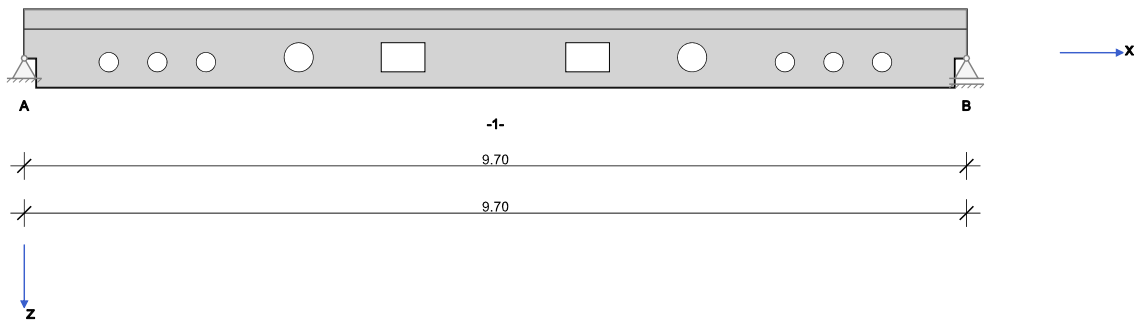


RIB Software AG	BALKEN V16.0 Build-Nr. 22072016	Typ: Stahlbeton
Datei: FT-Binder Aussparungen.Balx		

Projektinformation

Auftrag	Ausklinkungen + große Öffnungen
Beschreibung	BVFT Binder
Position	D10
Bauteil	Stahlbeton DLT

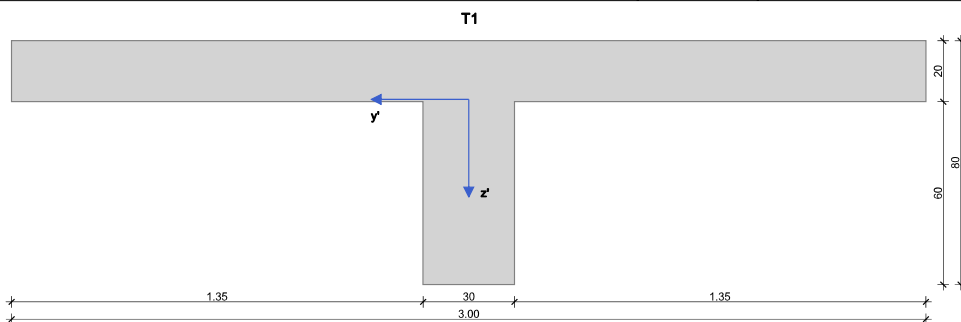
Systeminformationen



Normen:	DIN EN 1992-1-1	Bemessung	
Berechnung:	mitwirkende Breiten berücksichtigt	Momentenumlagerung:	begrenzt < 15.00 %
Bauwerksart:	Ingenieurbau	Vorspannung:	keine
Bemessungssituation:	ständig		
Expositionsklasse:	oben:XC1 unten:XC1		
Brandschutz:	kein Brandschutznachweis		

Durchlaufträger Geometrie

Typ	Querschnittstyp	b _o	Obergurtbreite
b _w	Stegbreite	d _o	Obergurtdicke
h _w	Steghöhe	b _u	Untergurtbreite
z _s	Abstand des Schwerpunktes gemessen von OK	d _u	Untergurtdicke



Querschnitt	Typ	b _w [cm]	h _w [cm]	b _o [cm]	d _o [cm]	b _u [cm]	d _u [cm]	A _c [cm ²]	I _y [cm ⁴]	z _s [cm]
T1	T	30.0	60.0	300.0	20.0			7800.0	2955385	19.2

Feld	Länge [m]	Querschnitt
1	9.70	T1

Aussparungen

Feld	a zum Anfang [m]	Typ	Abstand von UK [cm]	∅ bzw. b _x [cm]	h _z [cm]
1	0.870	Kreis	16.0	20.0	0.0
1	1.370	Kreis	16.0	20.0	0.0

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	1.870	Kreis	16.0	20.0	0.0
1	2.825	Kreis	16.0	30.0	0.0
1	3.900	Rechteck	16.0	45.0	30.0
1	5.800	Rechteck	16.0	45.0	30.0
1	6.875	Kreis	16.0	30.0	0.0
1	7.830	Kreis	16.0	20.0	0.0
1	8.330	Kreis	16.0	20.0	0.0
1	8.830	Kreis	16.0	20.0	0.0

Lagerung

Auflager	Typ	C _x [kN/m]	C _z [kN/m]	C _{φx} [kNm]	C _{φy} [kNm]	Breite [cm]	Ausklinkung	
							ba [cm]	h [cm]
A	Beton direkt	starr	starr	starr		15.0	12.5	30.0
B	Beton direkt		starr			15.0	12.5	30.0

Material

Beton	f _{ck} [N/mm ²]	E _{cm} [N/mm ²]	γ _c	α _{cc}	f _{cd} [N/mm ²]	f _{ctm} [N/mm ²]	γ [kN/m ³]
C35/45	35.0	34100	1.50	0.85	19.8	3.2	25.00

Bewehrung	Anwendung	f _{yk} [N/mm ²]	E _s [N/mm ²]	γ _s	f _{yd} [N/mm ²]	Duktilität	Δσ _{RSK}
B500S	Längs & Quer	500.00	200000	1.15	434.8	B (hoch)	175.00
B420S	Schubfuge	420.00	200000	1.15	365.2	B (hoch)	175.00

Bewehrungsvorgabe

Längsbewehrung

d ₁	Bewehrungsachsabstand zum Rand	∅ _s	Stabdurchmesser im Steg bzw. Gurt
----------------	--------------------------------	----------------	-----------------------------------

Feld Nr	Abschnitt [m]		As oben [cm ²]			As unten [cm ²]			∅ _s -oben [mm]		∅ _s -unten [mm]	
	a	b	d ₁ [cm]	Steg	Gurt	d ₁ [cm]	Steg	Gurt	Steg	Gurt	Steg	Gurt
1	0.000	9.700	4.0	0.00	0.00	4.0	0.00	0.00	20	10	25	10

Belastung

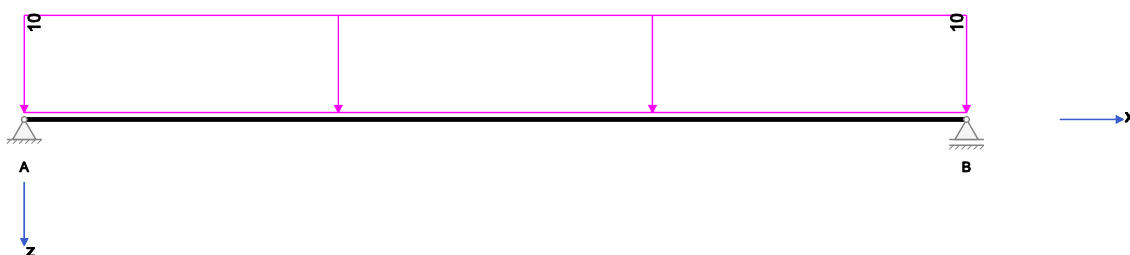
Bezug	Lager/Feld ... a bezieht sich auf Lagerposition oder Feldanfang Träger ... Linienlast erstreckt sich über gesamten Träger		
LR	Lastrichtung im globalen Koordinatensystem, x-, y- oder z-Richtung		
n, Δx	Generierung n-mal einer Einzellast mit Abstand Δx		
Δs [cm]	Stützensenkung bezüglich Lager	ΔT [K]	Temperaturlast in x- y- oder z-Richtung
ex/ey [cm]	Exzentrizität des Lastangriffs	a zum Anfang [m]	Abstand zum Bezugspunkt
b _R [m]	bei Trapezlasten, Abstand rechts zu q _R	P[kN], M[kNm]	Einzellast, Einzelmoment
b _L [m]	bei Trapez- und Dreieckslasten, Abstand links zu q _L	q _L , q _R [kN/m], m _L , m _R [kNm/m]	Gleich-, Trapez-, Dreieckslast, Streckenmoment
Ü	Lastübernahme aus anderer Berechnung		

Stahlbeton, alle Lastwerte in den Lastfällen sind charakteristisch
Eigengewicht: q_z [kN/m] = 25.00 [kN/m³] * A [m²] für alle LFK

Lastfälle

LF	Einwirkungsart	γ _{sup}	γ _{inf}	ψ ₀	ψ ₁	ψ ₂	Bezeichnung
0	Eigengewicht	1.35	1.00	1.00	1.00	1.00	Eigengewicht Träger
1	ständige Last	1.35	1.00	1.00	1.00	1.00	
2	Verkehrslast	1.50	0.00	0.80	0.70	0.50	

Lastfall 1:

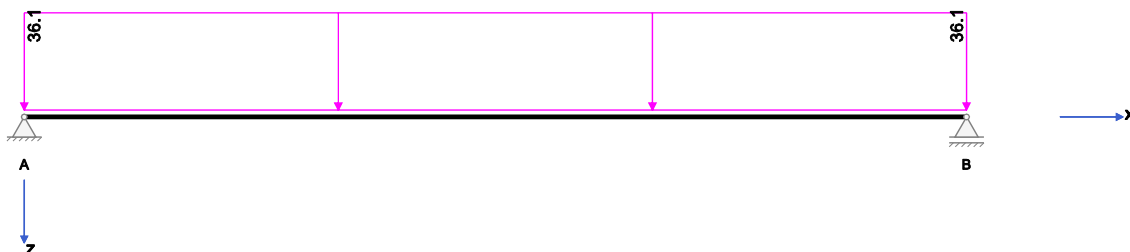


Belastung in XZ-Ebene

Ü	Typ	Bezug	LR	a zum Anfang [m]	qL/mL [kN,kNm]	qR/mR [kN,kNm]	ey [cm]	ez [cm]	Länge [m]	bL [m]	bR [m]
	Linienlast	Lager A	z	0.000	10.00	10.00			9.700		

Lastfall 2:

Lasten in z-Richtung



Belastung in XZ-Ebene

Ü	Typ	Bezug	LR	a zum Anfang [m]	qL/mL [kN,kNm]	qR/mR [kN,kNm]	ey [cm]	ez [cm]	Länge [m]	bL [m]	bR [m]
	Trapezlast	Lager A	z	0.000	36.08	36.08			9.700		

Ergebnisse

Auflagerkräfte

LF 1,2, ...	Original LF	EXTR	Führende Größe
Q	Nutzlasten charakteristisch	EQU	Lagesicherheit
A	Außergewöhnliche Einwirkung	GK	Grundkombination
ΣG	Ständige Einwirkungen	AK	Außergewöhnliche Kombination
ΣP _∞	Vorspannung t _∞	EK	Erdbebenkombination

Lager	Lastfall	EXTR	A _x [kN]	A _z [kN]	M _x [kNm]	M _y [kNm]
A	0		0.00	91.73	0.00	0.00
A	1		0.00	48.50	0.00	0.00
A	2		0.00	174.99	0.00	0.00
A	Summe G		0.00	140.23	0.00	0.00
A	Q	max Az	0.00	174.99	0.00	0.00
A	Q	min Az	0.00	0.00	0.00	0.00
A	EQU	min Az	0.00	126.21	0.00	0.00
A	GK	max Az	0.00	451.80	0.00	0.00
A	GK	min Az	0.00	140.23	0.00	0.00
B	0		0.00	91.73	0.00	0.00
B	1		0.00	48.50	0.00	0.00
B	2		0.00	174.99	0.00	0.00
B	Summe G		0.00	140.23	0.00	0.00

