



Muligheder for fremføring af alle former for installationer og specielt egnet til genvex i tagbjælken.



Vederlags/endeløsning ved vægafslutning. Både ved tunge og lette vægge.



Vederlagsløsning på bærende væg eller bjælke som mellemunderstøtning.



ningsbjælke på langs af bygningen.





PROJECT: 2 storey house with basement

SUBJECT: Wood Open Web Joist Plan

DRAWN BY: Dimtrian Cebotaru



Vederlagsløsning mod limtræsbjælke, trævægge, beton eller murværk.



Bjælken kan leveres færdig isoleret fra fabrik. Herved spares arbejde og tid på byggepladsen.

VIA Built Environment & Engineering Campus Horsens

DATE: 11/30/22

SCALE: 1 : 75

CLASS: AH21-22S

IXX_K01_TXX_H1_EX_N12

The following member analysis is only valid for the engineering data below. The actual length of the structural member might be different to the engineering length shown.

Finnwood 3.0 UK (2.4.089)

UK public (17.09.2021) Structural design without fire/accidental cases

PROJECT INFORMATION:

C:\Users\DimitrianC\OneDrive - ViaUC\Skrivebord\Joists finnwood\with overhang.s01

STRUCTURAL INFORMATION:

				/ /
Type of structure: Profile: Web stiffeners: Service class: Spacing:	Floor beam FJI 69x300-36 (B=69 mm, H=300 mm) Never 1 600 mm (for surface loads)			367 1 300
Cantilever/span lengths: Cantilever/Span: Left cantilever Span 1 Total:	Horizontal [mm]: 1346.0 2945.0 4291.0			36 7 69
Support:	Position x [mm]:	Width [mm]:	Туре:	
1:	1346	150	Pinned support (X,Z)	
2:	4291	150	Pinned support (Z)	
 My,k:	18.33 kNm			
Mz,k:	1.20 kNm			
Vz,k:	16.02 kN			
Vy,k:	6.51 kN			
Nt,k:	66.70 kN			
Nc,k:	66.70 kN			
Ely:	1196.88 kNm2			
Elz:	13.59 kNm2			
GAz:	4860.00 kN			
GAy:	2858.40 kN			
EA:	65743.20 kN			
Partial factor, flange: Partial factor, web	1.20 1.20			
Load duration class:	kmod,flange:	kmod,web:		



Permanent:	0.600	0.400	
Long-term:	0.700	0.500	
Medium-term:	0.800	0.700	
Short-term:	0.900	0.900	
Instantaneous:	1.100	1.100	
kdef,flange:	0.600		
kdef,web:	1.500		



LOADING INFORMATION:

Self-weight (Self-weight, Permanent):					
Self-weight:	QZ = 0.039 kN/m	x = 0 - 4291 mm			
Surface load: 1:	QZ = 0.500 kN/m2	x = 0 - 4291 mm			
Partition load (Partition load,	Permanent, ULS/SLS-movability =	100.0 %):			
Surface load: 1:	QZ = 0.250 kN/m2	x = 0 - 4291 mm			
Imposed load (A, domestic, I	residential areas, Medium-term, UL	S/SLS-movability = 100.0 %):			
Surface load: 1:	QZ = 1.500 kN/m2	x = 0 - 4291 mm			
Surface load: 1:	QZ = 1.500 kN/m2	x = 0 - 4291 mm			

LOAD COMBINATIONS:

Combination 1 (ULS, Permanent)

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1.35*Self-weight + 1.35*Partition load	
Combination 2 (ULS, Medium-term) 1.35*Self-weight + 1.35*Partition load + 1.50*0.70*Imposed	load
Combination 10 (ULS, Medium-term) 1.25*Self-weight + 1.25*Partition load + 1.50*Imposed load	i
Combination 11 (ULS, Permanent) 1.25*Self-weight + 1.25*Partition load	
Combination 17 (ULS, Medium-term) 1.25*Self-weight + 1.25*Partition load + 1.50*0.70*Imposed	load
Combination 24 (ULS, Permanent) 1.00*Self-weight + 1.00*Partition load	
Combination 25 (ULS, Medium-term) 1.00*Self-weight + 1.00*Partition load + 1.50*Imposed load	I
Combination 32 (ULS, Medium-term) 1.00*Self-weight + 1.00*Partition load + 1.50*0.70*Imposed	load
Combination 39 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load	
Combination 40 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load + 1.00*Imposed load	1
Combination 47 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load + 1.00*0.70*Imposed	load
DESIGN RESULTS:	
Norm/Standard: Maximum utilization rate:	BS EN 1995-1-1:2004+A1:2008 and UK NA 30.4 %
DESIGN PARAMETERS: Allowed Wnet,fin: L/250 (character Allowed Winst: L/350 and 12.00 mr(character Factor for left cantilever:	eristic) eristic) 2.00

