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Structural Report

F55 (F54PN)

18445

Date 14/12/2018

for the system by

Global Truss
Furong Industrial Area
Shajing Town

Baoan District Shenzen China

Compiled by:

Aachen, 14th December 2018

INGENIEURKAMMER-BAU NORDRHEIN-WESTFALEN
BERATENDER INGENIEUR
101448

This Structural Report includes pages 1 - 40 + annexes

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1 PRELIMINARY NOTES

1.1 Basics

The currently applicable regulations and standards, in particular:

DIN EN 1991-1	Actions on structures (Eurocode 1)
DIN EN 13814	Fairground and amusement park machinery and structures
DIN EN 13782	Temporary Structures – Tents
DIN EN 1993-1	Design of steel structures
DIN EN 1999-1	Design of aluminium structures

1.2 Materials

Tubes	Aluminium EN AW-6082 T6
Bolts	Güte mid. 8.8 (grade min. 10.9)

1.3 General remarks

The truss system is part of a "modular construction system" with the different truss lengths

500mm, 1000mm, 1500mm, 2000mm, 2500 mm, 3000mm, 3500mm, 4000mm, 4500mm and 5000mm.

The Trusses consist of 2 upper and 3 lower main chords (round tube 50 x 4mm), which are arranged in a quadratic shape. The center chord at the bottom is connected to the outer chords by cross tubes (round tube 50 x 4mm). The trusses also consist of welded diagonal bracings (round tube 30 x 3mm). The truss type is stiffened by diagonal bracings at the top and at both vertical sides.

The distance between system lines of the mainchords is 47 cm in vertical- and 47 cm in horizontal direction.

The trusses are connected at the 4 outer mainchords with couplers consisting of female fittings, connectors and bolts. The center chord of the bottom is not connected with couplers.

The loads are applied acc. chapter 1.4. The allowable loads are listed in tables (see chapter 6).

The verification of the single parts is done according the safety concept of EN 1990 with a partial safety factor of the loading side of 1.50 for payloads.

For applications which can be calculated on the basis of other codes, the partial safety factors can be adjusted (for example temporary structures acc. EN 13814, yF = 1.35 for payloads).

To use the resulting allowable loads with British Standard (BS) and ANSI, the allowable loads listed in tables have to be multiplied by 0.85

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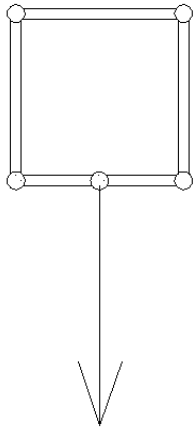
1.4 Geometry and loadings

The selfweight of the truss is approx. 18 kg/m

For the paylodas there are 2 loadcases taken into account:



LC 1) The load can be applied as a distributed load, as multiple point loads or as single point loads on the central bottom chord.

The allowable loading on the truss is limited by two conditions:

1) First condition is the local load transfer from the central bottom chord to the bracing node.

2) Second condition is the global load transfer to the truss supports.

Resulting allowable loading see chapter 6

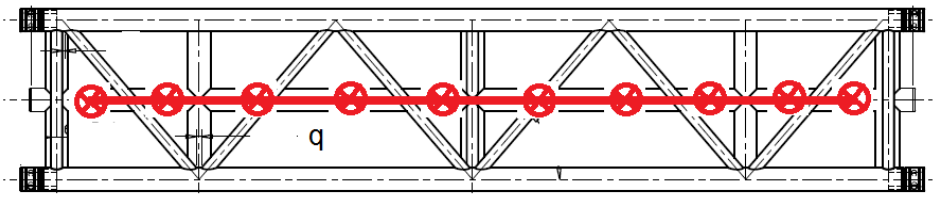
The following principle loadcases and loading situations are taken into account:

Structural system:

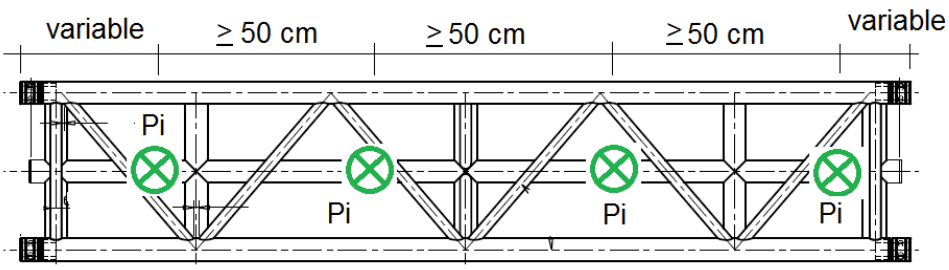
single span girder

Loading situations

1a) uniformly distributed load (UDL) on central bottom chord



1b) multiple point load on central bottom chord with maximum point load of Pi ≤ 200 kg and distances ≥ 50 cm (equivalent to a distributed load of ≤ 400 kg/m). No restrictions concerning position on the central bottom chord but allowable loading in dependence of the span has to be respected, see chapter 6.



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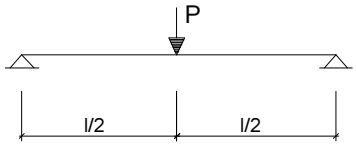
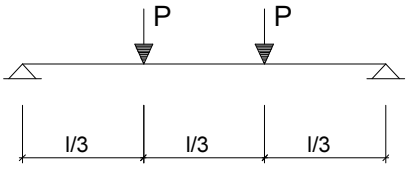
1c) Single point loads on central bottom chord

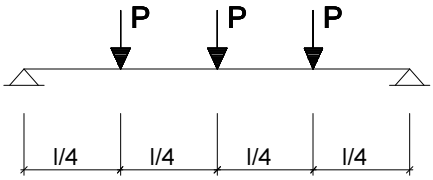
Single-load in 1/2 point



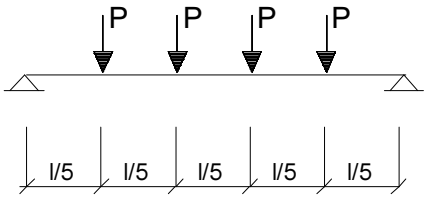
Single-load in 1/3 points



Single-load in 1/4 points



Single-load in 1/5 points



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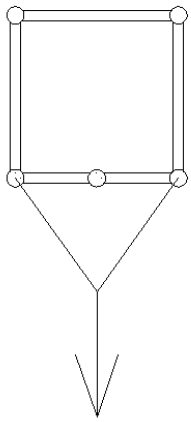


LC 2) The load can be applied as a distributed load or as single point loads on the side chords:

<u>The following principle loadcases and loading situations are taken into account:</u>

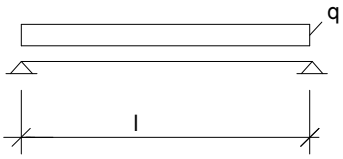
Structural system:

single span girder

Loading situations

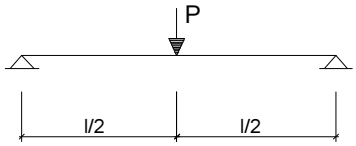
2a) uniformly distributed load (UDL) on side chords

Uniformly distributed load (UDL)

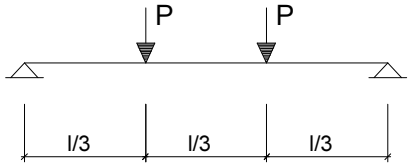


2b) Single point loads on central bottom chord

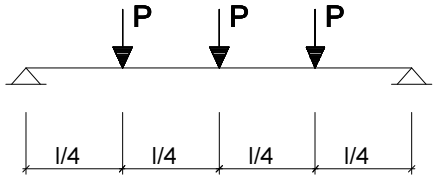
Single-load in 1/2 point



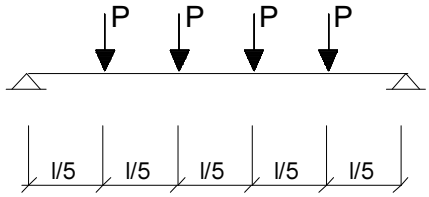
Single-load in 1/3 points



Single-load in 1/4 points



Single-load in 1/5 points



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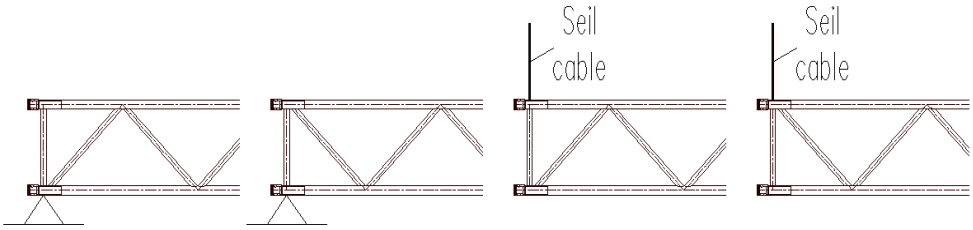
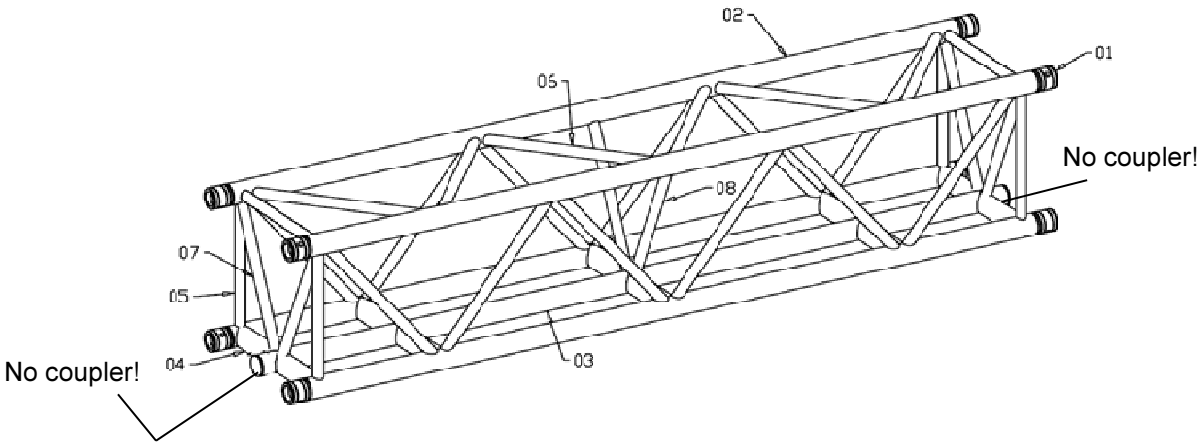
For the support or suspension there are the following possibilities:



The trusses are connected at the 4 outer mainchords with couplers consisting of female fittings, connectors and bolts. The center chord of the bottom is not connected with couplers.



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2 SYSTEM

Drawings F55 (F54PN)

see annex

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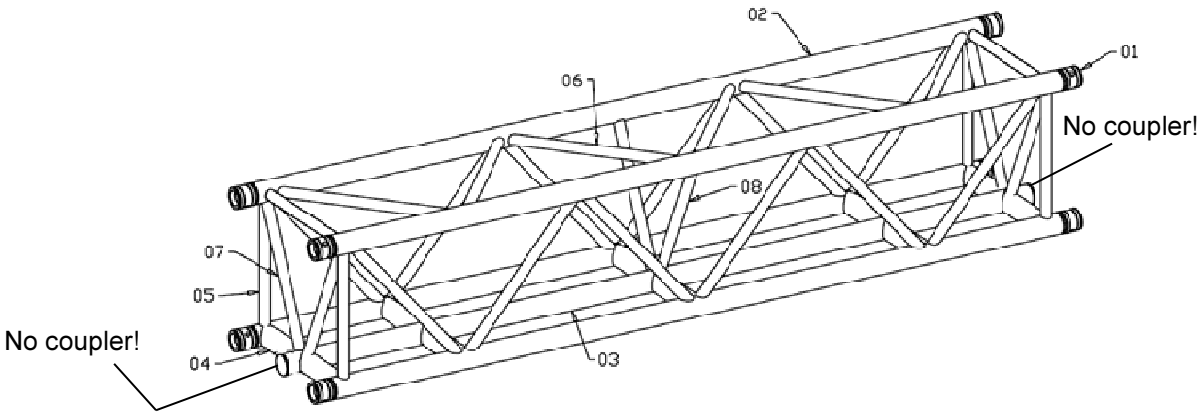
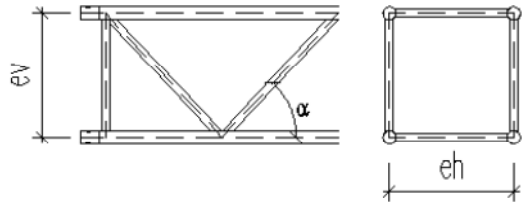
3 SECTION- AND MATERIAL PROPERTIES



Querschnittswerte Rohre / properties Tubes

	D [mm]	t [mm]	A [cm²]	I [cm⁴]	Wel [cm³]	i [cm]
Gurtrohre / main chords	50,0	4	5,78	15,41	6,16	1,63
vertikal Diagonalen / Bracing	30	3	2,54	2,35	1,56	0,96
horizontal Diagonalen / Bracing	30	3	2,54	2,35	1,56	0,96

Geometrie Traverse / truss geometry



Achsabstand Gurtrohre	vertikal	ev	47	[cm]
distance axes main chords	horizontal	eh	47	[cm]
min. Neigung Diagonalen	vertikal	α	40	[°]
min. gradient bracing	horizontal	α	40	[°]

Kennwerte Gesamttraverse / properties truss-Section

A	$= 4 \times A_G$	=	23,12	[cm²]
Iyy	$= 4 \times I_G + 4 \times A_G \times (ev/2)^2$	=	12830,81	[cm⁴]
Izz	$= 4 \times I_G + 4 \times A_G \times (eh/2)^2$	=	12830,81	[cm⁴]
It	= Näherung aus Erfahrungswerten	=	3613,25	[cm⁴]
iy	$= (Iyy/A)^{1/2}$	=	23,56	[cm]
iz	$= (Izz/A)^{1/2}$	=	23,56	[cm]

Index G : Querschnittseigenschaft Gurtrohr
section properties main chord

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Material properties

Gurtrohre + Diagonalen EN AW 6082 T6 (AlMgSi1)
chords and bracing

zulässige Spannungen nach EN-1999-1-1 / allowable stress acc. to EN-1999-1-1

Teilsicherheitsbeiwerte Material / partial safety factors material

γ_{M1}=	1,10	Beulklasse / BC=	A
γ_{M2}=	1,25		

0,2%-Dehngrenze / 0,2%-Proof Strength			Zugfestigkeit / ultimate tensile strength		
fo $t \le 5mm$=	250	[N/mm²]	fu $t \le 5mm$=	290	[N/mm²]
fo $t > 5mm$=	260	[N/mm²]	fu $t > 5mm$=	310	[N/mm²]
fo,haz=	125	[N/mm²]	fu,haz=	185	[N/mm²]

Festigkeit der Schweißnaht fw= 190 [N/mm²]
Strength of welding seams

Faktor für die WEZ-Werte beim WIG-Schweißen: 0,8
Factor for HAZ-values for TIG-welding:

Bolzen / Bolt 42 CrMo (8.8)

Verbinder / Connector EN AW 2011 T6 (AlCuBiPb)

0,2%-Dehngrenze / 0,2%-Proof Strength			Zugfestigkeit / ultimate tensile strength		
fo>	230	[N/mm²]	fu>	310	[N/mm²]

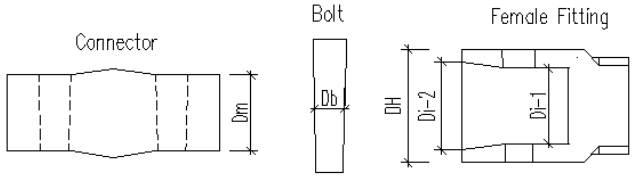
Hülse / Female fitting EN AW 6082 T6

zulässige Spannungen nach EN-1999-1-1 / allowable stress acc. to EN-1999-1-1

Teilsicherheitsbeiwerte Material / partial safety factors material

γ_{M1}=	1,10
γ_{M2}=	1,25

0,2%-Dehngrenze / 0,2%-Proof Strength			Zugfestigkeit / ultimate tensile strength		
fo=	250	[N/mm²]	fu=	290	[N/mm²]



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Material	E=	70000	[N/mm²]	
	fo=	250,00	[N/mm²]	
	f_o/γ_{M1}=	227,27	[N/mm²]	
	$f_{o,haz}$=	125,00	[N/mm²]	
	fu=	290,00	[N/mm²]	
	f_u/γ_{M2}=	232,00	[N/mm²]	
	$f_{u,haz}$=	185,00	[N/mm²]	
	$f_{u,haz}/\gamma_{M2}$=	148,00	[N/mm²]	
Querschnitt	D0=	50,00	[mm]	
cross section	A=	5,78	[cm²]	
	I=	15,41	[cm⁴]	
	i=	1,63	[cm]	
Bestimmung der QS-Klasse	β=	10,61	[-]	$3 \cdot (D0 / t)^{0,5}$ nach 6.10
Determination of section-class	ε=	1,00	[-]	$(250 / fo)^{0,5}$
	QS-Klasse=	2		nach Kap. 6.1.4.4
				acc. chapter 6.1.4.4
Beiwerte Biegeknicken	BC=	A	[-]	
Coefficients for buckling	α=	0,20	[-]	
	λo=	0,10	[-]	
t_{eff} im Bereich der WEZ	red-Faktor=	0,8	[-]	(WIG $_{TIG}$)
t_{eff} in heat affected zone				
	Knotenpunkt mit 1 Diagonalen / node with 1 bracing			
	D1=	30,00	[mm]	
	U_{WEZ}=	90,00	[mm]	D1 + 2 · 30
	U_{Total}=	157,08	[mm]	
	$t_{eff,o}/t$=	0,66	[-]	[1 - (1 - red-Faktor · fo,haz / fo) · U_{WEZ} / U_{Total}]
	$t_{eff,u}/t$=	0,72	[-]	[1 - (1 - red-Faktor · fu,haz / fu) · U_{WEZ} / U_{Total}]
	Knotenpunkt mit 2 Diagonalen / node with 2 bracing			
	D1=	30,00	[mm]	
	D2=	30,00	[mm]	
	U_{WEZ}=	129,27	[mm]	π / **4** · D0 + D1 / 2 + D2 / 2 + 2 · 30
	U_{Total}=	157,08	[mm]	
	$t_{eff,o}$ / t=	0,51	[-]	[1 - (1 - red-Faktor · fo,haz / fo) · U_{WEZ} / U_{Total}]
	$t_{eff,u}$ / t=	0,60	[-]	[1 - (1 - red-Faktor · fu,haz / fu) · U_{WEZ} / U_{Total}]

Querschnitts- und Materialeigenschaften der Diagonalen / Section- and material properties of the bracing

Material	E=	70000	[N/mm²]	
	fo=	250,00	[N/mm²]	
	f_o/γ_{M1}=	227,27	[N/mm²]	
	BC=	A	[-]	
	α=	0,20	[-]	
	λo=	0,1	[-]	
Querschnitt / cross section	D_0=	30	[mm]	
	A=	2,54	[cm²]	
	I=	2,35	[cm⁴]	
	i=	0,96	[cm]	

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4 ALLOWABLE LOADING SINGLE COMPONENTS

Outer chords at top and bottom

Gurtrohr im Bereich der WEZ an der Kupplung main chord in heat affected zone at coupler				
	N_{Rd} =A x 0,8* x fu,haz / γ_{M2}=	**68,44**	[kN]	*(WIG $_{TIG}$) örtliche Schweißnaht nach Kap. 6.2.9.3 (1) local welding seam acc. chapter 6.2.9.3 (1)
Gurtrohr im Bereich der WEZ main chord in heat affected zone	Knotenpunkt mit 1 Diagonalen / node with 1 bracing			
	N_{Rd} = A_{eff} x fo / γ_{M1}= (mit A_{eff}= $t_{eff,o}$ / t x A)	**86,21**	[kN]	örtliche Schweißnaht nach Kap. 6.2.9.3 (2) local welding seam acc. Chapter 6.2.9.3 (2)
	Knotenpunkt mit 2 Diagonalen / node with 2 bracing			
	N_{Rd} = A_{eff} x fo / γ_{M1}= (mit A_{eff}= $t_{eff,o}$ / t x A)	**66,51**	[kN]	örtliche Schweißnaht nach Kap. 6.2.9.3 (2) local welding seam acc. Chapter 6.2.9.3 (2)
Knicken Gurtrohr zw. Knoten mit 1 Diagonale in der Mitte buckling main chord bewteen nodes with 1 bracing in the middle	sk=	112,00	[cm]	
	Ncr=	84,85	[kN]	
	λ^*=	1,31	[-]	
	ϕ=	1,47	[-]	
	X=	0,46	[-]	
	A1=	3,62	[cm²]	nach Tab. 6.5
	κ=	0,88	[-]	acc. table 6.5
	N_{Rd} = X x κ x Aeff x fo / γ_{M1}= (mit A_{eff}=A für QSK 1,2 und 3, s. EN 1999-1-1 Kap. 6.3.1.1)	**53,70**	[kN]	nach Gl. 6.49 acc. equation 6.49
Knicken Gurtrohr zw. Knoten ohne Diagonale in der Mitte buckling main chord bewteen nodes without bracing in the middle	sk=	112,00	[cm]	
	Ncr=	84,85	[kN]	
	λ^*=	1,31	[-]	
	ϕ=	1,47	[-]	
	X=	0,46	[-]	
	N_{Rd} = X x A x fo / γ_{M1}=	**61,01**	[kN]	nach Gl. 6.49 acc. equation 6.49
Schweißnaht zwischen Gurtrohr und Hülse welding seam between chord and female conical coupler				
	fw=	190,00	[N/mm²]	
	Ymw=	1,25	[-]	
	N_{Rd} = A x fw / γ_{M1}=	**87,86**	[kN]	nach Gl. 8.29 acc. equation 8.29

relevant for main chord tubes: **N_{Rd_G} = 53,70 kN**

Bending of the center chord at the bottom and of the cross tubes in heat-affected zone:

Lokale Biegung unteres inneres Gurtrohr Knotenpunkt mit Querrohr Local bending of low er inner chord w ith lateral tube				
örtliche Schweißnaht nach Kap. 6.2.9.3 (2) local w elding seam acc. Chapter 6.2.9.3 (2)				
	α=	0,55	[-]	nach Tab. 6.4
Nebenrechnung QS-Kl. 3	D=	50,0	[mm]	
Auxiliary calculation for class 3	red-Faktor=	0,8	[-]	(WIG $_{TIG}$)
	ρo,haz=	0,5	[-]	fo,haz / fo
	to,eff=	1,60	[mm]	teff,o / t · t
	$W_{el,haz}$= π x R² x to,eff=	2,66	[cm³]	mit R = D / 2 - t / 2
	Wel=	6,16	[cm³]	
	$W_{pl,haz}$= 4 x R² x to,eff=	3,39	[cm³]	mit R = D / 2 - t / 2
	β3=	18	nach Kaı	nach Kap. 6.1.4.4
	β2=	13	nach Kaı	nach Kap. 6.1.4.4
	α,3w=	0,61	[-]	
	MoRd = α · Wel · fo / γ_{M1}=	**76,95**	[kNcm]	nach Gl. 6.24 acc. equation 6.24

Bending of the center chord outside of heat-affected zone:

Wel = 6,16 cm³ => MRd_G = 6,16 · 25 / 1,1 = 140 kNcm

Bracing

Diagonale im Bereich der WEZ bracing in heat affected zone				
	N_{Rd} = A x 0,8* x fu,haz / γ_{M2}=	**30,13**	[kN]	*(WIG $_{TIG}$) örtliche Schweißnaht nach Kap. 6.2.9.3 (1) local w elding seam acc. chapter 6.2.9.3 (1)
Knicken Diagonale buckling bracing	sk=	52,00	[cm]	
	Ncr=	59,98	[kN]	
	λ*=	1,03	[-]	
	ϕ=	1,12	[-]	
	X=	0,64	[-]	
	N_{Rd} = X x AG x fo / γ_{M1}=	**36,79**	[kN]	nach Gl. 6.49 acc. equation 6.49
Schweißnaht zwischen Diagonale und Gurtrohr w elding seam betw een chord and female conical coupler				
	fw=	190,00	[N/mm²]	
	γmw=	1,25	[-]	
	N_{Rd} = A x fw / γ_{M1}=	**38,68**	[kN]	nach Gl. 8.29 acc. equation 8.29

relevant for bracing tubes: **NRd_D = 30,13 kN**

Allowable normal force at coupler:

Bolzen / Bolt			
Material / material (8.8)	$f_{y,bk}$=	64,00	[kN/cm²]
	$f_{u,bk}$=	80,00	[kN/cm²]
Geometrie / geometry	Db=	1,08	[cm]
	Ab=	0,91	[cm²]
zul Normalkraft aus Abscheren n. EN 1999-1-1 allow able loading due to shearing acc. to EN 1999-1-1			
	N_{Rd} = 2 x 0,60 x Ab x fub,k / 1,25=	**69,71**	[kN]
Verbinder / Connector			
Material / material	EN AW 2011 (AlCuBiPb F37)		
Geometrie / geometry	Dm=	29	[mm]
Lochleibung in Verbinder Bearing stress in connector	f_u / γ_{M2}=	248,00	[N/mm²]
	do=	11	[mm]
	t=	29	[mm]
	e_1=	17,1	[mm]
	αb=	0,52	[-]
	e2=	14,5	[mm]
	k_1=	1,99090909	[-]
	NRd = k1 x αb x fu x d x t / γ_{M2}=	81,62	[kN]
Nachweis Restquerschnitt auf Zug Remaining section under tension			
	NRd = 0,9 x A,net x fu / γ_{M2}=	**76,23**	[kN]
Hülse / Female Fitting			
Geometrie / geometry	DH=	50	[mm]
	Di-1=	29	[mm]
	Di-2=	35	[mm]
	Di-m=	32	[mm]
Lochleibung in Hülse Bearing stress in female fitting	fu / γ_{M2}=	232	[N/mm²]
	do=	13	[mm]
	t = DH - Di-m=	18	[mm]
	e1>	23	[mm]
	αb=	0,59	
	e2>	20	[mm]
	k1=	2,5	
	NRd = k1 x αb x fu x d x t / γ_{M2}=	**80,04**	[kN]

The allowable normal force of the coupler is not relevant compared to the allowable normal force of the tube (N_{RdG} = 53,70 kN < 69,71 kN).

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Interaction bending and normal force at coupler of the outer chords

Verification of interaction bending and normal force at coupler

=> $\mathbf{(Nsd_G / NRd_G)^{1,3} + (Msd_G / MRd_G) < 1,0}$

mit $Nsd_G = Nsd / 4 + Msd / (2 \cdot 0,35\ m)$
und $Msd_G = 0,25 \cdot Qsd \cdot 10,5\ cm = 2,625\ cm \cdot Qsd$
=> a = factor for cantilever at the coupler = 2,625 cm

Nsd, Msd und Qsd: global internal forces in the truss (in kN resp. kNm)

The global internal forces include the following safety factors acc. Eurocode:

selfweight of the truss: yF = 1,35

Net load on the truss: yF = 1,50

NRd_G = allowable loading of the chord in the heat affected zone (see following table):

Gurtrohr im Bereich der WEZ an der Kupplung main chord in heat affected zone at coupler			
$N_{Rd} = A \times 0,8^* \times f_{u,haz} / \gamma_{M2} =$	**68,44**	[kN]	*(WIG $_{TIG}$) örtliche Schweißnaht nach Kap. 6.2.9.3 (1) local welding seam acc. chapter 6.2.9.3 (1)

MRd_G = MuRd (see following table):

Lokale Biegung Gurtrohr Knotenpunkt vollst. in WEZ Local bending of chord			
örtliche Schweißnaht nach Kap. 6.2.9.3 (1) local welding seam acc. Chapter 6.2.9.3 (1)			
D=	50	[mm]	
red-Faktor=	0,8	[-]	(WIG $_{TIG}$)
$\rho_{o,haz}$=	0,64	[-]	$f_{u,haz} / f_u$
$t_{u,eff}$=	2,04	[mm]	red-Faktor $\cdot \rho_{u,haz} \cdot t$
$W_{net} = \pi \times R^2 \times t_{u,eff}$=	3,39	[cm³]	mit R = D / 2 - t / 2
MuRd = Wnet · fu / yM2=	**78,71**	[kNcm]	nach Gl. 6.24 acc. equation 6.24

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The following 4 cases are taken into account.

1. Verification of the center chords at the bottom at UDL-loads or multiple single point loads (LC 1a and 1b)

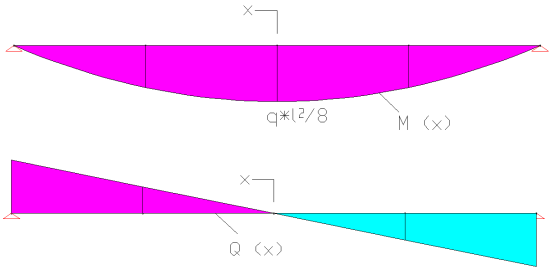
The loads at center chord at the bottom are loaded at the worst points with multiple single point loads at a distance of 50 cm between each load.

2. Verification of the center chord at the bottom with single point loads (LC 1c)
No requirements for position of coupler (see below).

3. Verification of the outer chords with uniformly distributed load (UDL) (LC 2a)

The coupler is always located at the theoretically worst point. This results from the following extremum-calculation:

Note: For the determination of the worst position of the coupler, the exponent 1,3, for the relation of actual load to the allowable load is not taken into account with sufficient accuracy.



