_{u,Ed}$	0.698 kNm
$V_{u,Ed}$	0.147 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.022 kNm

Cross-section Classification - Class 4

σ	-7.956 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	3.641 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.777 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.213	$\sigma_{b,1}$	-0.145 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	1.044	$\sigma_{b,2}$	-11.768 MPa	e_{Nv}	0.0 mm
λ_a	0.543			$S_{eff,u,min}$	79096.2 mm^3
ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	1.232 kNm	$\eta_{Mu,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	η_{Mu}	0.037

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x [m]	Design		Acc. to Formula	
LG18	US (LC1 + 0.6*LC2 + LC6)	1	0.123	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.347 kN	$V_{v,Ed}$	3.930 kN	$M_{u,Ed}$	0.488 kNm
$V_{u,Ed}$	0.866 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.106 kNm

Cross-section Classification - Class 4

σ	-4.782 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	156.0 mm	A_{eff}	2620.0 mm^2
$\sigma_{a,1}$	2.202 MPa	$b_{red,a}$	0.0 mm	$I_{eff,u}$	9340000. mm^4
$\sigma_{a,2}$	0.384 MPa			$I_{eff,v}$	974000.0 mm^4
ψ_a	0.174	$\sigma_{b,1}$	-0.216 MPa	e_{Nu}	0.0 mm
$k_{\sigma a}$	1.124	$\sigma_{b,2}$	-7.636 MPa	e_{Nv}	0.0 mm
λ_a	0.524			$S_{eff,u,min}$	79096.2 mm^3

STEEL EC3

CA2

SEISMIC

■ 2.1 DESIGN BY LOAD CASE

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	

ρ_a	1.000			$S_{eff,v,min}$	17820.9 mm^3

Design Ratio

$M_{u,max,Ed}$	1.347 kNm	η_{Mu}	0.041	$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	$M_{v,max,Ed}$	0.305 kNm	η_{Mv}	0.032
$\eta_{Mu,lim}$	0.010	$M_{pl,v,Rd}$	9.633 kNm		

LC/LG/ CO	Load Case or LG/CO Description	Member No	Location x x [m]	Design		Acc. to Formula	
LG19	US (LC1 + 0.6*LC2 + LC7)	2	0.000	Non-designable	> 1	1052)	ULS

Moment on non mono-symmetric cross-section -> Stability analysis acc. to 6.3.1 and 6.3.4 is not p

Design Internal Forces

N_{Ed}	0.017 kN	$V_{v,Ed}$	-1.536 kN	$M_{u,Ed}$	0.717 kNm
$V_{u,Ed}$	-0.214 kN	T_{Ed}	0.000 kNm	$M_{v,Ed}$	-0.046 kNm

Cross-section Classification - Class 4

σ	-8.513 MPa	ε	0.990	h/t	18.000
h	180.0 mm	λ_3	13.853	(b+h)/2t	13.500
b	90.0 mm	$\lambda_{3,a}$	14.843	Class	4
c	156.0 mm	$\lambda_{3,b}$	11.380		
t	10.0 mm	c/t	15.600		

Effective Cross-Section Properties

		$b_{eff,a}$	145.3 mm	A_{eff}	2513.4 mm^2
$\sigma_{a,1}$	1.043 MPa	$b_{red,a}$	10.7 mm	$I_{eff,u}$	7959220. mm^4
$\sigma_{a,2}$	0.833 MPa			$I_{eff,v}$	937714.0 mm^4
ψ_a	0.799	$\sigma_{b,1}$	-0.418 MPa	e_{Nu}	1.9 mm
$k_{\sigma a}$	0.447	$\sigma_{b,2}$	-3.756 MPa	e_{Nv}	-4.4 mm
λ_a	0.830			$S_{eff,u,min}$	70956.5 mm^3
ρ_a	0.932			$S_{eff,v,min}$	17166.9 mm^3

