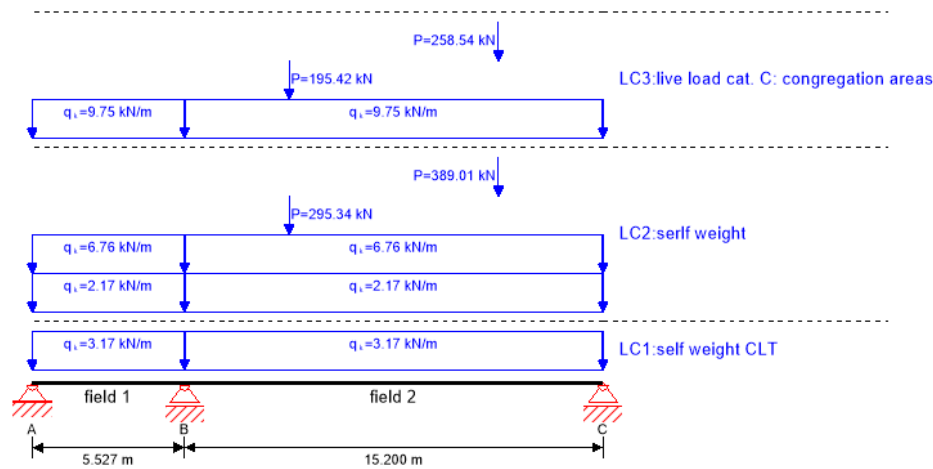


## system



global utilization ratio		87 %
ULS	69 %	SLS 87 %

## section

Name	height	width	$t_f$	$t_w$	area	$I_y$	$I_z$	$W_y$	$W_z$	$I_w$	$I_d$	$i_y$	$i_z$	$W_{y,pl}$	$W_{z,pl}$
	[mm]	[mm]	[mm]	[mm]	[cm <sup>2</sup> ]	[cm <sup>4</sup> ]	[cm <sup>4</sup> ]	[cm <sup>3</sup> ]	[cm <sup>3</sup> ]	[cm <sup>6</sup> ]	[cm <sup>4</sup> ]	[cm]	[cm]	[cm <sup>3</sup> ]	[cm <sup>3</sup> ]
HE-M 800	814	303	40	21	404.3	442600	18630	10870	1230	2.778E+07	1646	3.309	0.679	12490	1930

## material values

material	$f_{m,k}$	$f_{t,0,k}$	$E_{0,mean}$	$G_{mean}$
	[N/mm <sup>2</sup> ]	[N/mm <sup>2</sup> ]	[N/mm <sup>2</sup> ]	[N/mm <sup>2</sup> ]
steel S355	355.00	510.00	210,000.00	80,700.00

## load

## load case groups

	load case category	Typ	duration	Kmod	$\gamma_{inf}$	$\gamma_{sup}$	$\psi_0$	$\psi_1$	$\psi_2$
LC1	self weight CLT	G	permanet	1	1	1.35	1	1	1
LC2	serlf weight	G	permanet	1	1	1.35	1	1	1
LC3	live load cat. C: congregation areas	Q	short term	1	0	1.5	0.7	0.7	0.6

## LC1:self weight CLT

continous load	
field	load at start
	[kN/m]
1	3.17
2	3.17

**LC2:serlf weight**
**continous load**

field	load at start
	[kN/m]
1	2.17
1	6.76
2	2.17
2	6.76

**point load**

field	distance from start	load at start
	[m]	[kN]
2	3.800	295.34
2	11.400	389.01

**LC3:live load cat. C: congregation areas**
**continous load**

field	load at start
	[kN/m]
1	9.75
2	9.75

**point load**

field	distance from start	load at start
	[m]	[kN]
2	3.800	195.42
2	11.400	258.54

**ULS combinations**

	combination rule
LCO1	$1.12/1.00 * LC1 + 1.12/1.00 * LC2$
LCO2	$1.12/1.00 * LC1 + 1.12/1.00 * LC2 + 1.25/0.00 * LC3$

**ULS combinations fire**

	combination rule
LCO3	$1.00/1.00 * LC1 + 1.00/1.00 * LC2$
LCO4	$1.00/1.00 * LC1 + 1.00/1.00 * LC2 + 1.00/0.00 * 0.60 * LC3$