$M_{sd}(x) = q_{sd} \cdot L^2 / 8 - q_{sd} \cdot x^2 / 2$
$Q_{sd}(x) = q_{sd} \cdot x$

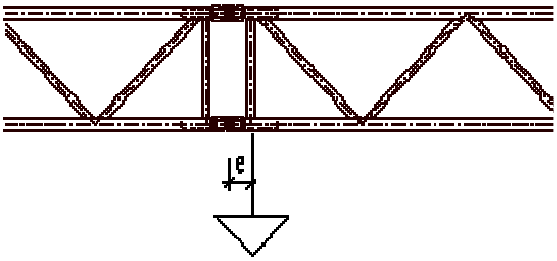
$N_{Rd_G} = 68{,}44$ kN
$M_{Rd_G} = 78{,}71$ kNcm

M-Q Interaction $M_{sd}(x) / (2 \cdot 0{,}47 \cdot 68{,}44) + Q_{sd}(x) \cdot 2{,}625 / 78{,}71$

Extreme value: $d/dx\ \sigma(x) = 0$

$\Rightarrow x = 2 \cdot 0{,}47 \cdot 68{,}44 \cdot 2{,}625 / 78{,}71 = 2{,}146$ m
(from middle of span)

4. Verification of the side chords with single point loads (LC 2b)
No requirements for position of coupler (Distance between load and coupler is e ≥ 12 cm, see below)



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Summary

Following points are relevant for the determination of the allowable loads:

1. Allowable bending moment of the center chord at the bottom and the cross tubes (MRd_G)
   completely in heat affected zone => MRd_G = 76,95 kNcm
   outside heat affectd zone => MRd_G = 140,0 kNcm

2. Allowable normal force in main chord (NRd_G)

   Buckling of main chord betw. nodes with 1 bracing is relevant => NRd_G = 53,70 kN

   Main chord in heat affected zone at coupler => NRd_G = 68,44 kN

3. Global shear force in truss (Q)

   Allowable normal force in diagonals at nodes is relevant => NRd_D = 30,13 kN

   zul shear force from $QRd / (2 \cdot \sin 40°) < 0{,}9 \cdot NRd_D$
   * 10% reduction because of minor stresses

   => allow. $QRd = 0{,}9 \cdot 30{,}13 \cdot 2 \cdot \sin 40°$ => QRd = 34,86 kN

4. Interaction bending and normal force at coupler see page 13

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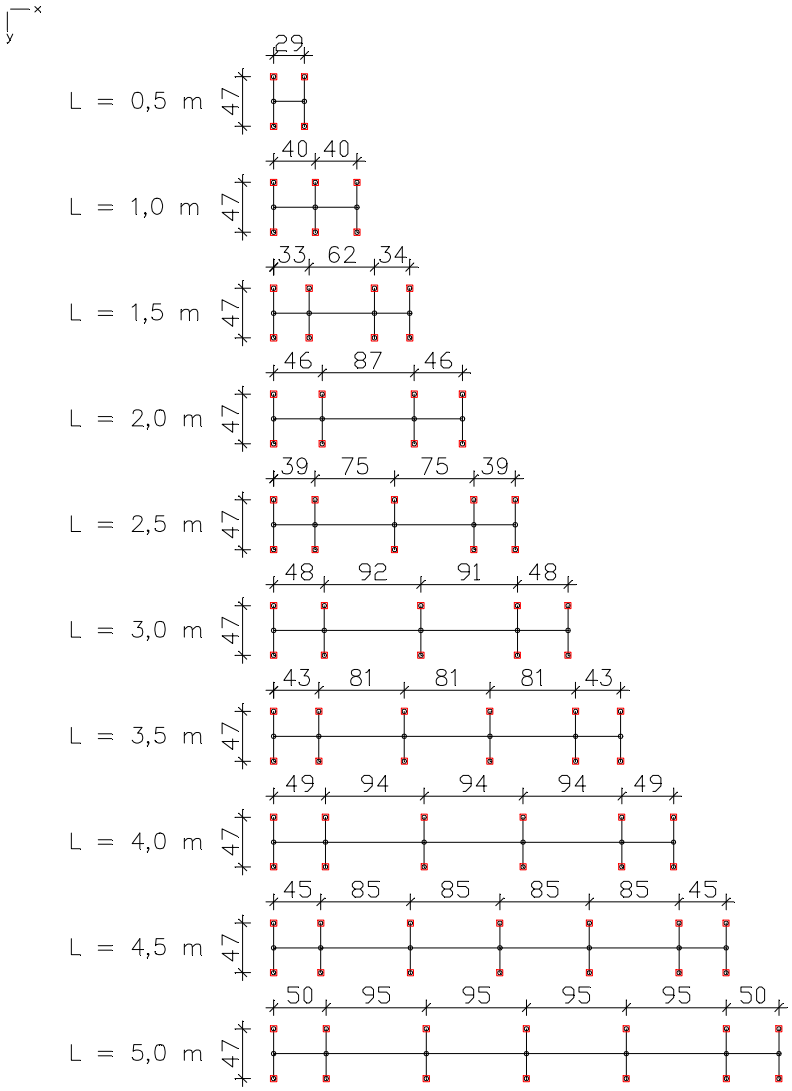
5 ALLOWABLE LOADING SINGLE SPAN GIRDER

5.1 Center chords at bottom

Systems [cm]:



Loadings:		see annex
	Single point load (CPL or at 1/3-, 1/4- or 1/5-pts)	Pi = 4,0 kN
	Multiple point loads at a distance of 50 cm	Pi = 2,0 kN
	Uniformly distributed load (UDL)	p = 4,0 kN/m
Calculation		see annex
Verification:	Single point load (transverse tube)	
	max M_{Ed} = 1,5 · 4,0 · 47 / 4 = 70,5 kNcm	< MRd = 76,95 kNcm
	Single point load (longitudinal tube)	
	max M_{Ed1} = 1,5 · (-33) = -50 kNcm	< MRd = 76,95 kNcm
	max M_{Ed2} = 1,5 · 66 = 99 kNcm	< MRd = 140 kNcm
	Multiple point loads and UDL (transverse tube)	
	max M_{Ed} = 1,5 · 46 kNcm = 69 kNcm	< MRd = 76,95 kNcm
	Multiple point loads and UDL (longitudinal tube)	
	max M_{Ed1} = 1,5 · (-36) = -54 kNcm	< MRd = 76,95 kNcm
	max M_{Ed2} = 1,5 · 24 = 36 kNcm	< MRd = 140 kNcm

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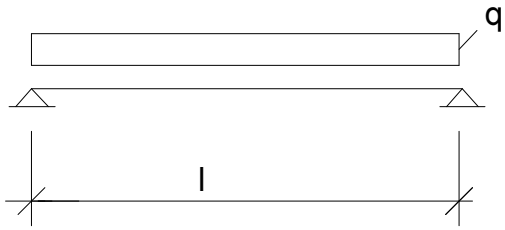
5.2 Outer chords + bracing uniformly distributed load (UDL)

System:



Loading

qsd = psd + gsd — (Net load + selfweight, incl. safety factors)

Normal force in chords:

$N_{Rd} \geq q_{sd} \cdot L^2 / 8 / (n \cdot b)$
$\Rightarrow q_{sd} \leq N_{Rd} \cdot (n \cdot b) \cdot 8 / L^2$
$\Rightarrow zul\ p = (N_{Rd} \cdot (n \cdot b) \cdot 8 / L^2 - g_{sd}) / \gamma_F$

Normal force in bracing:

$Q_{Rd} \geq q_{sd} \cdot L / 2$
$\Rightarrow q_{sd} \leq Q_{Rd} \cdot 2 / L$
$\Rightarrow zul\ p = (Q_{Rd} \cdot 2 / L - g_{sd}) / \gamma_F$

Interaction at coupler:

Verification of interaction bending and normal force at coupler by an iterative method.

$\Rightarrow (N_{sdG} / N_{RdG})^{1,3} + (M_{sdG} / M_{RdG}) < 1,0$

The coupler is located at e = 1,217 m from the middle of the span (theoretically worst point, see extremum-calculation in chapter 4)

Center chord at bottom:

zul p ≤ 3,75 kN/m

Limit of deflection:

Limit of deflection max. u = L / f
$\Rightarrow zul\ p = (L / f) / (5/384 \cdot L^4 / E / I_{yy}) - g$

3 different limitations are taken into account:
max. u = L / 100
max. u = L / 200
max. u = L / 300

Loading tables:

see following pages

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Gleichstreckenlast
Uniformly distributed load UDL

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	NRd	QRd	Interaction at coupler	Deflection L/100
L [m]	**zul q [kN/m]**	**zul q [kN/m]**	**zul q [kN/m]**	**zul q [kN/m]**
4,00	16,66	9,48	9,16	107,60
5,00	10,61	7,55	8,28	55,00
6,00	7,32	6,27	6,74	31,75
7,00	5,33	5,35	5,40	19,93
8,00	4,04	4,66	4,35	13,29
9,00	3,16	4,12	3,54	9,28
10,00	2,53	3,70	2,92	6,72
11,00	2,06	3,34	2,44	5,00
12,00	1,71	3,05	2,05	3,81
13,00	1,43	2,81	1,75	2,96
14,00	1,21	2,59	1,50	2,33
15,00	1,03	2,41	1,29	1,86
16,00	0,89	2,25	1,13	1,50
17,00	0,77	2,11	0,98	1,22
18,00	0,67	1,98	0,86	1,00
19,00	0,58	1,87	0,76	0,83
20,00	0,51	1,77	0,67	0,68
21,00	0,45	1,67	0,60	0,56
22,00	0,39	1,59	0,53	0,47
23,00	0,35	1,52	0,47	0,39
24,00	0,31	1,45	0,42	0,32

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN/m**

Gleichstreckenlast
Uniformly distributed load UDL

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	NRd	QRd	Interaction at coupler	Deflection L/200
L [m]	**zul q [kN/m]**	**zul q [kN/m]**	**zul q [kN/m]**	**zul q [kN/m]**
4,00	16,66	9,48	9,83	53,71
5,00	10,61	7,55	8,28	27,41
6,00	7,32	6,27	6,74	15,79
7,00	5,33	5,35	5,40	9,88
8,00	4,04	4,66	4,35	6,56
9,00	3,16	4,12	3,54	4,55
10,00	2,53	3,70	2,92	3,27
11,00	2,06	3,34	2,44	2,41
12,00	1,71	3,05	2,05	1,82
13,00	1,43	2,81	1,75	1,39
14,00	1,21	2,59	1,50	1,08
15,00	1,03	2,41	1,29	0,84
16,00	0,89	2,25	1,13	0,66
17,00	0,77	2,11	0,98	0,52
18,00	0,67	1,98	0,86	0,41
19,00	0,58	1,87	0,76	0,32
20,00	0,51	1,77	0,67	0,25
21,00	0,45	1,67	0,60	0,19
22,00	0,39	1,59	0,53	0,14

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN/m**

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Gleichstreckenlast

Uniformly distributed load UDL

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	NRd	QRd	Interaction at coupler	Deflection L/300
L [m]	**zul q [kN/m]**	**zul q [kN/m]**	**zul q [kN/m]**	**zul q [kN/m]**
4,00	16,66	9,48	9,83	35,75
5,00	10,61	7,55	8,28	18,21
6,00	7,32	6,27	6,74	10,46
7,00	5,33	5,35	5,40	6,52
8,00	4,04	4,66	4,35	4,31
9,00	3,16	4,12	3,54	2,97
10,00	2,53	3,70	2,92	2,12
11,00	2,06	3,34	2,44	1,55
12,00	1,71	3,05	2,05	1,15
13,00	1,43	2,81	1,75	0,87
14,00	1,21	2,59	1,50	0,66
15,00	1,03	2,41	1,29	0,50
16,00	0,89	2,25	1,13	0,38
17,00	0,77	2,11	0,98	0,29
18,00	0,67	1,98	0,86	0,21
19,00	0,58	1,87	0,76	0,16
20,00	0,51	1,77	0,67	0,11

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN/m**

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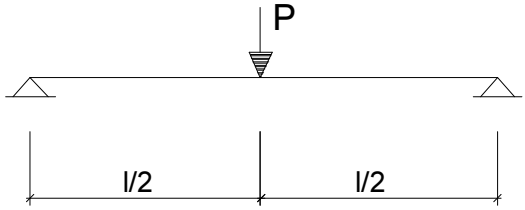
5.3 Outer chords + bracing single point load at 1/2-point

System:



Loading

Psd + gsd — (Net load + selfweight, incl. safety factors)

Normal force in chords:

$N_{Rd} \geq (P_{sd} \cdot L / 4 + g_{sd} \cdot L^2 / 8) / (n \cdot b)$
$\Rightarrow P_{sd} \leq [N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 4 / L$
$\Rightarrow$ zul P = $[N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 4 / L / \gamma_F$

Normal force in bracing:

$Q_{Rd} \geq P_{sd} / 2 + g_{sd} \cdot L / 2$
$\Rightarrow P_{sd} \leq (Q_{Rd} - g_{sd} \cdot L / 2) \cdot 2$
$\Rightarrow$ zul P = $(Q_{Rd} - g_{sd} \cdot L / 2) \cdot 2 / \gamma_F$

Interaction at coupler:

Verification of interaction bending and normal force at coupler by an iterative method.

$\Rightarrow (N_{sdG} / N_{RdG})^{1,3} + (M_{sdG} / M_{RdG}) < 1,0$

The load is located at e = 0,12 m from the coupler

Center chord at bottom:

zul P ≤ 4,0 kN

Limit of deflection:

Limit of deflection max. u = L / f
$\Rightarrow$ zul P = $[L / f - g \cdot (5/384 \cdot L^4 / E / I_{yy})] / (L^3/48 / E / I_{yy})$

3 different limitations are taken into account:
max. u = L / 100
max. u = L / 200
max. u = L / 300

Loading tables: see following pages

Einzellast in Feldmitte
Single-load in 1/2point

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	Nrd	Qrd	Interaction at coupler	Deflection L/100
			0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	33,33	37,93	23,23	269,00
5,00	26,52	37,76	20,47	171,89
6,00	21,95	37,60	18,23	119,08
7,00	18,66	37,44	16,38	87,20
8,00	16,18	37,28	14,83	66,46
9,00	14,23	37,12	13,52	52,21
10,00	12,65	36,95	12,38	41,99
11,00	11,35	36,79	11,39	34,39
12,00	10,25	36,63	10,52	28,59
13,00	9,30	36,47	9,75	24,05
14,00	8,48	36,31	9,06	20,42
15,00	7,76	36,14	8,43	17,47
16,00	7,12	35,98	7,87	15,04
17,00	6,54	35,82	7,35	13,01
18,00	6,02	35,66	6,87	11,28
19,00	5,55	35,50	6,43	9,80
20,00	5,11	35,33	6,01	8,53
21,00	4,71	35,17	5,63	7,41
22,00	4,34	35,01	5,26	6,43
23,00	3,99	34,85	4,92	5,56
24,00	3,66	34,69	4,59	4,78

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

Einzellast in Feldmitte
Single-load in 1/2point

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	Nrd	Qrd	Interaction at coupler	Deflection L/200
			0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	33,33	37,93	23,23	134,28
5,00	26,52	37,76	20,47	85,66
6,00	21,95	37,60	18,23	59,20
7,00	18,66	37,44	16,38	43,20
8,00	16,18	37,28	14,83	32,78
9,00	14,23	37,12	13,52	25,60
10,00	12,65	36,95	12,38	20,43
11,00	11,35	36,79	11,39	16,58
12,00	10,25	36,63	10,52	13,62
13,00	9,30	36,47	9,75	11,29
14,00	8,48	36,31	9,06	9,42
15,00	7,76	36,14	8,43	7,89
16,00	7,12	35,98	7,87	6,62
17,00	6,54	35,82	7,35	5,55
18,00	6,02	35,66	6,87	4,63
19,00	5,55	35,50	6,43	3,83
20,00	5,11	35,33	6,01	3,14
21,00	4,71	35,17	5,63	2,53
22,00	4,34	35,01	5,26	1,98

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

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Einzellast in Feldmitte

Single-load in 1/2point

	zulässige Belastung in Abhängigkeit von allowable load as a function of			
	Nrd	Qrd	Interaction at coupler	Deflection L/300
			0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	33,33	37,93	23,23	89,37
5,00	26,52	37,76	20,47	56,92
6,00	21,95	37,60	18,23	39,24
7,00	18,66	37,44	16,38	28,54
8,00	16,18	37,28	14,83	21,55
9,00	14,23	37,12	13,52	16,73
10,00	12,65	36,95	12,38	13,25
11,00	11,35	36,79	11,39	10,64
12,00	10,25	36,63	10,52	8,63
13,00	9,30	36,47	9,75	7,04
14,00	8,48	36,31	9,06	5,76
15,00	7,76	36,14	8,43	4,70
16,00	7,12	35,98	7,87	3,81
17,00	6,54	35,82	7,35	3,06
18,00	6,02	35,66	6,87	2,41
19,00	5,55	35,50	6,43	1,84
20,00	5,11	35,33	6,01	1,34

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

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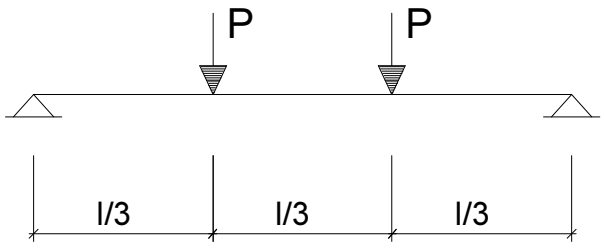
5.4 Outer chords + bracing single point load at 1/3-points

System:



Loading

Psd + gsd — (Net load + selfweight, incl. safety factors)

Normal force in chords:

$N_{Rd} \geq (P_{sd} \cdot L / 3 + g_{sd} \cdot L^2 / 8) / (n \cdot b)$
$\Rightarrow P_{sd} \leq [N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 3 / L$
$\Rightarrow$ zul P = $[N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 3 / L / \gamma_F$

Normal force in bracing:

$Q_{Rd} \geq P_{sd} / 2 \; g_{sd} \cdot L / 2$
$\Rightarrow P_{sd} \leq (Q_{Rd} - g_{sd} \cdot L / 2)$
$\Rightarrow$ zul P = $(Q_{Rd} - g_{sd} \cdot L / 2) / \gamma_F$

Interaction at coupler:

Verification of interaction bending and normal force at coupler by an iterative method.

$\Rightarrow (N_{sdG} / N_{RdG})^{1,3} + (M_{sdG} / M_{RdG}) < 1,0$

The load is located at e = 0,12 m from the coupler

Center chord at bottom:

zul P ≤ 4,0 kN

Limit of deflection:

Limit of deflection max. u = L / f
$\Rightarrow$ zul P = $[L / f - g \cdot (5/384 \cdot L^4/E/I_{yy})] / (23/684 \cdot L^3/E/I_{yy})$

3 different limitations are taken into account:
max. u = L / 100
max. u = L / 200
max. u = L / 300

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Last in den Drittelspunkten
Single-load in 1/3points

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	Nrd	Qrd	Interaction at coupler	Deflection L/100
			0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	25,00	18,96	13,86	157,89
5,00	19,89	18,88	12,57	100,89
6,00	16,46	18,80	11,44	69,90
7,00	14,00	18,72	10,46	51,18
8,00	12,13	18,64	9,61	39,01
9,00	10,67	18,56	8,86	30,65
10,00	9,49	18,48	8,20	24,64
11,00	8,51	18,40	7,61	20,19
12,00	7,68	18,31	7,08	16,78
13,00	6,98	18,23	6,61	14,11
14,00	6,36	18,15	6,18	11,99
15,00	5,82	18,07	5,78	10,26
16,00	5,34	17,99	5,42	8,83
17,00	4,91	17,91	5,09	7,63
18,00	4,52	17,83	4,78	6,62
19,00	4,16	17,75	4,49	5,76
20,00	3,83	17,67	4,22	5,01
21,00	3,53	17,59	3,97	4,35
22,00	3,25	17,50	3,73	3,78
23,00	2,99	17,42	3,50	3,26
24,00	2,75	17,34	3,28	2,81

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

Last in den Drittelspunkten
Single-load in 1/3points

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	Nrd	Qrd	Interaction at coupler	Deflection L/200
			0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	25,00	18,96	13,86	78,81
5,00	19,89	18,88	12,57	50,28
6,00	16,46	18,80	11,44	34,75
7,00	14,00	18,72	10,46	25,36
8,00	12,13	18,64	9,61	19,24
9,00	10,67	18,56	8,86	15,03
10,00	9,49	18,48	8,20	11,99
11,00	8,51	18,40	7,61	9,73
12,00	7,68	18,31	7,08	7,99
13,00	6,98	18,23	6,61	6,63
14,00	6,36	18,15	6,18	5,53
15,00	5,82	18,07	5,78	4,63
16,00	5,34	17,99	5,42	3,89
17,00	4,91	17,91	5,09	3,26
18,00	4,52	17,83	4,78	2,72
19,00	4,16	17,75	4,49	2,25
20,00	3,83	17,67	4,22	1,84
21,00	3,53	17,59	3,97	1,48
22,00	3,25	17,50	3,73	1,16

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

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Last in den Drittelspunkten

Single-load in 1/3points

	zulässige Belastung in Abhängigkeit von			
	allowable load as a function of			
	Nrd	Qrd	Interaction at coupler	Deflection L/300
			0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	25,00	18,96	13,86	52,45
5,00	19,89	18,88	12,57	33,41
6,00	16,46	18,80	11,44	23,03
7,00	14,00	18,72	10,46	16,75
8,00	12,13	18,64	9,61	12,65
9,00	10,67	18,56	8,86	9,82
10,00	9,49	18,48	8,20	7,77
11,00	8,51	18,40	7,61	6,24
12,00	7,68	18,31	7,08	5,07
13,00	6,98	18,23	6,61	4,13
14,00	6,36	18,15	6,18	3,38
15,00	5,82	18,07	5,78	2,76
16,00	5,34	17,99	5,42	2,24
17,00	4,91	17,91	5,09	1,80
18,00	4,52	17,83	4,78	1,41
19,00	4,16	17,75	4,49	1,08
20,00	3,83	17,67	4,22	0,79

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

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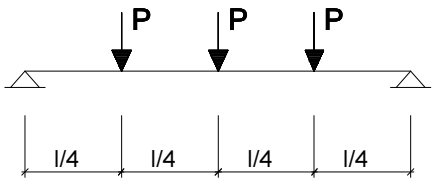
5.5 Outer chords + bracing single point load at 1/4-points

System:



Loading

Psd + gsd — (Net load + selfweight, incl. safety factors)

Normal force in chords:

$N_{Rd} \geq (P_{sd} \cdot L / 4 + g_{sd} \cdot L^2 / 8) / (n \cdot b)$
$\Rightarrow P_{sd} \leq [N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 2 / L$
$\Rightarrow$ zul P = $[N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 2 / L / \gamma_F$

Normal force in bracing:

$Q_{Rd} \geq 3 / 2 \cdot P_{sd} + g_{sd} \cdot L / 2$
$\Rightarrow P_{sd} \leq (Q_{Rd} - g_{sd} \cdot L / 2) \cdot 2 / 3$
$\Rightarrow$ zul P = $(Q_{Rd} - g_{sd} \cdot L / 2) \cdot 2 / 3 / \gamma_F$

Interaction at coupler:

Verification of interaction bending and normal force at coupler by an iterative method.

$\Rightarrow (N_{sdG} / N_{RdG})^{1,3} + (M_{sdG} / M_{RdG}) < 1,0$

The load is located at e = 0,12 m from the coupler

Center chord at bottom:

zul P ≤ 4,0 kN

Limit of deflection:

Limit of deflection max. u = L / f
$\Rightarrow$ zul P = $[L / f - g \cdot (5/384 \cdot L^4/E/I_{yy})] / (1/20{,}21 \cdot L^3/E/I_{yy})$

3 different limitations are taken into account:
max. u = L / 100
max. u = L / 200
max. u = L / 300

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Last in den Viertelspunkten
Single-load in 1/4points

	zulässige Belastung in Abhängigkeit von				
	allowable load as a function of				
	Nrd	Qrd	Interaction at coupler 1	Interaction at coupler 2	Deflection L/100
			0,12	0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	16,66	12,64	10,20	15,16	113,26
5,00	13,26	12,59	9,41	12,83	72,37
6,00	10,97	12,53	8,70	11,10	50,14
7,00	9,33	12,48	8,06	9,76	36,71
8,00	8,09	12,43	7,49	8,68	27,98
9,00	7,11	12,37	6,98	7,80	21,98
10,00	6,33	12,32	6,52	7,07	17,68
11,00	5,67	12,26	6,10	6,44	14,48
12,00	5,12	12,21	5,73	5,89	12,04
13,00	4,65	12,16	5,38	5,42	10,13
14,00	4,24	12,10	5,06	5,00	8,60
15,00	3,88	12,05	4,77	4,63	7,36
16,00	3,56	11,99	4,50	4,29	6,33
17,00	3,27	11,94	4,25	3,99	5,48
18,00	3,01	11,89	4,01	3,71	4,75
19,00	2,77	11,83	3,79	3,46	4,13
20,00	2,56	11,78	3,59	3,23	3,59
21,00	2,35	11,72	3,39	3,01	3,12
22,00	2,17	11,67	3,20	2,81	2,71
23,00	1,99	11,62	3,02	2,62	2,34
24,00	1,83	11,56	2,85	2,44	2,01

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

Last in den Viertelspunkten
Single-load in 1/4points

	zulässige Belastung in Abhängigkeit von				
	allowable load as a function of				
	Nrd	Qrd	Interaction at coupler 1	Interaction at coupler 2	Deflection L/200
			0,12	0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	16,66	12,64	10,20	15,16	56,54
5,00	13,26	12,59	9,41	12,83	36,07
6,00	10,97	12,53	8,70	11,10	24,93
7,00	9,33	12,48	8,06	9,76	18,19
8,00	8,09	12,43	7,49	8,68	13,80
9,00	7,11	12,37	6,98	7,80	10,78
10,00	6,33	12,32	6,52	7,07	8,60
11,00	5,67	12,26	6,10	6,44	6,98
12,00	5,12	12,21	5,73	5,89	5,73
13,00	4,65	12,16	5,38	5,42	4,75
14,00	4,24	12,10	5,06	5,00	3,97
15,00	3,88	12,05	4,77	4,63	3,32
16,00	3,56	11,99	4,50	4,29	2,79
17,00	3,27	11,94	4,25	3,99	2,34
18,00	3,01	11,89	4,01	3,71	1,95
19,00	2,77	11,83	3,79	3,46	1,61
20,00	2,56	11,78	3,59	3,23	1,32
21,00	2,35	11,72	3,39	3,01	1,06
22,00	2,17	11,67	3,20	2,81	0,83

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

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Last in den Viertelspunkten
Single-load in 1/4points

	zulässige Belastung in Abhängigkeit von allowable load as a function of				
	Nrd	Qrd	Interaction at coupler 1	Interaction at coupler 2	Deflection L/300
			0,12	0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	16,66	12,64	10,20	15,16	37,63
5,00	13,26	12,59	9,41	12,83	23,97
6,00	10,97	12,53	8,70	11,10	16,52
7,00	9,33	12,48	8,06	9,76	12,02
8,00	8,09	12,43	7,49	8,68	9,08
9,00	7,11	12,37	6,98	7,80	7,04
10,00	6,33	12,32	6,52	7,07	5,58
11,00	5,67	12,26	6,10	6,44	4,48
12,00	5,12	12,21	5,73	5,89	3,63
13,00	4,65	12,16	5,38	5,42	2,96
14,00	4,24	12,10	5,06	5,00	2,42
15,00	3,88	12,05	4,77	4,63	1,98
16,00	3,56	11,99	4,50	4,29	1,61
17,00	3,27	11,94	4,25	3,99	1,29
18,00	3,01	11,89	4,01	3,71	1,01
19,00	2,77	11,83	3,79	3,46	0,78
20,00	2,56	11,78	3,59	3,23	0,57

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

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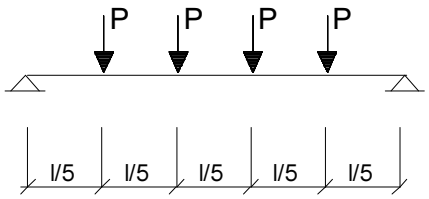
5.5 Outer chords + bracing single point load at 1/5-points

System:



Loading

Psd + gsd — (Net load + selfweight, incl. safety factors)

Normal force in chords:

$N_{Rd} \geq (P_{sd} \cdot 3 / 5 \cdot L + g_{sd} \cdot L^2 / 8) / (n \cdot b)$
$\Rightarrow P_{sd} \leq [N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 5 / 3$
$\Rightarrow$ zul P = $[N_{Rd} \cdot (n \cdot b) - g_{sd} \cdot L^2 / 8] \cdot 5 / 3 / L / y_F$

Normal force in bracing:

$Q_{Rd} \geq 2 \cdot P_{sd} + g_{sd} \cdot L / 2$
$\Rightarrow P_{sd} \leq (Q_{Rd} - g_{sd} \cdot L / 2) / 2$
$\Rightarrow$ zul P = $(Q_{Rd} - g_{sd} \cdot L / 2) / 2 / y_F$

Interaction at coupler:

Verification of interaction bending and normal force at coupler by an iterative method.

$\Rightarrow (N_{sdG} / N_{RdG})^{1,3} + (M_{sdG} / M_{RdG}) < 1,0$

The load is located at e = 0,12 m from the coupler

Center chord at bottom:

zul P ≤ 4,0 kN

Limit of deflection:

Limit of deflection max. u = L / f
$\Rightarrow$ zul P = $[L / f - g \cdot (5/384 \cdot L^4/E/I_{yy})] / (1/15{,}87 \cdot L^3/E/I_{yy})$

3 different limitations are taken into account:
max. u = L / 100
max. u = L / 200
max. u = L / 300

Loading tables: see following pages

Last in den Fünftelspunkten
Single-load in 1/5points

	zulässige Belastung in Abhängigkeit von allowable load as a function of				
	Nrd	Qrd	Interaction at coupler 1	Interaction at coupler 2	Deflection L/100
			0,12	0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	13,89	9,48	8,14	10,45	88,94
5,00	11,05	9,44	7,61	9,10	56,83
6,00	9,15	9,40	7,12	8,03	39,37
7,00	7,78	9,36	6,67	7,17	28,83
8,00	6,74	9,32	6,26	6,46	21,97
9,00	5,93	9,28	5,88	5,87	17,26
10,00	5,27	9,24	5,53	5,36	13,88
11,00	4,73	9,20	5,22	4,91	11,37
12,00	4,27	9,16	4,92	4,53	9,45
13,00	3,88	9,12	4,66	4,19	7,95
14,00	3,53	9,08	4,41	3,88	6,75
15,00	3,23	9,04	4,17	3,60	5,78
16,00	2,97	9,00	3,96	3,36	4,97
17,00	2,73	8,95	3,75	3,13	4,30
18,00	2,51	8,91	3,56	2,92	3,73
19,00	2,31	8,87	3,39	2,73	3,24
20,00	2,13	8,83	3,21	2,55	2,82
21,00	1,96	8,79	3,05	2,38	2,45
22,00	1,81	8,75	2,90	2,23	2,13
23,00	1,66	8,71	2,75	2,08	1,84
24,00	1,53	8,67	2,61	1,95	1,58

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

Last in den Fünftelspunkten
Single-load in 1/5points

	zulässige Belastung in Abhängigkeit von allowable load as a function of				
	Nrd	Qrd	Interaction at coupler 1	Interaction at coupler 2	Deflection L/200
			0,12	0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	13,89	9,48	8,14	10,45	44,39
5,00	11,05	9,44	7,61	9,10	28,32
6,00	9,15	9,40	7,12	8,03	19,57
7,00	7,78	9,36	6,67	7,17	14,28
8,00	6,74	9,32	6,26	6,46	10,84
9,00	5,93	9,28	5,88	5,87	8,46
10,00	5,27	9,24	5,53	5,36	6,76
11,00	4,73	9,20	5,22	4,91	5,48
12,00	4,27	9,16	4,92	4,53	4,50
13,00	3,88	9,12	4,66	4,19	3,73
14,00	3,53	9,08	4,41	3,88	3,12
15,00	3,23	9,04	4,17	3,60	2,61
16,00	2,97	9,00	3,96	3,36	2,19
17,00	2,73	8,95	3,75	3,13	1,83
18,00	2,51	8,91	3,56	2,92	1,53
19,00	2,31	8,87	3,39	2,73	1,27
20,00	2,13	8,83	3,21	2,55	1,04
21,00	1,96	8,79	3,05	2,38	0,83
22,00	1,81	8,75	2,90	2,23	0,65

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

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Last in den Fünftelspunkten
Single-load in 1/5points

	zulässige Belastung in Abhängigkeit von allowable load as a function of				
	Nrd	Qrd	Interaction at coupler 1	Interaction at coupler 2	Deflection L/300
			0,12	0,12	= e [m]
L [m]	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**	**zul P [kN]**
4,00	13,89	9,48	8,14	10,45	29,55
5,00	11,05	9,44	7,61	9,10	18,82
6,00	9,15	9,40	7,12	8,03	12,97
7,00	7,78	9,36	6,67	7,17	9,44
8,00	6,74	9,32	6,26	6,46	7,13
9,00	5,93	9,28	5,88	5,87	5,53
10,00	5,27	9,24	5,53	5,36	4,38
11,00	4,73	9,20	5,22	4,91	3,52
12,00	4,27	9,16	4,92	4,53	2,85
13,00	3,88	9,12	4,66	4,19	2,33
14,00	3,53	9,08	4,41	3,88	1,90
15,00	3,23	9,04	4,17	3,60	1,55
16,00	2,97	9,00	3,96	3,36	1,26
17,00	2,73	8,95	3,75	3,13	1,01
18,00	2,51	8,91	3,56	2,92	0,80
19,00	2,31	8,87	3,39	2,73	0,61
20,00	2,13	8,83	3,21	2,55	0,44

Note: If the load is applied at the center bottom chord (LC1) it has to be ≤ **4,0 kN**

6 SUMMARY OF RESULTS

6.1 Allowable loadings at center bottom chord (LC1):

The values of the following tables are only valid for single-span girder.
The truss-elements have to be braced with diagonals.
Loads have to be applied acc. chapter 1.4.
Loads at the middle of the couplers are not allowed.
The specified values include partial safety coefficients on the loadings side acc. EN 1990 of yF = 1.50 for payloads and yG = 1.35 for selfweight of the truss.
For applications which can be calculated on the basis of other codes, the partial safety factors can be adjusted (for example temporary structures acc. EN 13814, yF = 1.35 for payloads).
To use the resulting allowable loads with British Standard (BS) and ANSI, allowable loads listed in tables have to be multiplied by 0.85.