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

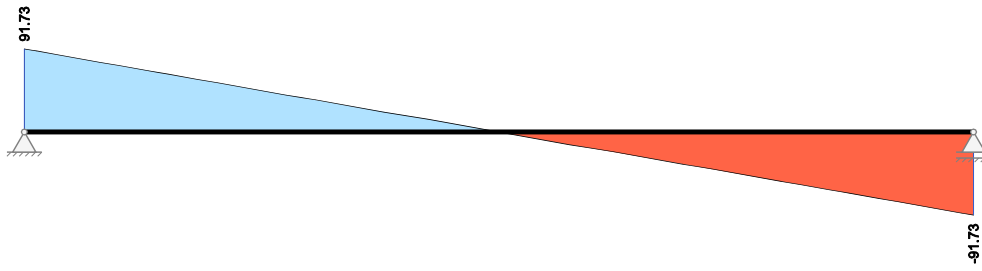
DLT

B	Q	max Az	0.00	174.99	0.00	0.00
B	Q	min Az	0.00	0.00	0.00	0.00
B	EQU	min Az	0.00	126.21	0.00	0.00
B	GK	max Az	0.00	451.80	0.00	0.00
B	GK	min Az	0.00	140.23	0.00	0.00

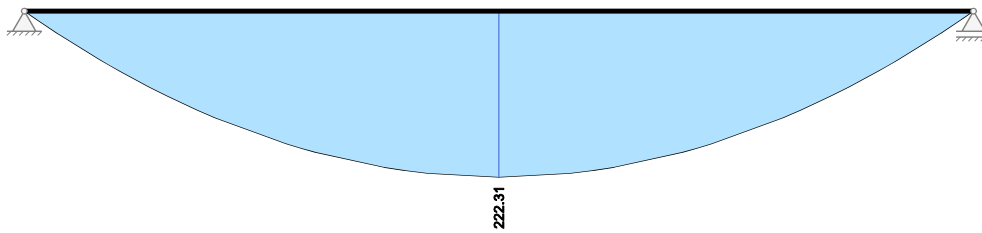
Schnittgrößen

Lastfall 0: Eigengewicht Träger

Feld Nr	x [m]	L/R	M _y [kNm]	V _z [kN]	M _t [kNm]	N _x [kN]
1	0.000	R	0.00	91.73	0.00	0.00
1	0.075		6.83	90.44	0.00	0.00
1	0.125		11.33	89.58	0.00	0.00
1	0.335		29.71	85.48	0.00	0.00
1	0.770		65.05	77.00	0.00	0.00
1	0.870		72.66	75.20	0.00	0.00
1	0.970		80.09	73.39	0.00	0.00
1	1.270		101.23	67.54	0.00	0.00
1	1.370		107.90	65.74	0.00	0.00
1	1.470		114.38	63.94	0.00	0.00
1	1.770		132.69	58.09	0.00	0.00
1	1.870		138.40	56.29	0.00	0.00
1	1.940		142.30	55.03	0.00	0.00
1	1.970		143.94	54.49	0.00	0.00
1	2.675		177.51	40.74	0.00	0.00
1	2.825		183.43	38.15	0.00	0.00
1	2.910		186.61	36.68	0.00	0.00
1	2.975		188.96	35.56	0.00	0.00
1	3.675		209.07	21.91	0.00	0.00
1	3.880		213.20	18.37	0.00	0.00
1	3.900		213.56	18.02	0.00	0.00
1	4.125		217.18	14.14	0.00	0.00
1	4.850		222.31	0.00	0.00	0.00
1	5.575		217.18	-14.14	0.00	0.00
1	5.800		213.56	-18.02	0.00	0.00
1	5.820		213.20	-18.37	0.00	0.00
1	6.025		209.07	-21.91	0.00	0.00
1	6.725		188.96	-35.56	0.00	0.00
1	6.790		186.61	-36.68	0.00	0.00
1	6.875		183.43	-38.15	0.00	0.00
1	7.025		177.51	-40.74	0.00	0.00
1	7.730		143.94	-54.49	0.00	0.00
1	7.760		142.30	-55.03	0.00	0.00
1	7.830		138.40	-56.29	0.00	0.00
1	7.930		132.69	-58.09	0.00	0.00
1	8.230		114.38	-63.94	0.00	0.00
1	8.330		107.90	-65.74	0.00	0.00
1	8.430		101.23	-67.54	0.00	0.00
1	8.730		80.09	-73.39	0.00	0.00
1	8.830		72.66	-75.20	0.00	0.00
1	8.930		65.05	-77.00	0.00	0.00
1	9.365		29.71	-85.48	0.00	0.00
1	9.575		11.33	-89.58	0.00	0.00
1	9.625		6.83	-90.44	0.00	0.00
1	9.700	L	0.00	-91.73	0.00	0.00



Momente My [kNm]



Lastfall 1:

Feld Nr	x [m]	L/R	My [kNm]	Vz [kN]	Mt [kNm]	Nx [kN]
1	0.000	R	0.00	48.50	0.00	0.00
1	0.075		3.61	47.75	0.00	0.00
1	0.125		5.98	47.25	0.00	0.00
1	0.335		15.69	45.15	0.00	0.00
1	0.770		34.38	40.80	0.00	0.00
1	0.870		38.41	39.80	0.00	0.00
1	0.970		42.34	38.80	0.00	0.00
1	1.270		53.53	35.80	0.00	0.00
1	1.370		57.06	34.80	0.00	0.00
1	1.470		60.49	33.80	0.00	0.00
1	1.770		70.18	30.80	0.00	0.00
1	1.870		73.21	29.80	0.00	0.00
1	1.940		75.27	29.10	0.00	0.00
1	1.970		76.14	28.80	0.00	0.00
1	2.675		93.96	21.75	0.00	0.00
1	2.825		97.11	20.25	0.00	0.00
1	2.910		98.79	19.40	0.00	0.00
1	2.975		100.03	18.75	0.00	0.00
1	3.675		110.71	11.75	0.00	0.00
1	3.880		112.91	9.70	0.00	0.00
1	3.900		113.10	9.50	0.00	0.00
1	4.125		114.98	7.25	0.00	0.00
1	4.850		117.61	0.00	0.00	0.00
1	5.575		114.98	-7.25	0.00	0.00
1	5.800		113.10	-9.50	0.00	0.00
1	5.820		112.91	-9.70	0.00	0.00
1	6.025		110.71	-11.75	0.00	0.00
1	6.725		100.03	-18.75	0.00	0.00
1	6.790		98.79	-19.40	0.00	0.00
1	6.875		97.11	-20.25	0.00	0.00
1	7.025		93.96	-21.75	0.00	0.00
1	7.730		76.14	-28.80	0.00	0.00
1	7.760		75.27	-29.10	0.00	0.00

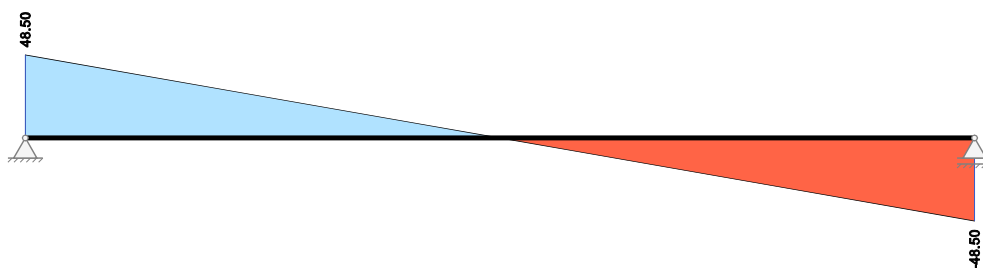
Auftrag: Ausklinkungen + große Öffnungen

Position: D10

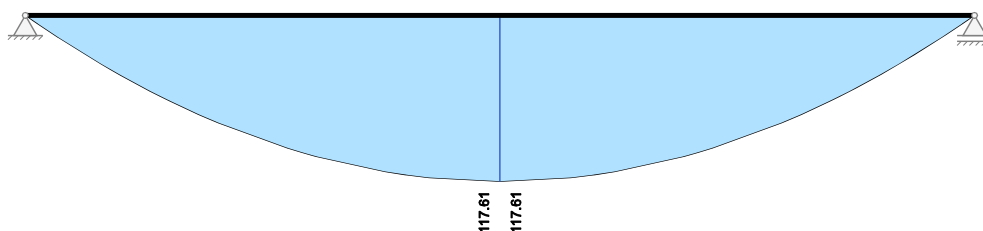
DLT

1	7.830		73.21	-29.80	0.00	0.00
1	7.930		70.18	-30.80	0.00	0.00
1	8.230		60.49	-33.80	0.00	0.00
1	8.330		57.06	-34.80	0.00	0.00
1	8.430		53.53	-35.80	0.00	0.00
1	8.730		42.34	-38.80	0.00	0.00
1	8.830		38.41	-39.80	0.00	0.00
1	8.930		34.38	-40.80	0.00	0.00
1	9.365		15.69	-45.15	0.00	0.00
1	9.575		5.98	-47.25	0.00	0.00
1	9.625		3.61	-47.75	0.00	0.00
1	9.700	L	0.00	-48.50	0.00	0.00

Querkräfte Vz [kN]



Momente My [kNm]



Lastfall 2:

Feld Nr	x [m]	L/R	My [kNm]	Vz [kN]	Mt [kNm]	Nx [kN]
1	0.000	R	0.00	174.99	0.00	0.00
1	0.075		13.02	172.28	0.00	0.00
1	0.125		21.59	170.48	0.00	0.00
1	0.335		56.60	162.90	0.00	0.00
1	0.770		124.05	147.21	0.00	0.00
1	0.870		138.59	143.60	0.00	0.00
1	0.970		152.76	139.99	0.00	0.00
1	1.270		193.14	129.17	0.00	0.00
1	1.370		205.87	125.56	0.00	0.00
1	1.470		218.25	121.95	0.00	0.00
1	1.770		253.21	111.13	0.00	0.00
1	1.870		264.14	107.52	0.00	0.00
1	1.940		271.58	104.99	0.00	0.00
1	1.970		274.71	103.91	0.00	0.00
1	2.675		339.01	78.47	0.00	0.00
1	2.825		350.37	73.06	0.00	0.00
1	2.910		356.45	70.00	0.00	0.00
1	2.975		360.92	67.65	0.00	0.00
1	3.675		399.44	42.39	0.00	0.00
1	3.880		407.37	35.00	0.00	0.00

