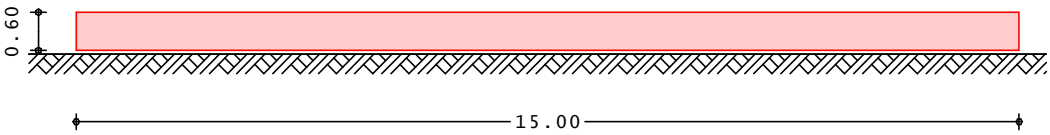
Pos. B521 Elastisch gebetteter Balken

System
M 1:120



Balken	Länge	l =	15.00	m
	Höhe	h =	0.60	m
	Breite	b =	0.60	m
	Elastizitätsmodul Beton	Ecm =	26700	N/mm²

Bodenschichten

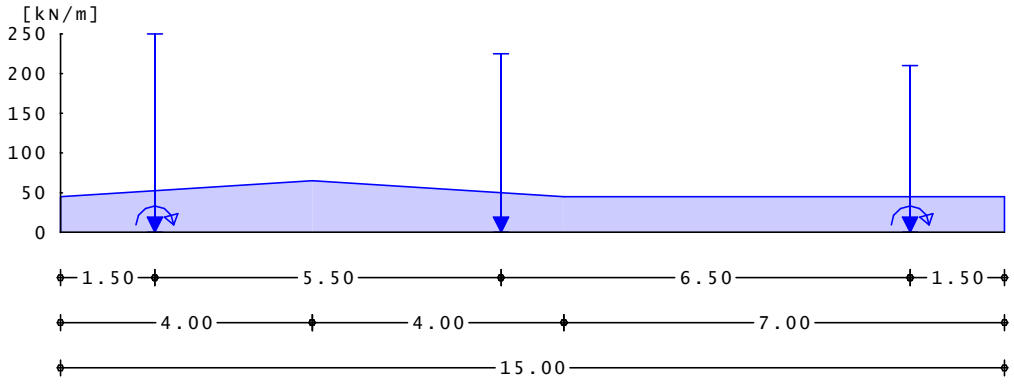
Nr.	Bezeichnung	h [m]	Es [N/mm²]
1	Sand	3.50	40.00
2	Sand, dicht, eckig	12.00	200.00

Einwirkungen

Ständig		ständige Einwirkung
NutzA		Nutzlast, Kategorie A
#Fundam.	#	Eigenlast Fundamentbalken
		ständige Einwirkung

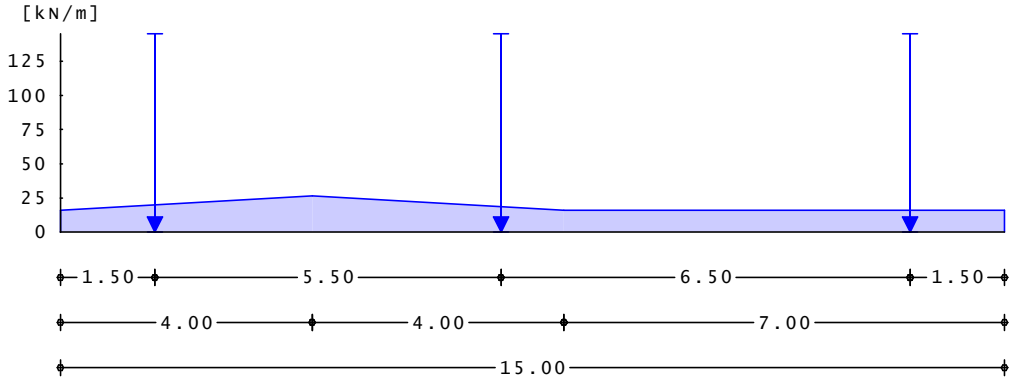
Die Einwirkung wurde automatisch generiert.