6.1.1 Limitation of deflection = L/100

Allowable load F55 Loading applied on the central bottom chord

				Einzellasten / Single point loads							
Span		UDL on cBC		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
Spannweite		UDL on cBC		in 1/2 Punkt		in 1/3 Punkten		in 1/4 Punkten		in 1/5 Punkten	
[m]	[ft]	[kg/m]	[lbs/ft]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]
4	13,1	400	269	400	882	400	882	400	882	400	882
5	16,4	400	269	400	882	400	882	400	882	400	882
6	19,7	400	269	400	882	400	882	400	882	400	882
7	23,0	400	269	400	882	400	882	400	882	400	882
8	26,2	400	269	400	882	400	882	400	882	400	882
9	29,5	316	212	400	882	400	882	400	882	400	882
10	32,8	253	170	400	882	400	882	400	882	400	882
11	36,1	206	139	400	882	400	882	400	882	400	882
12	39,4	171	115	400	882	400	882	400	882	400	882
13	42,7	143	96	400	882	400	882	400	882	388	855
14	45,9	121	81	400	882	400	882	400	882	353	779
15	49,2	103	70	400	882	400	882	388	855	323	713
16	52,5	89	60	400	882	400	882	356	785	297	654
17	55,8	77	52	400	882	400	882	327	721	273	601
18	59,1	67	45	400	882	400	882	301	664	251	553
19	62,3	58	39	400	882	400	882	277	611	231	510
20	65,6	51	34	400	882	383	845	256	563	213	470
21	68,9	45	30	400	882	353	779	235	519	196	433
22	72,2	39	26	400	882	325	717	217	478	181	398
23	75,5	35	23	399	880	299	660	199	440	166	367
24	78,7	31	21	366	808	275	606	183	404	153	337

Load limited by allowable local loading on the Bottom chord

Load limited by allowable deflection of L/100

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6.1.2 Limitation of deflection = L/200

Allowable load F55 Loading applied on the central bottom chord

				Einzellasten / Single point loads							
Span		UDL on cBC		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
Spannweite		UDL on cBC		in 1/2 Punkt		in 1/3 Punkten		in 1/4 Punkten		in 1/5 Punkten	
[m]	[ft]	[kg/m]	[lbs/ft]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]
4	13,1	400	269	400	882	400	882	400	882	400	882
5	16,4	400	269	400	882	400	882	400	882	400	882
6	19,7	400	269	400	882	400	882	400	882	400	882
7	23,0	400	269	400	882	400	882	400	882	400	882
8	26,2	400	269	400	882	400	882	400	882	400	882
9	29,5	316	212	400	882	400	882	400	882	400	882
10	32,8	253	170	400	882	400	882	400	882	400	882
11	36,1	206	139	400	882	400	882	400	882	400	882
12	39,4	171	115	400	882	400	882	400	882	400	882
13	42,7	139	93	400	882	400	882	400	882	373	823
14	45,9	108	72	400	882	400	882	397	875	312	687
15	49,2	84	57	400	882	400	882	332	733	261	575
16	52,5	66	44	400	882	389	857	279	615	219	483
17	55,8	52	35	400	882	326	718	234	515	183	404
18	59,1	41	28	400	882	272	599	195	430	153	337
19	62,3	32	22	383	845	225	496	161	356	127	279
20	65,6	25	17	314	692	184	406	132	291	104	229
21	68,9	19	13	253	557	148	327	106	234	83	184
22	72,2	14	10	198	436	116	256	83	184	65	144

Load limited by allowable local loading on the Bottom chord

Load limited by allowable deflection of L/200

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6.1.3 Limitation of deflection = L/300

Allowable load F535 Loading applied on the central bottom chord

				Einzellasten / Single point loads							
Span		UDL on cBC		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
Spannweite		UDL on cBC		in 1/2 Punkt		in 1/3 Punkten		in 1/4 Punkten		in 1/5 Punkten	
[m]	[ft]	[kg/m]	[lbs/ft]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]
4	13,1	400	269	400	882	400	882	400	882	400	882
5	16,4	400	269	400	882	400	882	400	882	400	882
6	19,7	400	269	400	882	400	882	400	882	400	882
7	23,0	400	269	400	882	400	882	400	882	400	882
8	26,2	400	269	400	882	400	882	400	882	400	882
9	29,5	297	200	400	882	400	882	400	882	400	882
10	32,8	212	142	400	882	400	882	400	882	400	882
11	36,1	155	104	400	882	400	882	400	882	352	776
12	39,4	115	77	400	882	400	882	363	801	285	629
13	42,7	87	58	400	882	400	882	296	654	233	513
14	45,9	66	44	400	882	338	745	242	534	190	420
15	49,2	50	34	400	882	276	608	198	436	155	343
16	52,5	38	26	381	841	224	494	161	354	126	278
17	55,8	29	19	306	675	180	396	129	284	101	223
18	59,1	21	14	241	531	141	312	101	224	80	176
19	62,3	16	10	184	406	108	239	78	171	61	134
20	65,6	11	7	134	296	79	174	57	125	44	98

Load limited by allowable local loading on the Bottom chord

Load limited by allowable deflection of L/300

6.2 Allowable loadings at side chord (LC2):

The values of the following tables are only valid for single-span girder.
The truss-elements have to be braced with diagonals.
Loads have to be applied acc. chapter 1.4.
Loads at the middle of the couplers are not allowed.
The specified values include partial safety coefficients on the loadings side acc. EN 1990 of yF = 1.50 for payloads and yG = 1.35 for selfweight of the truss.
For applications which can be calculated on the basis of other codes, the partial safety factors can be adjusted (for example temporary structures acc. EN 13814, yF = 1.35 for payloads).
To use the resulting allowable loads with British Standard (BS) and ANSI, allowable loads listed in tables have to be multiplied by 0.85.

6.2.1 Limitation of deflection = L/100

Allowable load F55 Loading applied on the side chords

				Einzellasten / Single point loads							
Span		UDL on cBC		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
Spannweite		UDL on cBC		in 1/2 Punkt		in 1/3 Punkten		in 1/4 Punkten		in 1/5 Punkten	
[m]	[ft]	[kg/m]	[lbs/ft]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]
4	13,1	983	661	2323	5122	1388	3060	1020	2250	814	1795
5	16,4	828	556	2047	4514	1257	2772	941	2075	761	1678
6	19,7	674	453	1823	4020	1144	2522	870	1918	712	1570
7	23,0	533	358	1638	3613	1046	2306	806	1778	667	1470
8	26,2	404	272	1483	3271	961	2118	749	1652	626	1379
9	29,5	316	212	1352	2980	886	1954	698	1539	587	1294
10	32,8	253	170	1238	2730	820	1808	633	1395	527	1162
11	36,1	206	139	1135	2502	761	1678	567	1251	473	1042
12	39,4	171	115	1025	2259	708	1562	512	1130	427	941
13	42,7	143	96	930	2051	661	1457	465	1025	388	855
14	45,9	121	81	848	1870	618	1362	424	935	353	779
15	49,2	103	70	776	1711	578	1275	388	855	323	713
16	52,5	89	60	712	1569	534	1177	356	785	297	654
17	55,8	77	52	654	1442	491	1082	327	721	273	601
18	59,1	67	45	602	1327	452	996	301	664	251	553
19	62,3	58	39	555	1223	416	917	277	611	231	510
20	65,6	51	34	511	1127	383	845	256	563	213	470
21	68,9	45	30	471	1038	353	779	235	519	196	433
22	72,2	39	26	434	956	325	717	217	478	181	398
23	75,5	35	23	399	880	299	660	199	440	166	367
24	78,7	31	21	366	808	275	606	183	404	153	337

Load limited by allowable deflection of L/100

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6.2.2 Limitation of deflection = L/200

Allowable load F55 Loading applied on the side chords

				Einzellasten / Single point loads							
Span		UDL on cBC		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
Spannweite		UDL on cBC		in 1/2 Punkt		in 1/3 Punkten		in 1/4 Punkten		in 1/5 Punkten	
[m]	[ft]	[kg/m]	[lbs/ft]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]
4	13,1	983	661	2323	5122	1388	3060	1020	2250	814	1795
5	16,4	828	556	2047	4514	1257	2772	941	2075	761	1678
6	19,7	674	453	1823	4020	1144	2522	870	1918	712	1570
7	23,0	533	358	1638	3613	1046	2306	806	1778	667	1470
8	26,2	404	272	1483	3271	961	2118	749	1652	626	1379
9	29,5	316	212	1352	2980	886	1954	698	1539	587	1294
10	32,8	253	170	1238	2730	820	1808	633	1395	527	1162
11	36,1	206	139	1135	2502	761	1678	567	1251	473	1042
12	39,4	171	115	1025	2259	708	1562	512	1130	427	941
13	42,7	139	93	930	2051	661	1457	465	1025	373	823
14	45,9	108	72	848	1870	553	1220	397	875	312	687
15	49,2	84	57	776	1711	463	1022	332	733	261	575
16	52,5	66	44	662	1460	389	857	279	615	219	483
17	55,8	52	35	555	1223	326	718	234	515	183	404
18	59,1	41	28	463	1020	272	599	195	430	153	337
19	62,3	32	22	383	845	225	496	161	356	127	279
20	65,6	25	17	314	692	184	406	132	291	104	229
21	68,9	19	13	253	557	148	327	106	234	83	184
22	72,2	14	10	198	436	116	256	83	184	65	144

Load limited by allowable deflection of L/200

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6.2.3 Limitation of deflection = L/300

Allowable load F55 Loading applied on the side chords

Span		UDL on cBC		Einzellasten / Single point loads							
				in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
Spannweite		UDL on cBC		in 1/2 Punkt		in 1/3 Punkten		in 1/4 Punkten		in 1/5 Punkten	
[m]	[ft]	[kg/m]	[lbs/ft]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]	[kg]	[lbs]
4	13,1	983	661	2323	5122	1388	3060	1020	2250	814	1795
5	16,4	828	556	2047	4514	1257	2772	941	2075	761	1678
6	19,7	674	453	1823	4020	1144	2522	870	1918	712	1570
7	23,0	533	358	1638	3613	1046	2306	806	1778	667	1470
8	26,2	404	272	1483	3271	961	2118	749	1652	626	1379
9	29,5	297	200	1352	2980	886	1954	698	1539	553	1220
10	32,8	212	142	1238	2730	777	1714	558	1230	438	966
11	36,1	155	104	1064	2346	624	1377	448	988	352	776
12	39,4	115	77	863	1903	507	1117	363	801	285	629
13	42,7	87	58	704	1553	413	911	296	654	233	513
14	45,9	66	44	576	1269	338	745	242	534	190	420
15	49,2	50	34	470	1036	276	608	198	436	155	343
16	52,5	38	26	381	841	224	494	161	354	126	278
17	55,8	29	19	306	675	180	396	129	284	101	223
18	59,1	21	14	241	531	141	312	101	224	80	176
19	62,3	16	10	184	406	108	239	78	171	61	134
20	65,6	11	7	134	296	79	174	57	125	44	98

Load limited by allowable deflection of L/300

6.3 Deflections at max. allowable loadings on center bottom chords (LC1):

6.3.1 Limitation of deflection = L/100

Deflections [cm] for F55 at max. allowable loading on central Bottom chord

Vorhandene Durchbiegung [cm] F55 unter max. zul. Lasten

				Einzellasten / Single point loads							
Span		UDL		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
[m]	[ft]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]
4	13,1	0,16	0,06	0,07	0,03	0,11	0,04	0,15	0,06	0,19	0,07
5	16,4	0,38	0,15	0,13	0,05	0,21	0,08	0,29	0,11	0,37	0,14
6	19,7	0,79	0,31	0,23	0,09	0,38	0,15	0,51	0,20	0,64	0,25
7	23,0	1,45	0,57	0,38	0,15	0,60	0,24	0,82	0,32	1,03	0,40
8	26,2	2,48	0,98	0,58	0,23	0,92	0,36	1,24	0,49	1,54	0,61
9	29,5	3,18	1,25	0,85	0,33	1,32	0,52	1,78	0,70	2,22	0,87
10	32,8	3,93	1,55	1,19	0,47	1,84	0,73	2,46	0,97	3,07	1,21
11	36,1	4,76	1,87	1,62	0,64	2,49	0,98	3,32	1,31	4,12	1,62
12	39,4	5,67	2,23	2,14	0,84	3,27	1,29	4,35	1,71	5,39	2,12
13	42,7	6,67	2,63	2,78	1,10	4,22	1,66	5,59	2,20	6,72	2,65
14	45,9	7,75	3,05	3,55	1,40	5,34	2,10	7,05	2,78	7,81	3,07
15	49,2	8,91	3,51	4,45	1,75	6,66	2,62	8,53	3,36	8,98	3,53
16	52,5	10,16	4,00	5,51	2,17	8,18	3,22	9,74	3,83	10,23	4,03
17	55,8	11,50	4,53	6,74	2,65	9,95	3,92	11,03	4,34	11,57	4,56
18	59,1	12,92	5,09	8,15	3,21	11,96	4,71	12,41	4,89	13,00	5,12
19	62,3	14,43	5,68	9,76	6,38	14,24	5,61	13,88	5,46	14,52	5,72
20	65,6	16,03	6,31	11,60	6,38	16,29	6,41	15,44	6,08	16,13	6,35
21	68,9	17,72	6,98	13,67	6,38	18,00	7,09	17,09	6,73	17,82	7,02
22	72,2	19,50	7,68	15,99	6,38	19,80	7,79	18,83	7,41	19,61	7,72
23	75,5	21,38	8,42	18,56	6,38	21,69	8,54	20,67	8,14	21,49	8,46
24	78,7	23,35	9,19	20,41	6,38	23,67	9,32	22,61	8,90	23,47	9,24

6.3.2 Limitation of deflection = L/200

Deflections [cm] for F55 at max. allowable loading on central Bottom chord

Vorhandene Durchbiegung [cm] F55 unter max. zul. Lasten

				Einzellasten / Single point loads							
Span		UDL		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
[m]	[ft]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]
4	13,1	0,16	0,06	0,07	0,03	0,11	0,04	0,15	0,06	0,19	0,07
5	16,4	0,38	0,15	0,13	0,05	0,21	0,08	0,29	0,11	0,37	0,14
6	19,7	0,79	0,31	0,23	0,09	0,38	0,15	0,51	0,20	0,64	0,25
7	23,0	1,45	0,57	0,38	0,15	0,60	0,24	0,82	0,32	1,03	0,40
8	26,2	2,48	0,98	0,58	0,23	0,92	0,36	1,24	0,49	1,54	0,61
9	29,5	3,18	1,25	0,85	0,33	1,32	0,52	1,78	0,70	2,22	0,87
10	32,8	3,93	1,55	1,19	0,47	1,84	0,73	2,46	0,97	3,07	1,21
11	36,1	4,76	1,87	1,62	0,64	2,49	0,98	3,32	1,31	4,12	1,62
12	39,4	5,67	2,23	2,14	0,84	3,27	1,29	4,35	1,71	5,39	2,12
13	42,7	6,50	2,56	2,78	1,10	4,22	1,66	5,59	2,20	6,50	2,56
14	45,9	7,00	2,76	3,55	1,40	5,34	2,10	7,00	2,76	7,00	2,76
15	49,2	7,50	2,95	4,45	1,75	6,66	2,62	7,50	2,95	7,50	2,95
16	52,5	8,00	3,15	5,51	2,17	8,00	3,15	8,00	3,15	8,00	3,15
17	55,8	8,50	3,35	6,74	2,65	8,50	3,35	8,50	3,35	8,50	3,35
18	59,1	9,00	3,54	8,15	3,21	9,00	3,54	9,00	3,54	9,00	3,54
19	62,3	9,50	3,74	9,50	6,38	9,50	3,74	9,50	3,74	9,50	3,74
20	65,6	10,00	3,94	10,00	6,38	10,00	3,94	10,00	3,94	10,00	3,94
21	68,9	10,50	4,13	10,50	6,38	10,50	4,13	10,50	4,13	10,50	4,13
22	72,2	11,00	4,33	11,00	6,38	11,00	4,33	11,00	4,33	11,00	4,33

6.3.3 Limitation of deflection = L/300

Deflections [cm] for F55 at max. allowable loading on central Bottom chord

Vorhandene Durchbiegung [cm] F55 unter max. zul. Lasten

				Einzellasten / Single point loads							
Span		UDL		in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
[m]	[ft]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]
4	13,1	0,16	0,06	0,07	0,03	0,11	0,04	0,15	0,06	0,19	0,07
5	16,4	0,38	0,15	0,13	0,05	0,21	0,08	0,29	0,11	0,37	0,14
6	19,7	0,79	0,31	0,23	0,09	0,38	0,15	0,51	0,20	0,64	0,25
7	23,0	1,45	0,57	0,38	0,15	0,60	0,24	0,82	0,32	1,03	0,40
8	26,2	2,48	0,98	0,58	0,23	0,92	0,36	1,24	0,49	1,54	0,61
9	29,5	3,00	1,18	0,85	0,33	1,32	0,52	1,78	0,70	2,22	0,87
10	32,8	3,33	1,31	1,19	0,47	1,84	0,73	2,46	0,97	3,07	1,21
11	36,1	3,67	1,44	1,62	0,64	2,49	0,98	3,32	1,31	3,67	1,44
12	39,4	4,00	1,57	2,14	0,84	3,27	1,29	4,00	1,57	4,00	1,57
13	42,7	4,33	1,71	2,78	1,10	4,22	1,66	4,33	1,71	4,33	1,71
14	45,9	4,67	1,84	3,55	1,40	4,67	1,84	4,67	1,84	4,67	1,84
15	49,2	5,00	1,97	4,45	1,75	5,00	1,97	5,00	1,97	5,00	1,97
16	52,5	5,33	2,10	5,33	2,10	5,33	2,10	5,33	2,10	5,33	2,10
17	55,8	5,67	2,23	5,67	2,23	5,67	2,23	5,67	2,23	5,67	2,23
18	59,1	6,00	2,36	6,00	2,36	6,00	2,36	6,00	2,36	6,00	2,36
19	62,3	6,33	2,49	6,33	6,38	6,33	2,49	6,33	2,49	6,33	2,49
20	65,6	6,67	2,62	6,67	6,38	6,67	2,62	6,67	2,62	6,67	2,62

6.4 Deflections at max. allowable loadings on side chords (LC2):

6.4.1 Limitation of deflection = L/100

Deflections [cm] for F55 at max. allowable loading on the side chords

Vorhandene Durchbiegung [cm] F535 unter max. zul. Lasten

				Einzellasten / Single point loads							
Span		UDL	UDL	in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
[m]	[ft]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]
4	13,1	0,37	0,15	0,35	0,14	0,36	0,14	0,37	0,14	0,37	0,15
5	16,4	0,77	0,30	0,61	0,24	0,64	0,25	0,66	0,26	0,68	0,27
6	19,7	1,30	0,51	0,95	0,37	1,01	0,40	1,07	0,42	1,11	0,44
7	23,0	1,92	0,76	1,37	0,54	1,48	0,58	1,59	0,62	1,67	0,66
8	26,2	2,51	0,99	1,87	0,74	2,05	0,81	2,22	0,87	2,35	0,93
9	29,5	3,18	1,25	2,46	0,97	2,72	1,07	2,97	1,17	3,17	1,25
10	32,8	3,93	1,55	3,13	1,23	3,50	1,38	3,75	1,47	3,96	1,56
11	36,1	4,76	1,87	3,88	1,53	4,39	1,73	4,54	1,79	4,80	1,89
12	39,4	5,67	2,23	4,65	1,83	5,38	2,12	5,42	2,13	5,72	2,25
13	42,7	6,67	2,63	5,49	2,16	6,48	2,55	6,37	2,51	6,72	2,65
14	45,9	7,75	3,05	6,40	2,52	7,70	3,03	7,41	2,92	7,81	3,07
15	49,2	8,91	3,51	7,40	2,91	9,03	3,56	8,53	3,36	8,98	3,53
16	52,5	10,16	4,00	8,47	3,34	10,35	4,07	9,74	3,83	10,23	4,03
17	55,8	11,50	4,53	9,63	3,79	11,70	4,61	11,03	4,34	11,57	4,56
18	59,1	12,92	5,09	10,88	4,28	13,15	5,18	12,41	4,89	13,00	5,12
19	62,3	14,43	5,68	12,22	4,81	14,67	5,78	13,88	5,46	14,52	5,72
20	65,6	16,03	6,31	13,66	5,38	16,29	6,41	15,44	6,08	16,13	6,35
21	68,9	17,72	6,98	15,19	5,98	18,00	7,09	17,09	6,73	17,82	7,02
22	72,2	19,50	7,68	16,82	6,62	19,80	7,79	18,83	7,41	19,61	7,72
23	75,5	21,38	8,42	18,56	7,31	21,69	8,54	20,67	8,14	21,49	8,46
24	78,7	23,35	9,19	20,41	8,03	23,67	9,32	22,61	8,90	23,47	9,24

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buero@vom-felde.de

6.4.2 Limitation of deflection = L/200

Deflections [cm] for F55 at max. allowable loading on the side chords

Vorhandene Durchbiegung [cm] F55 unter max. zul. Lasten

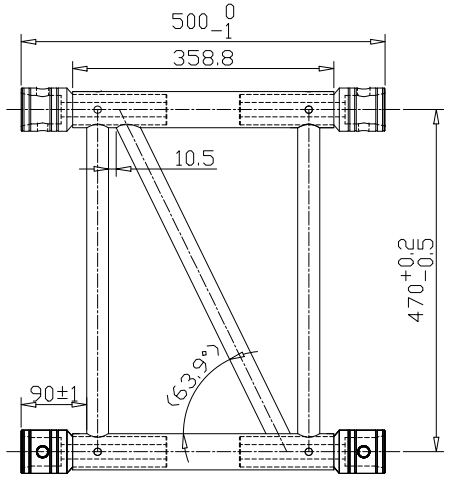
				Einzellasten / Single point loads							
Span		UDL	UDL	in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
[m]	[ft]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]
4	13,1	0,37	0,15	0,35	0,14	0,36	0,14	0,37	0,14	0,37	0,15
5	16,4	0,77	0,30	0,61	0,24	0,64	0,25	0,66	0,26	0,68	0,27
6	19,7	1,30	0,51	0,95	0,37	1,01	0,40	1,07	0,42	1,11	0,44
7	23,0	1,92	0,76	1,37	0,54	1,48	0,58	1,59	0,62	1,67	0,66
8	26,2	2,51	0,99	1,87	0,74	2,05	0,81	2,22	0,87	2,35	0,93
9	29,5	3,18	1,25	2,46	0,97	2,72	1,07	2,97	1,17	3,17	1,25
10	32,8	3,93	1,55	3,13	1,23	3,50	1,38	3,75	1,47	3,96	1,56
11	36,1	4,76	1,87	3,88	1,53	4,39	1,73	4,54	1,79	4,80	1,89
12	39,4	5,67	2,23	4,65	1,83	5,38	2,12	5,42	2,13	5,72	2,25
13	42,7	6,50	2,56	5,49	2,16	6,48	2,55	6,37	2,51	6,50	2,56
14	45,9	7,00	2,76	6,40	2,52	7,00	2,76	7,00	2,76	7,00	2,76
15	49,2	7,50	2,95	7,40	2,91	7,50	2,95	7,50	2,95	7,50	2,95
16	52,5	8,00	3,15	8,00	3,15	8,00	3,15	8,00	3,15	8,00	3,15
17	55,8	8,50	3,35	8,50	3,35	8,50	3,35	8,50	3,35	8,50	3,35
18	59,1	9,00	3,54	9,00	3,54	9,00	3,54	9,00	3,54	9,00	3,54
19	62,3	9,50	3,74	9,50	3,74	9,50	3,74	9,50	3,74	9,50	3,74
20	65,6	10,00	3,94	10,00	3,94	10,00	3,94	10,00	3,94	10,00	3,94
21	68,9	10,50	4,13	10,50	4,13	10,50	4,13	10,50	4,13	10,50	4,13
22	72,2	11,00	4,33	11,00	4,33	11,00	4,33	11,00	4,33	11,00	4,33

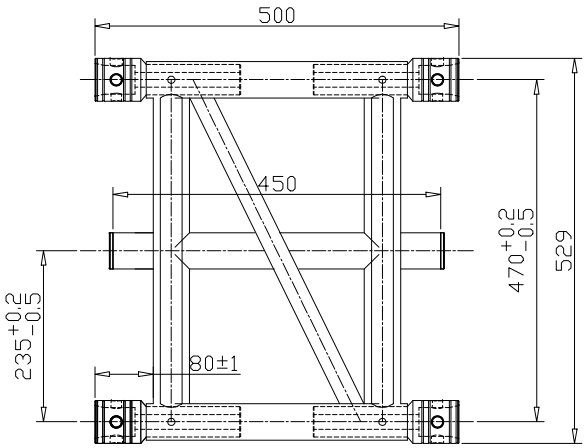
6.4.3 Limitation of deflection = L/300

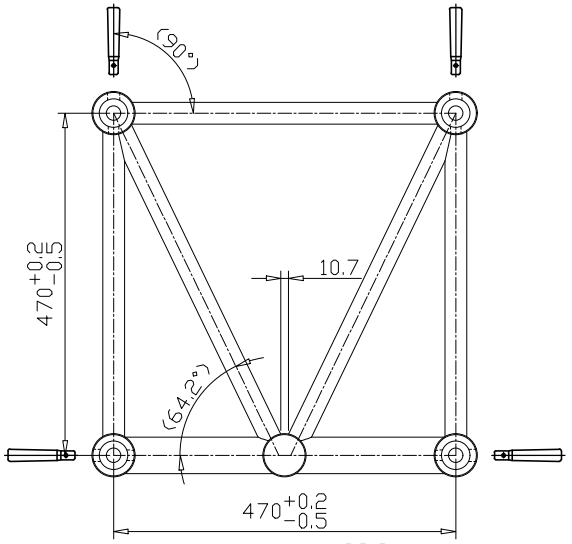
Deflections [cm] for F55 at max. allowable loading on the side chords

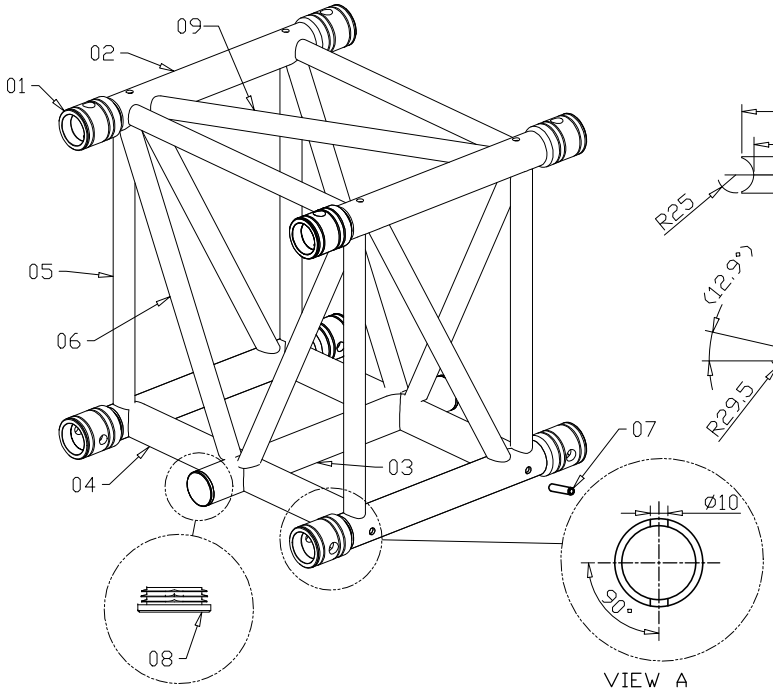
Vorhandene Durchbiegung [cm] F55 unter max. zul. Lasten

				Einzellasten / Single point loads							
Span		UDL	UDL	in 1/2 Point		in 1/3 Points		in 1/4 Points		in 1/5 Points	
[m]	[ft]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]	[cm]	[inch]
4	13,1	0,37	0,15	0,35	0,14	0,36	0,14	0,37	0,14	0,37	0,15
5	16,4	0,77	0,30	0,61	0,24	0,64	0,25	0,66	0,26	0,68	0,27
6	19,7	1,30	0,51	0,95	0,37	1,01	0,40	1,07	0,42	1,11	0,44
7	23,0	1,92	0,76	1,37	0,54	1,48	0,58	1,59	0,62	1,67	0,66
8	26,2	2,51	0,99	1,87	0,74	2,05	0,81	2,22	0,87	2,35	0,93
9	29,5	3,00	1,18	2,46	0,97	2,72	1,07	2,97	1,17	3,00	1,18
10	32,8	3,33	1,31	3,13	1,23	3,33	1,31	3,33	1,31	3,33	1,31
11	36,1	3,67	1,44	3,67	1,44	3,67	1,44	3,67	1,44	3,67	1,44
12	39,4	4,00	1,57	4,00	1,57	4,00	1,57	4,00	1,57	4,00	1,57
13	42,7	4,33	1,71	4,33	1,71	4,33	1,71	4,33	1,71	4,33	1,71
14	45,9	4,67	1,84	4,67	1,84	4,67	1,84	4,67	1,84	4,67	1,84
15	49,2	5,00	1,97	5,00	1,97	5,00	1,97	5,00	1,97	5,00	1,97
16	52,5	5,33	2,10	5,33	2,10	5,33	2,10	5,33	2,10	5,33	2,10
17	55,8	5,67	2,23	5,67	2,23	5,67	2,23	5,67	2,23	5,67	2,23
18	59,1	6,00	2,36	6,00	2,36	6,00	2,36	6,00	2,36	6,00	2,36
19	62,3	6,33	2,49	6,33	2,49	6,33	2,49	6,33	2,49	6,33	2,49
20	65,6	6,67	2,62	6,67	2,62	6,67	2,62	6,67	2,62	6,67	2,62

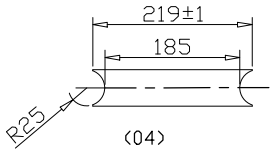








VIEW A



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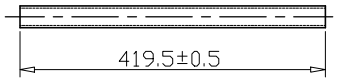

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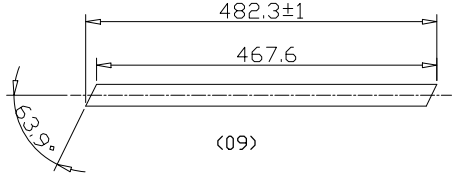

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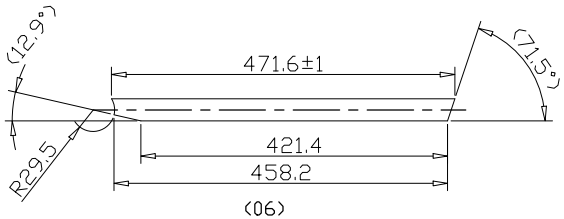

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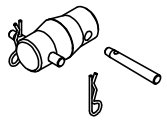


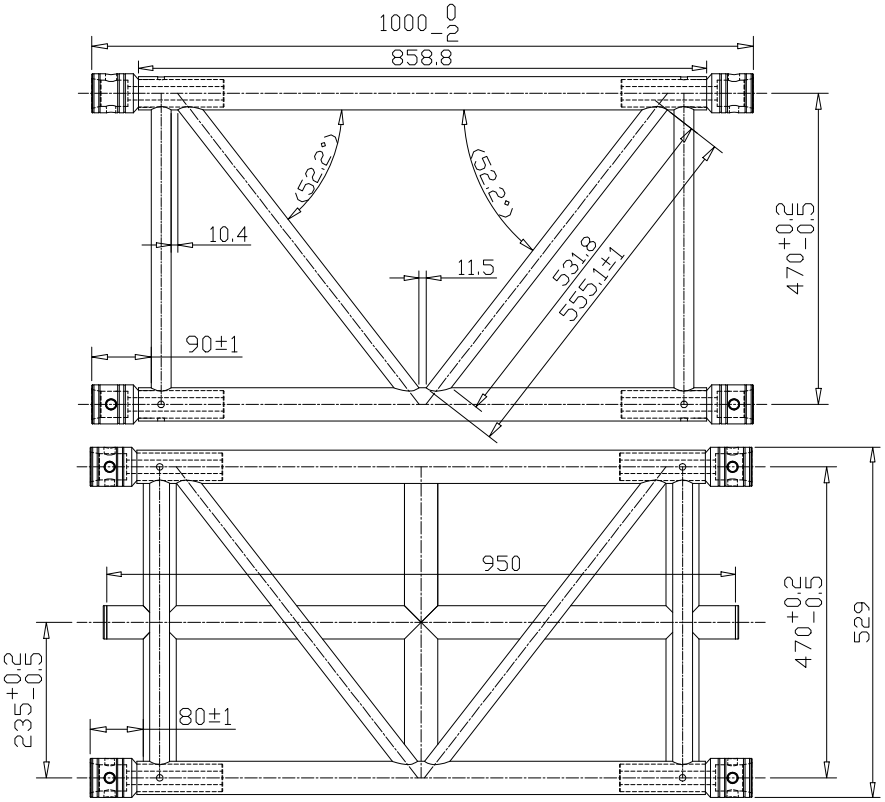
(fitting)

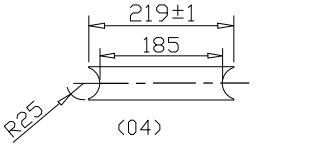
NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
09	ø30*3.0t*482.3mm	#6082	T6	3
08	PJ-NS011		RAW	2
07	ø10*50mm	Steel	black	8
06	ø30*3.0t*471.6mm	#6082	T6	4
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	4
03	ø50*4.0t*450mm	#6082	T6	1
02	ø50*4.0t*358.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