NOTE! SLS design limits above are set by the user and can differ to BS EN 1995-1-1:2004+A1:2008

Buckling is prevented on both directions (y and z)

Factor for right cantilever:

Lateral torsional buckling for bending My about the y-axis:

Distance between supports above the beam: Lk1 = 300.00 mm

2.00

		-		Distance between supports below the beam: Lk2 = 300.00 mm NOTE! Lk1 is used when My>0 and Lk2 when My<0					
VIBRATION DESIGN PARA	AMETERS:								
Floor width:		5 m							
Structure above:			Custom floor st	tiffness (defined	below)				
Transverse stiffness of floor structure:			1907 Nm2/m						
Minimum frequency allowed:			8 Hz						
Frequency f1 is calculated according:			Eurocode 5						
Deflection limit with 1 kN:			As per BS NA to EC5						
Type of the beam:			Joist						
GOVERNING DESIGN RES	SULTS:								
Check:	Actual:	Allowable:	% allowable:	Location x:					
Shear (z):	2.76 kN	9.34 kN	29.5 %	1721 mm	Comb. 10/1, Medium-term				
Bending (My):	1.94 kNm	12.22 kNm	15.9 %	2896 mm	Comb. 10/4, Medium-term				
(without kcrit):	1.94 kNm	12.22 kNm	15.9 %	2896 mm	Comb. 10/4, Medium-term				
Bearing, support 1:	6.13 kN	20.18 kN	30.4 %	1346 mm	Comb. 10/1, Medium-term				
Bearing, support 2:	2.76 kN	17.79 kN	15.5 %	4291 mm	Comb. 10/4, Medium-term				
Left cant., Wz,inst:	1.8 mm	7.7 mm	23.9 %	0 mm	Comb. 40/2 (characteristic)				
Left cant., Wz,net,fin:	2.5 mm	10.8 mm	23.3 %	0 mm	Comb. 40/2 (characteristic)				
Span 1, Wz,inst:	1.3 mm	8.4 mm	15.5 %	2789 mm	Comb. 40/3 (characteristic)				
Span 1, Wz,net,fin:	1.8 mm	11.8 mm	15.7 %	2896 mm	Comb. 40/3 (characteristic)				
Deflection U:	0.27 mm	1.80 mm	15.0%	(Vibration cheo	ck)				
Frequency f1:	34.20 Hz	8.00 Hz	23.4%	(Vibration cheo	ck)				
velocity v:	0.0192 m/(Ns2)	0.2429 m/(Ns2) 7.9%	(Vibration chec	ck)				
GOVERNING DESIGN RESULT COMBINATIONS: Combination 10/1 (Medium-term): 1.25*Self-weight + 1.25*Partition load, Left cant. + 1.25*Partition load, span 1 + 1.50*Imposed load, Left cant. + 1.50*Imposed load, span 1 Combination 10/4 (Medium-term): 1.25*Self-weight + 1.25*Partition load, span 1 + 1.50*Imposed load, span 1 Combination 40/2 (characteristic): 1.00*Self-weight + 1.00*Partition load, Left cant. + 1.00*Imposed load, Left cant. Combination 40/3 (characteristic): 1.00*Self-weight + 1.00*Partition load, span 1 + 1.00*Imposed load, span 1									
EXTREME FORCES:									
Result:	Maximum value:	Location x:							
Vz,max	3.49 kN	1346 mm							
My,max	1.94 kNm	2896 mm							
SUPPORT REACTIONS	:								
Support:	ULSmax:	ULSmin:	SLSmax:	SLSmin:	Rd/A:				

1:	6.13 kN	1.06 kN	4.34 kN	1.06 kN	0.59 N/mm2
2:	2.76 kN	-0.07 kN	1.94 kN	0.07 kN	0.27 N/mm2
Linnlift agours ma	ke ouro of the encharing				

- Upplift occurs, make sure of the anchoring

- SLS support reactions are for reference use only

NOTES:

- Design is done in accordance with BS EN 1995-1-1 2004+A1 (2008)+A2 (2014) and
- UK NA (Oct 2012) and PD 6693-1 (2012)
- ULS = Ultimate Limit State, SLS = Serviceability Limit State
- Permanent load consists of dead load and partition load
- Self-weight according to BS EN 1991-1-1 (Table A.3) or calculated as the mean density times the acceleration of gravity
- SLS design limits used are set by the user and can differ from BS EN 1995-1-1:2004+A1:2008
- *) The percentage value of the checking of the combined actions stands for the ratio of design value and design resistance, not the actual utilization rate
- Bearing resistance of the structure underneath shall be separately checked
- Design calculations do not take into account upward deflection of cantilevers less than 4.0 mm
- Deflection checking is not carried out for cantilevers shorter than 350 mm.
- Second order analysis/loading was not taken into account
- Shear deflection was taken into account in the SLS design
- Shear deflection was taken into account when calculating the ULS forces
- Reduction of shear force is taken into account close to supports, and loads are assumed to act on the opposite side of the structure than the support area
- Shear force reduction is made to the shear force curve of the load combinations
- at the distance of H from the edge of the support

These calculations do not take into account loads or moisture conditions during construction. The need for additional bracing during construction has to be checked separately. The overall stability of the building and horizontal loads have not been considered. The building designer, main structural engineer or other person responsible for the structural behaviour of the whole building has to check separately the applicability of the structural member to the building.

The following member analysis is only valid for the engineering data below. The actual length of the structural member might be different to the engineering length shown.

Finnwood 3.0 UK (2.4.089)

UK public (17.09.2021) Structural design without fire/accidental cases

PROJECT INFORMATION:

STRUCTURAL INFORMATION:

				<i>→ →</i>
Type of structure:	Floor beam			36
Profile:	FJI 69x220-36 (B=	⊧69 mm, H=220 r	nm)	
Web stiffeners:	Never			
Service class:	1			148 220
Spacing:	300 mm (for surfa	ice loads)		
Cantilever/span lengths:				36
Cantilever/Span:	Horizontal [mm]:			*
Left cantilever	1346.0			69
Span 1	2945.0			
Total:	4291.0			
			T	
Support:	Position x [mm]:	vvidtn [mm]:	Type:	
1:	1346	150	Pinned support (X,Z)	
2:	4291	150	Pinned support (Z)	
My,k:	12.74 kNm			
Mz,k:	1.20 kNm			
Vz,k:	11.13 kN			
Vy,k:	6.51 kN			
Nt,k:	66.70 kN			
Nc,k:	66.70 kN			
Ely:	580.85 kNm2			
Elz:	13.59 kNm2			
GAz:	3564.00 kN			
GAy:	2858.40 kN			
EA:	65743.20 kN			
Partial factor, flange:	1.20			
Partial factor, web	1.20			
Load duration class:	kmod,flange:	kmod,web:		
Permanent:	0.600	0.400		
Long-term:	0.700	0.500		



Finnwood 3.0 UK (2.4.089)

28.11.2022

Medium-term:	0.800	0.700
Short-term:	0.900	0.900
Instantaneous:	1.100	1.100
kdef,flange:	0.600	
kdef,web:	1.500	



LOADING INFORMATION:

Self-weight (Self-weight, Per	manent):	
Self-weight:	QZ = 0.034 kN/m	x = 0 - 4291 mm
Surface load: 1:	QZ = 0.500 kN/m2	x = 0 - 4291 mm
Partition load (Partition load,	Permanent, ULS/SLS-movability =	100.0 %):
Surface load: 1:	QZ = 0.250 kN/m2	x = 0 - 4291 mm
Imposed load (A, domestic, I	residential areas, Medium-term, UL	S/SLS-movability = 100.0 %):
Surface load: 1:	QZ = 1.500 kN/m2	x = 0 - 4291 mm

LOAD COMBINATIONS:

Combination 1 (ULS, Permanent) 1.35*Self-weight + 1.35*Partition load

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DESIGN RESULTS:
Combination 47 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load + 1.00*0.70*Imposed load
Combination 40 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load + 1.00*Imposed load
Combination 39 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load
Combination 32 (ULS, Medium-term) 1.00*Self-weight + 1.00*Partition load + 1.50*0.70*Imposed load
Combination 25 (ULS, Medium-term) 1.00*Self-weight + 1.00*Partition load + 1.50*Imposed load
Combination 24 (ULS, Permanent) 1.00*Self-weight + 1.00*Partition load
Combination 17 (ULS, Medium-term) 1.25*Self-weight + 1.25*Partition load + 1.50*0.70*Imposed load
Combination 11 (ULS, Permanent) 1.25*Self-weight + 1.25*Partition load
Combination 10 (ULS, Medium-term) 1.25*Self-weight + 1.25*Partition load + 1.50*Imposed load
Combination 2 (ULS, Medium-term) 1.35*Self-weight + 1.35*Partition load + 1.50*0.70*Imposed load