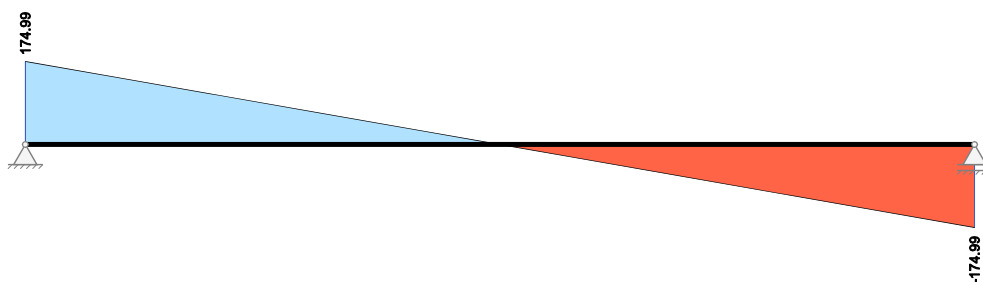
Auftrag: Ausklinkungen + große Öffnungen

Position: D10

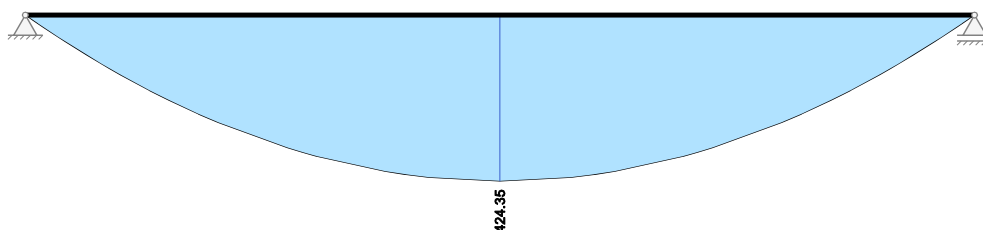
DLT

1	4.125		414.86	26.16	0.00	0.00
1	4.850		424.35	0.00	0.00	0.00
1	5.575		414.86	-26.16	0.00	0.00
1	5.800		408.07	-34.28	0.00	0.00
1	5.820		407.37	-35.00	0.00	0.00
1	6.025		399.44	-42.39	0.00	0.00
1	6.725		360.92	-67.65	0.00	0.00
1	6.790		356.45	-70.00	0.00	0.00
1	6.875		350.37	-73.06	0.00	0.00
1	7.025		339.01	-78.47	0.00	0.00
1	7.730		274.71	-103.91	0.00	0.00
1	7.760		271.58	-104.99	0.00	0.00
1	7.830		264.14	-107.52	0.00	0.00
1	7.930		253.21	-111.13	0.00	0.00
1	8.230		218.25	-121.95	0.00	0.00
1	8.330		205.87	-125.56	0.00	0.00
1	8.430		193.14	-129.17	0.00	0.00
1	8.730		152.76	-139.99	0.00	0.00
1	8.830		138.59	-143.60	0.00	0.00
1	8.930		124.05	-147.21	0.00	0.00
1	9.365		56.60	-162.90	0.00	0.00
1	9.575		21.59	-170.48	0.00	0.00
1	9.625		13.02	-172.28	0.00	0.00
1	9.700	L	0.00	-174.99	0.00	0.00

Querkräfte Vz [kN]



Momente My [kNm]



Feldschnittgrößen Übersicht

Feld Nr.	max MyEd [kNm]	min MyEd [kNm]	max VzEd [kN]	max MtEd [kNm]	max NxEd [kN]	min NxEd [kN]
1	1095.41	0.00	451.80	0.00	0.00	0.00

Stützschnittgrößen Übersicht

Auflager	max MyEd [kNm]	min MyEd [kNm]	max VzEd-Li max VzEd-Re [kN]	max MtEd-Li max MtEd-Re [kNm]	max NxEd [kN]	min NxEd [kN]
A	0.00	0.00	0.00 451.80	0.00 0.00	0.00	0.00
B	0.00	0.00	-451.80	0.00	0.00	0.00

Verformungen

Lastfall 0: Eigengewicht Träger

Feld Nr	x [m]	L/R	d _x [mm]	d _z [mm]	r _y [1000]	r _x [1000]
1	0.000	R	0.00	0.00	-0.824	0.000
1	0.075		0.00	0.06	-0.823	0.000
1	0.125		0.00	0.10	-0.822	0.000
1	0.335		0.00	0.28	-0.817	0.000
1	0.770		0.00	0.63	-0.796	0.000
1	0.870		0.00	0.71	-0.787	0.000
1	0.970		0.00	0.79	-0.776	0.000
1	1.270		0.00	1.02	-0.749	0.000
1	1.370		0.00	1.10	-0.734	0.000
1	1.470		0.00	1.17	-0.719	0.000
1	1.770		0.00	1.38	-0.681	0.000
1	1.870		0.00	1.45	-0.663	0.000
1	1.940		0.00	1.50	-0.649	0.000
1	1.970		0.00	1.52	-0.643	0.000
1	2.675		0.00	1.93	-0.528	0.000
1	2.825		0.00	2.01	-0.488	0.000
1	2.910		0.00	2.05	-0.464	0.000
1	2.975		0.00	2.08	-0.446	0.000
1	3.675		0.00	2.35	-0.305	0.000
1	3.880		0.00	2.40	-0.240	0.000
1	3.900		0.00	2.41	-0.234	0.000
1	4.125		0.00	2.45	-0.162	0.000
1	4.850		0.00	2.51	0.000	0.000
1	5.575		0.00	2.45	0.162	0.000
1	5.800		0.00	2.41	0.234	0.000
1	5.820		0.00	2.40	0.240	0.000
1	6.025		0.00	2.35	0.305	0.000
1	6.725		0.00	2.08	0.446	0.000
1	6.790		0.00	2.05	0.464	0.000
1	6.875		0.00	2.01	0.488	0.000
1	7.025		0.00	1.93	0.528	0.000
1	7.730		0.00	1.52	0.643	0.000
1	7.760		0.00	1.50	0.649	0.000
1	7.830		0.00	1.45	0.663	0.000
1	7.930		0.00	1.38	0.681	0.000
1	8.230		0.00	1.17	0.719	0.000
1	8.330		0.00	1.10	0.734	0.000
1	8.430		0.00	1.02	0.749	0.000
1	8.730		0.00	0.79	0.776	0.000
1	8.830		0.00	0.71	0.787	0.000
1	8.930		0.00	0.63	0.796	0.000
1	9.365		0.00	0.28	0.817	0.000
1	9.575		0.00	0.10	0.822	0.000
1	9.625		0.00	0.06	0.823	0.000
1	9.700	L	0.00	0.00	0.824	0.000

Lastfall 1:

Feld Nr	x [m]	L/R	d _x [mm]	d _z [mm]	r _y [1000]	r _x [1000]
1	0.000	R	0.00	0.00	-0.436	0.000
1	0.075		0.00	0.03	-0.436	0.000
1	0.125		0.00	0.06	-0.435	0.000
1	0.335		0.00	0.15	-0.432	0.000
1	0.770		0.00	0.33	-0.421	0.000
1	0.870		0.00	0.38	-0.416	0.000

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	0.970		0.00	0.42	-0.411	0.000
1	1.270		0.00	0.54	-0.396	0.000
1	1.370		0.00	0.58	-0.389	0.000
1	1.470		0.00	0.62	-0.381	0.000
1	1.770		0.00	0.73	-0.361	0.000
1	1.870		0.00	0.77	-0.351	0.000
1	1.940		0.00	0.79	-0.344	0.000
1	1.970		0.00	0.80	-0.340	0.000
1	2.675		0.00	1.02	-0.280	0.000
1	2.825		0.00	1.06	-0.258	0.000
1	2.910		0.00	1.09	-0.246	0.000
1	2.975		0.00	1.10	-0.236	0.000
1	3.675		0.00	1.24	-0.161	0.000
1	3.880		0.00	1.27	-0.127	0.000
1	3.900		0.00	1.27	-0.124	0.000
1	4.125		0.00	1.30	-0.086	0.000
1	4.850		0.00	1.33	0.000	0.000
1	5.575		0.00	1.30	0.086	0.000
1	5.800		0.00	1.27	0.124	0.000
1	5.820		0.00	1.27	0.127	0.000
1	6.025		0.00	1.24	0.161	0.000
1	6.725		0.00	1.10	0.236	0.000
1	6.790		0.00	1.09	0.246	0.000
1	6.875		0.00	1.06	0.258	0.000
1	7.025		0.00	1.02	0.280	0.000
1	7.730		0.00	0.80	0.340	0.000
1	7.760		0.00	0.79	0.344	0.000
1	7.830		0.00	0.77	0.351	0.000
1	7.930		0.00	0.73	0.361	0.000
1	8.230		0.00	0.62	0.381	0.000
1	8.330		0.00	0.58	0.389	0.000
1	8.430		0.00	0.54	0.396	0.000
1	8.730		0.00	0.42	0.411	0.000
1	8.830		0.00	0.38	0.416	0.000
1	8.930		0.00	0.33	0.421	0.000
1	9.365		0.00	0.15	0.432	0.000
1	9.575		0.00	0.06	0.435	0.000
1	9.625		0.00	0.03	0.436	0.000
1	9.700	L	0.00	0.00	0.436	0.000

Lastfall 2:

Feld Nr	x [m]	L/R	d _x [mm]	d _z [mm]	r _y [1000]	r _x [1000]
1	0.000	R	0.00	0.00	-1.574	0.000
1	0.075		0.00	0.12	-1.572	0.000
1	0.125		0.00	0.20	-1.569	0.000
1	0.335		0.00	0.53	-1.560	0.000
1	0.770		0.00	1.21	-1.520	0.000
1	0.870		0.00	1.36	-1.502	0.000
1	0.970		0.00	1.51	-1.482	0.000
1	1.270		0.00	1.95	-1.430	0.000
1	1.370		0.00	2.10	-1.402	0.000
1	1.470		0.00	2.24	-1.373	0.000
1	1.770		0.00	2.64	-1.301	0.000
1	1.870		0.00	2.77	-1.266	0.000
1	1.940		0.00	2.86	-1.240	0.000
1	1.970		0.00	2.90	-1.228	0.000
1	2.675		0.00	3.69	-1.009	0.000
1	2.825		0.00	3.84	-0.932	0.000
1	2.910		0.00	3.92	-0.887	0.000
1	2.975		0.00	3.98	-0.852	0.000
1	3.675		0.00	4.48	-0.582	0.000

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	3.880		0.00	4.59	-0.459	0.000
1	3.900		0.00	4.60	-0.447	0.000
1	4.125		0.00	4.68	-0.309	0.000
1	4.850		0.00	4.80	0.000	0.000
1	5.575		0.00	4.68	0.309	0.000
1	5.800		0.00	4.60	0.447	0.000
1	5.820		0.00	4.59	0.459	0.000
1	6.025		0.00	4.48	0.582	0.000
1	6.725		0.00	3.98	0.852	0.000
1	6.790		0.00	3.92	0.887	0.000
1	6.875		0.00	3.84	0.932	0.000
1	7.025		0.00	3.69	1.009	0.000
1	7.730		0.00	2.90	1.228	0.000
1	8.230		0.00	2.24	1.373	0.000
1	8.330		0.00	2.10	1.402	0.000
1	8.430		0.00	1.95	1.430	0.000
1	8.730		0.00	1.51	1.482	0.000
1	8.830		0.00	1.36	1.502	0.000
1	8.930		0.00	1.21	1.520	0.000
1	9.365		0.00	0.53	1.560	0.000
1	9.575		0.00	0.20	1.569	0.000
1	9.625		0.00	0.12	1.572	0.000
1	9.700	L	0.00	0.00	1.574	0.000