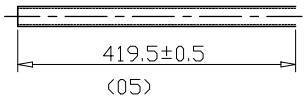
MARK	NAME	RETRIEVE CONTENTS	DATE
1			

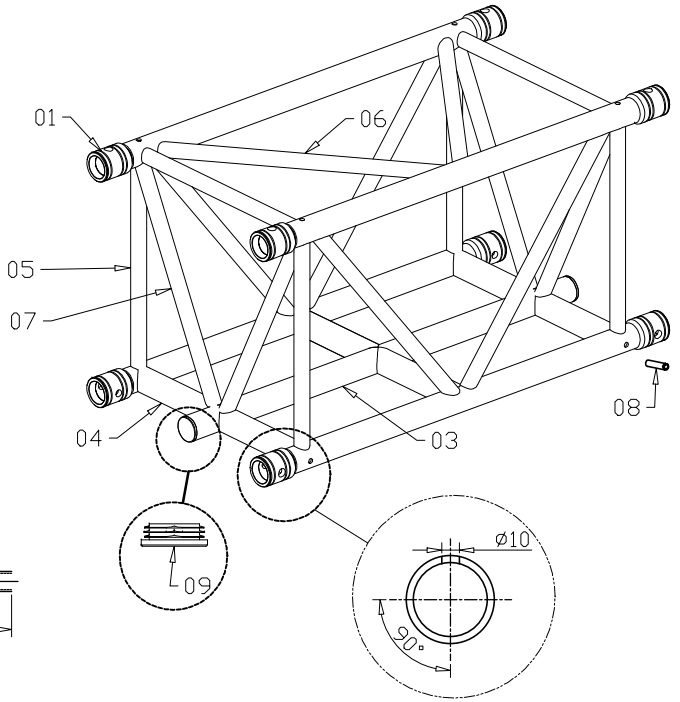
DRAWN	F54PN	DRAW NO	F54050PN		2D/3D	edition	2
Specification	F54PN-0.5M	DESIGN	RWW	DATE 19.08.29	CHECKED	APPROVED	
Weight	**kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:10				

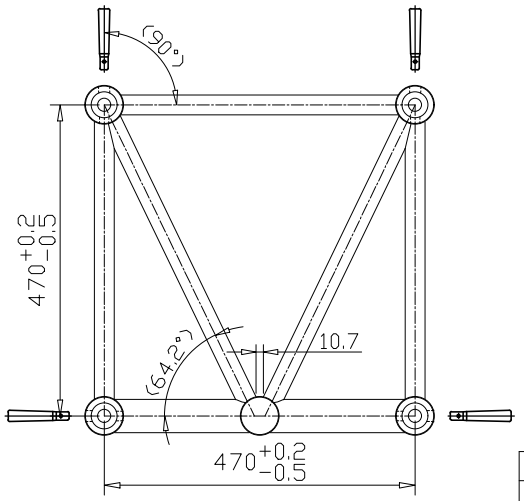
Global Truss

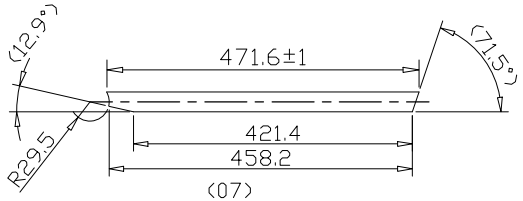


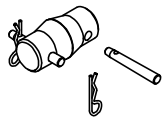










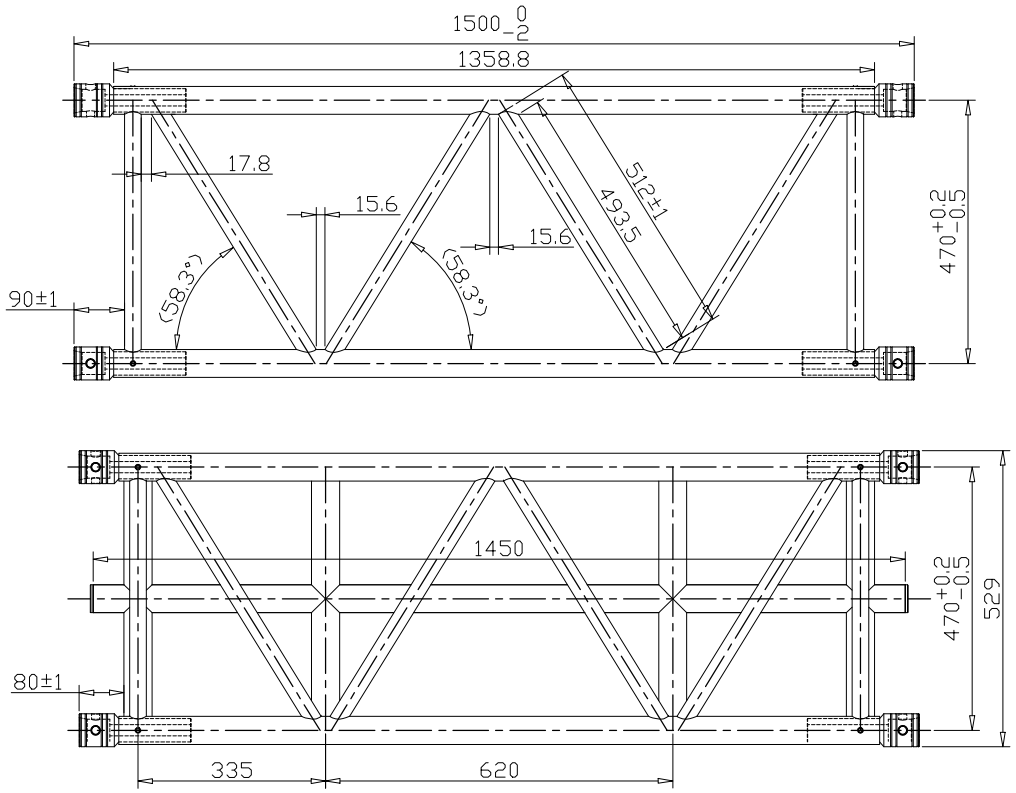


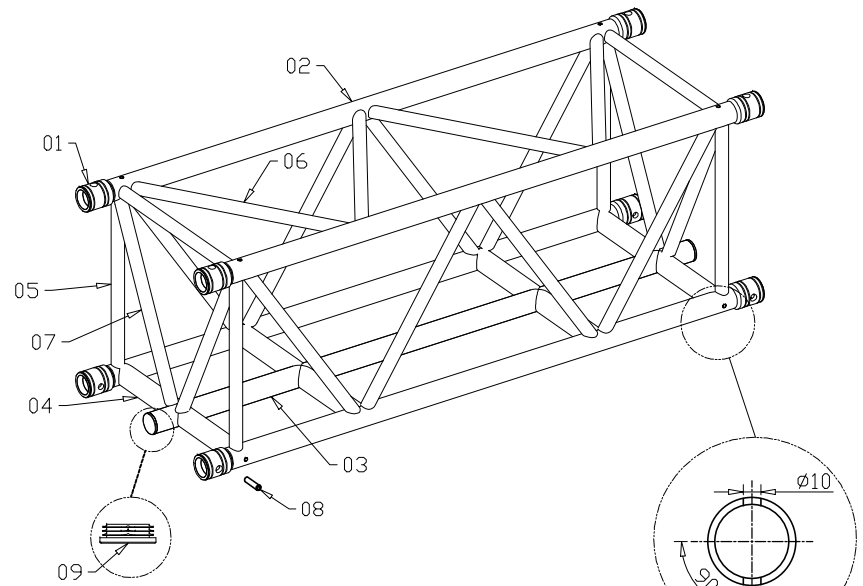
	NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1		Steel	ZP	8
	ST-F64-PJ-A-3		S45C	ZP	8
	ST-F64-PJ-A-2		#2011	T6	4
09	PJ-NS011			RAW	2
08	ø10*50mm		Steel	black	8
07	ø30*3.0t*471.6mm		#6082	T6	4
06	ø30*3.0t*555.1mm		#6082	T6	6
05	ø30*3.0t*419.5mm		#6082	T6	6
04	ø50*4.0t*219mm		#6082	T6	6
03	ø50*4.0t*950mm		#6082	T6	1
02	ø50*4.0t*858.8mm		#6082	T6	4
01	ST-F64-PJ-A-1TR		#6082	T6	8

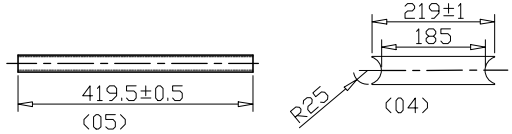
MARK	NAME	RETRIEVE CONTENTS	DATE
1			

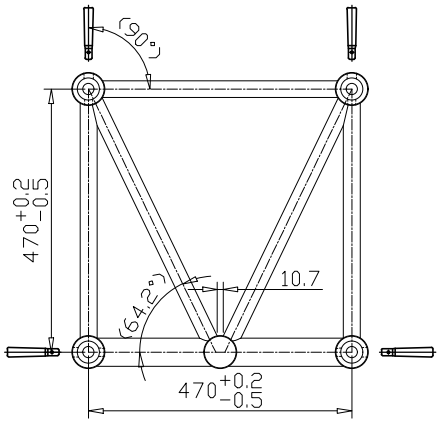
DRAWN	F54PN	DRAW NO	F54100PN		2D/3D	edition	2
Specification	F54PN-1.0M	DESIGN	RWW	DATE 19.08.29	CHECKED	APPROVED	
Weight	21.9kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:11				

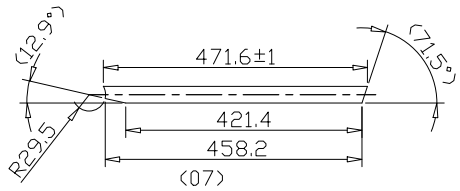
Global truss

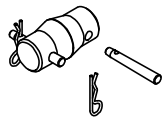












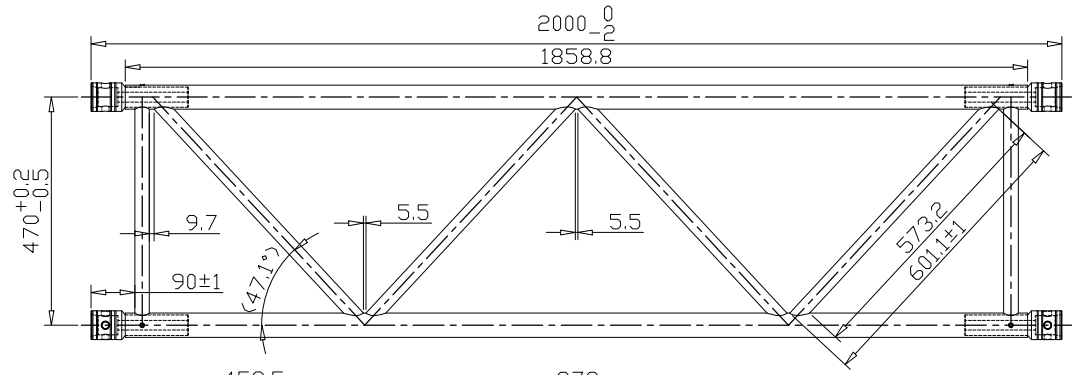
(fitting)

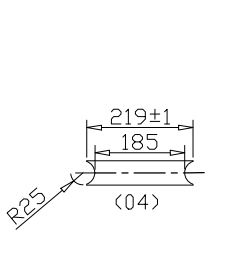
NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
09	PJ-NS011		RAW	2
08	ø10*50mm	Steel	black	8
07	ø30*3.0t*471.6mm	#6082	T6	4
06	ø30*3.0t*512mm	#6082	T6	12
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	8
03	ø50*4.0t*1450mm	#6082	T6	1
02	ø50*4.0t*1358.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

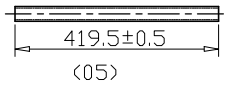
MARK	NAME	RETRIEVE CONTENTS	DATE

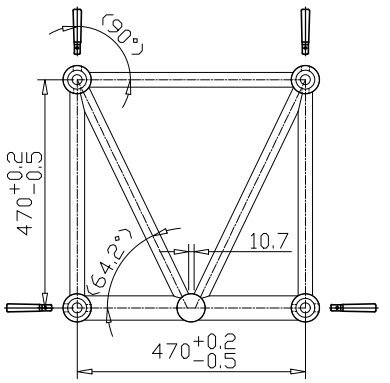
DRAWN	F54PN	DRAW NO	F54150PN		2D/3D	edition	2
Specification	F54PN-1.5M	DESIGN	RWW	DATE 19.08.29	CHECKED	APPROVED	
Weight	26.4kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:13				

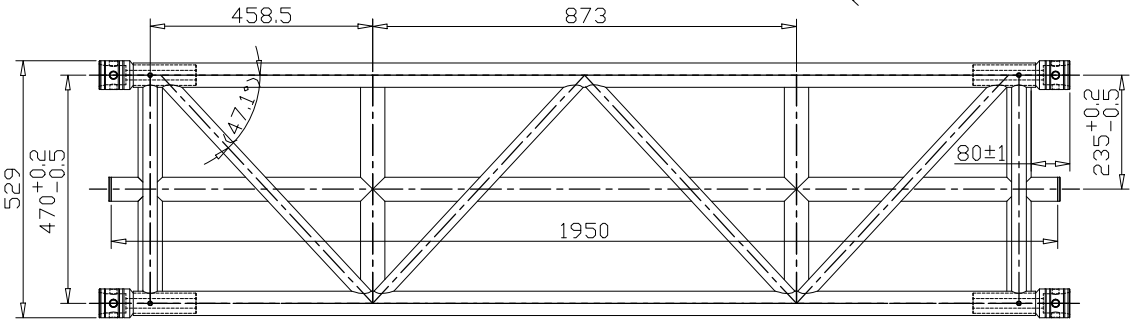
Global Truss

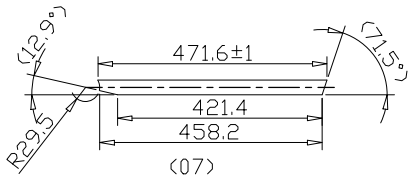


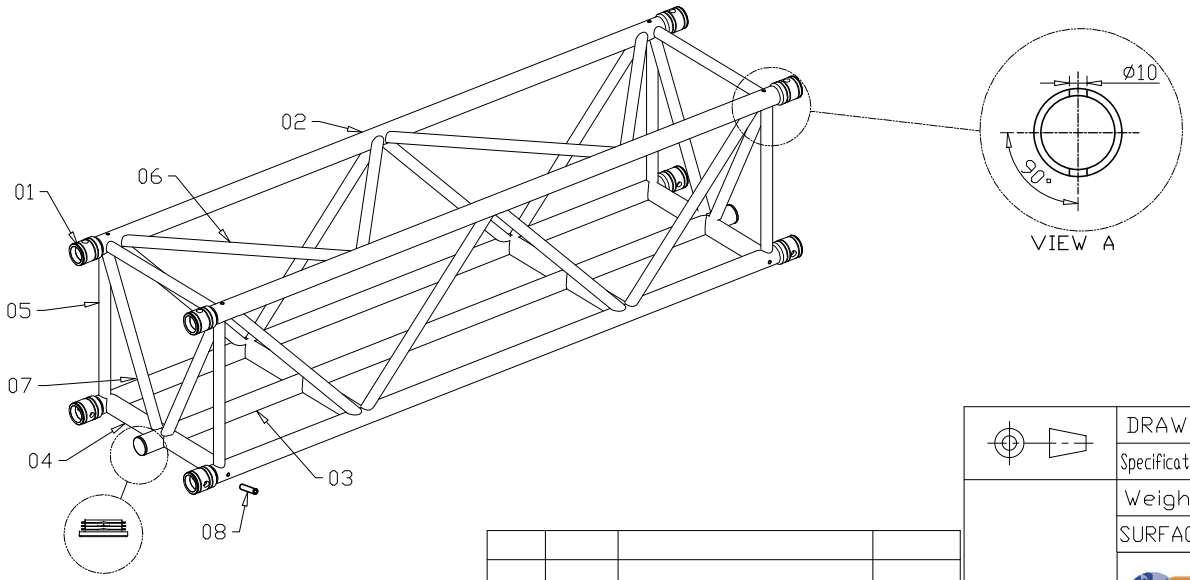


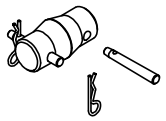










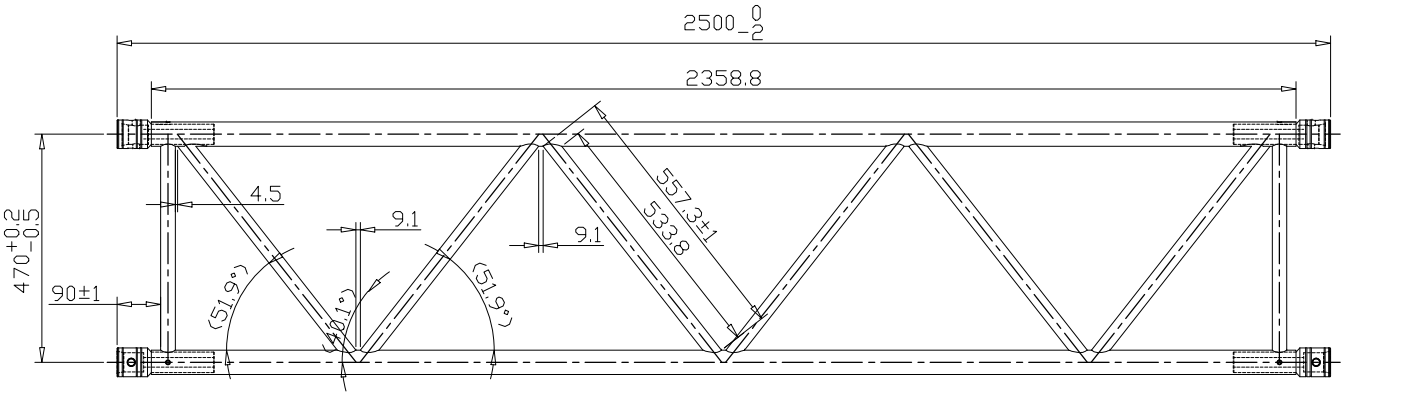

(fitting)

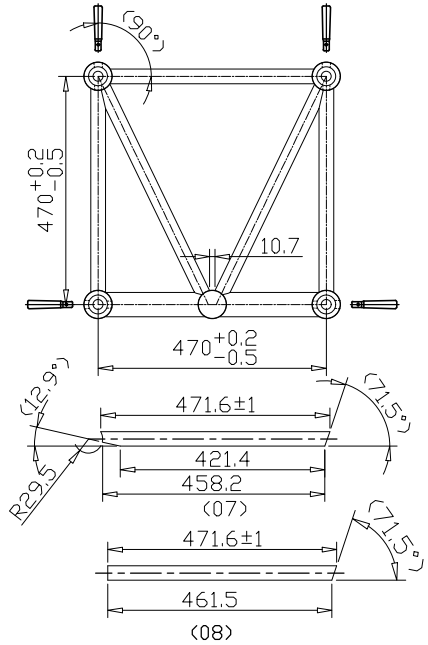
NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
09	PJ-NS011		RAW	2
08	ø10*50mm	Steel	black	8
07	ø30*3.0t*471.6mm	#6082	T6	4
06	ø30*3.0t*601.1mm	#6082	T6	12
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	8
03	ø50*4.0t*1950mm	#6082	T6	1
02	ø50*4.0t*1858.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

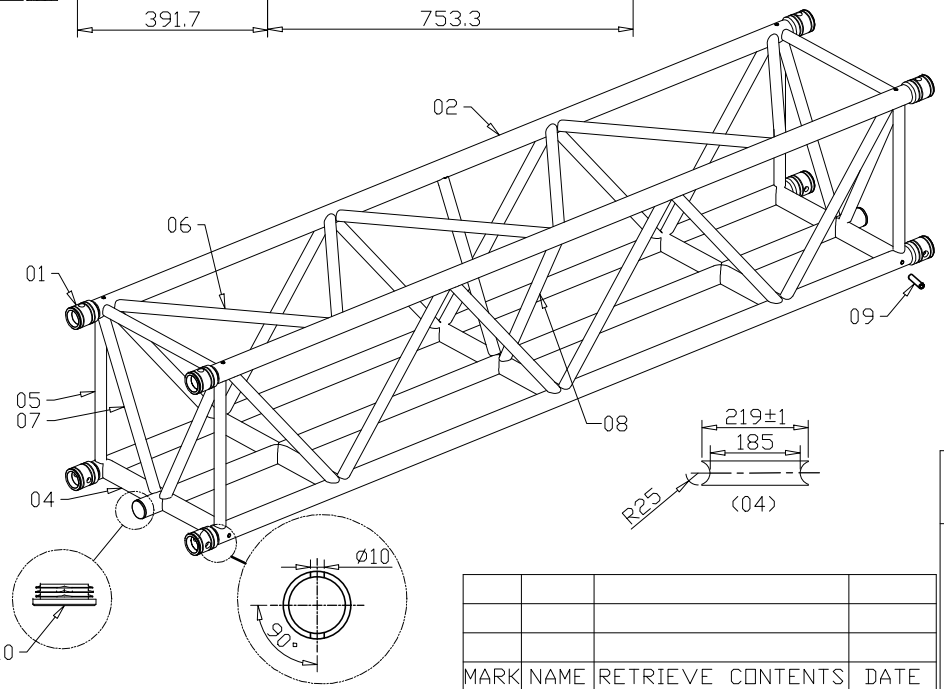
MARK	NAME	RETRIEVE CONTENTS	DATE

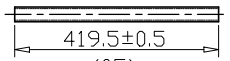
DRAWN	F54PN	DRAW NO	F54200PN		2D/3D	edition	2
Specification	F54PN-2.0M	DESIGN	RWW	DATE 19.08.29	CHECKED	APPROVED	
Weight	34.3kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:15				

Global Truss







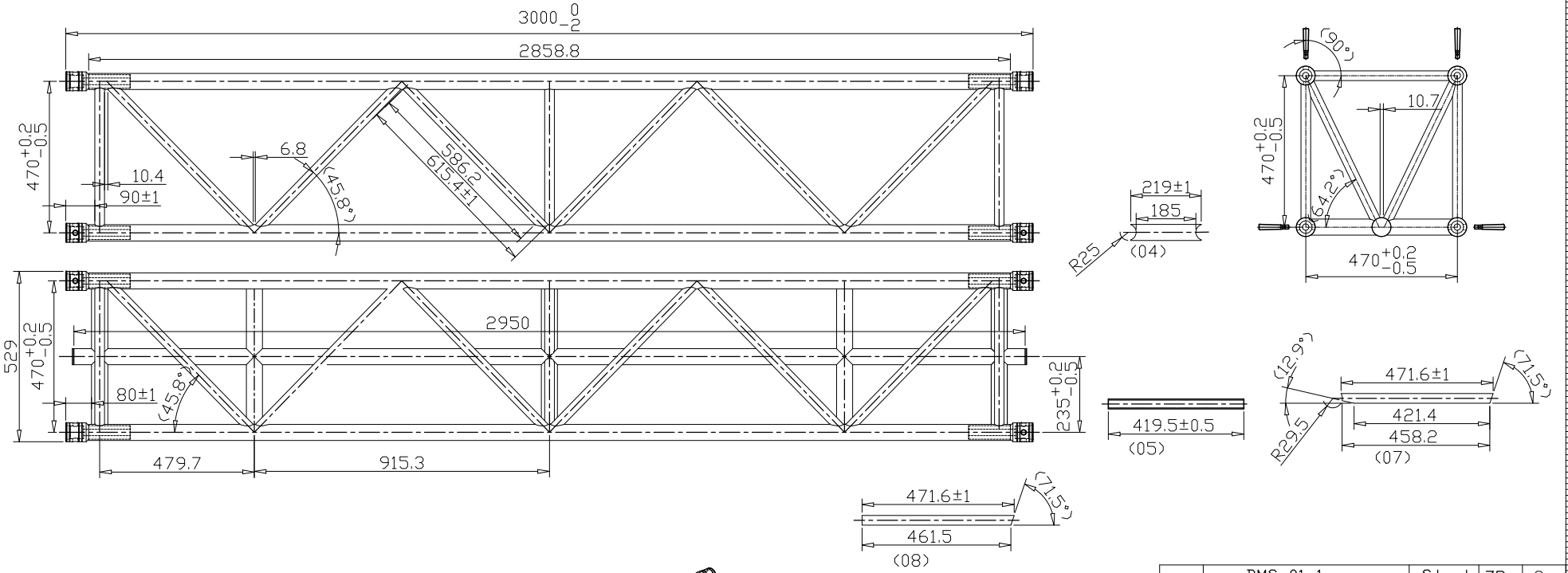


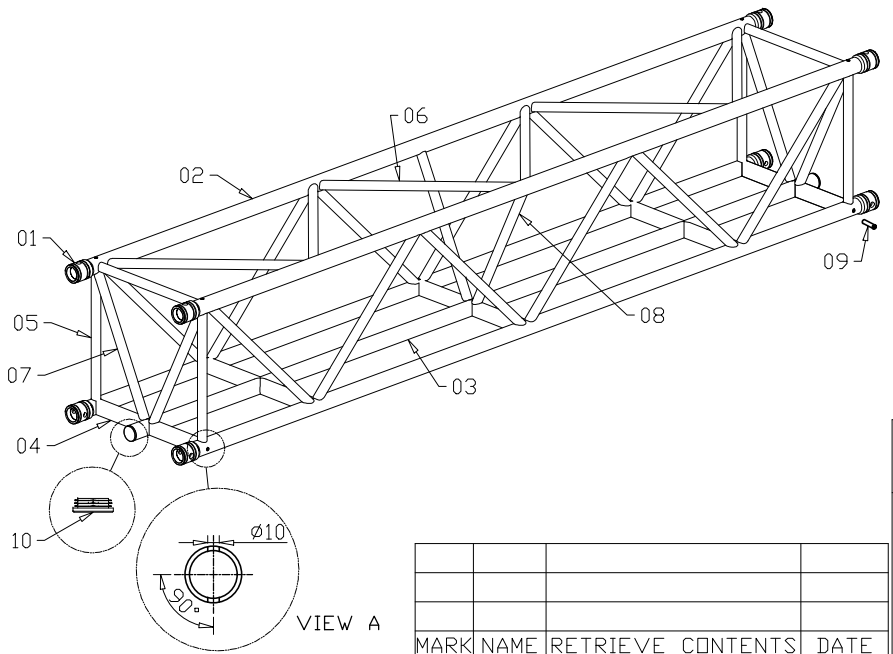
NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
10	PJ-NS011		RAW	2
09	ø10*50mm	Steel	black	8
08	ø30*3.0t*471.6mm	#6082	T6	2
07	ø30*3.0t*471.6mm	#6082	T6	4
06	ø30*3.0t*557.3mm	#6082	T6	18
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	10
03	ø50*4.0t*2450mm	#6082	T6	1
02	ø50*4.0t*2358.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

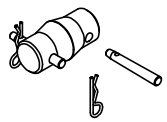
MARK	NAME	RETRIEVE CONTENTS	DATE

DRAWN	F54PN	DRAW NO	F54250PN		2D/3D	edition	2
Specification	F54PN-2.5M	DESIGN	RWW	DATE 19.08.30	CHECKED	APPROVED	
Weight	39.2kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:15				

Global truss







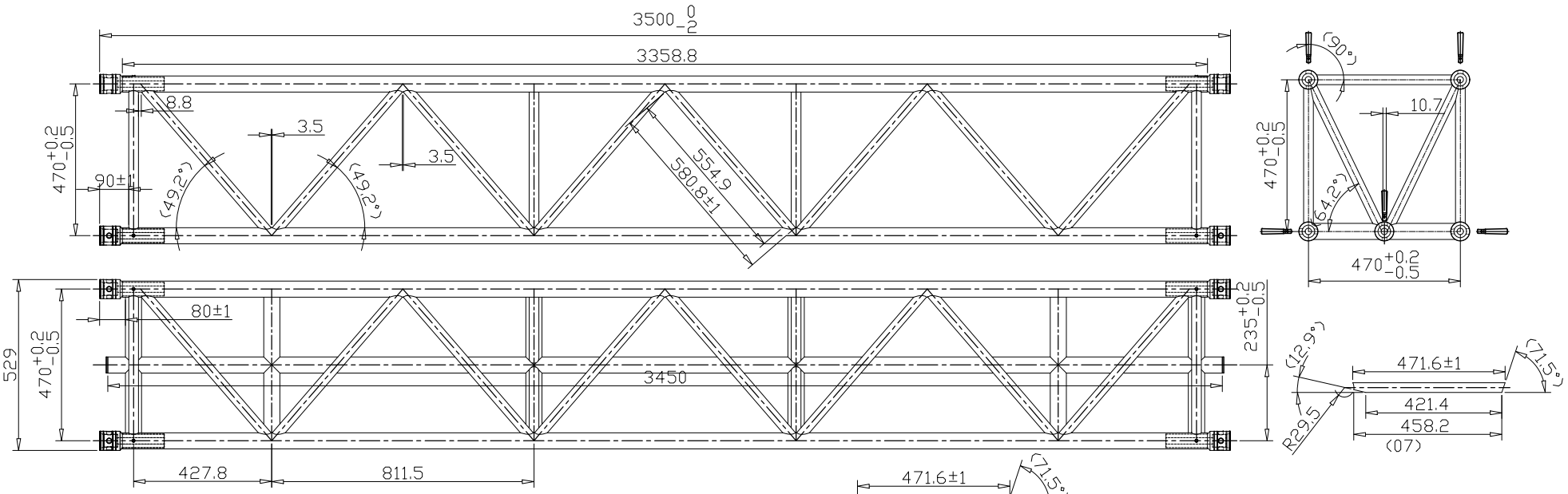
(fitting)

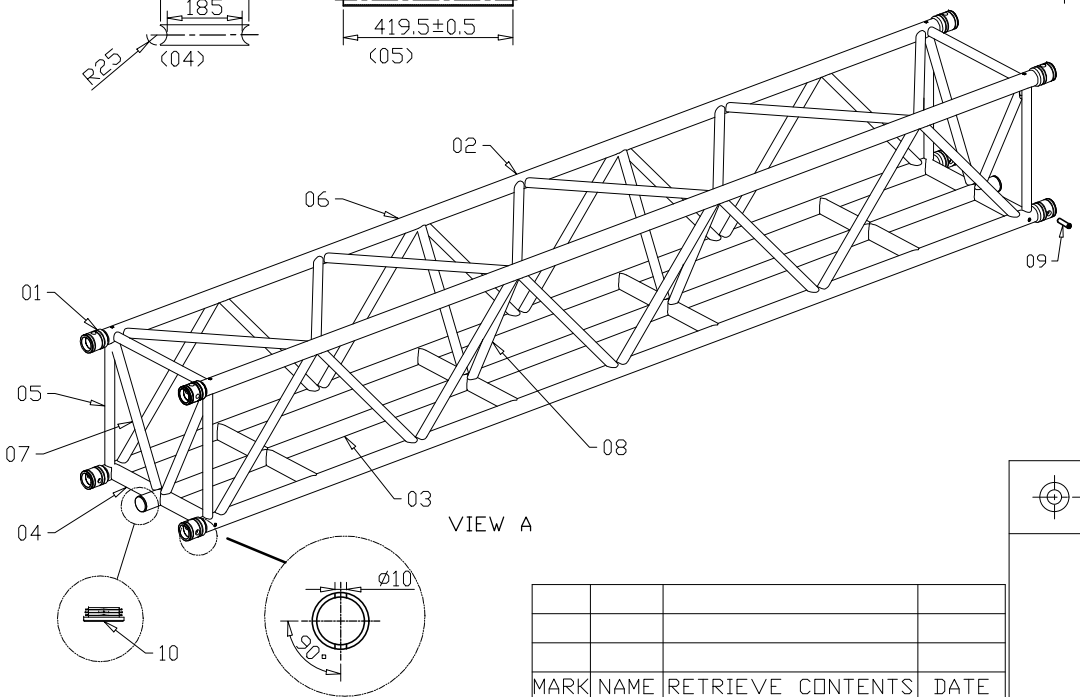
NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
10	PJ-NS011		RAW	2
09	ø10*50mm	Steel	black	8
08	ø30*3.0t*471.6mm	#6082	T6	2
07	ø30*3.0t*471.6mm	#6082	T6	4
06	ø30*3.0t*615.4mm	#6082	T6	18
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	10
03	ø50*4.0t*2950mm	#6082	T6	1
02	ø50*4.0t*2858.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

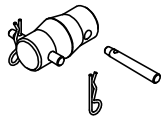
MARK	NAME	RETRIEVE CONTENTS	DATE

DRAWN	F54PN	DRAW NO	F54300PN		2D/3D	edition	1
Specification	F54PN-3.0M	DESIGN	RWW	DATE 19.08.30	CHECKED	APPROVED	
Weight	46.7kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:18				

Global truss





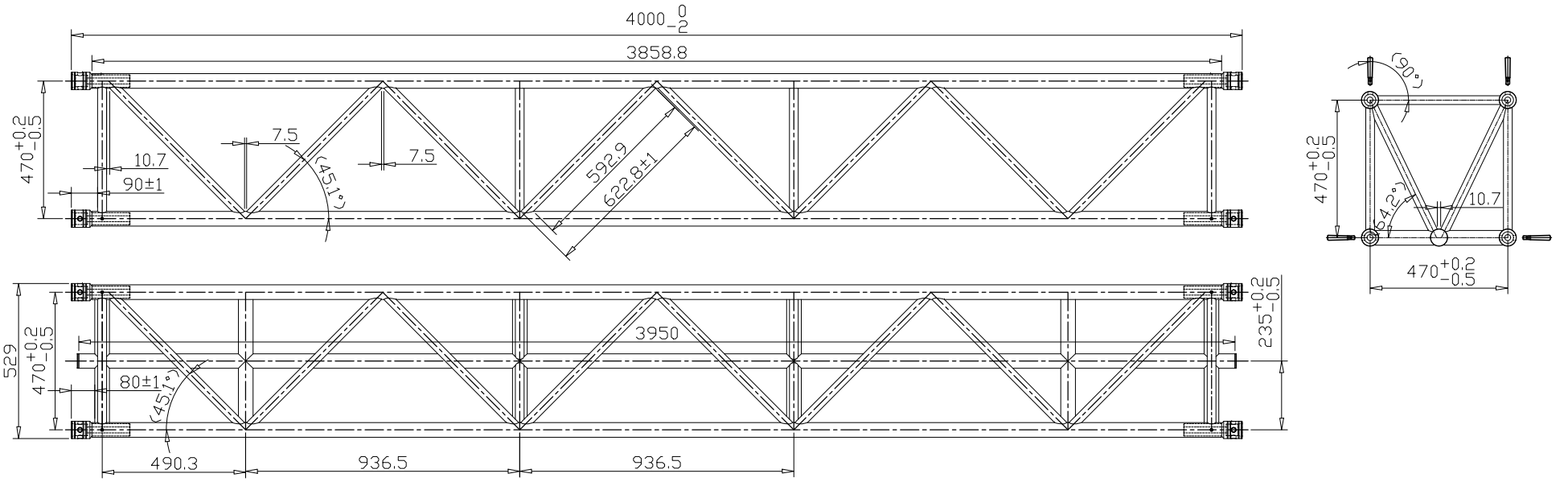


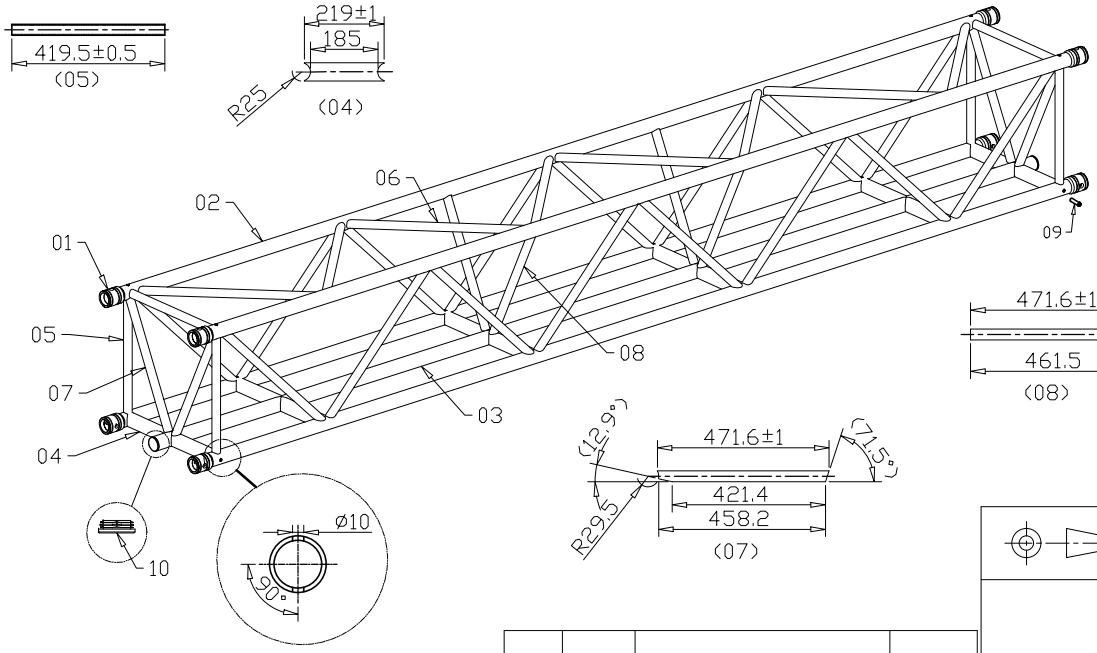
(fitting)

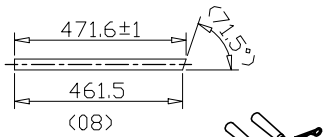
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
10	PJ-NS011		RAW	2
09	ø10*50mm	Steel	black	8
08	ø30*3.0t*471.6mm	#6082	T6	4
07	ø30*3.0t*471.6mm	#6082	T6	4
06	ø30*3.0t*580.8mm	#6082	T6	24
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	12
03	ø50*4.0t*3450mm	#6082	T6	1
02	ø50*4.0t*3358.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8
NO.	SPEC.	MATERIAL	FIN.	QTY.