Norm/Standard: Maximum utilization rate:			BS EN 1995-1-1:2004+A1:2008 and UK NA 35.0 %		
DESIGN PARAMETERS:					
Allowed Wnet,fin:	L/250	(characteristic)			
Allowed Winst:	L/350 and 12.00 n	nr(characteristic)			
Factor for left cantilever:			2.00		
Factor for right cantilever:			2.00		
NOTE! SLS design limits abo	ve are set by the u	ser and can differ	to BS EN 1995-1-1:2004+A1:2008		
Buckling is prevented on both	h directions (y and	z)			
Lateral torsional buckling for	bending My about	the y-axis:			
Distance between supports above the beam: $Lk1 = 300.00$ mm					
Distance between supports below the beam: $Lk2 = 300.00$ mm					
NOTE! Lk1 is used when My>	>0 and Lk2 when N	1y<0			

Floor width:5 mStructure above:Custom floor stiffness (defined below)Transverse stiffness of floor structure:1907 Nm2/mMinimum frequency allowed:8 HzFrequency f1 is calculated according:Eurocode 5Deflection limit with 1 kN:As per BS NA to EC5Type of the beam:Joist	VIBRATION DESIGN PA	ARAMETERS:					
Custom floor structure:Custom floor structure:1907 Nm2/mMinimum frequency allowed:8 HzFrequency f1 is calculated according:Eurocode 5Deflection limit with 1 kN:As per BS NA to EC5Type of the beam:Joist	Floor width:			5 m			
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Structure above:			Custom floor s	tiffness (define	d below)	
Minimum frequency allowed:8 HzFrequency f1 is calculated according:Eurocode 5Deflection limit with 1 kN:As per BS NA to EC5Type of the beam:Joist	Transverse stiffness of fle	oor structure:		1907 Nm2/m			
Frequency f1 is calculated according:Eurocode 5Deflection limit with 1 kN:As per BS NA to EC5JoistGOVERNING DESIGN RESULTS:Check:Actual:Allowable:Location x:Shear (z):1.48 kN6.49 kN22.9 %1641 mmComb. 10/1, Medium-termBending (My):0.98 kNm8.49 kNm11.6 %2896 mmComb. 10/4, Medium-termWithout kcrit):0.98 kNm8.49 kNm11.6 %2896 mmComb. 10/1, Medium-termBearing, support 1:3.12 kN20.18 kN15.5 %1346 mmComb. 10/4, Medium-termLeft cant., Wz,inst:1.8 mm7.7 mm23.0 %O mmComb. 40/2 (characteristic)Span 1, Wz,inst:1.3 mm8.4 mm14.9 %2896 mmComb. 40/2 (characteristic)Span 1, Wz,inst:1.3 mm8.4 mm14.9 %2896 mmComb. 40/3 (characteristic)Span 1, Wz,inst:1.3 mm8.4 mm14.9 %2896 mmComb. 40/3 (characteristic) <td co<="" td=""><td>Minimum frequency allow</td><td>red:</td><td></td><td>8 Hz</td><td></td><td></td></td>	<td>Minimum frequency allow</td> <td>red:</td> <td></td> <td>8 Hz</td> <td></td> <td></td>	Minimum frequency allow	red:		8 Hz		
Deflection limit with 1 kN: As per BS NA to EC5 Type of the beam: Joist	Frequency f1 is calculate	ed according:		Eurocode 5			
Type of the beam: Joist GOVERNING DESIGN RESULTS: GOVERNING DESIGN RESULTS: Check: Actual: Allowable: % allowable: Location x: Shear (z): 1.48 kN 6.49 kN 22.9 % 1641 mm Comb. 10/1, Medium-term Bending (My): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term (without kcrit): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term Bearing, support 1: 3.12 kN 20.18 kN 15.5 % 1346 mm Comb. 10/1, Medium-term Bearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mm Comb. 10/4, Medium-term Left cant., Wz,inst: 1.8 mm 7.7 mm 23.0 % 0 mm Comb. 40/2 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm	Deflection limit with 1 kN:			As per BS NA	to EC5		
GOVERNING DESIGN RESULTS: Check: Actual: Allowable: % allowable: Location x: Shear (z): 1.48 kN 6.49 kN 22.9 % 1641 mm Comb. 10/1, Medium-term Bending (My): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term (without kcrit): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term Bearing, support 1: 3.12 kN 20.18 kN 15.5 % 1346 mm Comb. 10/4, Medium-term Bearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mm Comb. 10/4, Medium-term Left cant., Wz,inst: 1.8 mm 7.7 mm 23.0 % 0 mm Comb. 40/2 (characteristic) Left cant., Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 0	Type of the beam:			Joist			
Check:Actual:Allowable:% allowable:Location x:Shear (z):1.48 kN 6.49 kN 22.9 % 1641 mmComb. 10/1, Medium-termBending (My):0.98 kNm 8.49 kNm 11.6 % 2896 mmComb. 10/4, Medium-term(without kcrit):0.98 kNm 8.49 kNm 11.6 % 2896 mmComb. 10/4, Medium-termBearing, support 1: 3.12 kN 20.18 kN 15.5 % 1346 mmComb. 10/1, Medium-termBearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mmComb. 10/4, Medium-termLeft cant., Wz,inst: 1.8 mm 7.7 mm 23.0 %0 mmComb. 40/2 (characteristic)Left cant., Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mmComb. 40/2 (characteristic)Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mmComb. 40/3 (characteristic)Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mmComb. 40/3 (characteristic)Deflection U: 0.56 mm 1.80 mm 30.9 %(Vibration check-Frequency f1: 22.84 Hz 8.00 Hz 35.0 %(Vibration check-velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7 %(Vibration check-	GOVERNING DESIGN F	RESULTS:					