Bemessung

Bemessungskombinationen nach EN 1990

Nachweise	maßgebende EK für Expositionsklasse XC1	
Duktilitätsverhalten	seltene	
Tragfähigkeit	Grundkombination STR/GEO	
Lagesicherheit	Grundkombination EQU	
Dekompression	quasi-ständige	
Rissbreitenbegrenzung		
Betonspannung	seltene	quasi-ständige
Betonstahlspannung	seltene	
Spannstahlspannung	quasi-ständige	
Ermüdung	häufige	
Verformung		seltene
Brandschutz	außergewöhnliche	

Bemessungsschnittgrößen

Bemessungsschnittgrößen enthalten keine Vorspannung. (Mit begrenzter Momentenumlagerung <= 15.00 %)											
Feld Nr.	x [m]	Grundkombination STR/GEO				seltene EK		häufige EK		quasi-ständige EK	
		max Myd [kNm]	min Myd [kNm]	max Vzd [kN]	max Mtd [kNm]	max Myd [kNm]	min Myd [kNm]	max Myd [kNm]	min Myd [kNm]	max Myd [kNm]	min Myd [kNm]
1	0.000	0.00	0.00	451.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.075	33.63	10.44	444.98	0.00	23.46	10.44	19.56	10.44	16.95	10.44
1	0.125	55.76	17.32	440.43	0.00	38.91	17.32	32.43	17.32	28.11	17.32
1	0.335	146.18	45.40	420.70	0.00	102.00	45.40	85.02	45.40	73.70	45.40
1	0.770	320.30	99.43	379.84	0.00	223.48	99.43	186.26	99.43	161.45	99.43
1	0.870	357.82	111.07	370.64	0.00	249.66	111.07	208.08	111.07	180.36	111.07
1	0.970	394.43	122.43	361.45	0.00	275.20	122.43	229.37	122.43	198.81	122.43
1	1.270	498.64	154.76	333.26	0.00	347.90	154.76	289.96	154.76	251.33	154.76
1	1.370	531.50	164.96	324.07	0.00	370.83	164.96	309.07	164.96	267.89	164.96
1	1.470	563.45	174.87	314.88	0.00	393.12	174.87	327.65	174.87	284.00	174.87
1	1.770	653.68	202.87	286.69	0.00	456.08	202.87	380.11	202.87	329.47	202.87
1	1.870	681.89	211.61	277.50	0.00	475.76	211.61	396.51	211.61	343.69	211.61
1	1.940	701.10	217.57	271.06	0.00	489.15	217.57	407.68	217.57	353.36	217.57
1	1.970	709.19	220.08	268.30	0.00	494.80	220.08	412.38	220.08	357.44	220.08
1	2.675	874.99	271.47	202.07	0.00	610.48	271.47	508.77	271.47	440.97	271.47
1	2.825	904.28	280.54	188.43	0.00	630.91	280.54	525.80	280.54	455.72	280.54
1	2.910	919.97	285.40	180.70	0.00	641.85	285.40	534.92	285.40	463.63	285.40
1	2.975	931.52	288.99	174.79	0.00	649.91	288.99	541.64	288.99	469.45	288.99
1	3.675	1030.86	319.78	109.03	0.00	719.22	319.78	599.39	319.78	519.50	319.78
1	3.880	1051.30	326.11	90.39	0.00	733.48	326.11	611.27	326.11	529.79	326.11

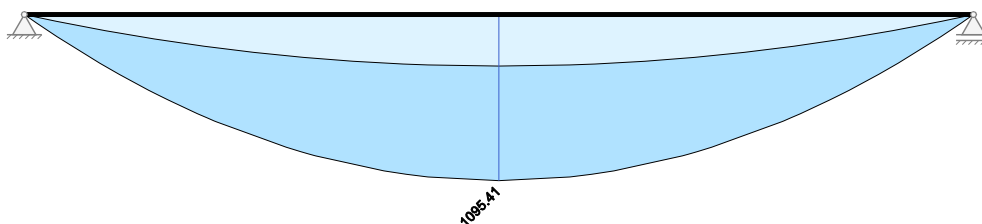
Auftrag: Ausklinkungen + große Öffnungen

Position: D10

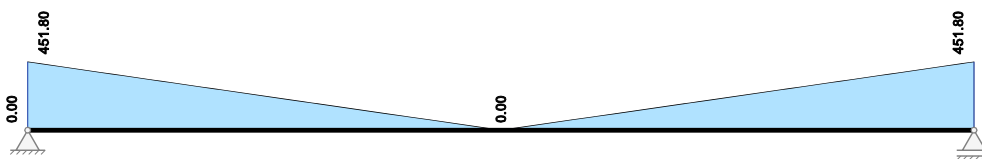
DLT

1	3.900	1053.09	326.66	88.57	0.00	734.73	326.66	612.31	326.66	530.70	326.66
1	4.125	1070.72	332.17	68.11	0.00	747.03	332.17	622.57	332.17	539.60	332.17
1	4.850	1095.41	339.92	0.00	0.00	764.26	339.92	636.96	339.92	552.09	339.92
1	5.575	1070.72	332.17	68.11	0.00	747.03	332.17	622.57	332.17	539.60	332.17
1	5.800	1053.09	326.66	88.57	0.00	734.73	326.66	612.31	326.66	530.70	326.66
1	5.820	1051.30	326.11	90.39	0.00	733.48	326.11	611.27	326.11	529.79	326.11
1	6.025	1030.86	319.78	109.03	0.00	719.22	319.78	599.39	319.78	519.50	319.78
1	6.725	931.52	288.99	174.79	0.00	649.91	288.99	541.64	288.99	469.45	288.99
1	6.790	919.97	285.40	180.70	0.00	641.85	285.40	534.92	285.40	463.63	285.40
1	6.875	904.28	280.54	188.43	0.00	630.91	280.54	525.80	280.54	455.72	280.54
1	7.025	874.99	271.47	202.07	0.00	610.48	271.47	508.77	271.47	440.97	271.47
1	7.730	709.19	220.08	268.30	0.00	494.80	220.08	412.38	220.08	357.44	220.08
1	7.760	701.10	217.57	271.06	0.00	489.15	217.57	407.68	217.57	353.36	217.57
1	7.830	681.89	211.61	277.50	0.00	475.76	211.61	396.51	211.61	343.69	211.61
1	7.930	653.68	202.87	286.69	0.00	456.08	202.87	380.11	202.87	329.47	202.87
1	8.230	563.45	174.87	314.88	0.00	393.12	174.87	327.65	174.87	284.00	174.87
1	8.330	531.50	164.96	324.07	0.00	370.83	164.96	309.07	164.96	267.89	164.96
1	8.430	498.64	154.76	333.26	0.00	347.90	154.76	289.96	154.76	251.33	154.76
1	8.730	394.43	122.43	361.45	0.00	275.20	122.43	229.37	122.43	198.81	122.43
1	8.830	357.82	111.07	370.64	0.00	249.66	111.07	208.08	111.07	180.36	111.07
1	8.930	320.30	99.43	379.84	0.00	223.48	99.43	186.26	99.43	161.45	99.43
1	9.365	146.18	45.40	420.70	0.00	102.00	45.40	85.02	45.40	73.70	45.40
1	9.575	55.76	17.32	440.43	0.00	38.91	17.32	32.43	17.32	28.11	17.32
1	9.625	33.63	10.44	444.98	0.00	23.46	10.44	19.56	10.44	16.95	10.44
1	9.700	0.00	0.00	451.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00

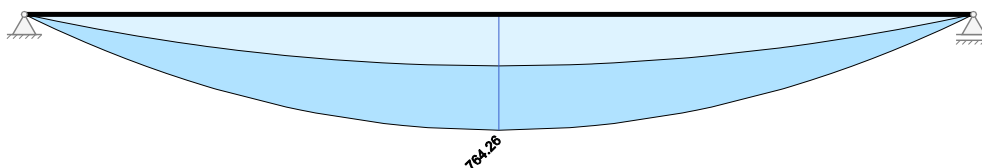
Grundkombination M_{yd} [kNm]

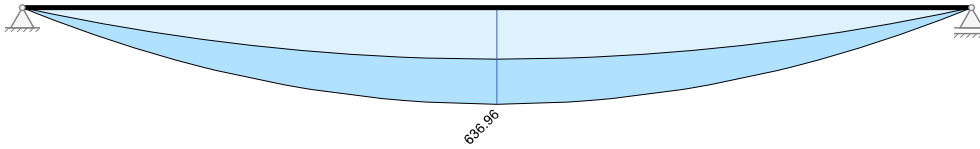


Grundkombination $|V_{zd}|$ [kN]

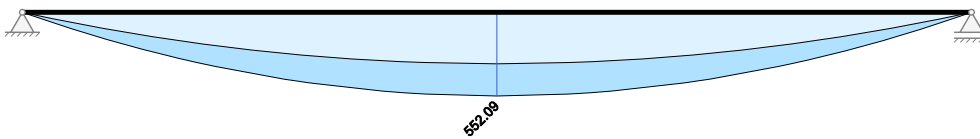


seltene Einwirkungskombination M_{yd} [kNm]





quasi-ständige Einwirkungskombination $M_{y,d}$ [kNm]



Momentennullpunkte

Bereich negativer Bemessungsmomente im GzT				
Feld Nr	Druck Unterseite [m]		Zug Oberseite [m]	
	vom Anfang	vom Ende	vom Anfang	vom Ende
1			9.70	9.70

Biegebemessung

Mit begrenzter Momentenumlagerung <= 15.00 %	
E	E={a,e,u,i} Einwirkung
a	M_{yEd} aus Momentenausrundung
e	M_{yEd} aus Mindesteinspannung
u	M_{yEd} aus Momentenumlagerung
i	M_{yEd} Anschnittmoment
B	B={m,v,A} Bewehrung
m	Mindestlängsbewehrung
v	Verankerungsbewehrung
A	Aussparungsbewehrung
EXTR	führende Größe für Bemessungskombination