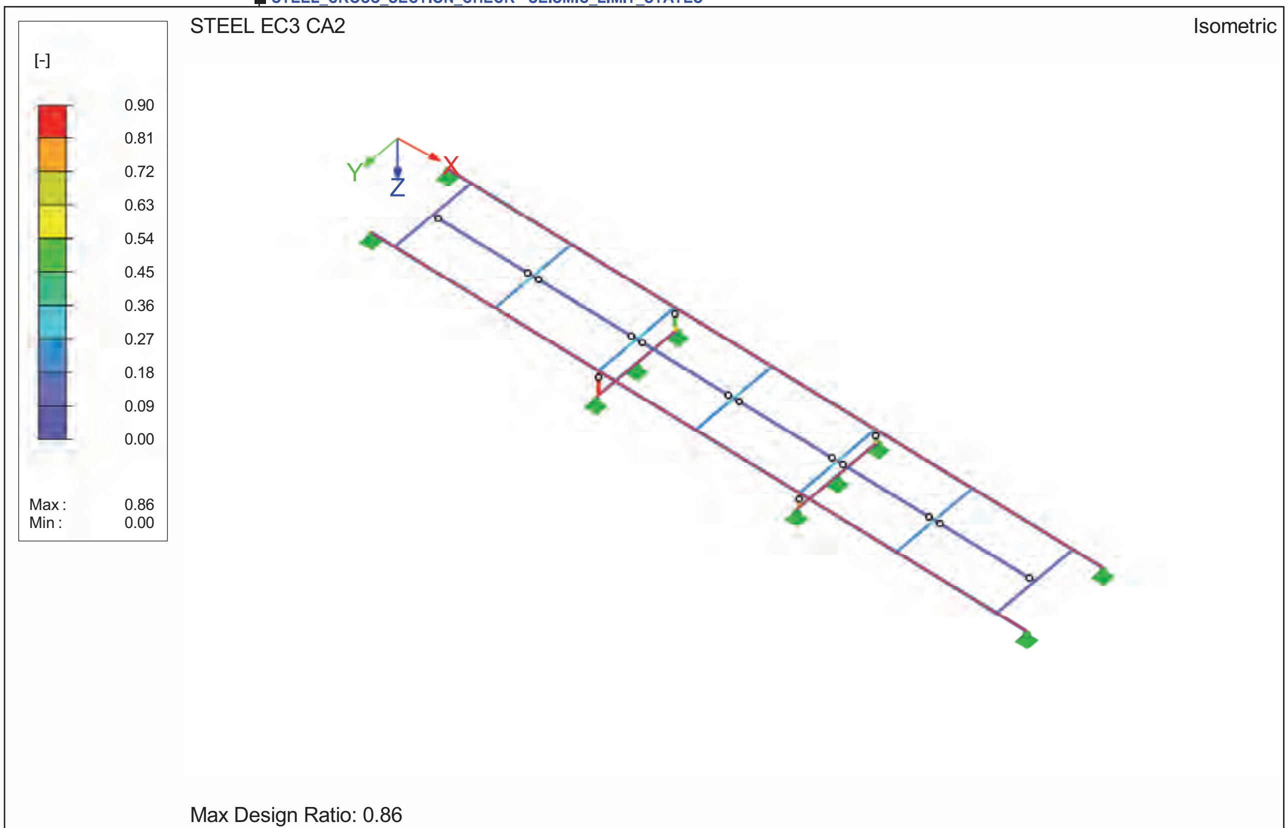
Design Ratio

$M_{u,max,Ed}$	3.079 kNm	η_{Mu}	0.093	$\eta_{Mv,lim}$	0.010
$M_{pl,u,Rd}$	32.968 kNm	$M_{v,max,Ed}$	0.143 kNm	η_{Mv}	0.015
$\eta_{Mu,lim}$	0.010	$M_{pl,v,Rd}$	9.633 kNm		

■ 4.1 PARTS LIST BY MEMBER

Part No	Cross-Section Description	Number Members	Length [m]	Tot. Length [m]	Surf. Area [m^2]	Volume [kNm]	Unit Weight [kg/m]	Weight [kg]	Tot. Weight [t]
1	1 - L 180x90x10	2	0.35	0.70	0.37	0.00	20.57	7.20	0.014
2	1 - L 180x90x10	4	1.45	5.80	3.07	0.00	20.57	29.82	0.119
3	1 - L 180x90x10	4	1.55	6.20	3.29	0.00	20.57	31.88	0.128
4	1 - L 180x90x10	4	1.50	6.00	3.18	0.00	20.57	30.85	0.123
5	2 - QRO 60x6 (EN 1021	14	0.71	9.90	2.12	0.00	9.20	6.51	0.091
6	3 - Rectangle 45/70	2	1.50	3.00	0.69	0.00	24.73	37.09	0.074
7	3 - Rectangle 45/70	2	1.55	3.10	0.71	0.00	24.73	38.33	0.077
8	3 - Rectangle 45/70	2	1.45	2.90	0.67	0.00	24.73	35.85	0.072
9	4 - LU 180/90/10/10 ... 5	2	0.45	0.90	0.44	0.00	18.45	8.30	0.017
10	6 - RD 30	2	0.37	0.75	0.07	0.00	5.55	2.08	0.004
11	6 - RD 30	2	0.22	0.45	0.04	0.00	5.55	1.25	0.002
12	7 - U 100	4	0.71	2.83	1.05	0.00	10.60	7.50	0.030
13	7 - U 100	4	0.05	0.20	0.07	0.00	10.60	0.53	0.002
Sum		48		42.73	15.78	0.00			0.754