Shear (z): 1.48 kN 6.49 kN 22.9 % 1641 mm Comb. 10/1, Medium-term Bending (My): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term (without kcrit): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term Bearing, support 1: 3.12 kN 20.18 kN 15.5 % 1346 mm Comb. 10/1, Medium-term Bearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mm Comb. 10/4, Medium-term Left cant., Wz,inst: 1.8 mm 7.7 mm 23.0 % 0 mm Comb. 40/2 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) Vibration check) veloci	Check:	Actual:	Allowable:	% allowable:	Location x:		
Bending (My): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term (without kcrit): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term Bearing, support 1: 3.12 kN 20.18 kN 15.5 % 1346 mm Comb. 10/1, Medium-term Bearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mm Comb. 10/4, Medium-term Left cant., Wz,inst: 1.8 mm 7.7 mm 23.0 % 0 mm Comb. 40/2 (characteristic) Left cant., Wz,net,fin: 2.4 mm 10.8 mm 22.0 % 0 mm Comb. 40/2 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check) Image: Comb. 40/2 (characteristic)	Shear (z):	1.48 kN	6.49 kN	22.9 %	1641 mm	Comb. 10/1, Medium-term	
(without kcrit): 0.98 kNm 8.49 kNm 11.6 % 2896 mm Comb. 10/4, Medium-term Bearing, support 1: 3.12 kN 20.18 kN 15.5 % 1346 mm Comb. 10/1, Medium-term Bearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mm Comb. 10/4, Medium-term Left cant., Wz,inst: 1.8 mm 7.7 mm 23.0 % 0 mm Comb. 40/2 (characteristic) Left cant., Wz,net,fin: 2.4 mm 10.8 mm 22.0 % 0 mm Comb. 40/2 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Bending (My):	0.98 kNm	8.49 kNm	11.6 %	2896 mm	Comb. 10/4, Medium-term	
Bearing, support 1: 3.12 kN 20.18 kN 15.5 % 1346 mm Comb. 10/1, Medium-term Bearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mm Comb. 10/4, Medium-term Left cant., Wz,inst: 1.8 mm 7.7 mm 23.0 % 0 mm Comb. 40/2 (characteristic) Left cant., Wz,net,fin: 2.4 mm 10.8 mm 22.0 % 0 mm Comb. 40/2 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	(without kcrit):	0.98 kNm	8.49 kNm	11.6 %	2896 mm	Comb. 10/4, Medium-term	
Bearing, support 2: 1.40 kN 17.79 kN 7.9 % 4291 mm Comb. 10/4, Medium-term Left cant., Wz,inst: 1.8 mm 7.7 mm 23.0 % 0 mm Comb. 40/2 (characteristic) Left cant., Wz,net,fin: 2.4 mm 10.8 mm 22.0 % 0 mm Comb. 40/2 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Bearing, support 1:	3.12 kN	20.18 kN	15.5 %	1346 mm	Comb. 10/1, Medium-term	
Left cant., Wz,inst:1.8 mm7.7 mm23.0 %0 mmComb. 40/2 (characteristic)Left cant., Wz,net,fin:2.4 mm10.8 mm22.0 %0 mmComb. 40/2 (characteristic)Span 1, Wz,inst:1.3 mm8.4 mm14.9 %2896 mmComb. 40/3 (characteristic)Span 1, Wz,net,fin:1.7 mm11.8 mm14.8 %2896 mmComb. 40/3 (characteristic)Deflection U:0.56 mm1.80 mm30.9%(Vibration check)Frequency f1:22.84 Hz8.00 Hz35.0%(Vibration check)velocity v:0.0226 m/(Ns2)0.0878 m/(Ns2) 25.7%(Vibration check)	Bearing, support 2:	1.40 kN	17.79 kN	7.9 %	4291 mm	Comb. 10/4, Medium-term	
Left cant., Wz,net,fin: 2.4 mm 10.8 mm 22.0 % 0 mm Comb. 40/2 (characteristic) Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Left cant., Wz,inst:	1.8 mm	7.7 mm	23.0 %	0 mm	Comb. 40/2 (characteristic)	
Span 1, Wz,inst: 1.3 mm 8.4 mm 14.9 % 2896 mm Comb. 40/3 (characteristic) Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Left cant., Wz,net,fin:	2.4 mm	10.8 mm	22.0 %	0 mm	Comb. 40/2 (characteristic)	
Span 1, Wz,net,fin: 1.7 mm 11.8 mm 14.8 % 2896 mm Comb. 40/3 (characteristic) Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Span 1, Wz,inst:	1.3 mm	8.4 mm	14.9 %	2896 mm	Comb. 40/3 (characteristic)	
Deflection U: 0.56 mm 1.80 mm 30.9% (Vibration check) Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Span 1, Wz,net,fin:	1.7 mm	11.8 mm	14.8 %	2896 mm	Comb. 40/3 (characteristic)	
Frequency f1: 22.84 Hz 8.00 Hz 35.0% (Vibration check) velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Deflection U:	0.56 mm	1.80 mm	30.9%	(Vibration ch	eck)	
velocity v: 0.0226 m/(Ns2) 0.0878 m/(Ns2) 25.7% (Vibration check)	Frequency f1:	22.84 Hz	8.00 Hz	35.0%	(Vibration ch	eck)	
	velocity v:	0.0226 m/(Ns2)	0.0878 m/(Ns	s2) 25.7%	(Vibration ch	eck)	