Feld Nr	x [m]	EXTR EXTR	$N_{Ed,max}$ M $N_{Ed,min}$ M [kN]	$M_{yEd,max}$ M $M_{yEd,min}$ M [kNm]	E	Querschnitt [cm]		Bewehrung						Ausnutzung (max M) (min M)
						Höhe Umlagerung [%]	d1o d1u	As oben [cm²]			As unten [cm²]			
								Gurt	Steg	B	Gurt	Steg	B	
1	0.000	max M min M	0.00 0.00	0.00 0.00		50.0	4.0 4.0	0.00 0.00	0.00		0.00	8.32	m	0.00 0.00
1	0.075	max M min M	0.00 0.00	33.63 10.44		50.0	4.0 4.0	0.00 0.00	0.00		0.00	8.32	m	0.81 0.25
1	0.125	max M min M	0.00 0.00	55.76 17.32		50.0	4.0 4.0	0.00 0.00	0.00		0.00	8.32	m	1.00 0.31
1	0.335	max M min M	0.00 0.00	146.18 45.40		80.0	4.0 4.0	0.00 0.00	0.00		0.00	8.32	m	0.93 0.29
1	0.770	max M min M	0.00 0.00	320.30 99.43		80.0	4.0 4.0	0.00 0.00	0.00		0.00	9.58		1.00 0.31
1	0.770	max M min M	0.00 0.00	320.30 99.43		80.0	4.0 4.0	0.00 0.00	0.97	A	0.00	12.91	A	1.00 0.31
1	0.870	max M min M	0.00 0.00	357.82 111.07		80.0	4.0 4.0	0.00 0.00	0.97	A	0.00	12.91	A	1.00 0.31
1	0.970	max M min M	0.00 0.00	394.43 122.43		80.0	4.0 4.0	0.00 0.00	0.97	A	0.00	12.91	A	1.00 0.31
1	0.970	max M min M	0.00 0.00	394.43 122.43		80.0	4.0 4.0	0.00 0.00	0.00		0.00	11.82		1.00 0.31
1	1.270	max M min M	0.00 0.00	498.64 154.76		80.0	4.0 4.0	0.00 0.00	0.00		0.00	14.98		1.00 0.31
1	1.270	max M min M	0.00 0.00	498.64 154.76		80.0	4.0 4.0	0.00 0.00	1.44	A	0.00	18.04	A	1.00 0.31
1	1.370	max M min M	0.00 0.00	531.50 164.96		80.0	4.0 4.0	0.00 0.00	1.44	A	0.00	18.04	A	1.00 0.31
1	1.470	max M min M	0.00 0.00	563.45 174.87		80.0	4.0 4.0	0.00 0.00	1.44	A	0.00	18.04	A	1.00 0.31

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	1.470	max M min M	0.00 0.00	563.45 174.87	80.0	4.0 4.0	0.00	0.00	0.00	0.00	16.95	1.00 0.31
1	1.770	max M min M	0.00 0.00	653.68 202.87	80.0	4.0 4.0	0.00	0.00	0.00	0.00	19.70	1.00 0.31
1	1.770	max M min M	0.00 0.00	653.68 202.87	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	1.870	max M min M	0.00 0.00	681.89 211.61	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	1.940	max M min M	0.00 0.00	701.10 217.57	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	1.970	max M min M	0.00 0.00	709.19 220.08	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	1.970	max M min M	0.00 0.00	709.19 220.08	80.0	4.0 4.0	0.00	0.00		0.00	21.39	1.00 0.31
1	2.675	max M min M	0.00 0.00	874.99 271.47	80.0	4.0 4.0	0.00	0.00		0.00	26.47	1.00 0.31
1	2.675	max M min M	0.00 0.00	874.99 271.47	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	2.825	max M min M	0.00 0.00	904.28 280.54	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	2.910	max M min M	0.00 0.00	919.97 285.40	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	2.975	max M min M	0.00 0.00	931.52 288.99	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	2.975	max M min M	0.00 0.00	931.52 288.99	80.0	4.0 4.0	0.00	0.00		0.00	28.22	1.00 0.31
1	3.675	max M min M	0.00 0.00	1030.86 319.78	80.0	4.0 4.0	0.00	0.00		0.00	31.27	1.00 0.31
1	3.675	max M min M	0.00 0.00	1030.86 319.78	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	3.880	max M min M	0.00 0.00	1051.30 326.11	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	3.900	max M min M	0.00 0.00	1053.09 326.66	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	4.125	max M min M	0.00 0.00	1070.72 332.17	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	4.125	max M min M	0.00 0.00	1070.72 332.17	80.0	4.0 4.0	0.00	0.00		0.00	32.51	1.00 0.31
1	4.850	max M min M	0.00 0.00	1095.41 339.92	80.0	4.0 4.0	0.00	0.00		0.00	33.27	1.00 0.31
1	5.575	max M min M	0.00 0.00	1070.72 332.17	80.0	4.0 4.0	0.00	0.00		0.00	32.51	1.00 0.31
1	5.575	max M min M	0.00 0.00	1070.72 332.17	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	5.800	max M min M	0.00 0.00	1053.09 326.66	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	5.820	max M min M	0.00 0.00	1051.30 326.11	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	6.025	max M min M	0.00 0.00	1030.86 319.78	80.0	4.0 4.0	0.00	2.80	A	0.00	33.40	A 1.00 0.31
1	6.025	max M min M	0.00 0.00	1030.86 319.78	80.0	4.0 4.0	0.00	0.00		0.00	31.27	1.00 0.31
1	6.725	max M min M	0.00 0.00	931.52 288.99	80.0	4.0 4.0	0.00	0.00		0.00	28.22	1.00 0.31
1	6.725	max M min M	0.00 0.00	931.52 288.99	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	6.790	max M min M	0.00 0.00	919.97 285.40	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	6.875	max M min M	0.00 0.00	904.28 280.54	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	7.025	max M min M	0.00 0.00	874.99 271.47	80.0	4.0 4.0	0.00	2.41	A	0.00	29.39	A 1.00 0.31
1	7.025	max M min M	0.00 0.00	874.99 271.47	80.0	4.0 4.0	0.00	0.00		0.00	26.47	1.00 0.31
1	7.730	max M min M	0.00 0.00	709.19 220.08	80.0	4.0 4.0	0.00	0.00		0.00	21.39	1.00 0.31
1	7.730	max M min M	0.00 0.00	709.19 220.08	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	7.760	max M min M	0.00 0.00	701.10 217.57	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	7.830	max M min M	0.00 0.00	681.89 211.61	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	7.930	max M min M	0.00 0.00	653.68 202.87	80.0	4.0 4.0	0.00	1.85	A	0.00	22.48	A 1.00 0.31
1	7.930	max M min M	0.00 0.00	653.68 202.87	80.0	4.0 4.0	0.00	0.00		0.00	19.70	1.00 0.31
1	8.230	max M min M	0.00 0.00	563.45 174.87	80.0	4.0 4.0	0.00	0.00		0.00	16.95	1.00 0.31
1	8.230	max M min M	0.00 0.00	563.45 174.87	80.0	4.0 4.0	0.00	1.44	A	0.00	18.04	A 1.00 0.31
1	8.330	max M min M	0.00 0.00	531.50 164.96	80.0	4.0 4.0	0.00	1.44	A	0.00	18.04	A 1.00 0.31

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	8.430	max M min M	0.00 0.00	498.64 154.76	80.0	4.0 4.0	0.00	1.44	A	0.00	18.04	A	1.00 0.31
1	8.430	max M min M	0.00 0.00	498.64 154.76	80.0	4.0 4.0	0.00	0.00		0.00	14.98		1.00 0.31
1	8.730	max M min M	0.00 0.00	394.43 122.43	80.0	4.0 4.0	0.00	0.00		0.00	11.82		1.00 0.31
1	8.730	max M min M	0.00 0.00	394.43 122.43	80.0	4.0 4.0	0.00	0.97	A	0.00	12.91	A	1.00 0.31
1	8.830	max M min M	0.00 0.00	357.82 111.07	80.0	4.0 4.0	0.00	0.97	A	0.00	12.91	A	1.00 0.31
1	8.930	max M min M	0.00 0.00	320.30 99.43	80.0	4.0 4.0	0.00	0.97	A	0.00	12.91	A	1.00 0.31
1	8.930	max M min M	0.00 0.00	320.30 99.43	80.0	4.0 4.0	0.00	0.00		0.00	9.58		1.00 0.31
1	9.365	max M min M	0.00 0.00	146.18 45.40	80.0	4.0 4.0	0.00	0.00		0.00	8.32	m	0.93 0.29
1	9.575	max M min M	0.00 0.00	55.76 17.32	80.0	4.0 4.0	0.00	0.00		0.00	8.32	m	0.35 0.11
1	9.625	max M min M	0.00 0.00	33.63 10.44	50.0	4.0 4.0	0.00	0.00		0.00	8.32	m	0.81 0.25
1	9.700	max M min M	0.00 0.00	0.00 0.00	50.0	4.0 4.0	0.00	0.00		0.00	8.32	m	0.00 0.00

Maximale Ausnutzung: 1.00 bei Feld / Ort = 1 / 0.125 m Nachweis erfüllt.

Schubbemessung

Mit begrenzter Momentenumlagerung <= 15.00 %			
A	Auflagerachse	Ar	Auflagerand
Ar±d	Abstand d vom Auflagerand		
m	Mindestquerkraftbewehrung	j	Bemessung der Schubfuge maßgebend

Feld Nr	x [m]	Attr	VEd [kN]	MTd [kNm]	VRdc [kN]	θ [Grad]	Zi [cm]	VEd / VRdmax	TEd / TRdmax	VEd / VTRdmax	asmin [cm²/m]	asw [cm²/m]	asTL [cm²/m]
1	0.000	A	451.8	0.0	80.6	33.2	41.0	0.54	0.00	0.00	3.07	12.33	j 0.00
1	0.075	Ar	445.0	0.0	80.6	33.1	41.0	0.53	0.00	0.00	3.07	12.33	j 0.00
1	0.125		440.4	0.0	80.6	33.0	41.0	0.53	0.00	0.00	3.07	12.33	j 0.00
1	0.335	Ar+d	420.7	0.0	80.6	26.7	71.0	0.33	0.00	0.00	3.07	12.33	j 0.00
1	0.770		379.8	0.0	84.5	25.0	71.0	0.31	0.00	0.00	3.07	10.76	j 0.00
1	0.870		370.6	0.0	87.7	24.6	71.0	0.31	0.00	0.00	3.07	10.40	j 0.00
1	0.970		361.4	0.0	90.6	24.1	71.0	0.31	0.00	0.00	3.07	10.05	j 0.00
1	1.270		333.3	0.0	98.1	22.5	71.0	0.30	0.00	0.00	3.07	8.96	j 0.00
1	1.370		324.1	0.0	100.2	22.0	71.0	0.29	0.00	0.00	3.07	8.61	j 0.00
1	1.470		314.9	0.0	102.2	21.3	71.0	0.29	0.00	0.00	3.07	8.25	j 0.00
1	1.770		286.7	0.0	107.5	19.2	71.0	0.29	0.00	0.00	3.07	7.16	j 0.00
1	1.870		277.5	0.0	109.0	18.9	71.0	0.29	0.00	0.00	3.07	6.81	j 0.00
1	1.940		271.1	0.0	110.0	19.3	71.0	0.27	0.00	0.00	3.07	6.56	j 0.00
1	1.970		268.3	0.0	110.5	19.5	71.0	0.27	0.00	0.00	3.07	6.45	j 0.00
1	2.675		202.1	0.0	118.6	25.1	71.0	0.17	0.00	0.00	3.07	3.90	j 0.00
1	2.825		188.4	0.0	119.9	26.7	71.0	0.15	0.00	0.00	3.07	3.37	j 0.00
1	2.910		180.7	0.0	120.6	27.7	71.0	0.14	0.00	0.00	3.07	3.08	j 0.00
1	2.975		174.8	0.0	121.1	28.5	71.0	0.13	0.00	0.00	3.07	3.07	m 0.00
1	3.675		109.0	0.0	125.4	41.0	71.0	0.07	0.00	0.00	3.07	3.07	m 0.00
1	3.880		90.4	0.0	126.2	45.0	71.0	0.06	0.00	0.00	3.07	3.07	m 0.00
1	3.900		88.6	0.0	126.3	45.0	71.0	0.06	0.00	0.00	3.07	3.07	m 0.00
1	4.125		68.1	0.0	127.0	45.0	71.0	0.04	0.00	0.00	3.07	3.07	m 0.00
1	4.850		0.0	0.0	128.0	45.0	71.0	0.00	0.00	0.00	3.07	3.07	m 0.00
1	5.575		68.1	0.0	127.0	45.0	71.0	0.04	0.00	0.00	3.07	3.07	m 0.00
1	5.800		88.6	0.0	126.3	45.0	71.0	0.06	0.00	0.00	3.07	3.07	m 0.00
1	5.820		90.4	0.0	126.2	45.0	71.0	0.06	0.00	0.00	3.07	3.07	m 0.00
1	6.025		109.0	0.0	125.4	41.0	71.0	0.07	0.00	0.00	3.07	3.07	m 0.00
1	6.725		174.8	0.0	121.1	28.5	71.0	0.13	0.00	0.00	3.07	3.07	m 0.00
1	6.790		180.7	0.0	120.6	27.7	71.0	0.14	0.00	0.00	3.07	3.08	j 0.00
1	6.875		188.4	0.0	119.9	26.7	71.0	0.15	0.00	0.00	3.07	3.37	j 0.00
1	7.025		202.1	0.0	118.6	25.1	71.0	0.17	0.00	0.00	3.07	3.90	j 0.00
1	7.730		268.3	0.0	110.5	19.5	71.0	0.27	0.00	0.00	3.07	6.45	j 0.00
1	7.760		271.1	0.0	110.0	19.3	71.0	0.27	0.00	0.00	3.07	6.56	j 0.00
1	7.830		277.5	0.0	109.0	18.9	71.0	0.29	0.00	0.00	3.07	6.81	j 0.00
1	7.930		286.7	0.0	107.5	19.2	71.0	0.29	0.00	0.00	3.07	7.16	j 0.00
1	8.230		314.9	0.0	102.2	21.3	71.0	0.29	0.00	0.00	3.07	8.25	j 0.00
1	8.330		324.1	0.0	100.2	22.0	71.0	0.29	0.00	0.00	3.07	8.61	j 0.00
1	8.430		333.3	0.0	98.1	22.5	71.0	0.30	0.00	0.00	3.07	8.96	j 0.00
1	8.730		361.4	0.0	90.6	24.1	71.0	0.31	0.00	0.00	3.07	10.05	j 0.00
1	8.830		370.6	0.0	87.7	24.6	71.0	0.31	0.00	0.00	3.07	10.40	j 0.00
1	8.930		379.8	0.0	84.5	25.0	71.0	0.31	0.00	0.00	3.07	10.76	j 0.00
1	9.365	Ar-d	420.7	0.0	80.6	26.7	71.0	0.33	0.00	0.00	3.07	12.33	j 0.00