DRAWN	F54PN	DRAW NO	F54350PN		2D/3D	edition	1
Specification	F54PN-3.5M	DESIGN	RWW	DATE 19.08.30	CHECKED	APPROVED	
Weight	51.7kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:18				

MARK	NAME	RETRIEVE CONTENTS	DATE



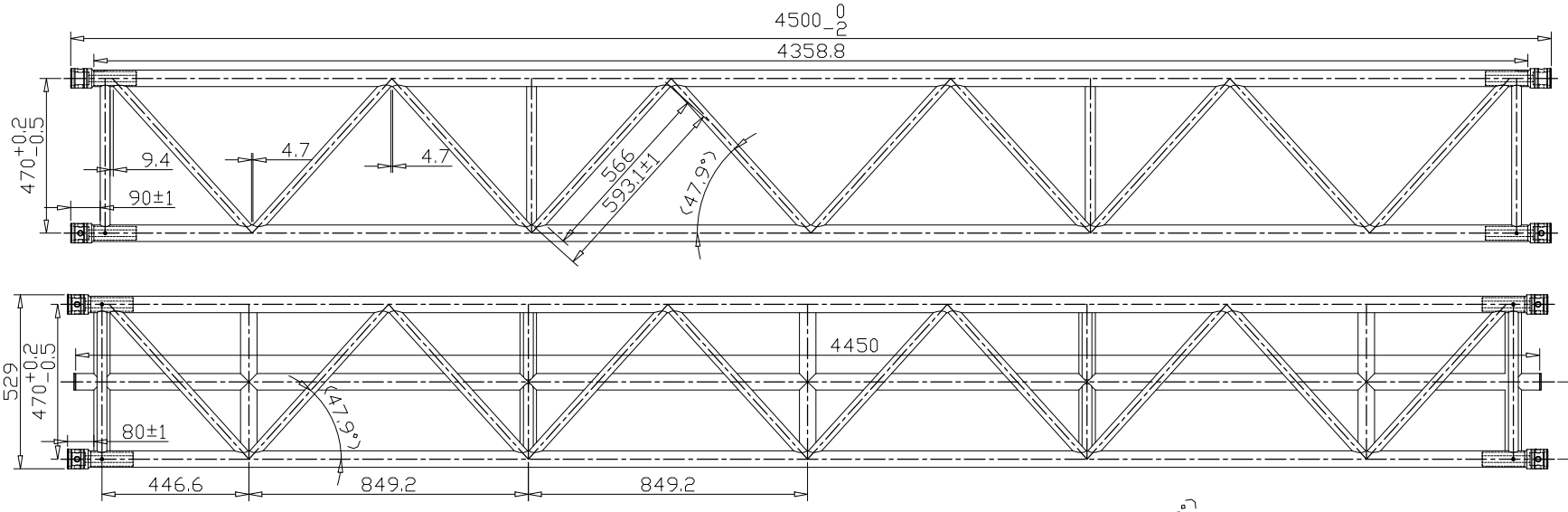


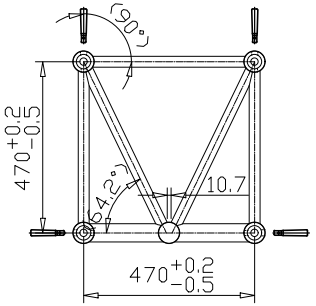


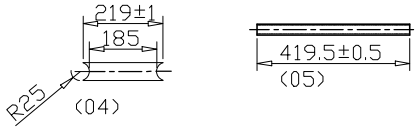
NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
10	PJ-NS011		RAW	2
09	ø10*50mm	Steel	black	8
08	ø30*3.0t*471.6mm	#6082	T6	4
07	ø30*3.0t*471.6mm	#6082	T6	4
06	ø30*3.0t*622.8mm	#6082	T6	24
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	12
03	ø50*4.0t*3950mm	#6082	T6	1
02	ø50*4.0t*3858.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

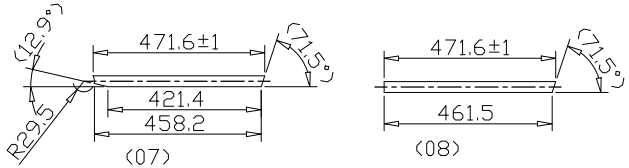
DRAWN	F54PN	DRAW NO	F54400PN		2D/3D	edition	1
Specification	F54PN-4.0M	DESIGN	RWW	DATE 19.08.30	CHECKED	APPROVED	
Weight	59.5kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:20				

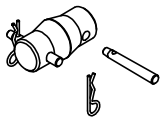
MARK	NAME	RETRIEVE CONTENTS	DATE
1			











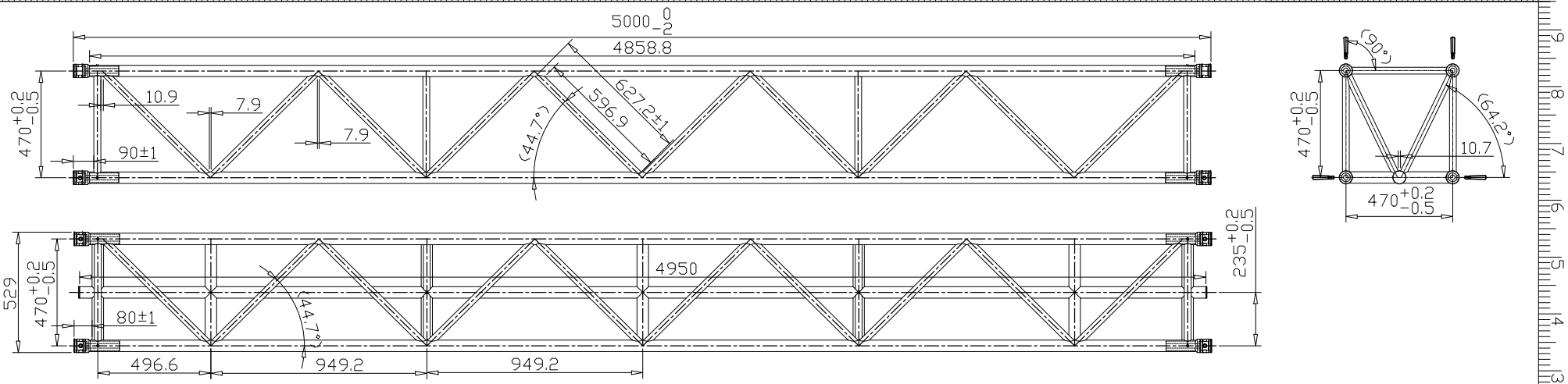
(fitting)

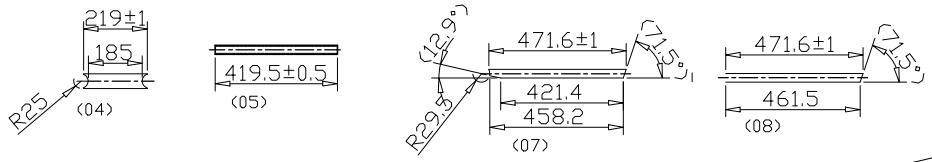
NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
10	PJ-NS011		RAW	2
09	Ø10*50mm	Steel	black	8
08	Ø30*3.0t*471.6mm	#6082	T6	4
07	Ø30*3.0t*471.6mm	#6082	T6	4
06	Ø30*3.0t*593.1mm	#6082	T6	30
05	Ø30*3.0t*419.5mm	#6082	T6	6
04	Ø50*4.0t*219mm	#6082	T6	14
03	Ø50*4.0t*4450mm	#6082	T6	1
02	Ø50*4.0t*4358.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

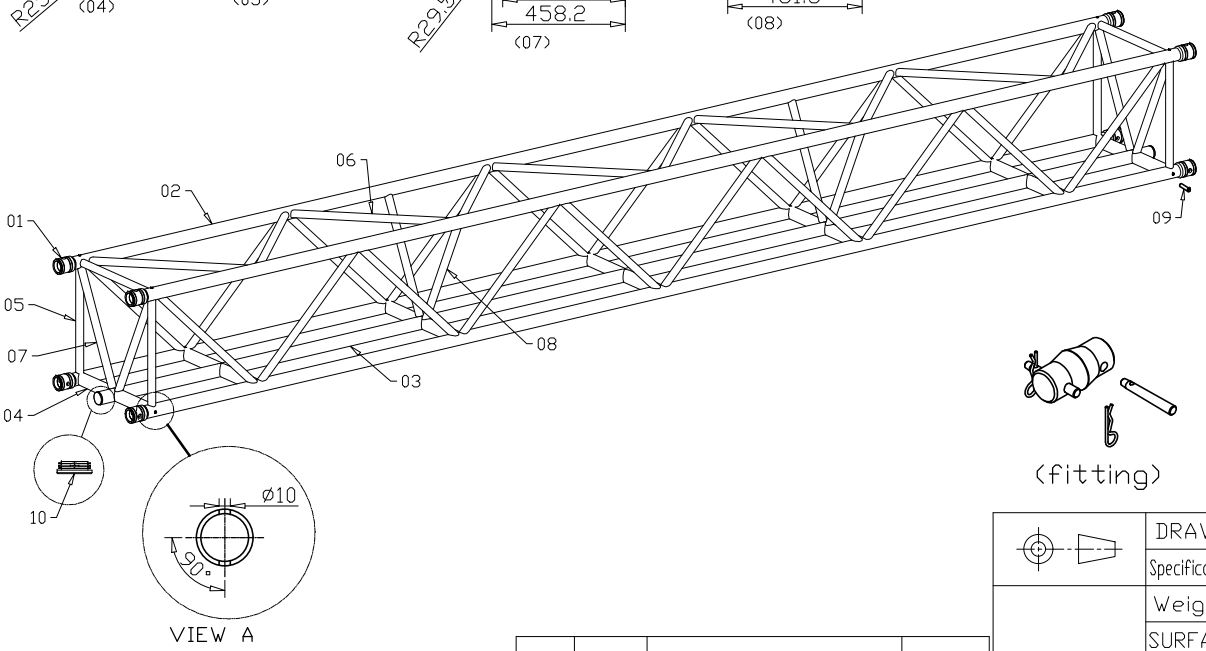
MARK	NAME	RETRIEVE CONTENTS	DATE
1			

DRAWN	F54PN	DRAW NO	F54450PN		2D/3D	edition	1
Specification	F54PN-4.5M	DESIGN	RWW	DATE 19.08.30	CHECKED	APPROVED	
Weight	66.5kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:20				

Global truss







(fitting)

NO.	SPEC.	MATERIAL	FIN.	QTY.
fitting	DMS-01-1	Steel	ZP	8
	ST-F64-PJ-A-3	S45C	ZP	8
	ST-F64-PJ-A-2	#2011	T6	4
10	PJ-NS011		RAW	2
09	ø10*50mm	Steel	black	8
08	ø30*3.0t*471.6mm	#6082	T6	4
07	ø30*3.0t*471.6mm	#6082	T6	4
06	ø30*3.0t*627.2mm	#6082	T6	30
05	ø30*3.0t*419.5mm	#6082	T6	6
04	ø50*4.0t*219mm	#6082	T6	14
03	ø50*4.0t*4950mm	#6082	T6	1
02	ø50*4.0t*4858.8mm	#6082	T6	4
01	ST-F64-PJ-A-1TR	#6082	T6	8

MARK	NAME	RETRIEVE CONTENTS	DATE

DRAWN	F54PN	DRAW NO	F54500PN		2D/3D	edition	1
Specification	F54PN-5.0M	DESIGN	RWW	DATE 19.08.30	CHECKED	APPROVED	
Weight	71.3kgs/pcs	UNITS	mm	Proofread			
SURFACE	RAW	SCALE	1:25				

Global Truss

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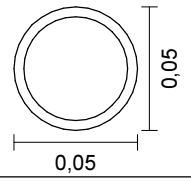
Systemkenngrößen

147 Knoten
137 Stäbe
98 Festhaltungen
0 Koppelungen
1 Materialkennwerte
1 Querschnittswerte
72 Lastfälle
3 LF-Kombinationen
7 Ergebnisorte in den Stäben

Querschnittswerte

1	Polygon 	Schwerpunkt [m]	ys = 0,000		zs = 0,000	
		Fläche [m²]	A = 5,7435e-04			
		Trägheitsmomente [m4]	Ix = 1,0000e-06			
			Iy = 1,5208e-07		I1 = 1,5208e-07	
			Iz = 1,5208e-07		I2 = 1,5208e-07	
		Hauptachsenwinkel [Grad]	Phi = 0,000		Iyz = 0,0000e+00	
		Mittelung der Querkraft-Schubspannungen über die Qu.-breite				

Materialkennwerte

	Nr.	Art	E-Modul [MN/m²]	G-Modul [MN/m²]	alpha.t [1/K]	gamma [kN/m³]	Verschiedenes
1	1	Frei	70000	27000	1,0e-05	27,000	fc = 1e+06 [MN/m²] ft = 1e+06

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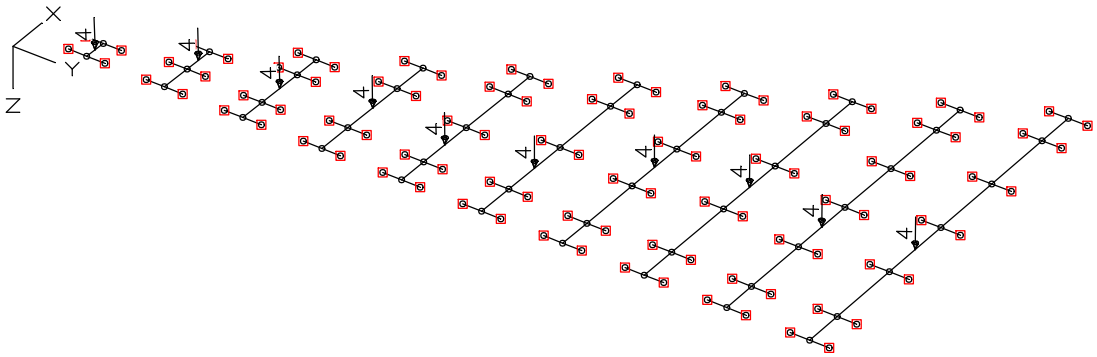
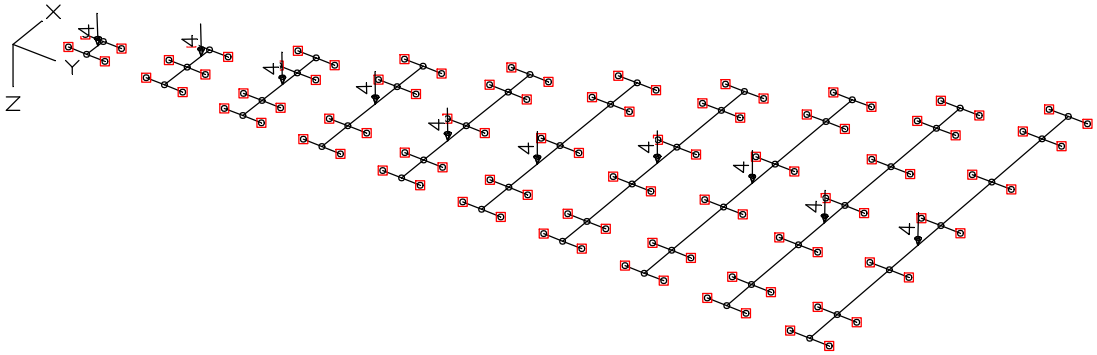
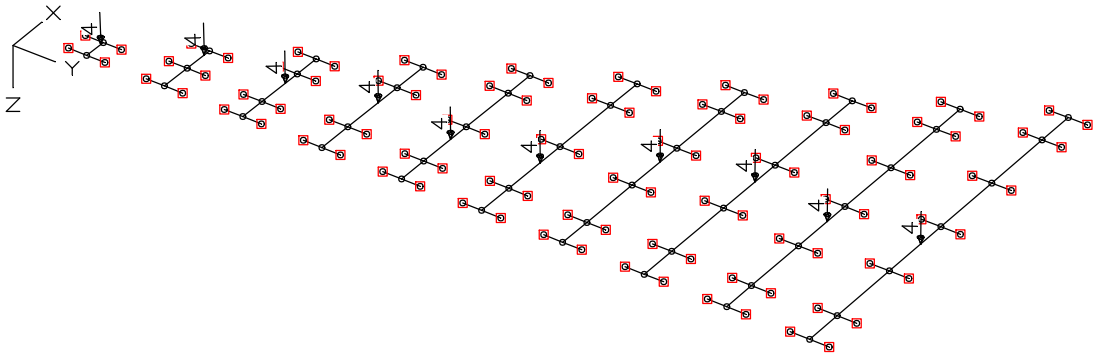


LF 1: Belastung, P = 4,0 kN



LF 2: Belastung, P = 4,0 kN



LF 3: Belastung, P = 4,0 kN

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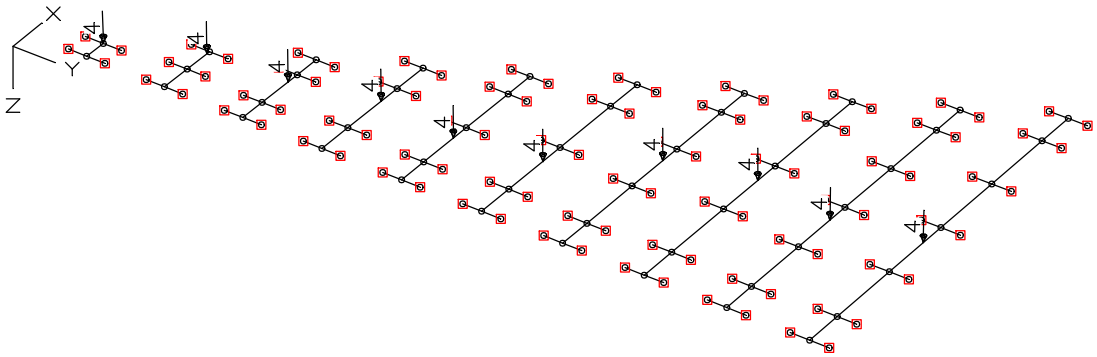
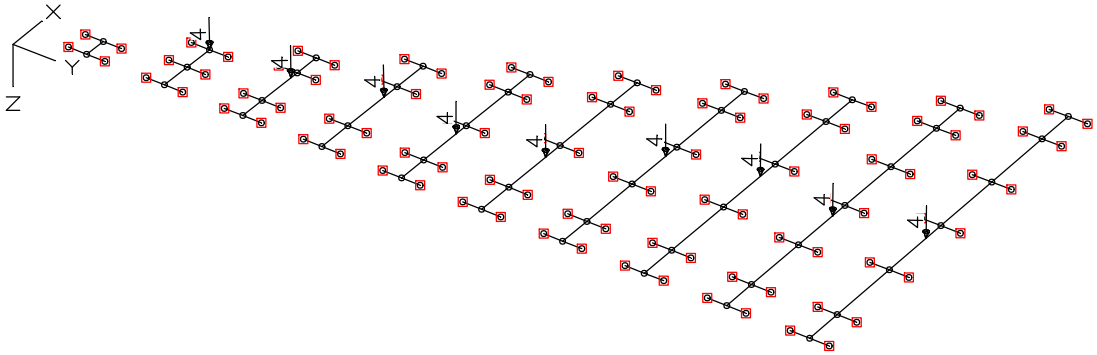
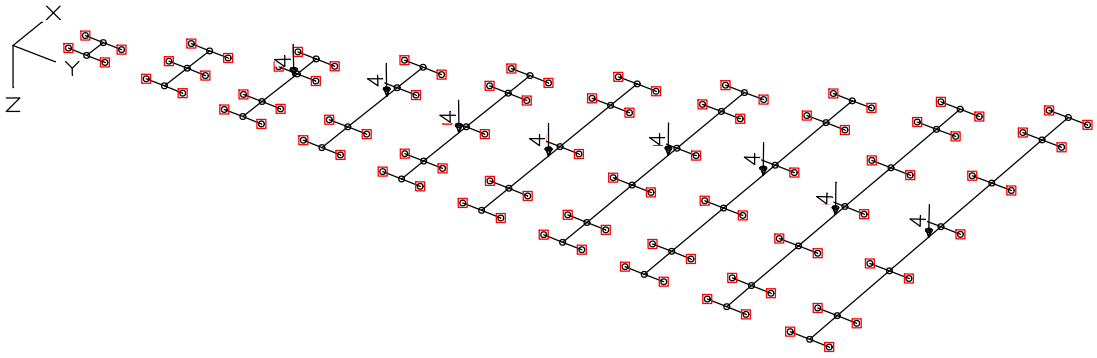


LF 4: Belastung, P = 4,0 kN



LF 5: Belastung, P = 4,0 kN



LF 6: Belastung, P = 4,0 kN

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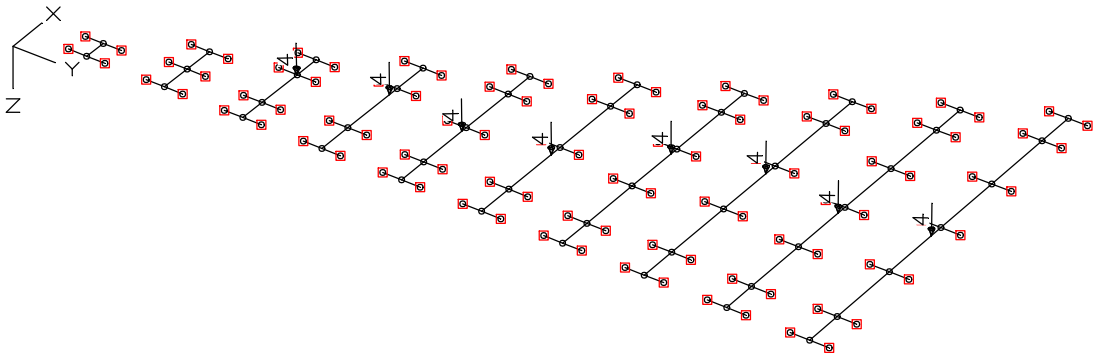
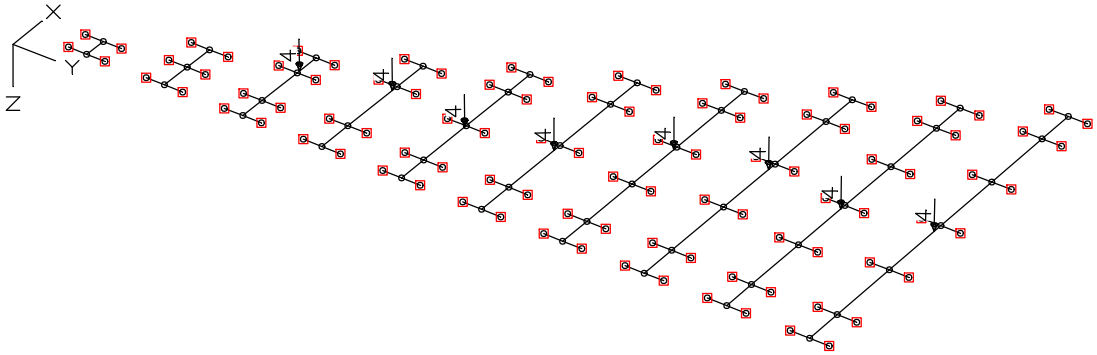
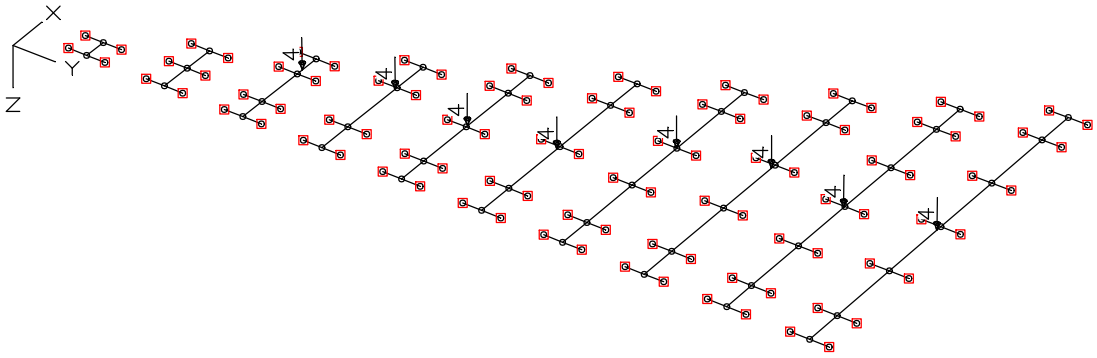


LF 7: Belastung, P = 4,0 kN



LF 8: Belastung, P = 4,0 kN



LF 9: Belastung, P = 4,0 kN

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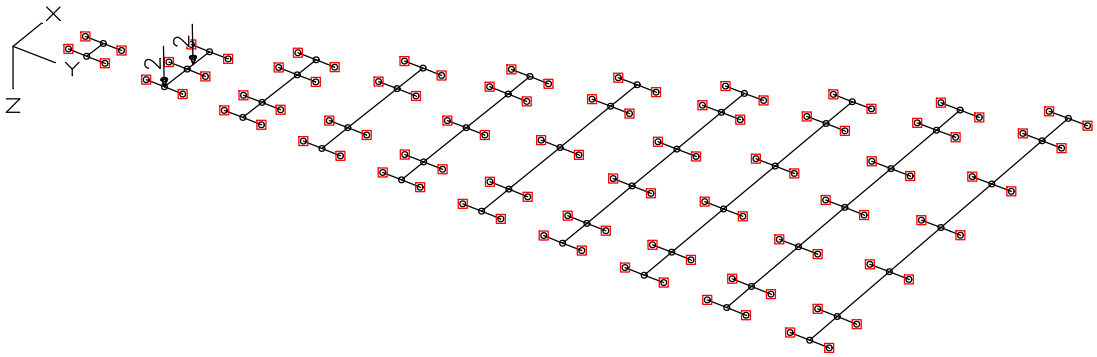
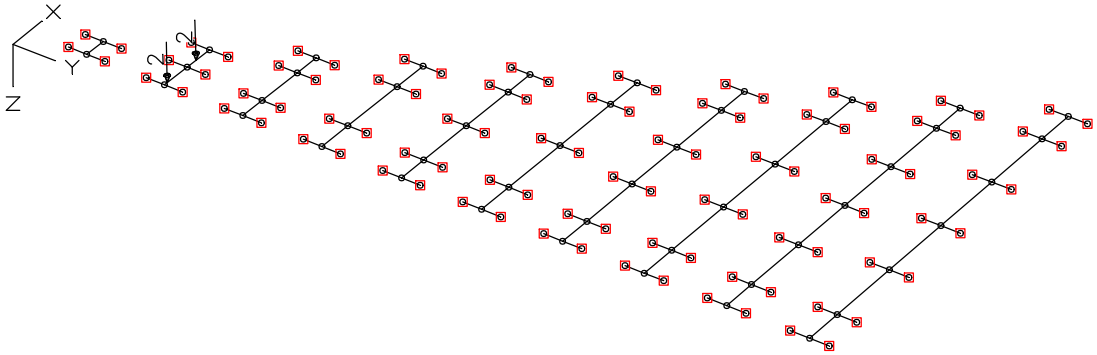
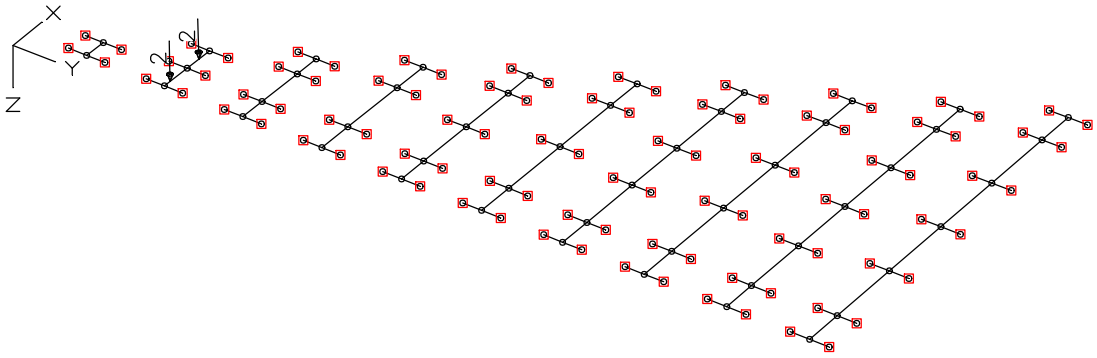