■ STEEL_CROSS_SECTION_CHECK - SEISMIC_LIMIT_STATES



RSCOMBI 2006

CA1

1.1.1 GENERAL DATA

Generation of : Load Groups for Non-Linear Analyses

Combination Rules according to Standard CSN EN 1990

Generating for Design Situations :
- ☐ Static Equilibrium
  - ☐ Basic Combination
  - ☐ Exceptional
  - ☐ Seismic
- ☒ Ultimate limit state
  - ☒ Basic Combination
  - ☐ Exceptional
  - ☒ Seismic
- ☐ Serviceability Limit State
  - ☐ Rare
  - ☐ Frequent
  - ☐ Quasi-Permanent

☐ Generating ULS Combinations from favorable permanent Actions

Control Parameters : ☐ Reducing possible combinations by examining the results

First number of generated LG : 1

1.1.2 DETAILS - PARTIAL FACTORS - STATIC EQUILIBRIUM

	Action Category		Design Situation Basic Combination	Exceptional	Seismic
1.	Permanent Actions	unfavorable g-G,sup:	1.10	1.00	1.00
		favorable g-G,inf:	0.90	1.00	1.00
2.	Prestress	unfavorable g-P,sup:	1.10	1.00	1.00
		favorable g-P,inf:	0.90	1.00	1.00
3. ...					
6.	Variable Actions	unfavorable g-Q:	1.50	1.00	1.00
7.	Accidental Actions	g-A:		1.00	
8.	Seismic Actions	g-1:			1.00

1.1.3 DETAILS - PARTIAL FACTORS - ULTIMATE LIMIT STATE

	Action Category		Design Situation Basic Combination	Exceptional	Seismic
1.	Permanent Actions	unfavorable g-G,sup:	1.35	1.00	1.00
		favorable g-G,inf:	1.00	1.00	1.00
2.	Prestress	g-P,sup:	1.00	1.00	1.00
3. ...					
6.	Variable Actions	unfavorable g-Q:	1.50	1.00	1.00
7.	Accidental Actions	g-A:		1.00	
8.	Seismic Actions	g-1:			1.00

1.1.5 DETAILS - COMBINATION FACTORS - VARIABLE ACTIONS

	Action Category		Combination Factors Phi-0	Phi-1	Phi-2
3. A	Live Loads	- Category A - Housing/Common Rooms	0.70	0.50	0.30
3. B		- Category B - Offices	0.70	0.50	0.30
3. C		- Category C - Meeting Halls	0.70	0.70	0.60
3. D		- Category D - Showrooms	0.70	0.70	0.60
3. E		- Category E - Storage Rooms	1.00	0.90	0.80
3. F	Live Loads	- Category F - Vehicle Load < 30 kN	0.70	0.70	0.60
3. G		- Category G - Vehicle Load > 30 kN	0.70	0.50	0.30
3. H		- Category H - Roofs	0.00	0.00	0.00
4. A	Snow and Ice Loads	- Finland, Island, Norway, Sweden	0.70	0.50	0.20
4. B	- Other CEN Countries	- Sites > 1 000 m Altitude	0.50	0.20	0.00
5.	Wind Loads		0.60	0.20	0.00
6.	Temperature Actions (Fire Excluded)		0.60	0.50	0.00

1.2 ACTIONS

Action No.	Description	Load Cases	LC Description	Alternative
AC1	Stálé úèinky	LC1	SELF_WEIGHT	
AC2	Užitná zatížení	LC2	IMPOSED_LOADS	
AC3	Zatížení snìhem a ledem	LC3	SNOW	
AC4	Zatížení vìtrem	LC4	WIND	
AC5	Mimoøádné úèinky	LC5	SEISMIC_X-DIRECTION	
		LC6	SEISMIC_Y-DIRECTION	
		LC7	SEISMIC_Z-DIRECTION	