**SLS characteristic combination**

	combination rule
LCO5	$1.00/1.00 * LC1 + 1.00/1.00 * LC2$
LCO6	$1.00/1.00 * LC1 + 1.00/1.00 * LC2 + 1.00/0.00 * LC3$

**SLS quasi-permanent combination**

	combination rule
LCO7	$1.00/1.00 * LC1 + 1.00/1.00 * LC2$
LCO8	$1.00/1.00 * LC1 + 1.00/1.00 * LC2 + 1.00/0.00 * 0.60 * LC3$

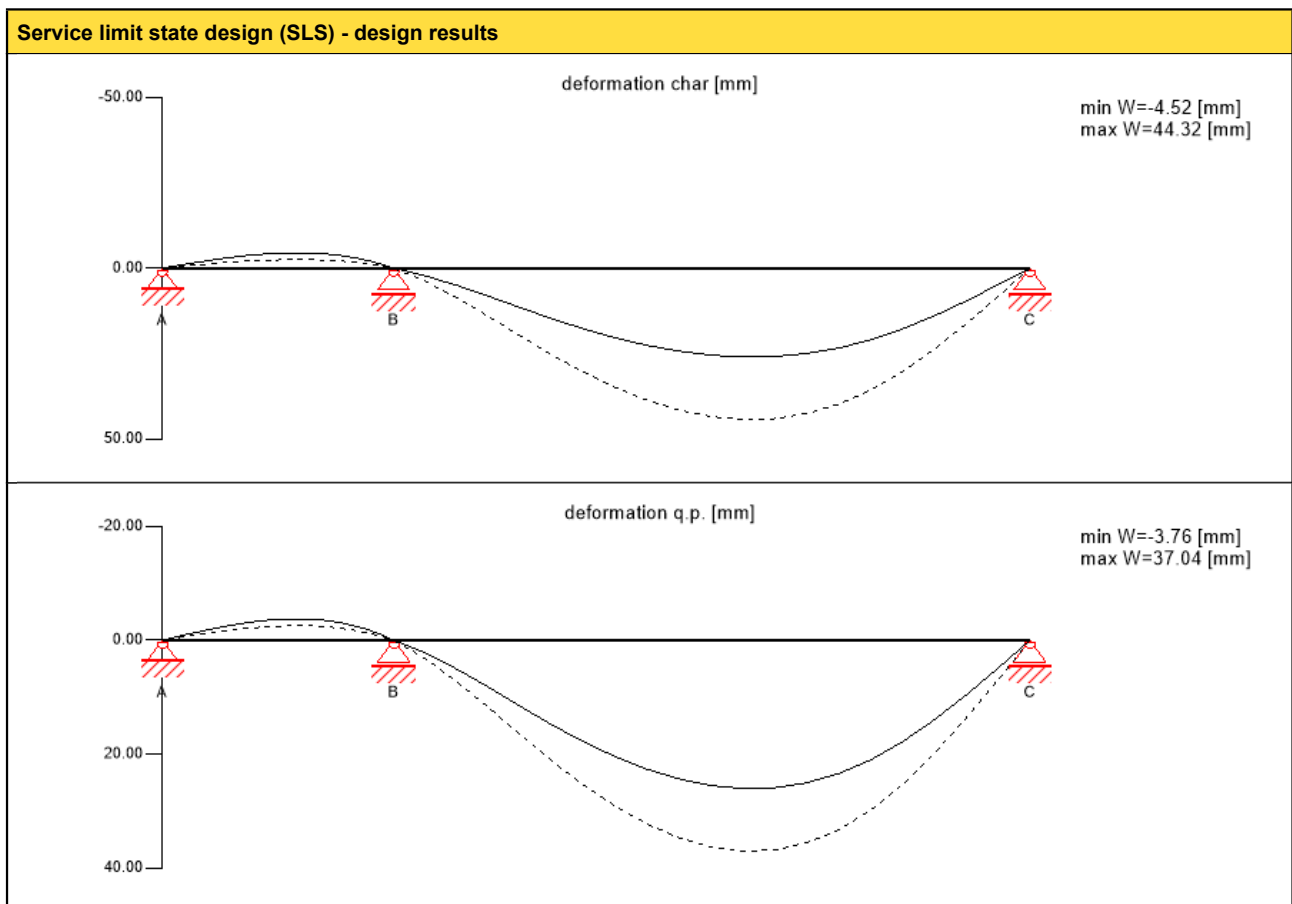
**flexural design**

Q <sub>kl</sub> =	1	comb.	LCO2
M <sub>Ed</sub> =	2612.31 kNm	M <sub>Rd</sub> =	4433.95 kNm
ratio	59 %		100 %
			✓
<b>utilization ratio</b>		<b>59 %</b>	