LF 10: Belastung, L = 1 m Pi = 2,0 kN



LF 11: Belastung, L = 1 m Pi = 2,0 kN



LF 12: Belastung, L = 1 m Pi = 2,0 kN

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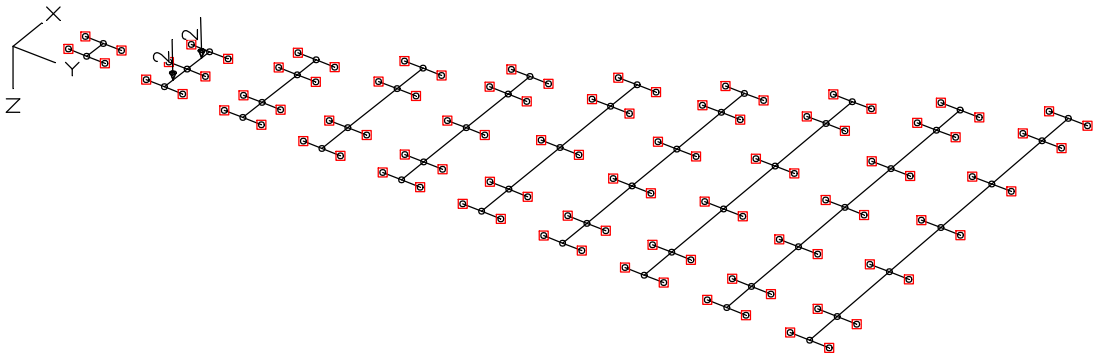
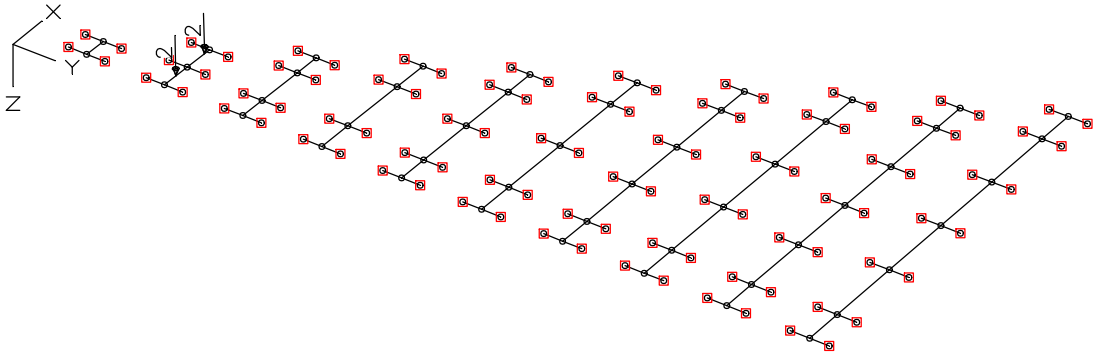
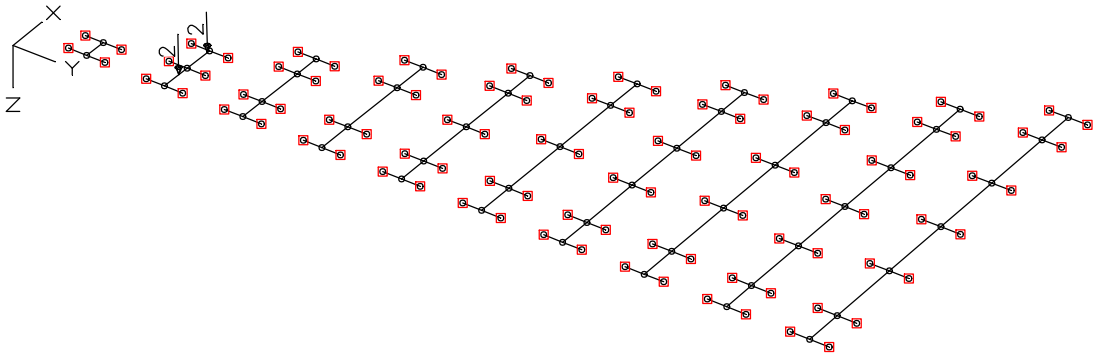


LF 13: Belastung, L = 1 m Pi = 2,0 kN



LF 14: Belastung, L = 1 m Pi = 2,0 kN



LF 15: Belastung, L = 1 m Pi = 2,0 kN

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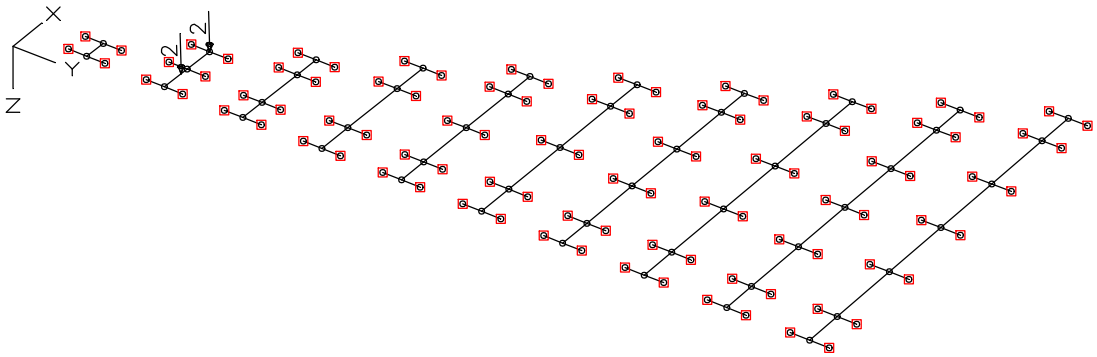
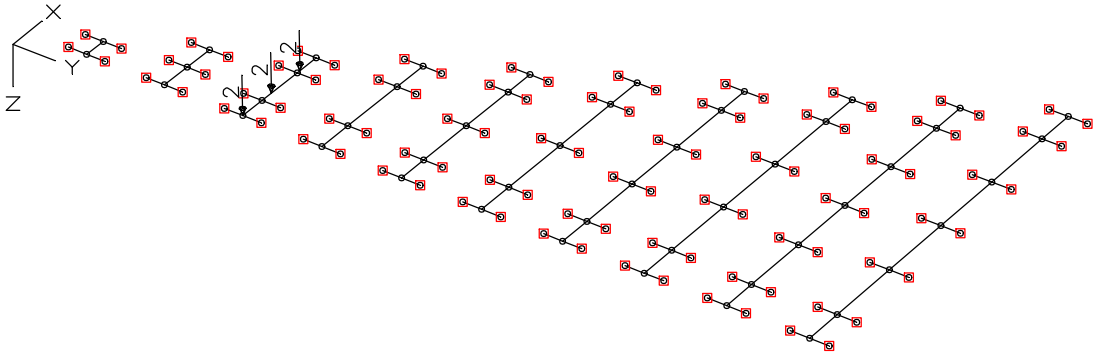
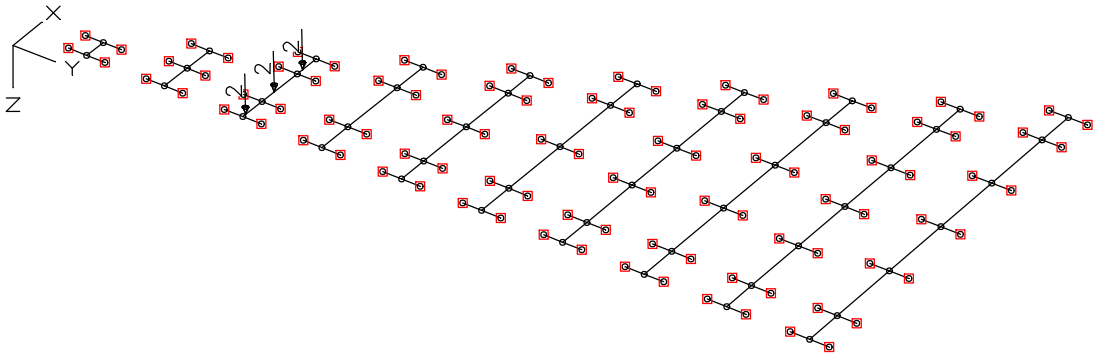


LF 16: Belastung, L = 1 m Pi = 2,0 kN



LF 20: Belastung, L = 1,5 m Pi = 2,0 kN



LF 21: Belastung, L = 1,5 m Pi = 2,0 kN

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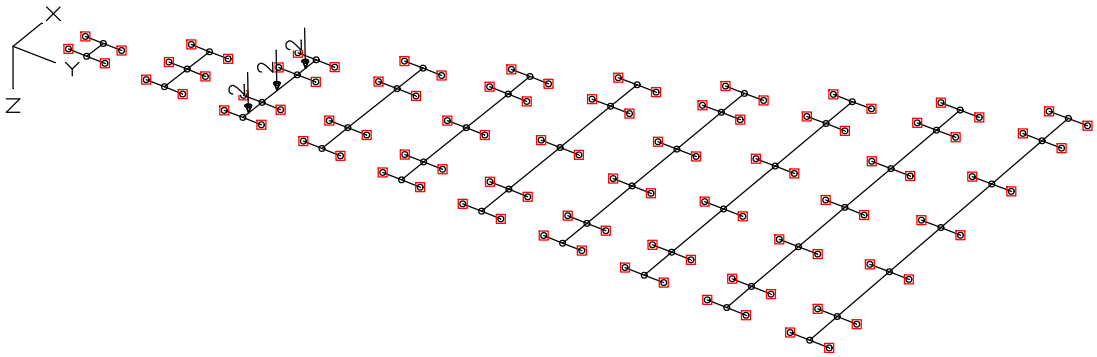
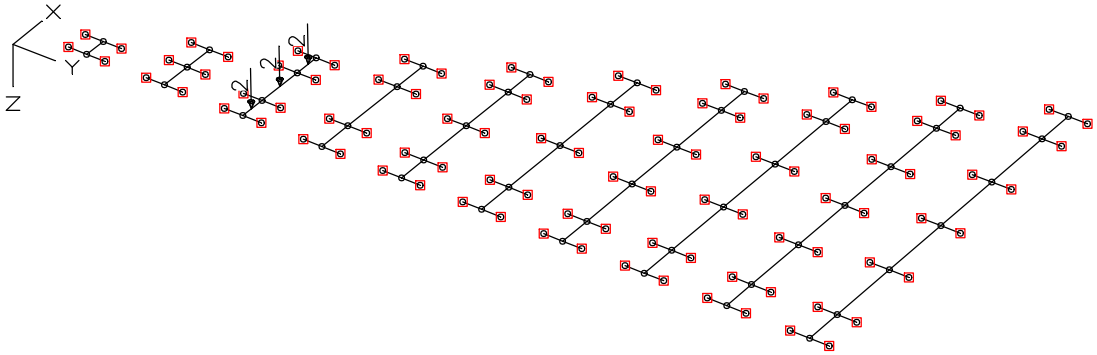
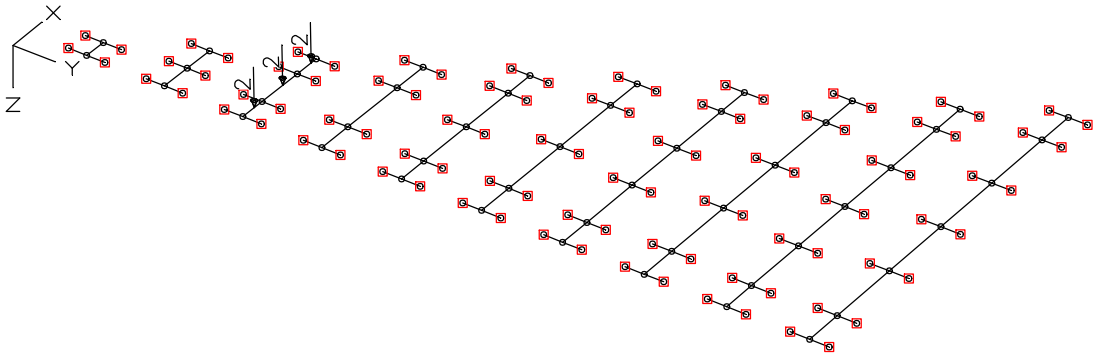


LF 22: Belastung, L = 1,5 m Pi = 2,0 kN



LF 23: Belastung, L = 1,5 m Pi = 2,0 kN



LF 24: Belastung, L = 1,5 m Pi = 2,0 kN

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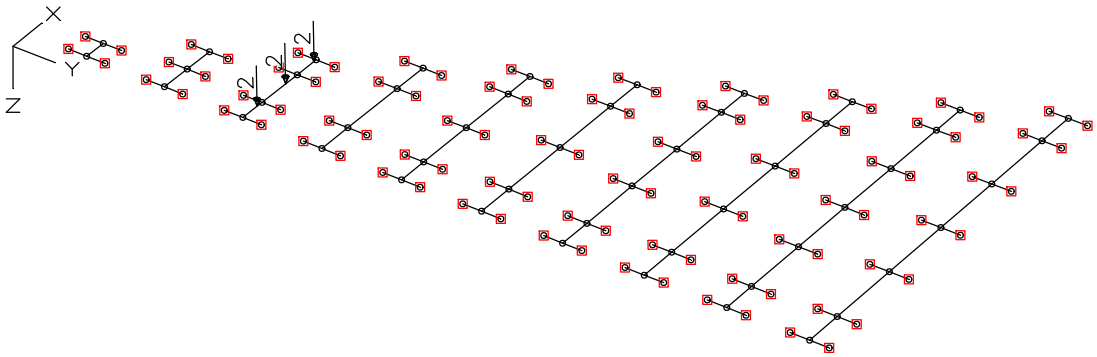
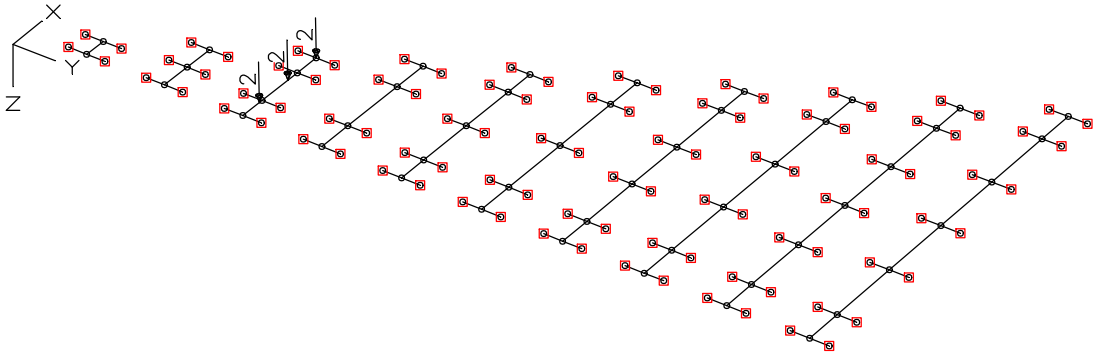
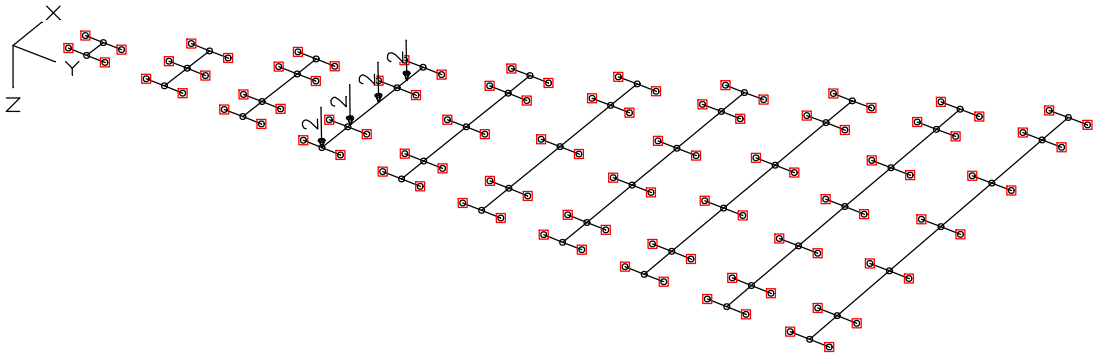


LF 25: Belastung, L = 1,5 m Pi = 2,0 kN



LF 26: Belastung, L = 1,5 m Pi = 2,0 kN



LF 30: Belastung, L = 2,0 m Pi = 2,0 kN

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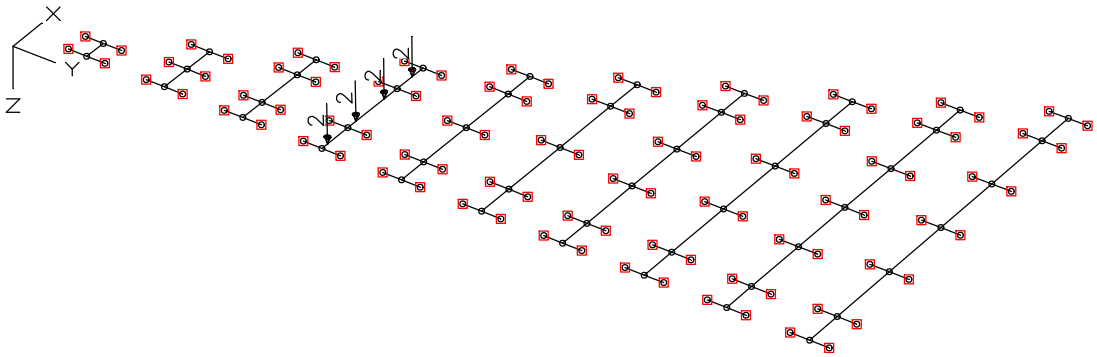
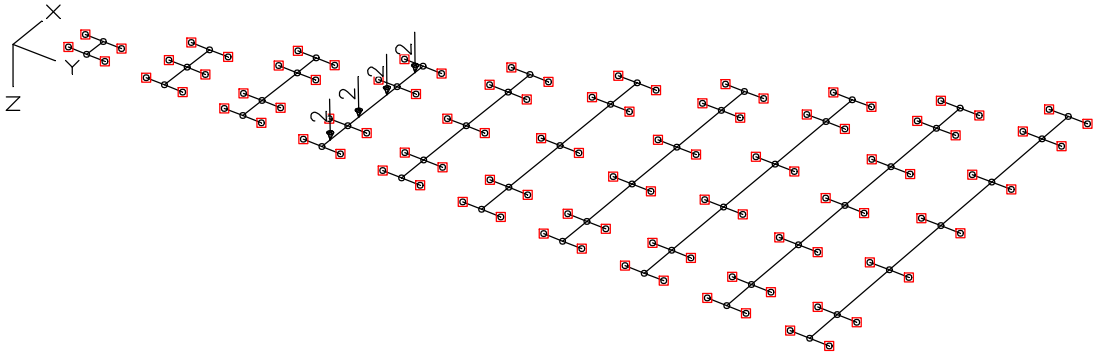
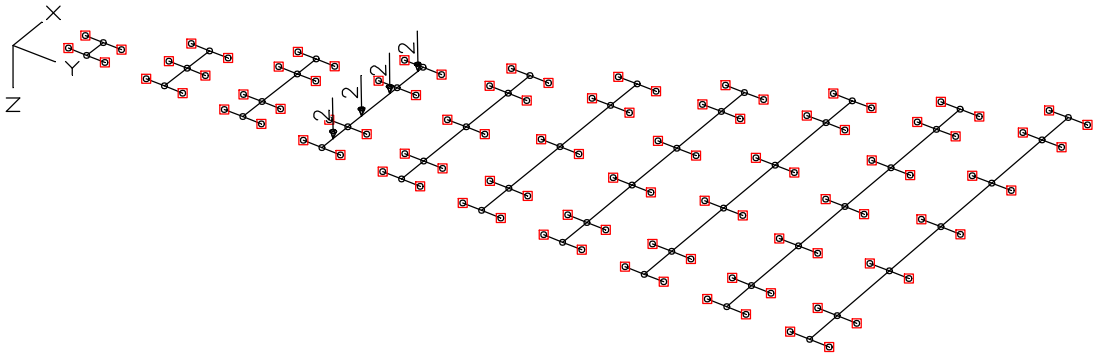


LF 31: Belastung, L = 2,0 m Pi = 2,0 kN



LF 32: Belastung, L = 2,0 m Pi = 2,0 kN



LF 33: Belastung, L = 2,0 m Pi = 2,0 kN

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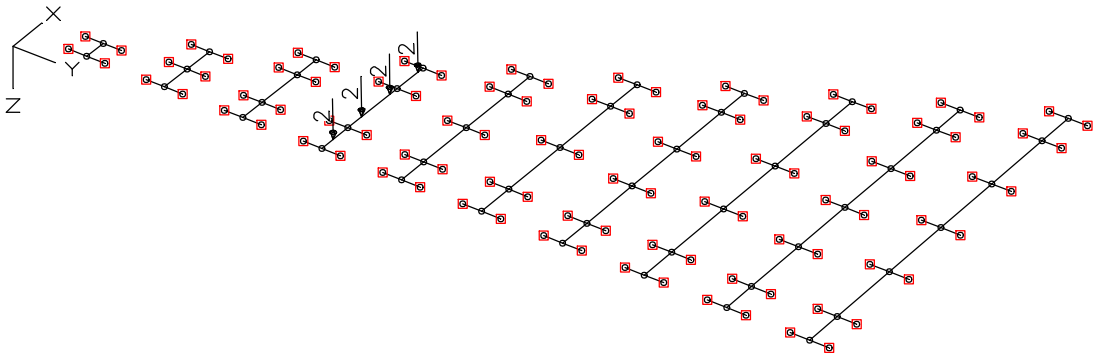
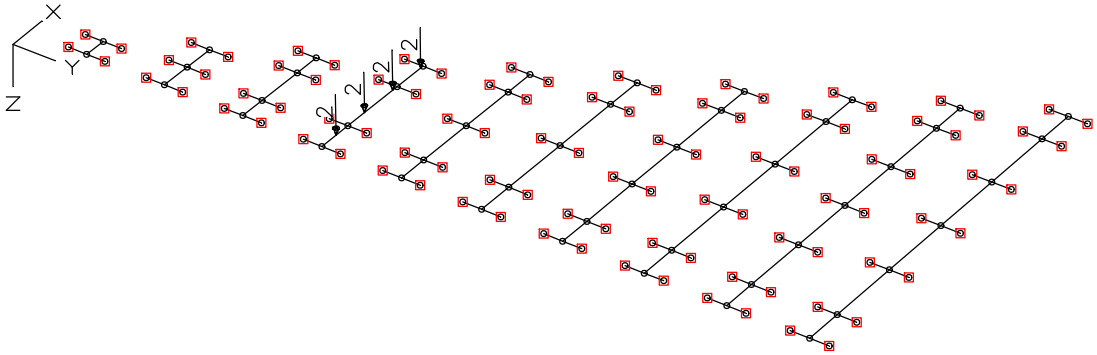
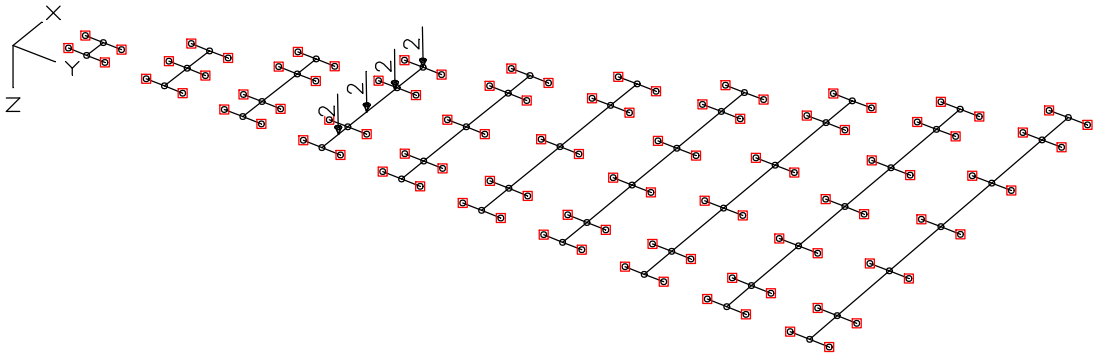


LF 33: Belastung, L = 2,0 m Pi = 2,0 kN



LF 34: Belastung, L = 2,0 m Pi = 2,0 kN



LF 35: Belastung, L = 2,0 m Pi = 2,0 kN

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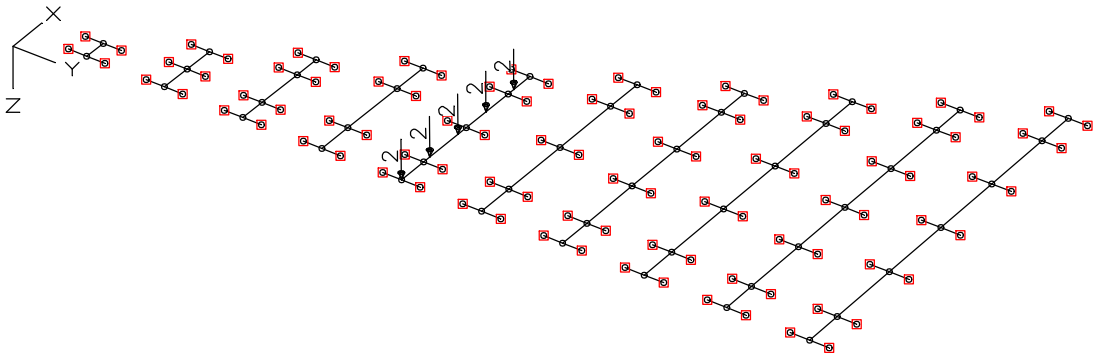
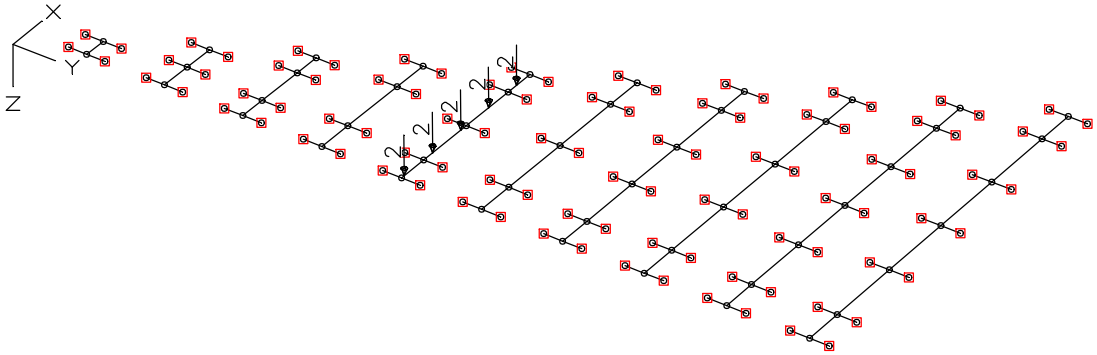
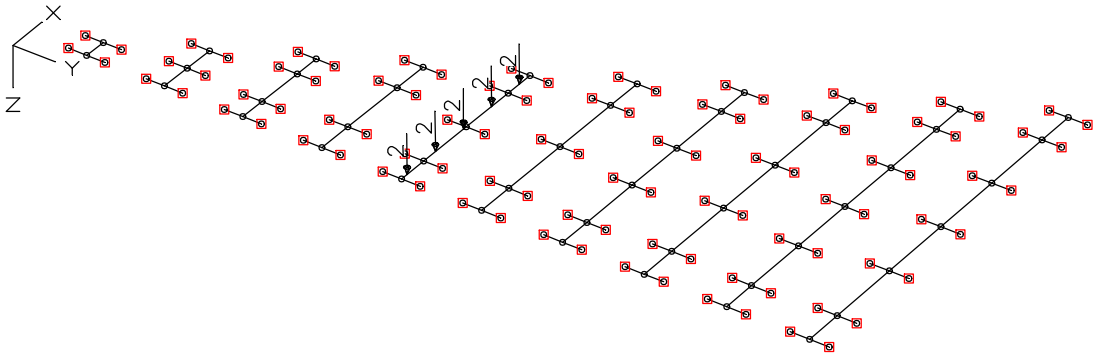


LF 40: Belastung, L = 2,5 m Pi = 2,0 kN



LF 41: Belastung, L = 2,5 m Pi = 2,0 kN



LF 42: Belastung, L = 2,5 m Pi = 2,0 kN

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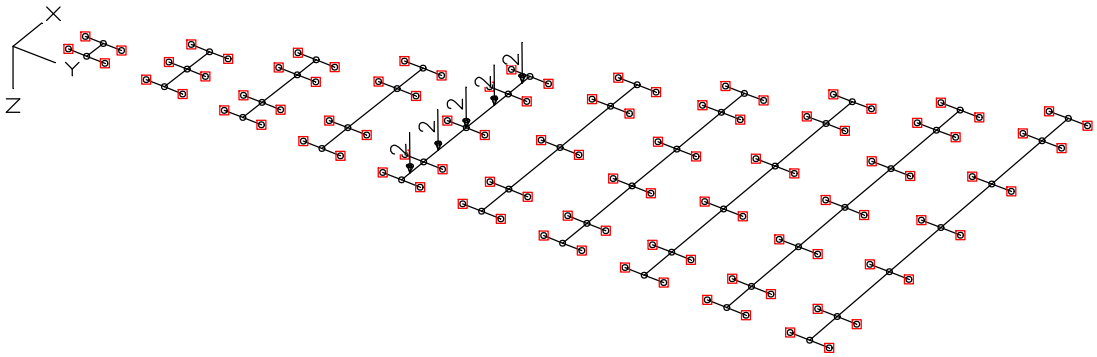
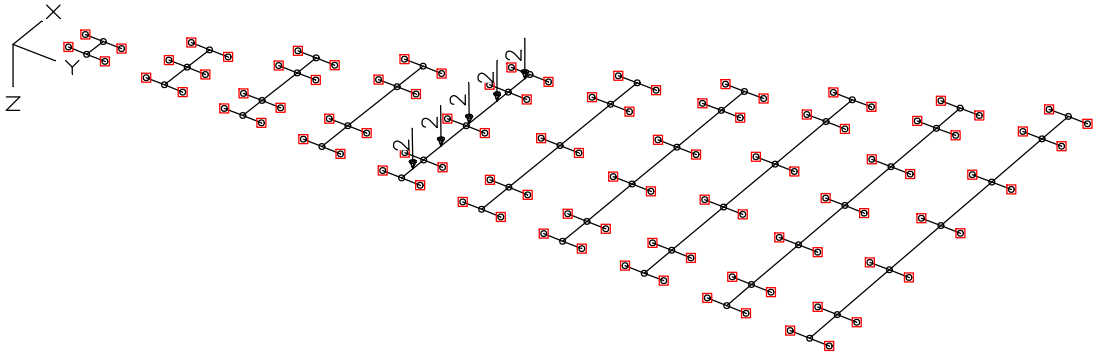
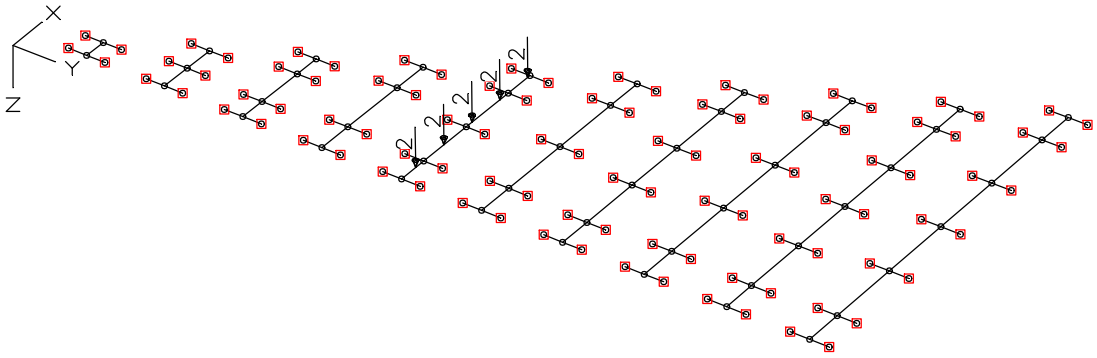