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	9.575		440.4	0.0	80.6	27.3	71.0	0.34	0.00	0.00	3.07	12.33	j	0.00
1	9.625	Ar	445.0	0.0	80.6	33.1	41.0	0.53	0.00	0.00	3.07	12.33	j	0.00
1	9.700	A	451.8	0.0	80.6	33.2	41.0	0.54	0.00	0.00	3.07	12.33	j	0.00

Maximale Ausnutzung: 0.63 bei Feld / Ort = 1 / 2.910 m Nachweis erfüllt.

Gurtanschlussbemessung

A_c	mitwirkende Gurtfläche	h_f	Gurtdicke am Anschluss
b_f/b	Gurtbreite/Plattenbreite	V_{Ed}	Längsschubspannung am Anschluss ($\Delta F_d/(h_f \cdot \Delta x)$)
ΔF_d	Längskraftdifferenz im Gurt über die Länge Δx	V_{Rdmax}	zul. Druckstreben­spannung
Δx	Halber Abstand Momentennullpunkt / -maximum	z	Zuggurt im Zustand I

Feld Nr	x [m]	Ort	A_c [m ²]	h_f [cm]	b_f/b [-]	V_{Ed} [kN/m ²]	V_{Rdmax} [kN/m ²]	a_{sf} [cm ² /m]
1	0.000	OG-li	0.2480	20.0	0.446	1958.2	6584.0	7.51
		OG-re	0.2480	20.0	0.446	1958.2	6584.0	7.51
1	0.075	OG-li	0.2480	20.0	0.446	1958.2	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1958.2	6584.0	4.33
1	0.125	OG-li	0.2480	20.0	0.446	1958.2	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1958.2	6584.0	4.33
1	0.335	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	0.770	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	0.870	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	0.970	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	1.270	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	1.370	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	1.470	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	1.770	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	1.870	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	1.940	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	1.970	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	2.675	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	2.825	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	2.910	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	2.975	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	3.675	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	3.880	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	3.900	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	4.125	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	4.850	OG-li	0.2480	20.0	0.446	133.5	6584.0	0.51
		OG-re	0.2480	20.0	0.446	133.5	6584.0	0.51
1	5.575	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	5.800	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	5.820	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	6.025	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	6.725	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	6.790	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	6.875	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	7.025	OG-li	0.2480	20.0	0.446	318.3	6584.0	1.22
		OG-re	0.2480	20.0	0.446	318.3	6584.0	1.22
1	7.730	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	7.760	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	7.830	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	7.930	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	8.230	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	8.330	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	8.430	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	8.730	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	8.830	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	8.930	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	9.365	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	9.575	OG-li	0.2480	20.0	0.446	1130.8	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1130.8	6584.0	4.33
1	9.575	OG-li	0.2480	20.0	0.446	1958.2	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1958.2	6584.0	4.33
1	9.625	OG-li	0.2480	20.0	0.446	1958.2	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1958.2	6584.0	4.33
1	9.700	OG-li	0.2480	20.0	0.446	1958.2	6584.0	4.33
		OG-re	0.2480	20.0	0.446	1958.2	6584.0	4.33

Maximale Ausnutzung: 0.30 bei Feld / Ort = 1 / 9.575 m Nachweis erfüllt.

Schubfugenbemessung

Schubfuge in	z =	20.0 cm von OK	Eigenschaften	c _j =	0.40
Abzugswert	δ _b =	2.0 cm		μ _j =	0.70
Oberfläche		rau		v _j =	0.50
Betonstahl	f _{yk} =	500 N/mm ²		α =	90.0 Grad

Feld Nr	x [m]	a _{sw} [cm ² /m]	b _j [cm]	σ _N [N/mm ²]	v _{Ed} [kN/m ²]	v _{Rdcj} [kN/m ²]	v _{Rdmaxj} [kN/m ²]	erf a _{sj} [cm ² /m]	Δa _{sj} [cm ² /m]
1	0.000	12.33	28.0	0.0	3935.5	507.7	4958.3	12.33	0.00
1	0.075	12.33	28.0	0.0	3876.1	507.7	4958.3	12.33	0.00
1	0.125	12.33	28.0	0.0	3836.5	507.7	4958.3	12.33	0.00
1	0.335	12.33	28.0	0.0	2116.2	507.7	4958.3	12.33	0.00
1	0.770	10.76	28.0	0.0	1910.6	507.7	4958.3	10.76	0.00
1	0.870	10.40	28.0	0.0	1864.4	507.7	4958.3	10.40	0.00
1	0.970	10.05	28.0	0.0	1818.1	507.7	4958.3	10.05	0.00
1	1.270	8.96	28.0	0.0	1676.4	507.7	4958.3	8.96	0.00
1	1.370	8.61	28.0	0.0	1630.1	507.7	4958.3	8.61	0.00
1	1.470	8.25	28.0	0.0	1583.9	507.7	4958.3	8.25	0.00
1	1.770	7.16	28.0	0.0	1442.1	507.7	4958.3	7.16	0.00
1	1.870	6.81	28.0	0.0	1395.9	507.7	4958.3	6.81	0.00
1	1.940	6.56	28.0	0.0	1363.5	507.7	4958.3	6.56	0.00
1	1.970	6.45	28.0	0.0	1349.6	507.7	4958.3	6.45	0.00
1	2.675	3.90	28.0	0.0	1016.5	507.7	4958.3	3.90	0.00
1	2.825	3.37	28.0	0.0	947.9	507.7	4958.3	3.37	0.00
1	2.910	3.08	28.0	0.0	909.0	507.7	4958.3	3.08	0.00
1	2.975	3.07	28.0	0.0	879.2	507.7	4958.3	3.07	0.00
1	3.675	3.07	28.0	0.0	548.4	507.7	4958.3	3.07	0.00
1	3.880	3.07	28.0	0.0	454.7	507.7	4958.3	3.07	0.00
1	3.900	3.07	28.0	0.0	445.5	507.7	4958.3	3.07	0.00
1	4.125	3.07	28.0	0.0	342.6	507.7	4958.3	3.07	0.00
1	4.850	3.07	28.0	0.0	0.0	507.7	4958.3	3.07	0.00
1	5.575	3.07	28.0	0.0	342.6	507.7	4958.3	3.07	0.00
1	5.800	3.07	28.0	0.0	445.5	507.7	4958.3	3.07	0.00
1	5.820	3.07	28.0	0.0	454.7	507.7	4958.3	3.07	0.00
1	6.025	3.07	28.0	0.0	548.4	507.7	4958.3	3.07	0.00

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

1	6.725	3.07	28.0	0.0	879.2	507.7	4958.3	3.07	0.00
1	6.790	3.08	28.0	0.0	909.0	507.7	4958.3	3.08	0.00
1	6.875	3.37	28.0	0.0	947.9	507.7	4958.3	3.37	0.00
1	7.025	3.90	28.0	0.0	1016.5	507.7	4958.3	3.90	0.00
1	7.730	6.45	28.0	0.0	1349.6	507.7	4958.3	6.45	0.00
1	7.760	6.56	28.0	0.0	1363.5	507.7	4958.3	6.56	0.00
1	7.830	6.81	28.0	0.0	1395.9	507.7	4958.3	6.81	0.00
1	7.930	7.16	28.0	0.0	1442.1	507.7	4958.3	7.16	0.00
1	8.230	8.25	28.0	0.0	1583.9	507.7	4958.3	8.25	0.00
1	8.330	8.61	28.0	0.0	1630.1	507.7	4958.3	8.61	0.00
1	8.430	8.96	28.0	0.0	1676.4	507.7	4958.3	8.96	0.00
1	8.730	10.05	28.0	0.0	1818.1	507.7	4958.3	10.05	0.00
1	8.830	10.40	28.0	0.0	1864.4	507.7	4958.3	10.40	0.00
1	8.930	10.76	28.0	0.0	1910.6	507.7	4958.3	10.76	0.00
1	9.365	12.33	28.0	0.0	2116.2	507.7	4958.3	12.33	0.00
1	9.575	12.33	28.0	0.0	2215.4	507.7	4958.3	12.33	0.00
1	9.625	12.33	28.0	0.0	3876.1	507.7	4958.3	12.33	0.00
1	9.700	12.33	28.0	0.0	3935.5	507.7	4958.3	12.33	0.00

Maximale Ausnutzung: 0.79 Nachweis erfüllt.