shear analysis					
Q <sub>kl</sub> =	1		comb.	LCO2	
V <sub>Ed</sub> =	987.18 kN		V <sub>Rd</sub> =	3982.36 kN	
ratio	25 %	<		100 %	✓
utilization ratio				25 %	

flexural design + shear analysis					
Q <sub>kl</sub> =	1		comb.	LCO2	
V <sub>Ed</sub> =	120.86 kN		V <sub>Rd</sub> =	3982.36 kN	
M <sub>Ed</sub> =	2612.31 kNm		M <sub>Rd</sub> =	4433.95 kNm	
ratio	59 %	<		100 %	✓
utilization ratio				59 %	

lateral torsional buckling design					
Q <sub>kl</sub> =	1		comb.	LCO2	
N <sub>yEd</sub> =	0.00 kN		N <sub>yRd</sub> =	0.00 kN	
N <sub>zEd</sub> =	0.00 kN		N <sub>zRd</sub> =	0.00 kN	
M <sub>yEd</sub> =	2612.31 kNm		M <sub>yRd</sub> =	3770.56 kNm	
ratio	69 %	<		100 %	✓
utilization ratio				69 %	



w <sub>inst</sub> = w[char]				
field	limit	w <sub>limit</sub>	w <sub>calc.</sub>	ratio
		[mm]	[mm]	
1	1/300	18.4	0.0	0 %
2	1/300	50.7	44.3	87 %

support reaction				
load case category	k <sub>mod</sub>	A <sub>v</sub>	B <sub>v</sub>	C <sub>v</sub>
		[kN]		
self weight CLT	1	-3.98	50.27	19.49
		-3.98	50.27	19.49
serlf weight	1	-	718.83	351.46
		200.85	-	718.83
		200.85	-	351.46
live load cat. C: congregation areas	1	25.15	537.13	257.54
		-	0.00	-0.65
		163.13		

**note**

Lastfaktoren for egenvekt er korrigert fra 1,35 til 1,2 ved å dele egenvektene på 1,35 og gange med 1,2.

**Disclaimer**

The software was created to assist engineers in their daily business. The software is an engineering software that is dealing with a very complex matter of structural analysis and building physics analysis. Therefore, this software shall only be operated by skilled, experienced engineers, with a deep understanding of structural engineering and building physics related to timber structures. The user of the software is obliged to check all input values, no matter if they were given by the user or given by default by the software and all results for plausibility.

The use of the results of the software should not be relied upon as the basis for any decision or action. Any use of results of the software is only allowed, if the results have been verified and approved regarding completeness and correctness by a project structural/building physics engineer. The user has the possibility to make print-outs from the software. Any modification of those are not allowed.

Stora Enso Wood Products GmbH does not assume any warranty regarding the software. The software has been developed with utmost diligence, nevertheless Stora Enso Wood Products GmbH, neither expressly nor implicitly, provides any warranty in terms of accuracy, validity, timeliness and completeness of information and data created by the software. Stora Enso Wood Products GmbH does also not assume any warranty for the general usability of the software, its suitability for a special purpose or for the compatibility of the software with the ones of third party producers or providers.

Stora Enso Wood Products GmbH is only liable for damages caused by gross negligence or intent through Stora Enso Wood Products GmbH; the liability for slight negligence is excluded. This does not apply to personal injury. Under the aforementioned conditions Stora Enso Wood Products GmbH is as well not liable for operational failures or the loss of programs and/or data of the user's data processing system.

Applicable Law: These terms of use shall be governed by the laws of Austria excluding however any conflict of laws rules and any laws regarding the Convention of the International Sale of Goods (CISG).