GOVERNING DESIGN RESULT COMBINATIONS:

Combination 10/1 (Medium-term):

1.25*Self-weight + 1.25*Partition load, Left cant. + 1.25*Partition load, span 1 + 1.50*Imposed load, Left cant. + 1.50*Imposed load, span 1
Combination 10/4 (Medium-term):
1.25*Self-weight + 1.25*Partition load, span 1 + 1.50*Imposed load, span 1
Combination 40/2 (characteristic):
1.00*Self-weight + 1.00*Partition load, Left cant. + 1.00*Imposed load, Left cant.
Combination 40/3 (characteristic):
1.00*Self-weight + 1.00*Partition load, span 1 + 1.00*Imposed load, span 1

EXTREME FORCES:

Result:	Maximum value:	Location x:
Vz,max	1.78 kN	1346 mm
My,max	0.98 kNm	2896 mm

SUPPORT REACTIONS:

Support:	ULSmax:	ULSmin:	SLSmax:	SLSmin:	Rd/A:
1:	3.12 kN	0.58 kN	2.22 kN	0.58 kN	0.30 N/mm2
2:	1.40 kN	-0.02 kN	0.99 kN	0.05 kN	0.14 N/mm2

- Upplift occurs, make sure of the anchoring
- SLS support reactions are for reference use only

NOTES:

- Design is done in accordance with BS EN 1995-1-1 2004+A1 (2008)+A2 (2014) and UK NA (Oct 2012) and PD 6693-1 (2012)
- ULS = Ultimate Limit State, SLS = Serviceability Limit State
- Permanent load consists of dead load and partition load
- Self-weight according to BS EN 1991-1-1 (Table A.3) or calculated as the mean density times the acceleration of gravity
- SLS design limits used are set by the user and can differ from BS EN 1995-1-1:2004+A1:2008
- *) The percentage value of the checking of the combined actions stands for the ratio of design value and design resistance, not the actual utilization rate
- Bearing resistance of the structure underneath shall be separately checked
- Design calculations do not take into account upward deflection of cantilevers less than 4.0 mm
- Deflection checking is not carried out for cantilevers shorter than 350 mm.
- Second order analysis/loading was not taken into account
- Shear deflection was taken into account in the SLS design
- Shear deflection was taken into account when calculating the ULS forces
- Reduction of shear force is taken into account close to supports, and loads are assumed to act on the opposite side of the structure than the support area
- Shear force reduction is made to the shear force curve of the load combinations at the distance of H from the edge of the support

These calculations do not take into account loads or moisture conditions during construction. The need for additional bracing during construction has to be checked separately. The overall stability of the building and horizontal loads have not been considered. The building designer, main structural engineer or other person responsible for the structural behaviour of the whole building has to check separately the applicability of the structural member to the building.