Belastung
EW Ständig ständige Einwirkung
M 1:120



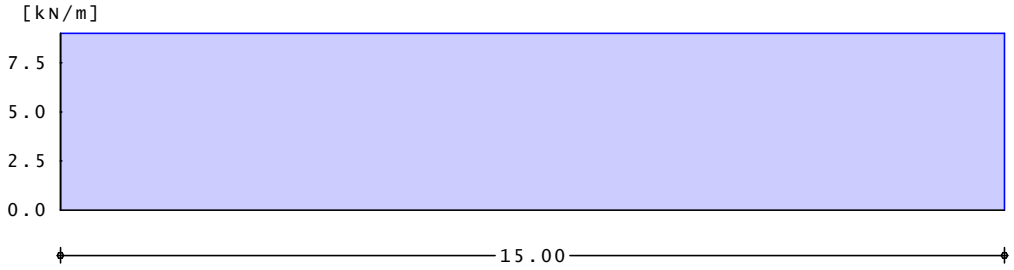
Lastart	a [m]	s [m]	ql [kN/m]	qr [kN/m]	F [kN]	M [kNm]
Gleich			45.00			
Trapez	0.00	4.00	0.00	20.00		
Trapez	4.00	4.00	20.00	0.00		
Einzel	1.50	0.20			250.00	
Einzel	7.00	0.20			225.00	
Einzel	13.50	0.20			210.00	
Moment	1.50	0.20				50.00
Moment	13.50	0.20				50.00

EW NutzA Nutzlast, Kategorie A
M 1:120



Lastart	a [m]	s [m]	ql [kN/m]	qr [kN/m]	F [kN]	M [kNm]
Gleich			16.00			
Trapez	0.00	4.00	0.00	10.50		
Trapez	4.00	4.00	10.50	0.00		
Einzel	1.50	0.20			145.00	
Einzel	7.00	0.20			145.00	
Einzel	13.50	0.20			145.00	

EW #Fundam. ständige Einwirkung (Eigenlast)
M 1:120



Zusammenst. q Eigenlast 25.00*0.60*0.60 = 9.00 kN/m

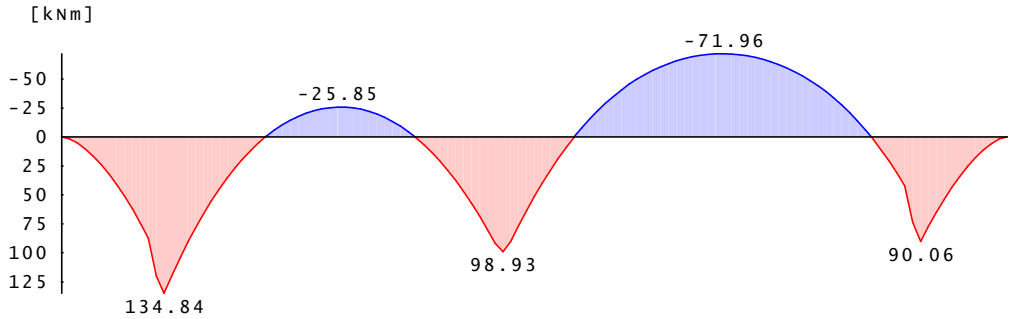
Lastart	a [m]	s [m]	ql [kN/m]	qr [kN/m]	F [kN]	M [kNm]
Gleich			9.00			

Schnittgrößen
EW Ständig

x [m]	Mk [kNm]	Vk [kN]	σk [kN/m²]	sk [cm]
1.38	87.35	107.52	186.13	0.47
1.63	134.84	-127.64	186.72	0.48
2.00	91.06	-106.01	184.92	0.48
10.50	-71.96	0.43	113.04	0.32
10.63	-71.72	3.28	113.03	0.32
15.00	-0.00	0.00	431.87	0.42