LF 43: Belastung, L = 2,5 m Pi = 2,0 kN



LF 44: Belastung, L = 2,5 m Pi = 2,0 kN



LF 45: Belastung, L = 2,5 m Pi = 2,0 kN

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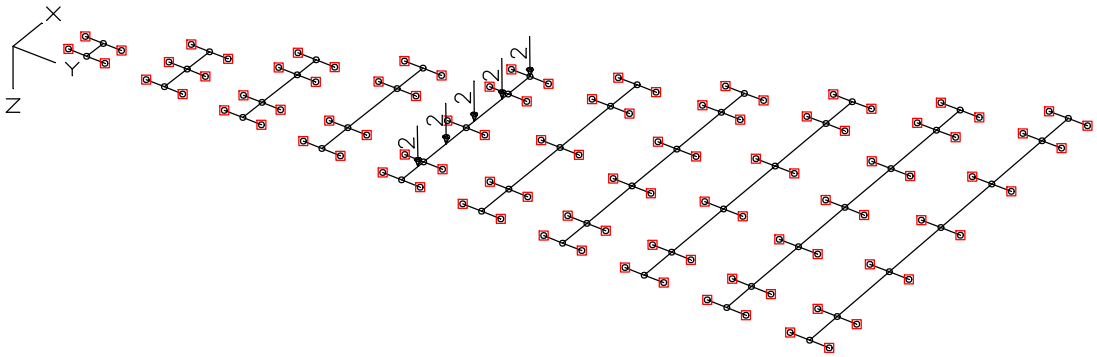
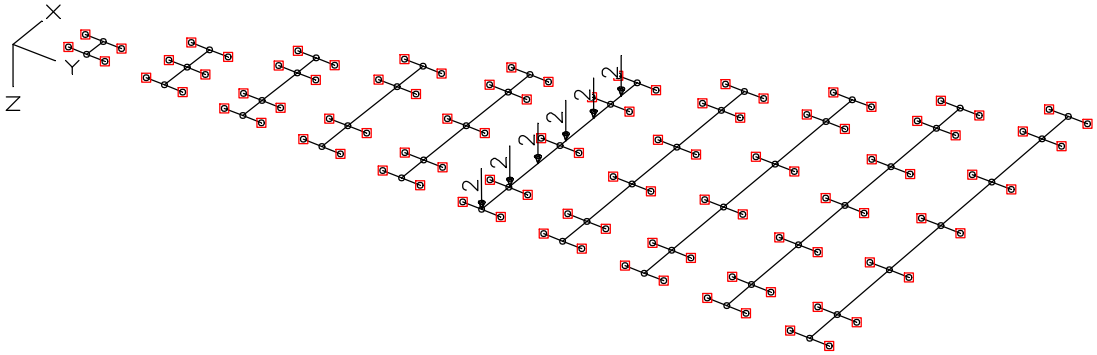
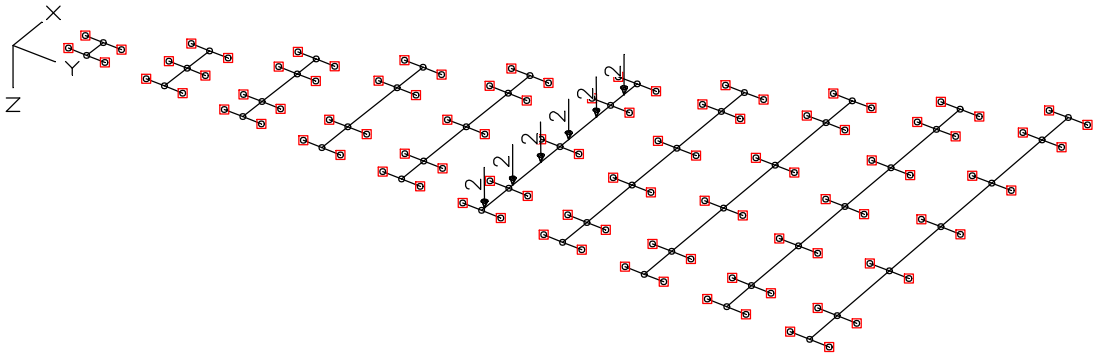


LF 46: Belastung, L = 2,5 m Pi = 2,0 kN



LF 50: Belastung, L = 3,0 m Pi = 2,0 kN



LF 51: Belastung, L = 3,0 m Pi = 2,0 kN

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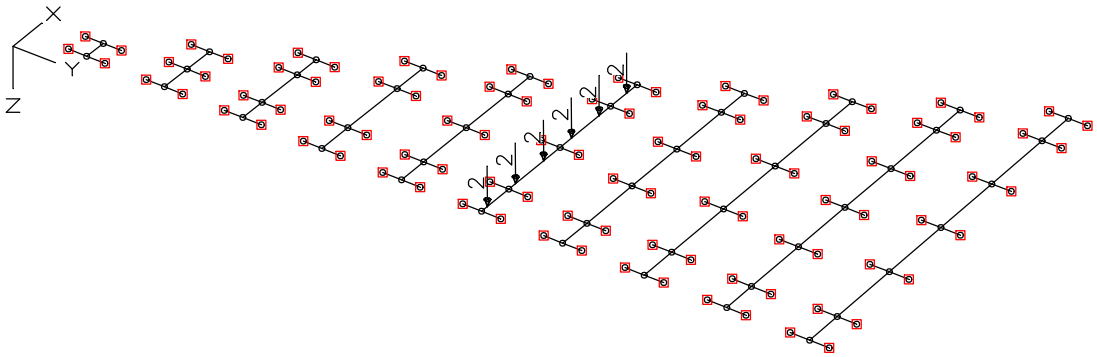
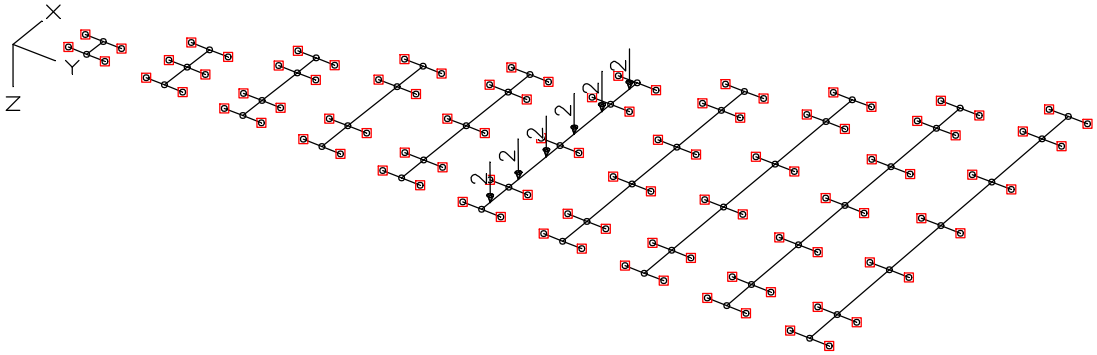
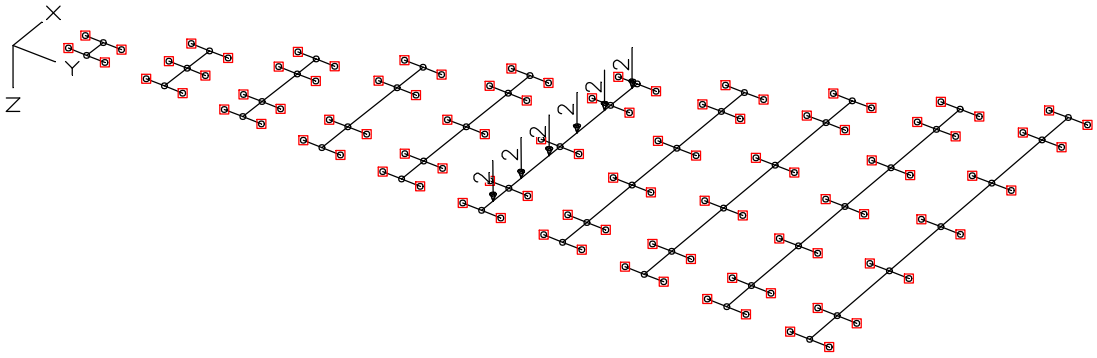


LF 52: Belastung, L = 3,0 m Pi = 2,0 kN



LF 53: Belastung, L = 3,0 m Pi = 2,0 kN



LF 54: Belastung, L = 3,0 m Pi = 2,0 kN

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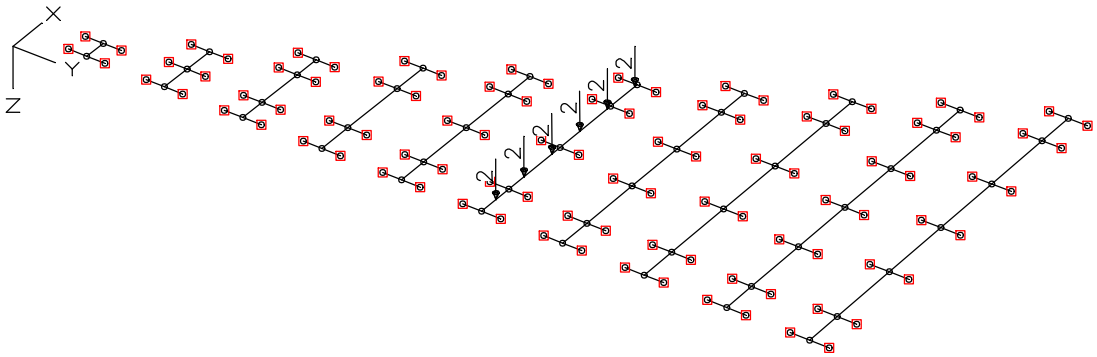
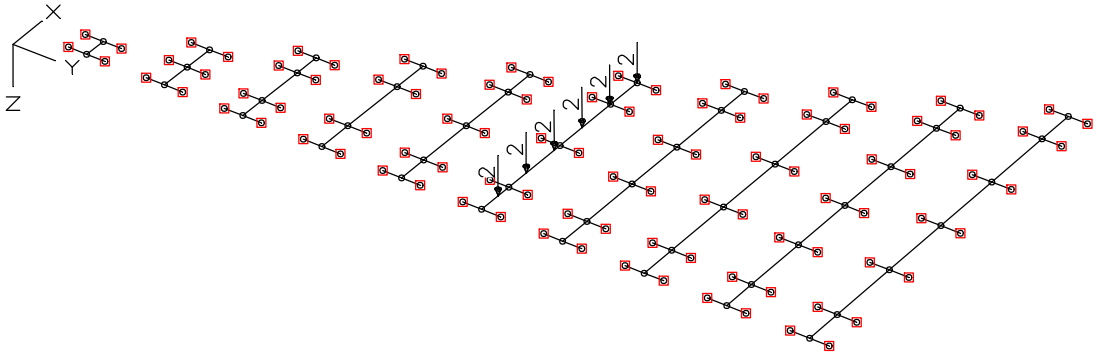
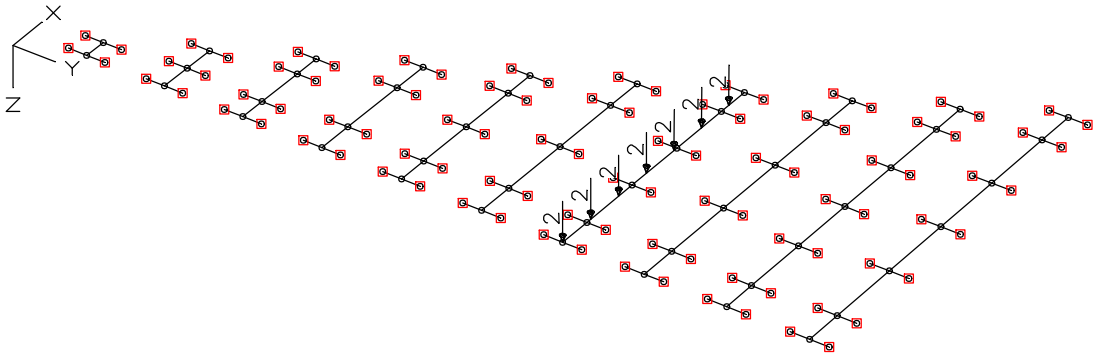


LF 55: Belastung, L = 3,0 m Pi = 2,0 kN



LF 56: Belastung, L = 3,0 m Pi = 2,0 kN



LF 60: Belastung, L = 3,5 m Pi = 2,0 kN

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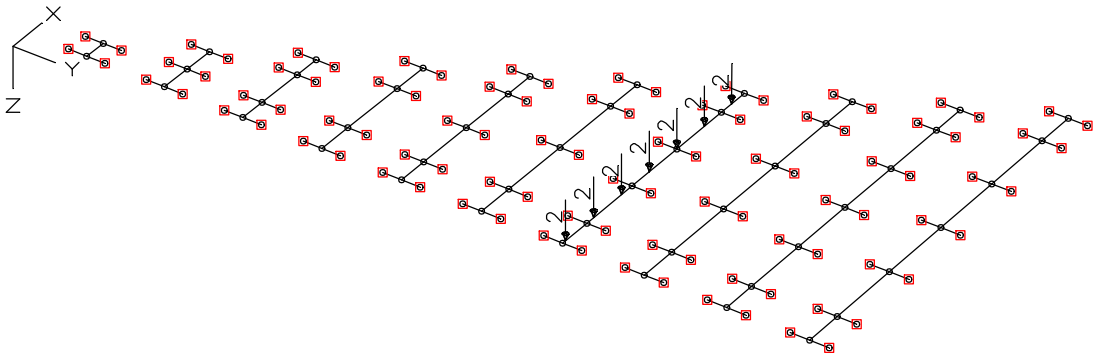
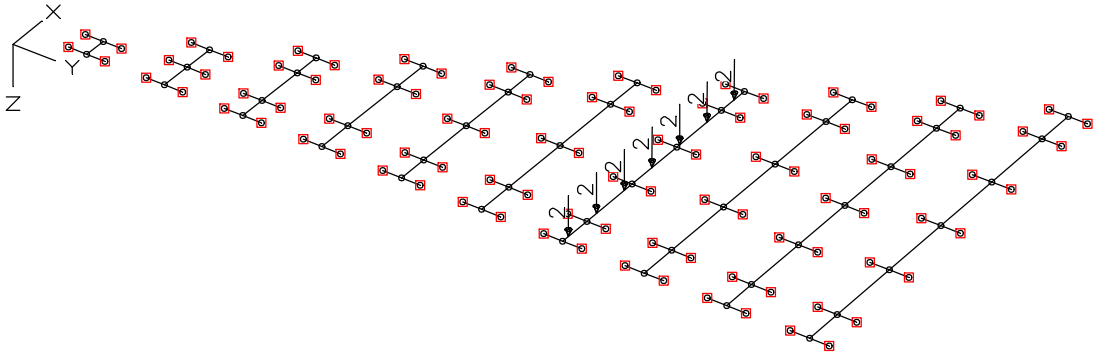
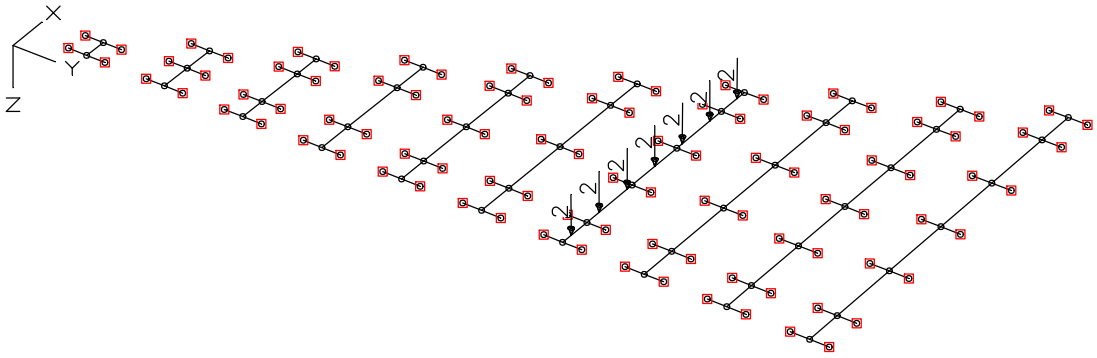


LF 61: Belastung, L = 3,5 m Pi = 2,0 kN



LF 62: Belastung, L = 3,5 m Pi = 2,0 kN



LF 63: Belastung, L = 3,5 m Pi = 2,0 kN

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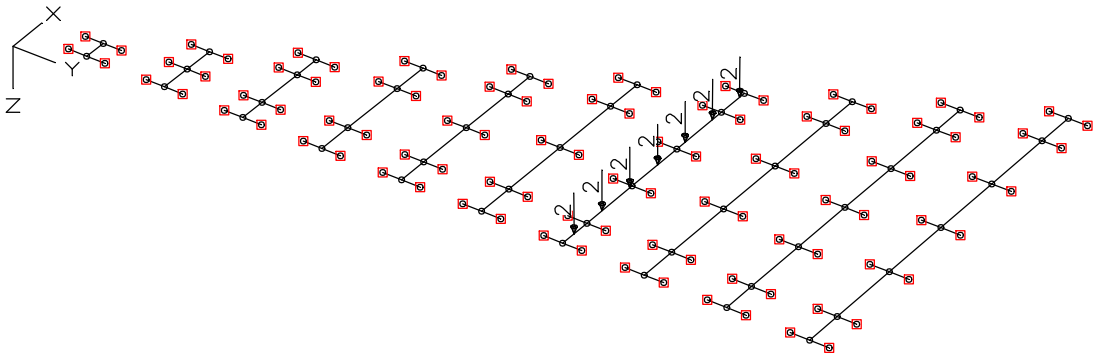
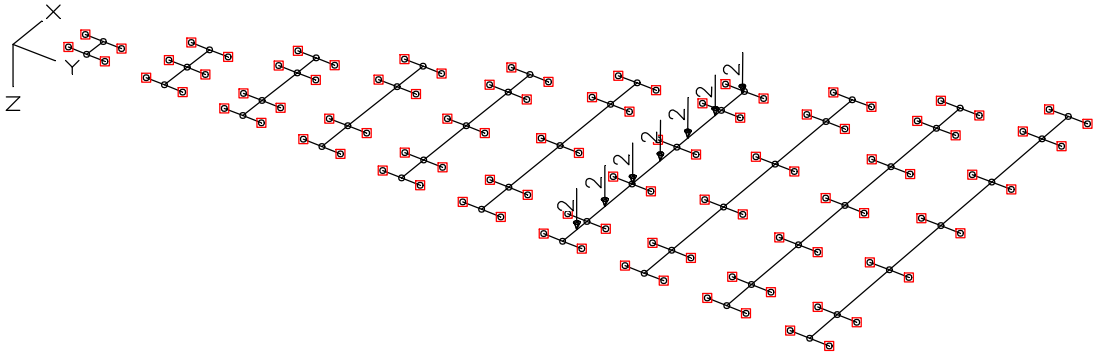
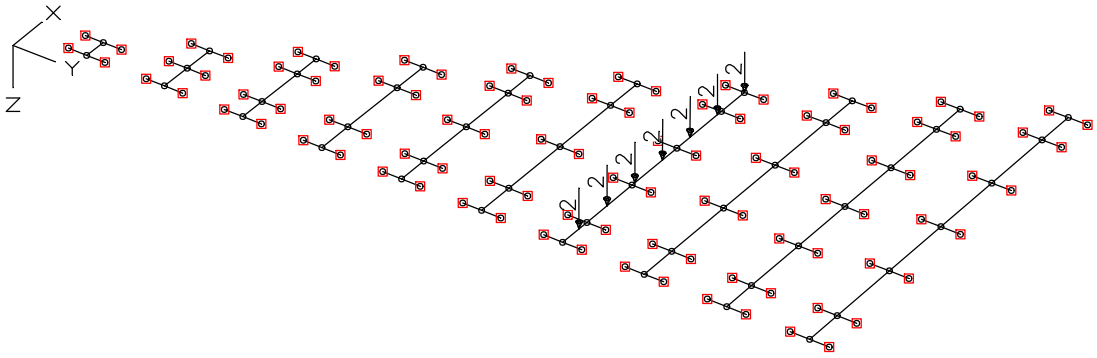


LF 64: Belastung, L = 3,5 m Pi = 2,0 kN



LF 65: Belastung, L = 3,5 m Pi = 2,0 kN



LF 66: Belastung, L = 3,5 m Pi = 2,0 kN

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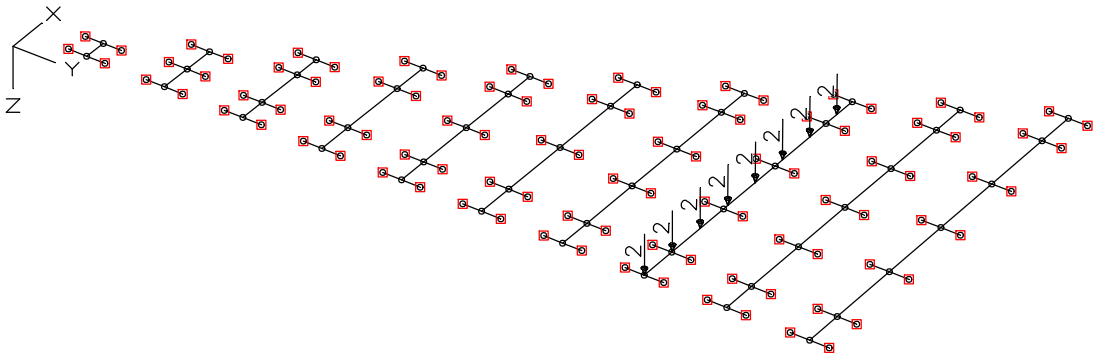
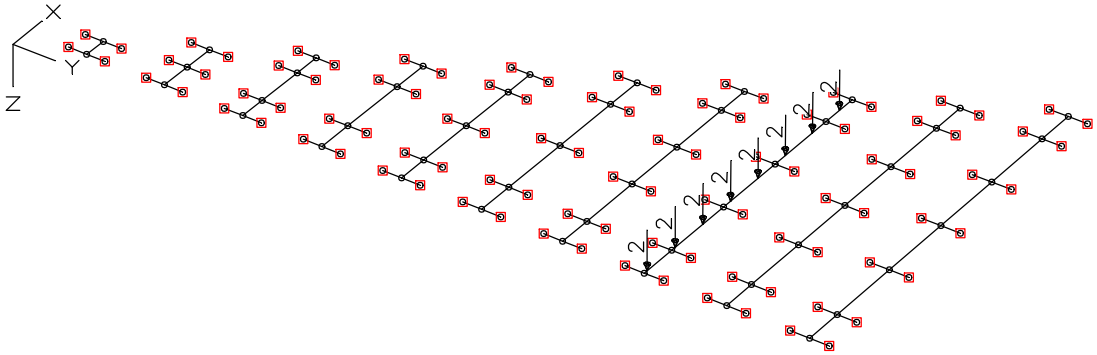
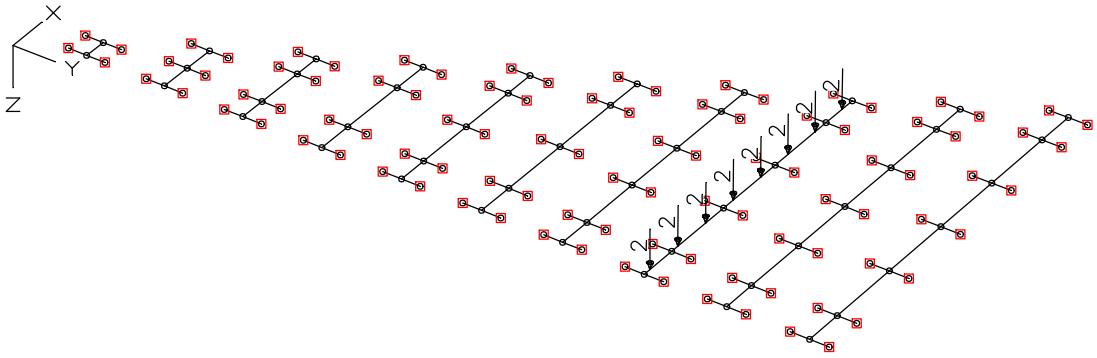


LF 70: Belastung, L = 4,0 m Pi = 2,0 kN



LF 71: Belastung, L = 4,0 m Pi = 2,0 kN



LF 72: Belastung, L = 4,0 m Pi = 2,0 kN

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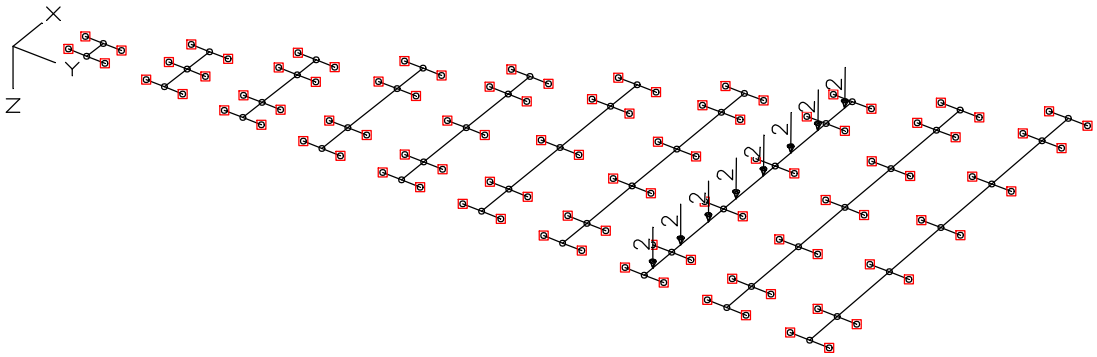
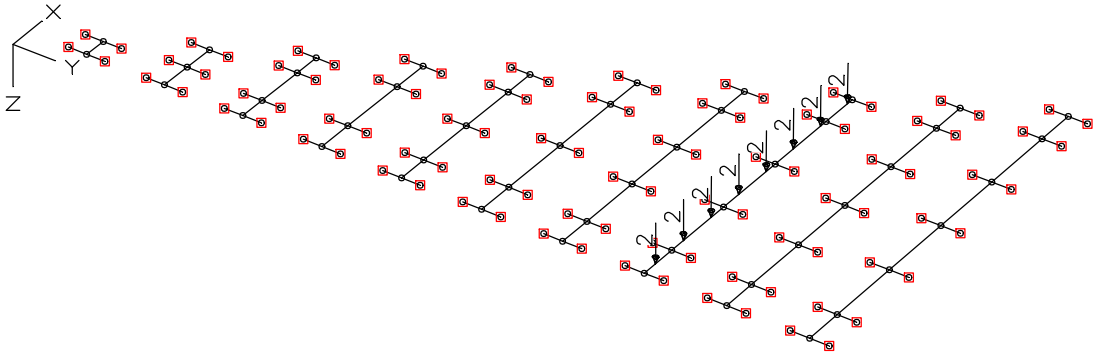
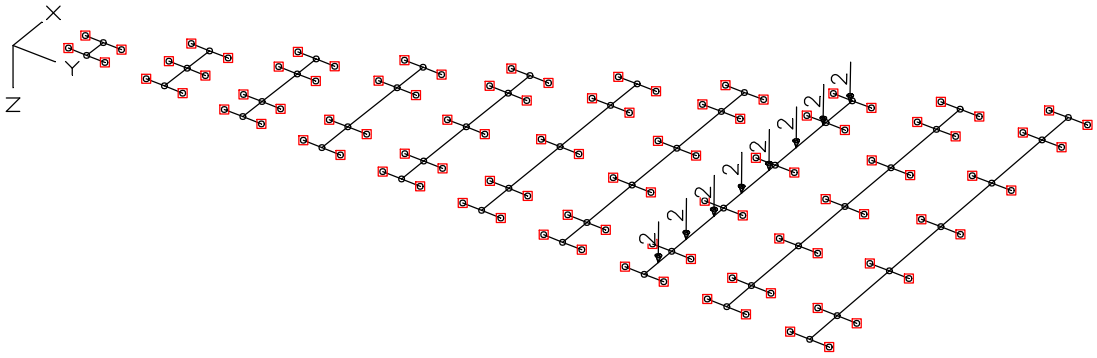


LF 73: Belastung, L = 4,0 m Pi = 2,0 kN



LF 74: Belastung, L = 4,0 m Pi = 2,0 kN



LF 75: Belastung, L = 4,0 m Pi = 2,0 kN

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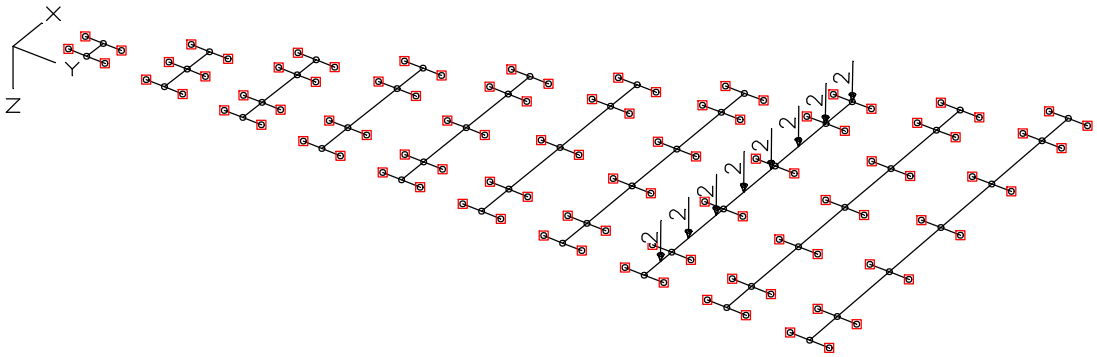
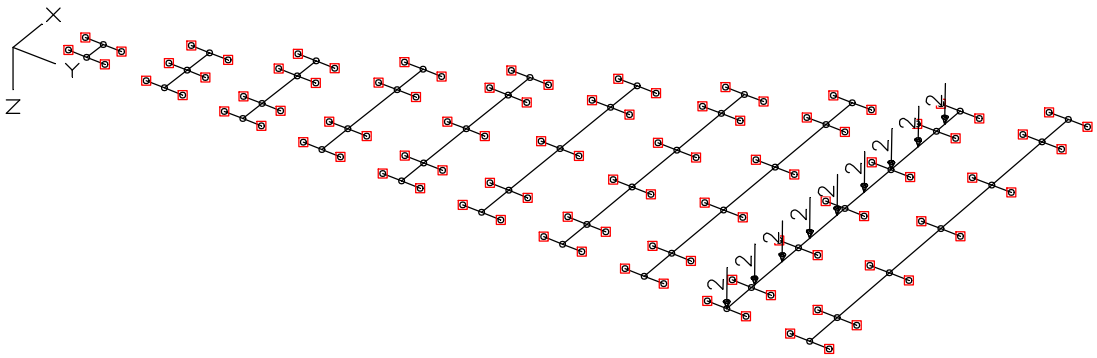
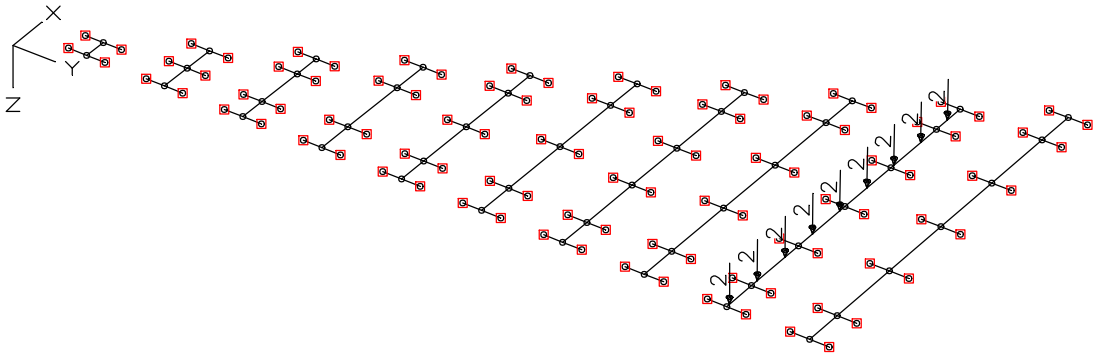