Bemessung Ausklinkung

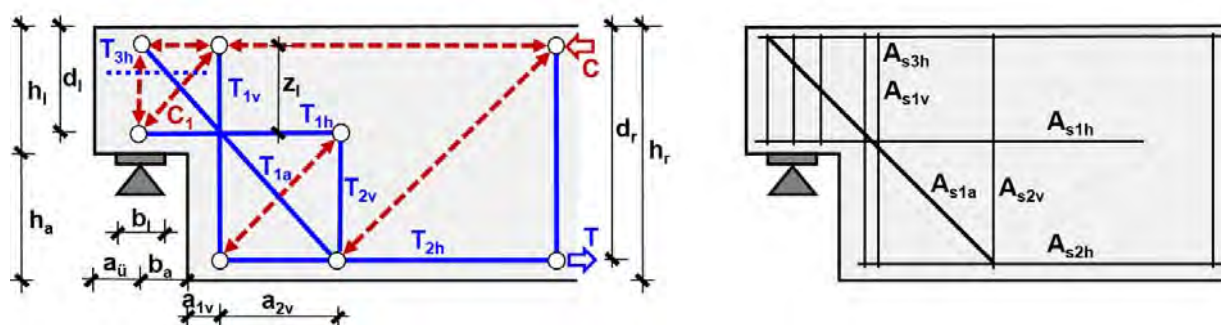
Verfahren: Stabwerkmodell nach Schlaich/Schäfer und Reineck (BK 2007) für Kräfte in xz-Ebene

L / R	linkes / rechtes Trägerende		C ₁	Druckstrebe Konsole
V _{Ed}	vertikale Lagerkraft		H _{Ed}	horizontale Lagerkraft
T _{1v} ;A _{s1v}	vertikale Lage A _{s1v}	Aufhängekraft: 75% Aufhängekraft: 75% Neigungswinkel: 45°	T _{1h} ;A _{s1h}	horizontal unten in Konsole A _{s1h}
T _{2v} ;A _{s2v}	vertikale Lage A _{s2v}		T _{2h} ;A _{s2h}	horizontale Verankerung in UK Träger A _{s2h}
T _{1a} ;A _{s1a}	schräge Lage A _{s1a}		T _{3h} ;A _{s3h}	horizontaler Spaltzug in Konsole A _{s3h} (bei b _a /h _l ≤ 0.5)

Abmessungen

x [m]	b _a [cm]	h _a [cm]	b _l [cm]	a _{1v} [cm]	a _{2v} [cm]	a _ü [cm]	z _l [cm]	h _l [cm]	d _l [cm]	h _r [cm]	d _r [cm]
0.00 L	12.5	30.0	15.0	7.5	30.0	12.5	42.0	50.0	46.0	80.0	76.0
9.70 R	12.5	30.0	15.0	7.5	30.0	12.5	42.0	50.0	46.0	80.0	76.0

Schemazeichnung Ausklinkung



Bemessung

x [m]	V _{Ed} [kN]	H _{Ed} [kN]	Lage	LFK	F [kN]	As [cm ²]	V _{Rdmax} [kN]	σ _{cd} [N/mm ²]	IAB [-]
0.00 L	451.8	90.4	T _{1v} ;A _{s1v}	max Vz	391.6	9.01	771.7	12.50	0.84
			T _{2v} ;A _{s2v}	max Vz	167.8	3.86			
			T _{1a} ;A _{s1a}	max Vz	159.7	3.67			
			T _{1h} ;A _{s1h}	max Vz	258.2	5.94			
			T _{2h} ;A _{s2h}	max Vz	511.7	11.77			
			T _{3h} ;A _{s3h}	max Vz	77.5	1.78			
			C ₁	max Vz					
9.70 R	451.8	90.4	T _{1v} ;A _{s1v}	min Vz	391.6	9.01	771.7	12.50	0.84
			T _{2v} ;A _{s2v}	min Vz	167.8	3.86			
			T _{1a} ;A _{s1a}	min Vz	159.7	3.67			
			T _{1h} ;A _{s1h}	min Vz	258.2	5.94			
			T _{2h} ;A _{s2h}	min Vz	511.7	11.77			
			T _{3h} ;A _{s3h}	min Vz	77.5	1.78			
			C ₁	min Vz					

Bemessung Aussparung

Verfahren: Stabwerkmodell nach DAfStb Heft 459

M _{Ed,li} , N _{Ed,li} , V _{Ed,li} Gurt o	Bemessungsschnittkräfte links Obergurt	M _{Ed,re} , N _{Ed,re} , V _{Ed,re} Gurt u	Bemessungsschnittkräfte rechts Untergurt
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Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

$A_{s0,o}$ $A_{s3h}, A_{su,o}, A_{s4h}$ $a_{sw,o}$ l_o, l_u l_v	Bewehrung OK Obergurt Bewehrung UK Obergurt Querkraftbewehrung infolge $V_{Ed,o}$ horizontale Abstände vom Öffnungsrand Bereich der Aufhängebewehrung	$A_{su,u}$ $A_{s1h}, A_{so,u}, A_{s2h}$ $a_{sw,u}$ a_{s1v}, a_{s2v} a_{s3v}, a_{s4v}	Bewehrung UK Untergurt Bewehrung OK Untergurt Querkraftbewehrung infolge $V_{Ed,u}$ Aufhängebewehrung links Aufhängebewehrung rechts
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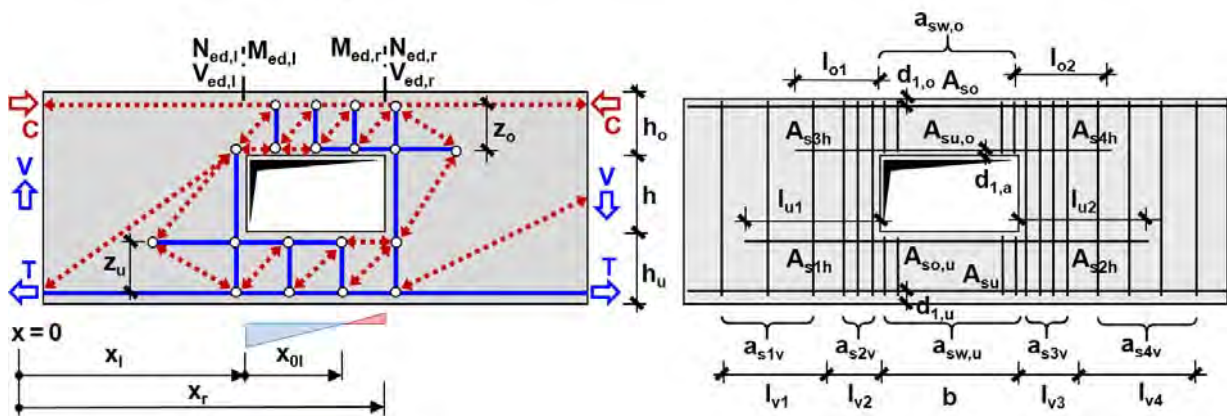
Abmessungen

x_l [m]	x_r [m]	b [cm]	h [cm]	h_o [cm]	h_u [cm]	b_w [cm]	z_i [cm]	z_o [cm]	z_u [cm]	$d_{1,o}$ [cm]	$d_{1,a}$ [cm]	$d_{1,u}$ [cm]
0.77	0.97	20.0	20.0	44.0	16.0	30.0	75.3	35.0	7.0	4.0	5.0	4.0
1.27	1.47	20.0	20.0	44.0	16.0	30.0	75.2	34.0	7.0	4.0	5.0	4.0
1.77	1.97	20.0	20.0	44.0	16.0	30.0	75.0	34.0	7.0	4.0	5.0	4.0
2.68	2.98	30.0	30.0	34.0	16.0	30.0	74.9	24.0	7.0	4.0	5.0	4.0
3.67	4.13	45.0	30.0	34.0	16.0	30.0	74.8	24.0	7.0	4.0	5.0	4.0
5.58	6.02	45.0	30.0	34.0	16.0	30.0	73.7	24.0	7.0	4.0	5.0	4.0
6.72	7.03	30.0	30.0	34.0	16.0	30.0	73.9	24.0	7.0	4.0	5.0	4.0
7.73	7.93	20.0	20.0	44.0	16.0	30.0	74.2	34.0	7.0	4.0	5.0	4.0
8.23	8.43	20.0	20.0	44.0	16.0	30.0	74.4	34.0	7.0	4.0	5.0	4.0
8.73	8.93	20.0	20.0	44.0	16.0	30.0	74.7	35.0	7.0	4.0	5.0	4.0

Bemessungsschnittgrößen (Faktor Querkraft im Druckgurt = 0.80)

x_l [m]	x_r [m]	Kombi	Gurt	$M_{Ed,li}$ [kNm]	$N_{Ed,li}$ [kN]	$V_{Ed,li}$ [kN]	$M_{Ed,re}$ [kNm]	$N_{Ed,re}$ [kN]	$V_{Ed,re}$ [kN]	VR_{dmax} [kN]
0.77	0.97	max My max My	o u	-1.2 -0.3	-430.5 430.5	303.9 76.0	56.7 14.2	-430.5 430.5	289.2 72.3	657.6 156.2
1.27	1.47	max My max My	o u	-0.0 -0.0	-669.9 669.9	266.6 66.7	50.4 12.6	-669.9 669.9	251.9 63.0	612.8 156.2
1.77	1.97	max My max My	o u	-0.0 -0.0	-880.8 880.8	229.4 57.3	42.9 10.7	-880.8 880.8	214.6 53.7	587.1 156.2
2.68	2.98	max My max My	o u	-0.0 -0.0	-1183.9 1183.9	161.7 40.4	42.0 10.5	-1183.9 1183.9	139.8 35.0	397.0 93.7
3.67	4.13	max My max My	o u	-0.0 -0.0	-1398.3 1398.3	87.2 21.8	24.5 6.1	-1398.3 1398.3	54.5 13.6	376.1 113.1
5.58	6.02	max My max My	o u	24.5 6.1	-1398.3 1398.3	-54.5 -13.6	-0.0 -0.0	-1398.3 1398.3	-87.2 -21.8	376.1 113.1
6.72	7.03	max My max My	o u	42.0 10.5	-1183.9 1183.9	-139.8 -35.0	-0.0 -0.0	-1183.9 1183.9	-161.7 -40.4	397.0 93.7
7.73	7.93	max My max My	o u	42.9 10.7	-880.8 880.8	-214.6 -53.7	-0.0 -0.0	-880.8 880.8	-229.4 -57.3	587.1 156.2
8.23	8.43	max My max My	o u	50.4 12.6	-669.9 669.9	-251.9 -63.0	-0.0 -0.0	-669.9 669.9	-266.6 -66.7	612.8 156.2
8.73	8.93	max My max My	o u	56.7 14.2	-430.5 430.5	-289.2 -72.3	-1.2 -0.3	-430.5 430.5	-303.9 -76.0	657.6 156.2