The following member analysis is only valid for the engineering data below. The actual length of the structural member might be different to the engineering length shown.

Finnwood 3.0 UK (2.4.089)

UK public (17.09.2021) Structural design without fire/accidental cases

PROJECT INFORMATION:

STRUCTURAL INFORMATION:

Type of structure: Profile: Web stiffeners: Service class: Spacing:	Floor beam FJI 69x300-36 (B= Never 1 600 mm (for surfa	⊧69 mm, H=300 r ice loads)	nm)	
Cantilever/span lengths: Cantilever/Span:	Horizontal [mm]:			36
Span 1	4291.0			
Total:	4291.0			05
Support:	Position x [mm]:	Width [mm]:	Туре:	
1:	0	150	Pinned support (X,Z)	
2:	4291	150	Pinned support (Z)	
 My,k:	18.33 kNm			
Mz,k:	1.20 kNm			
Vz,k:	16.02 kN			
Vy,k:	6.51 kN			
Nt,k:	66.70 kN			
Nc,k:	66.70 kN			
Ely:	1196.88 kNm2			
Elz:	13.59 kNm2			
GAz:	4860.00 kN			
GAy:	2858.40 kN			
EA:	65743.20 kN			
Partial factor, flange:	1.20			
Partial factor, web	1.20			
Load duration class:	kmod,flange:	kmod,web:		
Permanent:	0.600	0.400		
Long-term:	0.700	0.500		
Medium-term:	0.800	0.700		



Finnwood 3.0 UK (2.4.089)

28.11.2022

0.900	0.900
1.100	1.100
0.600	
4 500	
	0.900 1.100



LOADING INFORMATION:

Self-weight (Self-weight, Pe	ermanent):	
Self-weight:	QZ = 0.039 kN/m	x = 0 - 4291 mm
Surface load: 1:	QZ = 0.500 kN/m2	x = 0 - 4291 mm
Partition load (Partition load	, Permanent, ULS/SLS-movability =	100.0 %):
Surface load: 1:	QZ = 0.250 kN/m2	x = 0 - 4291 mm
Imposed load (A, domestic,	residential areas, Medium-term, UL	.S/SLS-movability = 100.0 %):
Surface load: 1:	QZ = 1.500 kN/m2	x = 0 - 4291 mm

LOAD COMBINATIONS:

Combination 1 (ULS, Permanent) 1.35*Self-weight + 1.35*Partition load

Combination 2 (ULS, Medium-term)

1.35*Self-weight + 1.35*Parti	ition load + 1.50	*0.70*Imposed I	load
Combination 10 (ULS, Mediu 1.25*Self-weight + 1.25*Part	um-term) ition load + 1.50	*Imposed load	
Combination 11 (ULS, Perma 1.25*Self-weight + 1.25*Parti	anent) ition load		
Combination 17 (ULS, Mediu 1.25*Self-weight + 1.25*Parti	um-term) ition load + 1.50	*0.70*Imposed I	load
Combination 24 (ULS, Perma 1.00*Self-weight + 1.00*Parti	anent) ition load		
Combination 25 (ULS, Mediu 1.00*Self-weight + 1.00*Part	um-term) ition load + 1.50)*Imposed load	
Combination 32 (ULS, Mediu 1.00*Self-weight + 1.00*Parti	um-term) ition load + 1.50	*0.70*Imposed I	load
Combination 39 (SLS, Chara 1.00*Self-weight + 1.00*Parti	acteristic) ition load		
Combination 40 (SLS, Chara 1.00*Self-weight + 1.00*Part	acteristic) ition load + 1.00)*Imposed load	
Combination 47 (SLS, Chara 1.00*Self-weight + 1.00*Parti	acteristic) ition load + 1.00	*0.70*Imposed I	load
DESIGN RESULTS:			
Norm/Standard: Maximum utilization rate:			BS EN 1995-1-1:2004+A1:2008 and UK NA 49.7 %
DESIGN PARAMETERS: Allowed Wnet,fin: Allowed Winst: Factor for left cantilever: Factor for right cantilever: NOTE! SLS design limits abo Buckling is prevented on bot Lateral torsional buckling for Distance between supports a	L/250 L/350 and 12.0 ove are set by th th directions (y ab bending My ab above the beam	(characteri 00 mr(characteri ne user and can and z) pout the y-axis: n: Lk1 = 300.00 r	ristic) ristic) 2.00 2.00 n differ to BS EN 1995-1-1:2004+A1:2008 mm