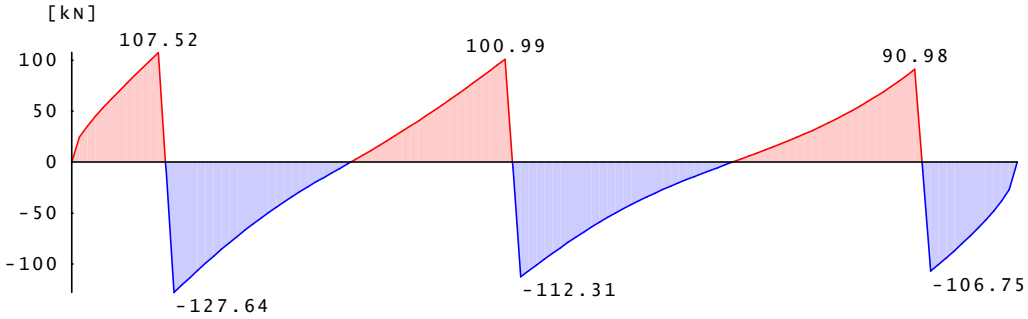
EW Ständig
M 1:120

charakteristisches Moment Mk



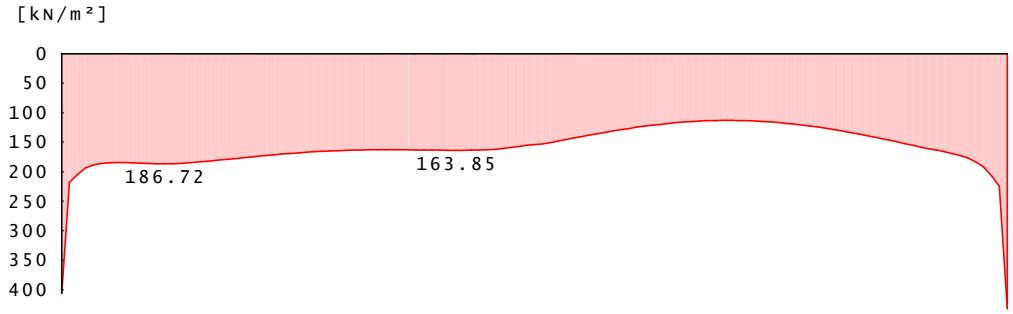
EW Ständig
M 1:120

charakteristische Querkraft Vk



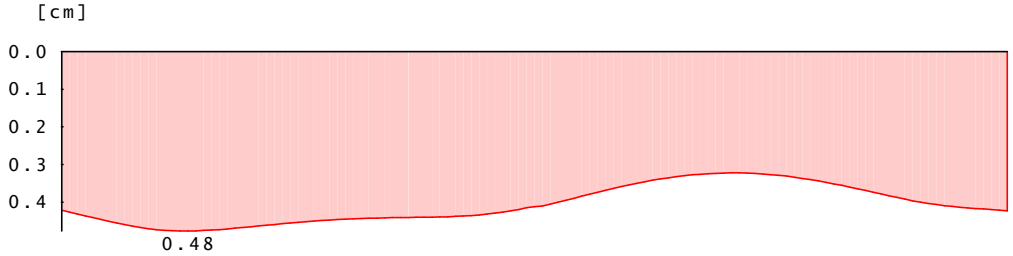
EW Ständig
M 1:120

charakteristische Pressung σk



EW Ständig
M 1:120

charakteristische Setzung sk



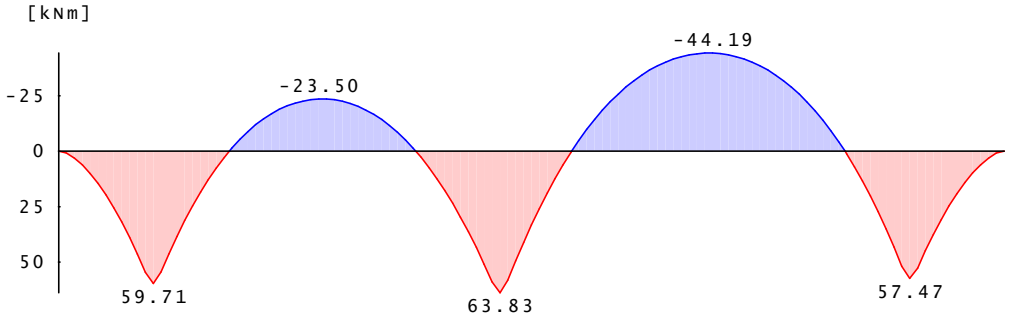
EW NutzA

x [m]	Mk [kNm]	Vk [kN]	σk [kN/m²]	sk [cm]
0.00	0.00	0.00	222.70	0.23
1.38	54.59	67.67	93.88	0.24
7.00	63.83	-3.07	79.58	0.21
7.13	58.23	-71.91	78.80	0.21

x [m]	Mk [kNm]	Vk [kN]	σk [kN/m²]	sk [cm]
10.38	-44.19	1.04	55.29	0.16
13.38	51.88	71.58	81.46	0.21