Schemazeichnung 'Große Öffnung' Heft 459, Bild 4.31, 4.32



Längsbewehrung 'Große Öffnungen'

x_l [m]	x_r [m]	Obergurt						Untergurt					
		$A_{s0,o}$ [cm ²]	A_{s3h} [cm ²]	l_{o1} [m]	$A_{su,o}$ [cm ²]	A_{s4h} [cm ²]	l_{o2} [m]	$A_{su,u}$ [cm ²]	A_{s1h} [cm ²]	l_{u1} [m]	$A_{so,u}$ [cm ²]	A_{s2h} [cm ²]	l_{u2} [m]
0.77	0.97	0.97	0.88	74.4	0.97	3.87	74.4	12.91	7.53	57.6	0.10	4.08	57.6
1.27	1.47	1.44			1.44	0.07	74.4	18.04	11.04	57.6	0.00	7.88	57.6
1.77	1.97	1.85			1.85			22.48	14.16	57.6	0.00	11.37	57.6
2.68	2.98	2.41			2.41			29.39	19.54	57.6	0.00	16.50	57.6
3.67	4.13	2.80			2.80			33.40	22.02	57.6	0.00	19.90	57.6
5.58	6.02	2.80			2.80			33.40	19.90	57.6	0.00	22.02	57.6
6.72	7.03	2.41			2.41			29.39	16.50	57.6	0.00	19.54	57.6
7.73	7.93	1.85			1.85			22.48	11.37	57.6	13.32	14.17	57.6

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

8.23	8.43	1.44	0.07	74.4	1.44			18.04	7.88	57.6	0.00	11.04	57.6
8.73	8.93	0.97	3.87	74.4	0.97	0.88	74.4	12.91	4.08	57.6	0.10	7.53	57.6

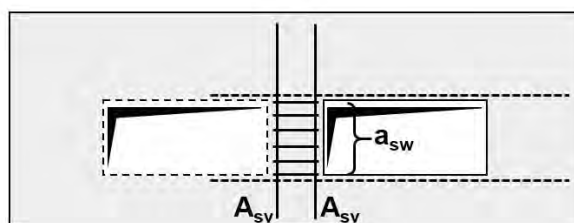
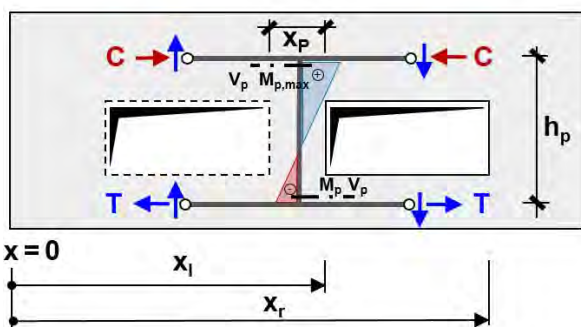
Aufhänge- und Querkraftbewehrung 'Große Öffnungen'

xl [m]	xr [m]	aswo [cm²/m]	aswu [cm²/m]	lv1 [cm]	as1v [cm²/m]	lv2 [cm]	as2v [cm²/m]	lv3 [cm]	as3v [cm²/m]	lv4 [cm]	as4v [cm²/m]
0.77	0.97	10.92	24.96	56.2	18.99	20.8	12.70				
1.27	1.47	9.17	21.90								
1.77	1.97	7.35	18.84					57.2	9.73	13.3	46.40
2.68	2.98	6.87	4.43	49.7	9.35	20.8	19.30	44.2	9.56	25.8	15.58
3.67	4.13	3.43	3.07	49.2	5.10	20.8	16.25	44.2	4.28	72.0	2.18
5.58	6.02	3.43	3.07	72.0	2.18	44.2	4.28	20.8	16.25	49.2	5.10
6.72	7.03	6.87	4.43	25.8	15.58	44.2	9.56	20.8	19.30	49.7	9.35
7.73	7.93	7.35	18.84	13.3	46.40	57.2	9.73				
8.23	8.43	9.17	21.90								
8.73	8.93	10.92	24.96					20.8	12.70	56.2	18.99

Pfostenbemessung

Verfahren	Pfostenmethode für $0.10 h \leq x_p \leq 0.80 h$		
x_p A_{sv}	Pfostenbreite zwischen benachbarten Öffnungen beidseitig jeweils Biegebewehrung senkrecht	V_p, M_p a_{sw}	Bemessungsschnittgrößen Querkraftbewehrung horizontal

Schemazeichnung 'Pfostenbemessung'



		linker Pfosten						rechter Pfosten					
xl [m]	xr [m]	xp [cm]	Vp [kN]	Mp [kNm]	Asv [cm²]	asw [cm²/m]	VRdmax [kN]	xp [cm]	Vp [kN]	Mp [kNm]	Asv [cm²]	asw [cm²/m]	VRdmax [kN]
0.77	0.97							30.00	241.8	144.6	17.84	20.34	387.3
1.27	1.47	30.00	223.9	133.3	16.21	18.17	389.7	30.00	211.5	126.0	14.94	16.39	396.2
1.77	1.97	30.00	193.2	114.7	13.15	14.00	402.5						
7.73	7.93							30.00	193.2	114.7	13.15	14.00	402.5
8.23	8.43	30.00	211.5	126.0	14.94	16.39	396.2	30.00	223.9	133.3	16.21	18.17	389.7
8.73	8.93	30.00	241.8	144.6	17.84	20.34	387.3						

Zusammenfassung

Nachweisübersicht

Durchlaufträgerstatik mit linear elastischer Schnittgrößenermittlung und begrenzter Momentenumlagerung $\leq 15.00\%$					
Bemessung nach DIN EN 1992-1-1		Ingenieurbau		Bemessung erfolgt normativ	
GzT	Nachweis	GzG	Nachweis	GzE	Nachweis
Ankündigungsverhalten	ja	Dekompression	ohne Nw	Ermüdung Biegung	ohne Nw
Biegetragfähigkeit	erfüllt	Begrenzung der Rissbreite	ohne Nw	Ermüdung Querkraft	ohne Nw
Schubtragfähigkeit	erfüllt	Begrenzung Spannungen	ohne Nw		
Schubfugentragfähigkeit	erfüllt	Begrenzung Verformungen	ohne Nw		
Konstruktiver Brandschutz	ohne Nw				
Ausklinkungen	erfüllt				
Aussparungen	erfüllt				

Erforderliche Bewehrung

$\varnothing_{s,..o/u}$	Stabdurchmesser oben / unten	$A_{s,..o/u}$	Längsbewehrung oben / unten
$A_{sv,..o/u}$	Gurtanschlussbewehrung im Obergurt / Untergurt, jeweils in den Gurten 2-lagig zu verteilen	..f. / ..w..	Flansch (flange) / Steg (web)
$a_{sv,w}$	Bügelbewehrung im Steg 2-schnittig	a_{sTL}	Torsionslängsbewehrung

Auftrag: Ausklinkungen + große Öffnungen

Position: D10

DLT

r		erforderliche (required) Bewehrung						p		vorhandene (provide) Bewehrung					
Feld Nr	x [m]	r/p	Längsbewehrung A _s oben [cm ²]				Längsbewehrung A _s unten [cm ²]				Schubbewehrung [cm ² /m]			a _s TL [cm ² /m]	
			∅ _{s,fo}	∅ _{s,wo}	A _{s,fo}	A _{s,wo}	∅ _{s,fu}	∅ _{s,wu}	A _{s,fu}	A _{s,wu}	a _{sv,fo}	a _{sv,fu}	a _{sv,w}		
1	0.000	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.075	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.125	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.335	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.770	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.870	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.970	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.270	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.370	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.470	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.770	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.870	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.940	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.970	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	2.675	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	2.825	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	2.910	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	2.975	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	3.675	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	3.880	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	3.900	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	4.125	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	4.850	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	5.575	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	5.800	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	5.820	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	6.025	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	6.725	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	6.790	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	6.875	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	7.025	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	7.730	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	7.760	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	7.830	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	7.930	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	8.230	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	8.330	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	8.430	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	8.730	p r	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00

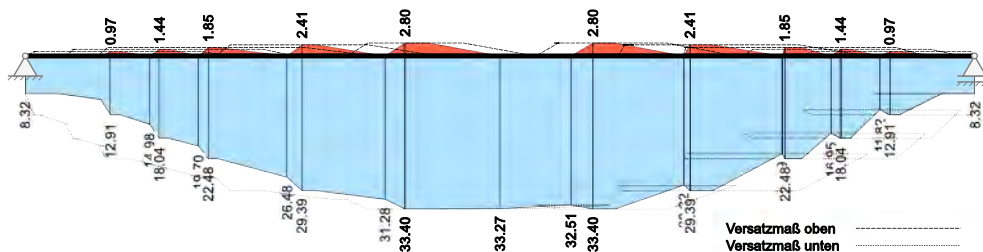
Auftrag: Ausklinkungen + große Öffnungen

Position: D10

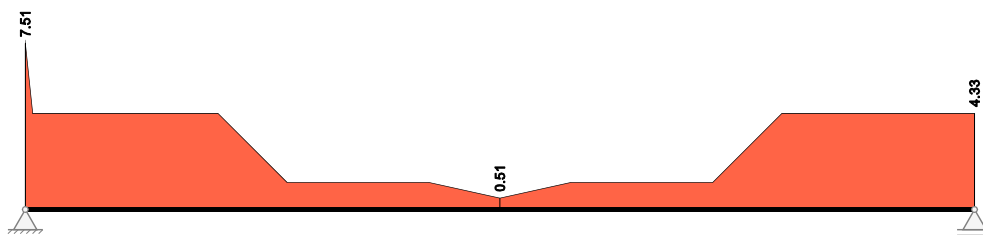
DLT

1	8.830	p	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00
		r			0.00	0.97			0.00	12.91	4.33	0.00	10.40	0.00
1	8.930	p	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00
		r			0.00	0.97			0.00	12.91	4.33	0.00	10.76	0.00
1	9.365	p	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00
		r			0.00	0.00			0.00	8.32	4.33	0.00	12.33	0.00
1	9.575	p	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00
		r			0.00	0.00			0.00	8.32	4.33	0.00	12.33	0.00
1	9.625	p	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00
		r			0.00	0.00			0.00	8.32	4.33	0.00	12.33	0.00
1	9.700	p	10	20	0.00	0.00	10	25	0.00	0.00	0.00	0.00	0.00	0.00
		r			0.00	0.00			0.00	8.32	4.33	0.00	12.33	0.00

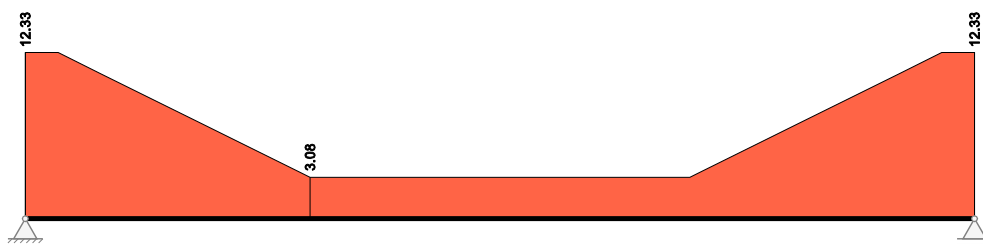
Erforderliche Längsbewehrung [cm²]



Erforderliche Gurtanschlussbewehrung [cm²/m]



Erforderliche Bügelbewehrung [cm²/m]



Materialverbrauch

Material		Volumen [m ³]	Gewicht [kg]
Beton	C35/45	7.287	18217
Betonstahl	B500S	0.036	285
Spannstahl			

Theoretischer Materialverbrauch der Bemessungsergebnisse ohne konstruktive Bewehrung, Zulagen und Übergreifungslängen.