LF 76: Belastung, L = 4,0 m Pi = 2,0 kN



LF 80: Belastung, L = 4,5 m Pi = 2,0 kN



LF 81: Belastung, L = 4,5 m Pi = 2,0 kN

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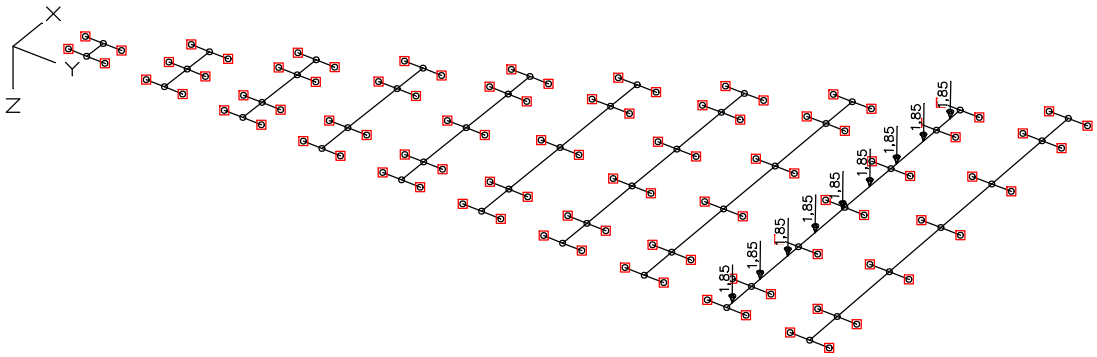
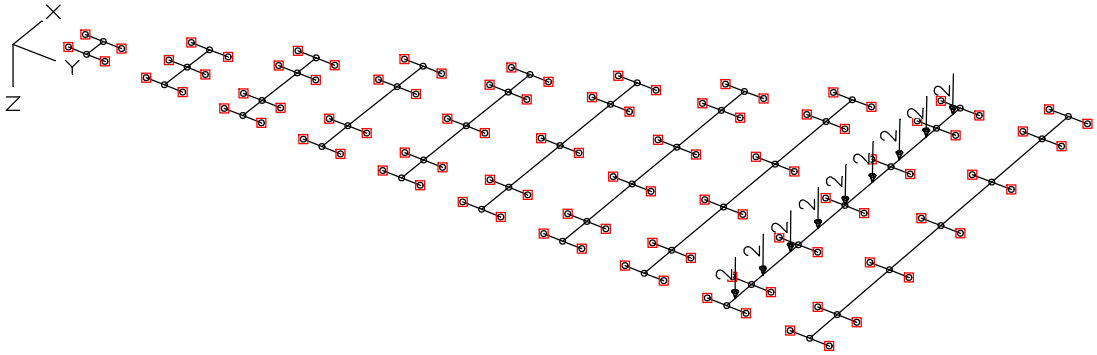
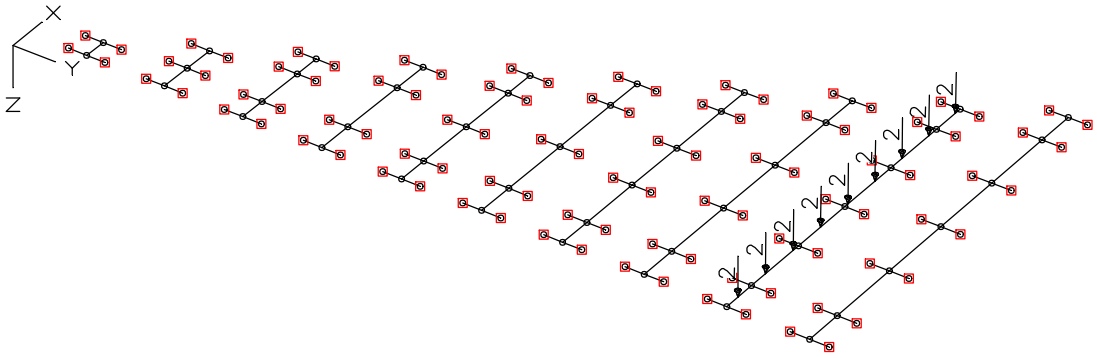


LF 82: Belastung, L = 4,5 m Pi = 2,0 kN



LF 83: Belastung, L = 4,5 m Pi = 2,0 kN



LF 84: Belastung, L = 4,5 m Pi = 2,0 kN

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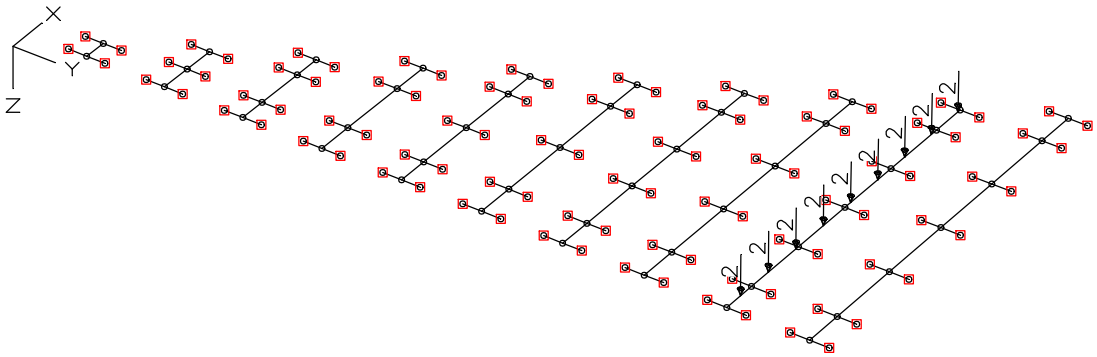
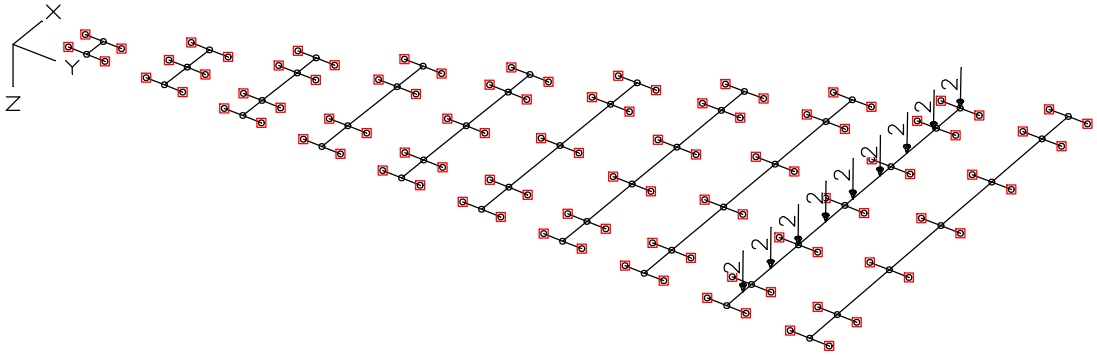
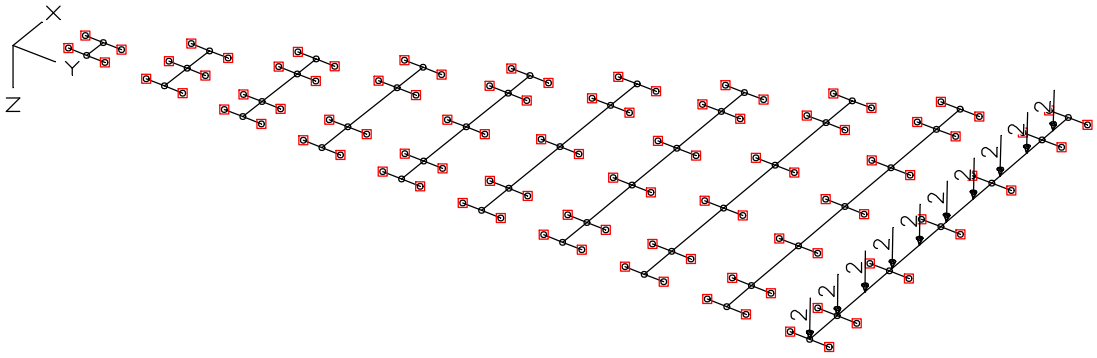


LF 85: Belastung, L = 4,5 m Pi = 2,0 kN



LF 86: Belastung, L = 4,5 m Pi = 2,0 kN



LF 90: Belastung, L = 5,0 m Pi = 2,0 kN

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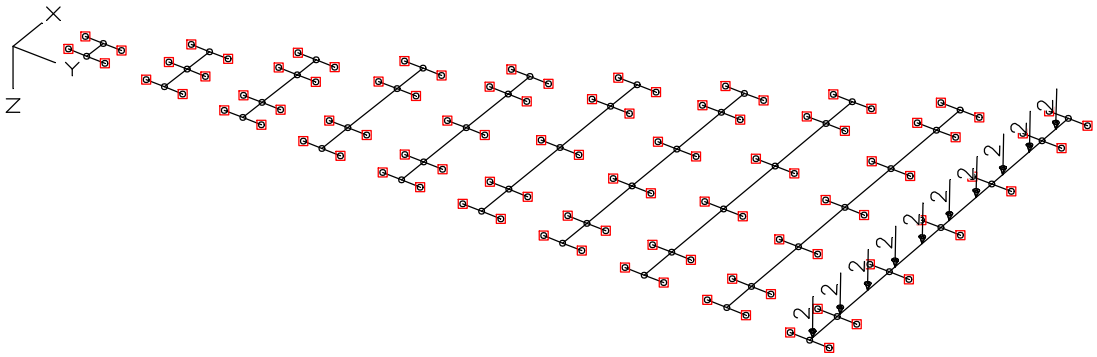
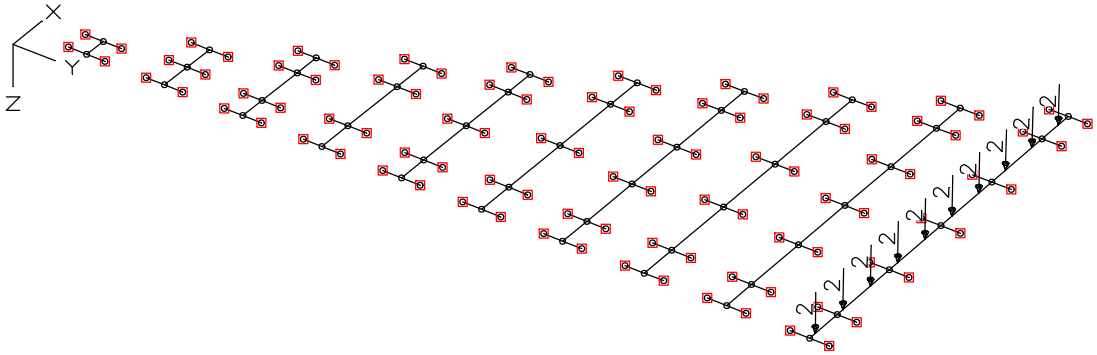
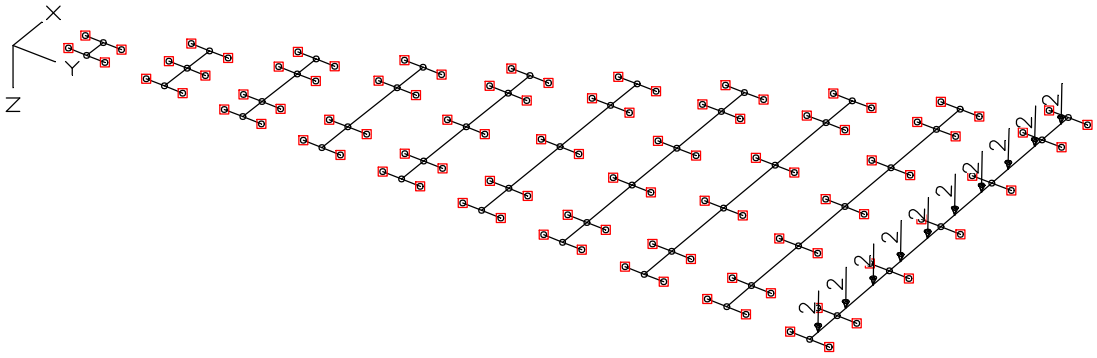


LF 91: Belastung, L = 5,0 m Pi = 2,0 kN



LF 92: Belastung, L = 5,0 m Pi = 2,0 kN



LF 93: Belastung, L = 5,0 m Pi = 2,0 kN

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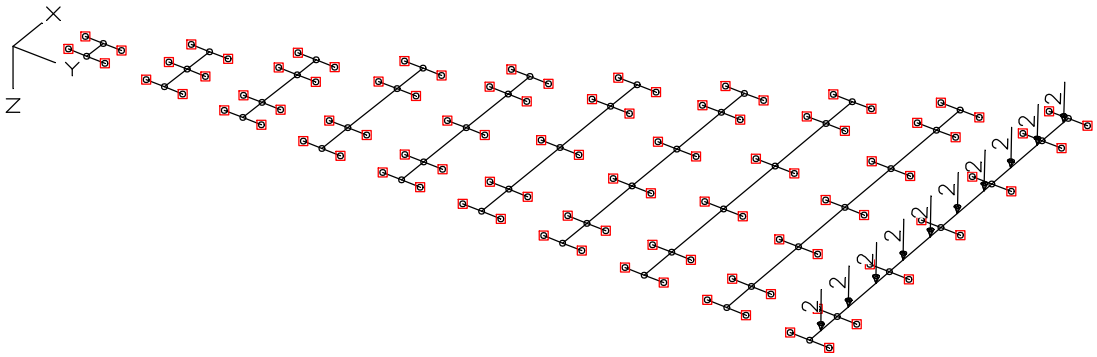
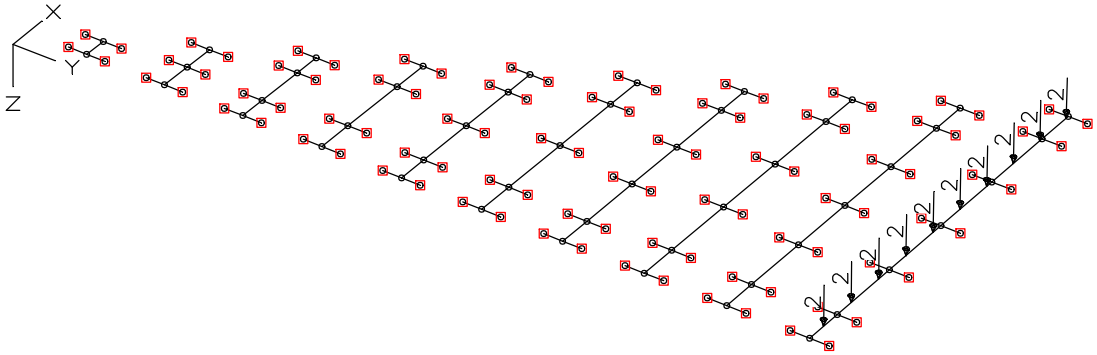
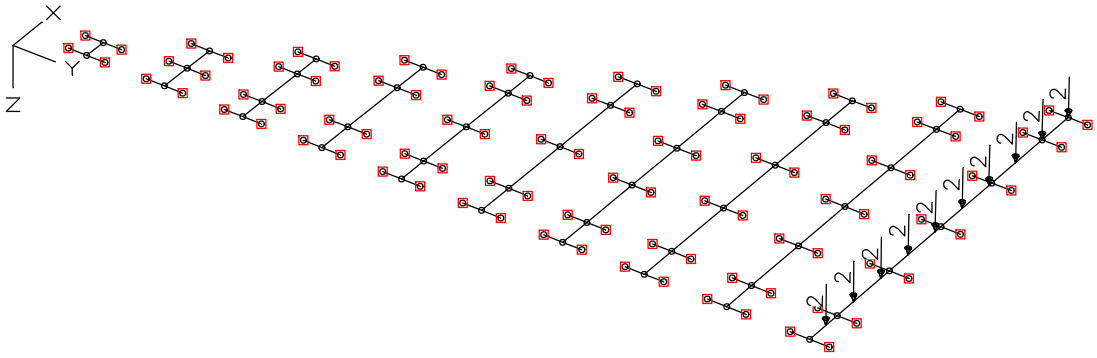


LF 94: Belastung, L = 5,0 m Pi = 2,0 kN



LF 95: Belastung, L = 5,0 m Pi = 2,0 kN



LF 96: Belastung, L = 5,0 m Pi = 2,0 kN

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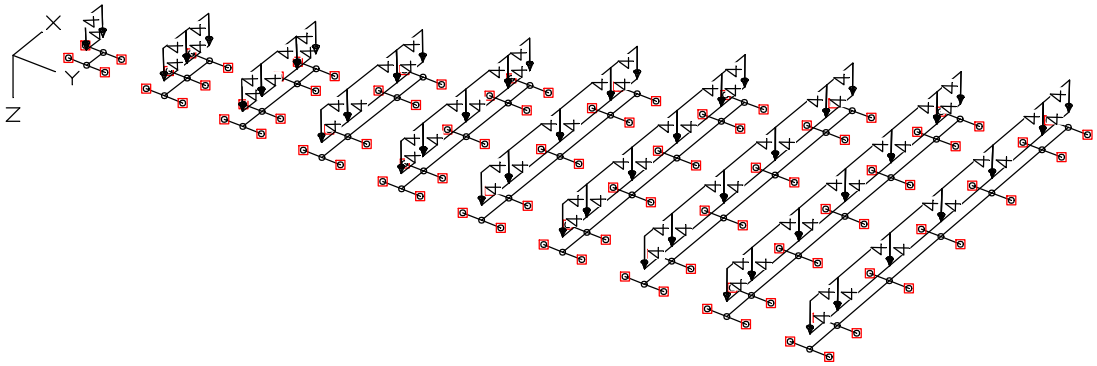

LF 100: Belastung, p = 4,0 kN/m

Lastfallkombination 777, P = 4,0 kN

Exklusive Auswahl		Faktor
1	P = 4,0 kN	1,000
2	P = 4,0 kN	1,000
3	P = 4,0 kN	1,000
4	P = 4,0 kN	1,000
5	P = 4,0 kN	1,000
6	P = 4,0 kN	1,000
7	P = 4,0 kN	1,000
8	P = 4,0 kN	1,000
9	P = 4,0 kN	1,000

Lastfallkombination 888, Pi = 2,0 kN

Exklusive Auswahl		Faktor
10	L = 1 m Pi = 2,0 kN	1,000
11	L = 1 m Pi = 2,0 kN	1,000
12	L = 1 m Pi = 2,0 kN	1,000
13	L = 1 m Pi = 2,0 kN	1,000
14	L = 1 m Pi = 2,0 kN	1,000
15	L = 1 m Pi = 2,0 kN	1,000
16	L = 1 m Pi = 2,0 kN	1,000
20	L = 1,5 m Pi = 2,0 kN	1,000
21	L = 1,5 m Pi = 2,0 kN	1,000
22	L = 1,5 m Pi = 2,0 kN	1,000
23	L = 1,5 m Pi = 2,0 kN	1,000
24	L = 1,5 m Pi = 2,0 kN	1,000
25	L = 1,5 m Pi = 2,0 kN	1,000
26	L = 1,5 m Pi = 2,0 kN	1,000
30	L = 2,0 m Pi = 2,0 kN	1,000
31	L = 2,0 m Pi = 2,0 kN	1,000
32	L = 2,0 m Pi = 2,0 kN	1,000
33	L = 2,0 m Pi = 2,0 kN	1,000
34	L = 2,0 m Pi = 2,0 kN	1,000

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Lastfallkombination 888, Pi = 2,0 kN

Exklusive Auswahl		Faktor
35	L = 2,0 m Pi = 2,0 kN	1,000
40	L = 2,5 m Pi = 2,0 kN	1,000
41	L = 2,5 m Pi = 2,0 kN	1,000
42	L = 2,5 m Pi = 2,0 kN	1,000
43	L = 2,5 m Pi = 2,0 kN	1,000
44	L = 2,5 m Pi = 2,0 kN	1,000
45	L = 2,5 m Pi = 2,0 kN	1,000
46	L = 2,5 m Pi = 2,0 kN	1,000
50	L = 3,0 m Pi = 2,0 kN	1,000
51	L = 3,0 m Pi = 2,0 kN	1,000
52	L = 3,0 m Pi = 2,0 kN	1,000
53	L = 3,0 m Pi = 2,0 kN	1,000
54	L = 3,0 m Pi = 2,0 kN	1,000
55	L = 3,0 m Pi = 2,0 kN	1,000
56	L = 3,0 m Pi = 2,0 kN	1,000
60	L = 3,5 m Pi = 2,0 kN	1,000
61	L = 3,5 m Pi = 2,0 kN	1,000
62	L = 3,5 m Pi = 2,0 kN	1,000
63	L = 3,5 m Pi = 2,0 kN	1,000
64	L = 3,5 m Pi = 2,0 kN	1,000
65	L = 3,5 m Pi = 2,0 kN	1,000
66	L = 3,5 m Pi = 2,0 kN	1,000
70	L = 4,0 m Pi = 2,0 kN	1,000
71	L = 4,0 m Pi = 2,0 kN	1,000
72	L = 4,0 m Pi = 2,0 kN	1,000
73	L = 4,0 m Pi = 2,0 kN	1,000
74	L = 4,0 m Pi = 2,0 kN	1,000
75	L = 4,0 m Pi = 2,0 kN	1,000
76	L = 4,0 m Pi = 2,0 kN	1,000
80	L = 4,5 m Pi = 2,0 kN	1,000
81	L = 4,5 m Pi = 2,0 kN	1,000
82	L = 4,5 m Pi = 2,0 kN	1,000
83	L = 4,5 m Pi = 2,0 kN	1,000
84	L = 4,5 m Pi = 2,0 kN	1,000
85	L = 4,5 m Pi = 2,0 kN	1,000
86	L = 4,5 m Pi = 2,0 kN	1,000
90	L = 5,0 m Pi = 2,0 kN	1,000
91	L = 5,0 m Pi = 2,0 kN	1,000
92	L = 5,0 m Pi = 2,0 kN	1,000
93	L = 5,0 m Pi = 2,0 kN	1,000
94	L = 5,0 m Pi = 2,0 kN	1,000
95	L = 5,0 m Pi = 2,0 kN	1,000
96	L = 5,0 m Pi = 2,0 kN	1,000

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Lastfallkombination 999, p = 4,0 kN/m

Exklusive Auswahl		Faktor
100	p = 4,0 kN/m	1,000

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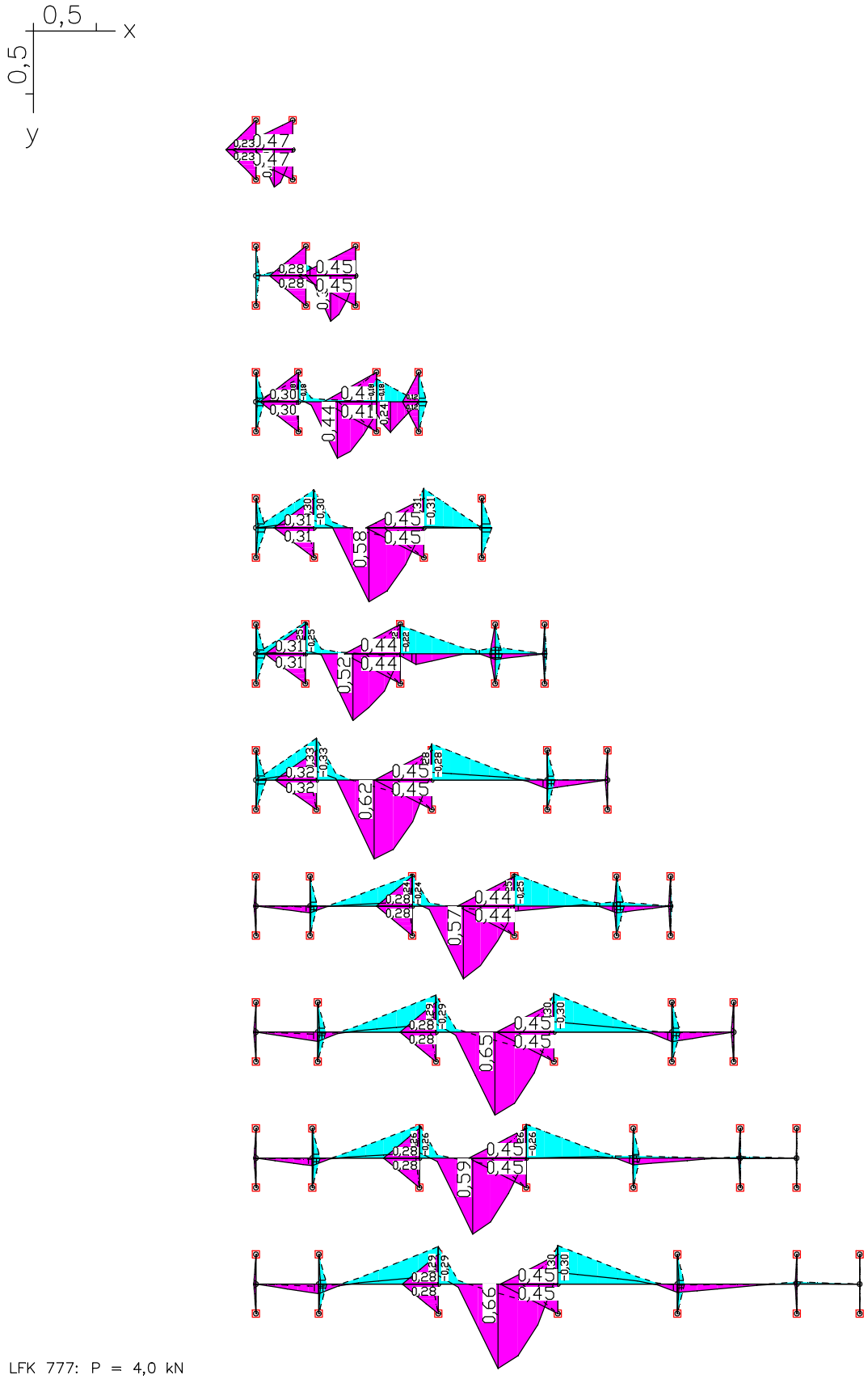
18445 – Annex Loadings at center chord at bottom

14.12.2018

M 1 : 48



LFK 777: P = 4,0 kN

Schnittgrößen min,max My. 0,48 [kNm] = ⊢——⊣

Wertebereich (Gesamtsystem, min/max): −0,33/0,66 [kNm]

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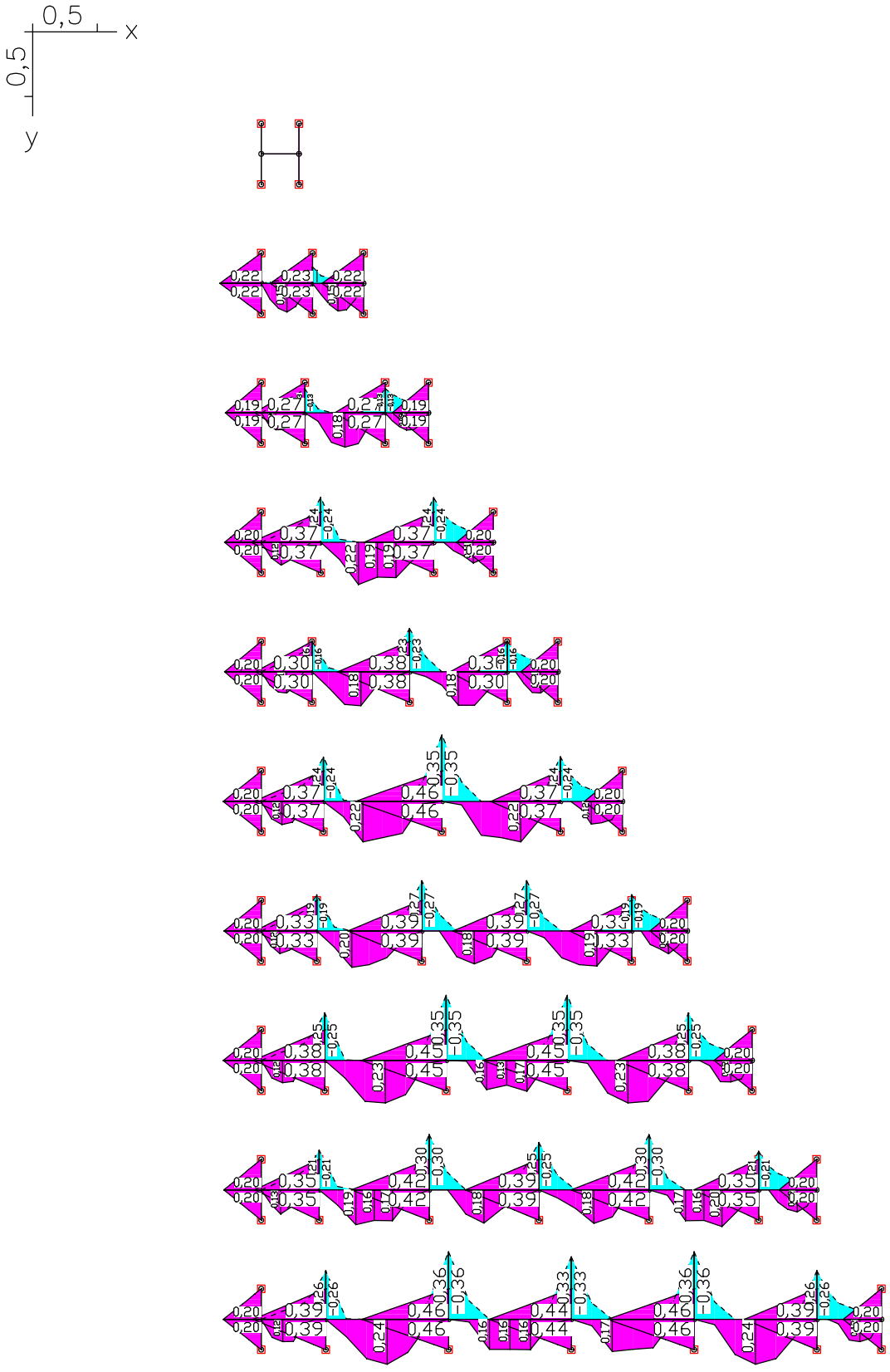
14.12.2018

M 1 : 48



LFK 888: Pi = 2,0 kN

Schnittgrößen min,max My. 0,34 [kNm] =

Wertebereich (Gesamtsystem, min/max): −0,36/0,46 [kNm]

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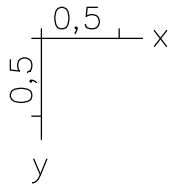
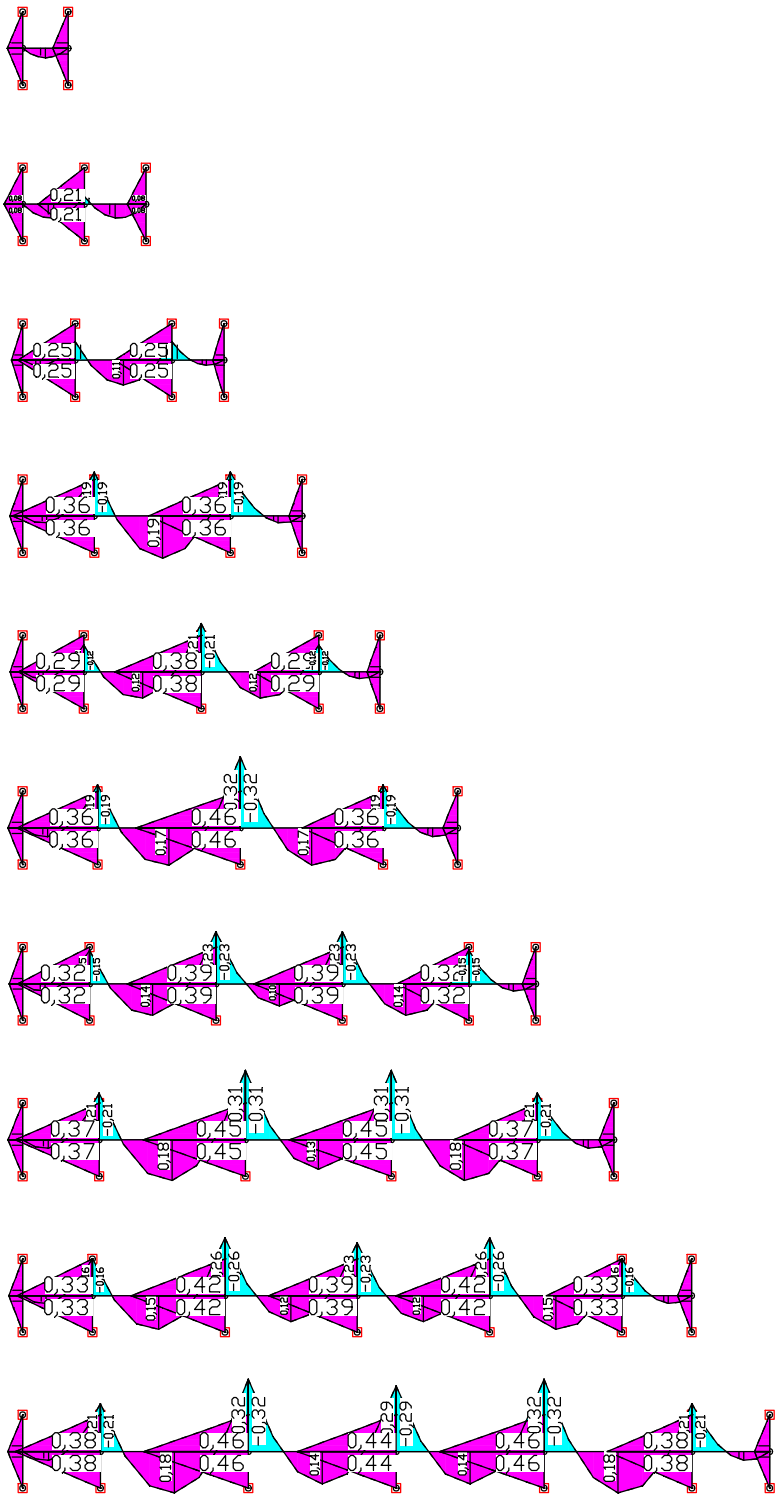
14.12.2018

M 1 : 48





LFK 999: p = 4,0 kN/m

Schnittgrößen min,max My. 0,34 [kNm] = ⊢——⊣

Wertebereich (Gesamtsystem, min/max): −0,32/0,46 [kNm]