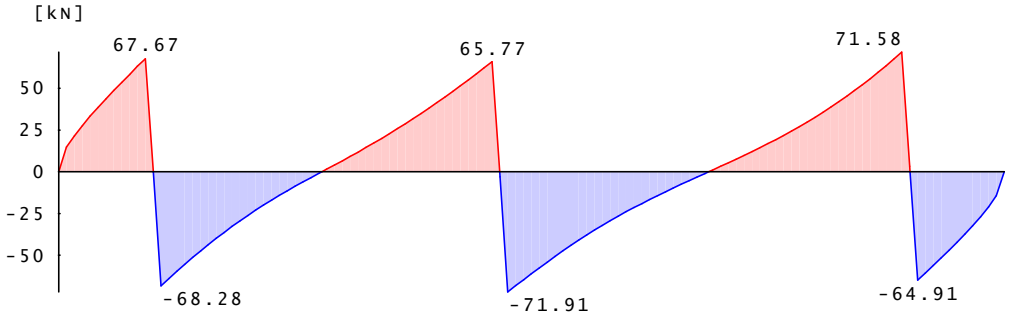
EW NutzA
M 1:120

charakteristisches Moment Mk



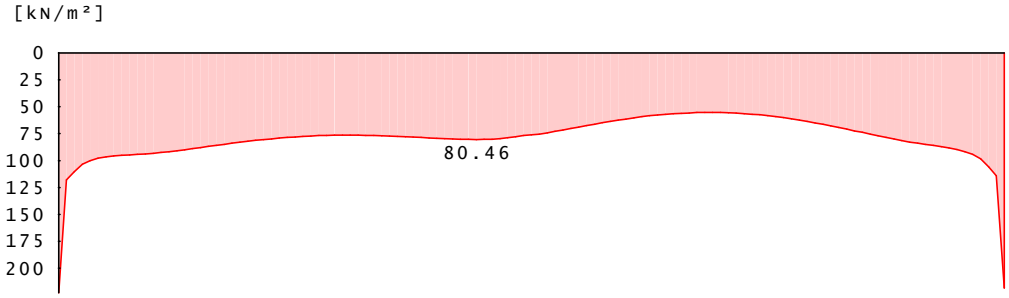
EW NutzA
M 1:120

charakteristische Querkraft Vk



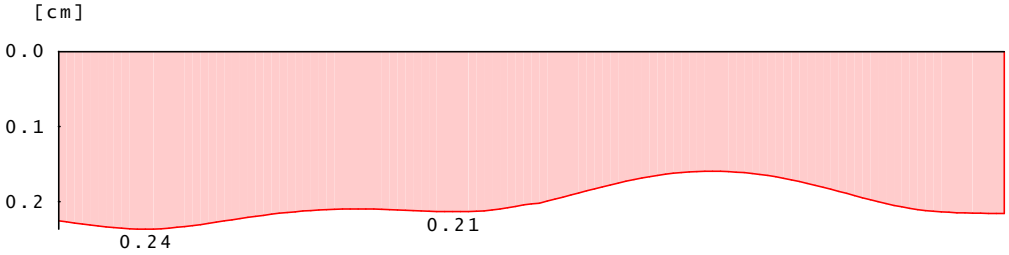
EW NutzA
M 1:120

charakteristische Pressung σk



EW NutzA
M 1:120

charakteristische Setzung sk

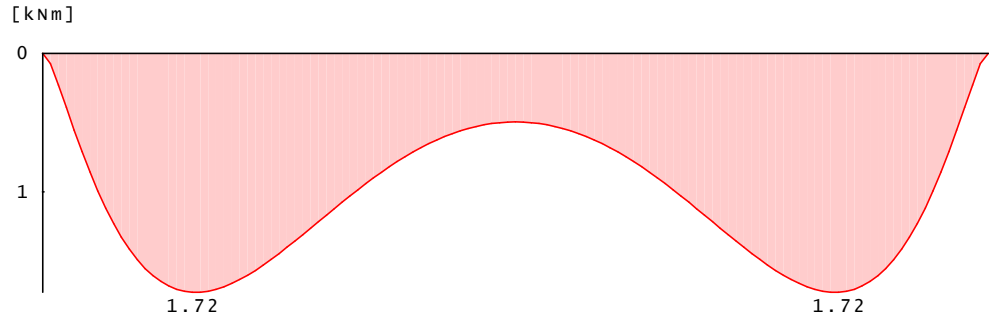


EW #Fundam.