2.1 BY ACTIONS

No.	Apply	LG No.	LG Type	Load Group
1	☒	LG1	UB	1.35*AC1
2	☒	LG2	UB	1.35*AC1 + 1.50*AC2
3	☒	LG3	UB	1.35*AC1 + 1.50*AC2 + 0.75*AC3
4	☒	LG4	UB	1.35*AC1 + 1.50*AC2 + 0.75*AC3 + 0.90*AC4
5	☒	LG5	UB	1.35*AC1 + 1.50*AC2 + 0.90*AC4
6	☒	LG6	UB	1.35*AC1 + 1.50*AC3
7	☒	LG7	UB	1.35*AC1 + 1.05*AC2 + 1.50*AC3
8	☒	LG8	UB	1.35*AC1 + 1.05*AC2 + 1.50*AC3 + 0.90*AC4
9	☒	LG9	UB	1.35*AC1 + 1.50*AC3 + 0.90*AC4
10	☒	LG10	UB	1.35*AC1 + 1.50*AC4
11	☒	LG11	UB	1.35*AC1 + 1.05*AC2 + 1.50*AC4
12	☒	LG12	UB	1.35*AC1 + 1.05*AC2 + 0.75*AC3 + 1.50*AC4
13	☒	LG13	UB	1.35*AC1 + 0.75*AC3 + 1.50*AC4
14	☒	LG14 .. 16	US	1.00*AC1 + 1.00*AC5
15	☒	LG17 .. 19	US	1.00*AC1 + 0.60*AC2 + 1.00*AC5
16	☐	LG20 .. 22	US	1.00*AC1 + 0.60*AC2 + 0.00*AC3 + 1.00*AC5
17	☐	LG23 .. 25	US	1.00*AC1 + 0.60*AC2 + 0.00*AC3 + 0.00*AC4 + 1.00*AC5
18	☐	LG26 .. 28	US	1.00*AC1 + 0.60*AC2 + 0.00*AC4 + 1.00*AC5
19	☐	LG29 .. 31	US	1.00*AC1 + 0.00*AC3 + 1.00*AC5
20	☐	LG32 .. 34	US	1.00*AC1 + 0.00*AC3 + 0.00*AC4 + 1.00*AC5
21	☐	LG35 .. 37	US	1.00*AC1 + 0.00*AC4 + 1.00*AC5

2.2 BY LOAD CASES

LG No.	Apply	LG Type	Load Group
LG1	☒	UB	1.35*LC1
LG2	☒	UB	1.35*LC1 + 1.50*LC2
LG3	☒	UB	1.35*LC1 + 1.50*LC2 + 0.75*LC3
LG4	☒	UB	1.35*LC1 + 1.50*LC2 + 0.75*LC3 + 0.90*LC4
LG5	☒	UB	1.35*LC1 + 1.50*LC2 + 0.90*LC4
LG6	☒	UB	1.35*LC1 + 1.50*LC3
LG7	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC3
LG8	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC3 + 0.90*LC4
LG9	☒	UB	1.35*LC1 + 1.50*LC3 + 0.90*LC4
LG10	☒	UB	1.35*LC1 + 1.50*LC4
LG11	☒	UB	1.35*LC1 + 1.05*LC2 + 1.50*LC4
LG12	☒	UB	1.35*LC1 + 1.05*LC2 + 0.75*LC3 + 1.50*LC4
LG13	☒	UB	1.35*LC1 + 0.75*LC3 + 1.50*LC4
LG14	☒	US	LC1 + LC5
LG15	☒	US	LC1 + LC6
LG16	☒	US	LC1 + LC7
LG17	☒	US	LC1 + 0.60*LC2 + LC5
LG18	☒	US	LC1 + 0.60*LC2 + LC6
LG19	☒	US	LC1 + 0.60*LC2 + LC7
LG20	☐	US	LC1 + 0.60*LC2 + LC5
LG21	☐	US	LC1 + 0.60*LC2 + LC6
LG22	☐	US	LC1 + 0.60*LC2 + LC7
LG23	☐	US	LC1 + 0.60*LC2 + LC5
LG24	☐	US	LC1 + 0.60*LC2 + LC6
LG25	☐	US	LC1 + 0.60*LC2 + LC7
LG26	☐	US	LC1 + 0.60*LC2 + LC5
LG27	☐	US	LC1 + 0.60*LC2 + LC6
LG28	☐	US	LC1 + 0.60*LC2 + LC7
LG29	☐	US	LC1 + LC5
LG30	☐	US	LC1 + LC6
LG31	☐	US	LC1 + LC7

2.2 BY LOAD CASES

LG No.	Apply	LG Type	Load Group
LG32	❑	US	LC1 + LC5
LG33	❑	US	LC1 + LC6
LG34	❑	US	LC1 + LC7
LG35	❑	US	LC1 + LC5
LG36	❑	US	LC1 + LC6
LG37	❑	US	LC1 + LC7

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