x [m]	Mk [kNm]	Vk [kN]	σk [kN/m²]	sk [cm]
0.00	0.00	0.00	30.72	0.03
0.38	0.39	1.32	14.54	0.03
7.50	0.49	-0.00	15.28	0.04
12.63	1.72	-0.02	14.26	0.04
14.00	1.12	-0.94	13.67	0.03
14.63	0.39	-1.32	14.54	0.03
15.00	-0.00	0.00	30.72	0.03

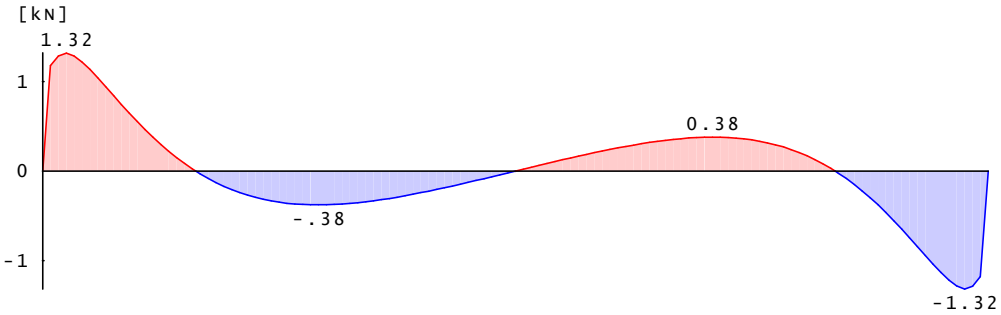
EW #Fundam.
M 1:120

charakteristisches Moment Mk



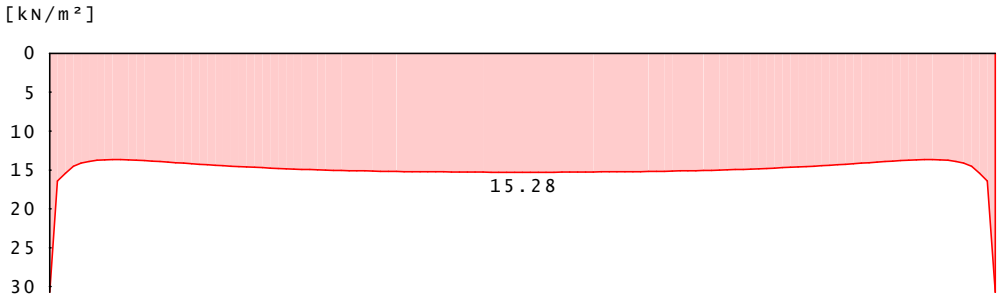
EW #Fundam.
M 1:120

charakteristische Querkraft Vk



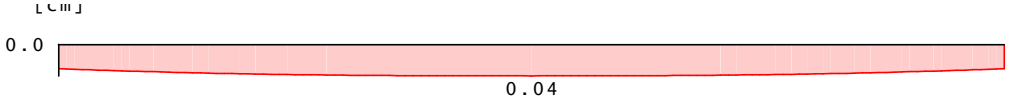
EW #Fundam.
M 1:120

charakteristische Pressung σk



EW #Fundam.
M 1:120

charakteristische Setzung sk



Kombinationen nach DIN 1055-100 (03.01)

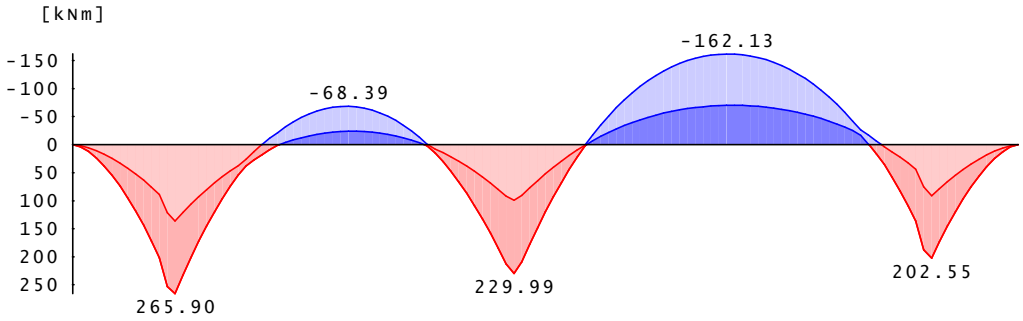
Grundkombination

x [m]	max MEd [kNm]	min MEd [kNm]	max VEd [kN]	min VEd [kN]
1.38	201.71	88.76	247.53	108.17
1.63	265.90	136.39	-127.02	-274.27
10.38	-70.32	-162.13	-0.35	-2.90

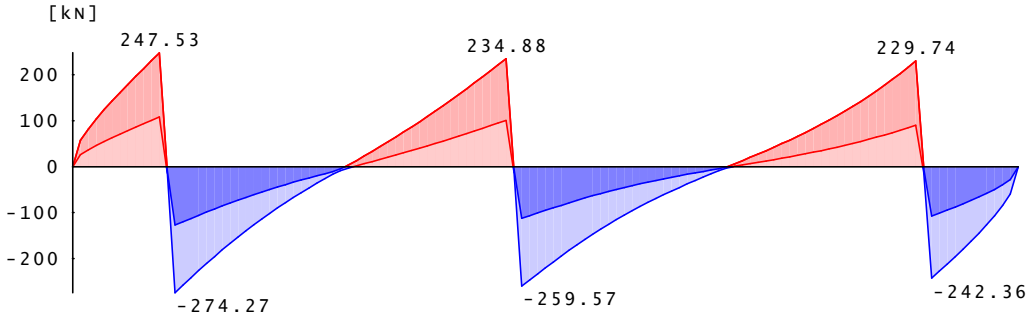
maßgeb. Kombination

max/min	Wert	Beiwert $\gamma_{.\psi}$ * Einwirkung
max MEd	265.90	+ 1.35*Ständig + 1.50*NutzA + 1.35*#Fundam.
min MEd	-162.13	+ 1.35*Ständig + 1.50*NutzA + 1.00*#Fundam.
max VEd	247.53	+ 1.35*Ständig + 1.50*NutzA + 1.35*#Fundam.
min VEd	-274.27	+ 1.35*Ständig + 1.50*NutzA + 1.00*#Fundam.

Grundkombination Moment MEd
M 1:120



Grundkombination Querkraft VEd
M 1:120



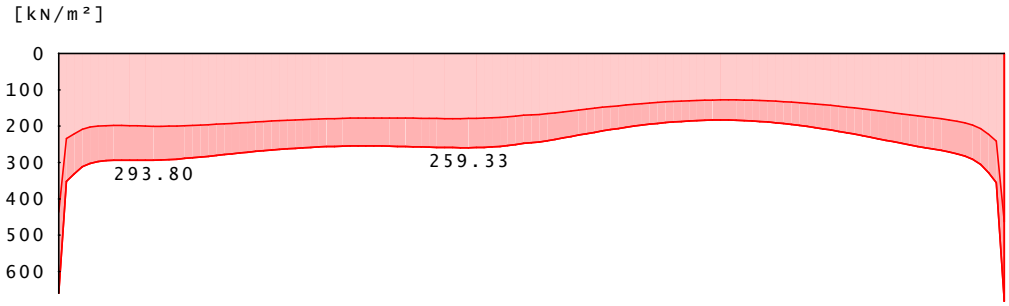
char. Kombination

x [m]	max σ [kN/m²]	min σ [kN/m²]	max s [cm]	min s [cm]
1.75	292.04	200.29	0.75	0.51
10.63	183.65	128.04	0.52	0.36
15.00	681.06	462.59	0.67	0.46

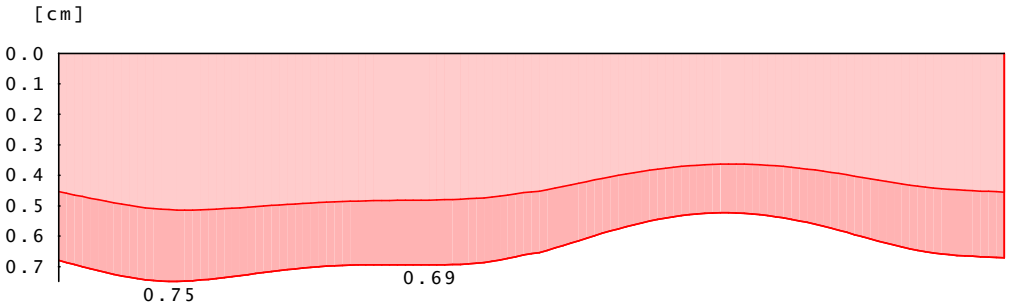
maßgeb. Kombination

max/min	Wert	Beiwert $\gamma_{.\psi}$ * Einwirkung
max σ	681.06	+ 1.00*Ständig + 1.00*NutzA + 1.00*#Fundam.
min σ	128.04	+ 1.00*Ständig + 1.00*#Fundam.
max s	0.75	+ 1.00*Ständig + 1.00*NutzA + 1.00*#Fundam.
min s	0.36	+ 1.00*Ständig + 1.00*#Fundam.

char. Kombination Pressung σ
M 1:120



char. Kombination Setzung s
M 1:120



Bemessung

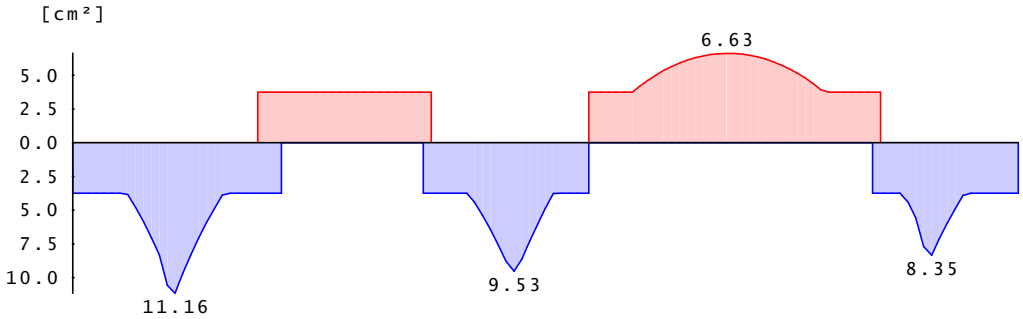
nach DIN 1045-1 (07.01)
Beton C 25/30 Betonstahl BSt 500SA
Wichte des Stahlbetons γ = 25.00 kN/m³
Balken b / h = 60 / 60 cm
Achsabst. d. Bewehrung d'u / d'o = 4.5 / 4.5 cm

Biegebewehrung/
Querkraftbewehrung

x [m]	erf Asu [cm²]	erf Aso [cm²]	VRd,ct [kN]	VRd,max [kN]	erf asw [cm²/m]
0.00	-	-	240.00	955.29	4.98M
0.13	3.75M	-	75.23	955.29	4.98M
1.63	11.16	-	108.23	955.29	4.98M
3.00	3.75M	3.75M	75.23	955.29	4.98M
5.63	3.75M	3.75M	75.23	955.29	4.98M
7.00	9.53	-	102.69	955.29	4.98M
8.25	-	3.75M	75.23	955.29	4.98M
10.38	-	6.63	90.97	955.29	4.98M
12.75	3.75M	3.75M	75.23	955.29	4.98M
13.63	8.35	-	98.24	955.29	4.98M

M - Mindestbewehrung nach 13.1.1(1) bzw. 13.2.3(5)

erf. Biegebewehrung
M 1:120



erf. Querkraftbew.
M 1:120