Distance between supports below the beam: Lk2 = 300.00 mm

NOTE! Lk1 is used when My>0 and Lk2 when My<0

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VIBRATION DESIGN P	ARAMETERS:				
Floor width:			5 m		
Structure above:			Custom floor s	tiffness (define	ed below)
Transverse stiffness of f	loor structure:		1907 Nm2/m		
Minimum frequency allow	ved:		8 Hz		
Frequency f1 is calculat	ed according:		Eurocode 5		
Deflection limit with 1 kN:			As per BS NA	to EC5	
Type of the beam:			Joist		
GOVERNING DESIGN	- RESULTS:				
Check:	Actual:	Allowable:	% allowable:	Location x:	
Shear (z):	3.47 kN	9.34 kN	37.2 %	3916 mm	Comb. 10/1, Medium-term
Bending (My):	4.51 kNm	12.22 kNm	36.9 %	2146 mm	Comb. 10/1, Medium-term
(without kcrit):	4.51 kNm	12.22 kNm	36.9 %	2146 mm	Comb. 10/1, Medium-term
Bearing, support 1:	4.21 kN	17.79 kN	23.7 %	0 mm	Comb. 10/1, Medium-term
Bearing, support 2:	4.21 kN	17.79 kN	23.7 %	4291 mm	Comb. 10/1, Medium-term
Span 1, Wz,inst:	5.8 mm	12.0 mm	48.2 %	2146 mm	Comb. 40/1 (characteristic)
Span 1, Wz,net,fin:	8.0 mm	17.2 mm	46.6 %	2146 mm	Comb. 40/1 (characteristic)
Deflection U:	0.81 mm	1.67 mm	48.5%	(Vibration ch	neck)
Frequency f1:	16.11 Hz	8.00 Hz	49.7%	(Vibration ch	neck)
velocity v:	0.0182 m/(Ns2)	0.0462 m/(Ns	2) 39.5%	(Vibration ch	neck)
GOVERNING DESIGN	- RESULT COMBINATIO	ONS:			
Combination 10/1 (Med	ium-term):				
1.25*Self-weight + 1.25*	Partition load + 1.50*In	nposed load			
Combination 40/1 (char	acteristic):				
1.00*Self-weight + 1.00*	Partition load + 1.00*In	nposed load			
	-				
Result:	Maximum value.	Location x.			
Vz max	4 21 kN	4291 mm			
My max	4.51 kNm	2146 mm			
iviy, max					

SUPPORT REACTIONS: _____

Support:	ULSmax:	ULSmin:	SLSmax:	SLSmin:	Rd/A:
1:	4.21 kN	0.73 kN	2.98 kN	0.73 kN	0.41 N/mm2
2:	4.21 kN	0.73 kN	2.98 kN	0.73 kN	0.41 N/mm2
- SLS support reactions are f	or reference use on	nly			

NOTES:

- Design is done in accordance with BS EN 1995-1-1 2004+A1 (2008)+A2 (2014) and

UK NA (Oct 2012) and PD 6693-1 (2012)

- ULS = Ultimate Limit State, SLS = Serviceability Limit State

- Permanent load consists of dead load and partition load

- Self-weight according to BS EN 1991-1-1 (Table A.3) or calculated as the mean density times the acceleration of gravity
- SLS design limits used are set by the user and can differ from BS EN 1995-1-1:2004+A1:2008
- *) The percentage value of the checking of the combined actions stands for the ratio of design value and design resistance, not the actual utilization rate
- Bearing resistance of the structure underneath shall be separately checked
- Design calculations do not take into account upward deflection of cantilevers less than 4.0 mm
- Deflection checking is not carried out for cantilevers shorter than 350 mm.
- Second order analysis/loading was not taken into account
- Shear deflection was taken into account in the SLS design
- Shear deflection was taken into account when calculating the ULS forces
- Reduction of shear force is taken into account close to supports, and loads are assumed to act on the opposite side of the structure than the support area
- Shear force reduction is made to the shear force curve of the load combinations at the distance of H from the edge of the support

These calculations do not take into account loads or moisture conditions during construction. The need for additional bracing during construction has to be checked separately. The overall stability of the building and horizontal loads have not been considered. The building designer, main structural engineer or other person responsible for the structural behaviour of the whole building has to check separately the applicability of the structural member to the building.

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The following member analysis is only valid for the engineering data below. The actual length of the structural member might be different to the engineering length shown.

Finnwood 3.0 UK (2.4.089)

UK public (17.09.2021) Structural design without fire/accidental cases

PROJECT INFORMATION:

STRUCTURAL INFORMATION:

Type of structure: Profile: Web stiffeners: Service class: Spacing:	Floor beam FJI 69x300-36 (B= Never 1 600 mm (for surfa	⊧69 mm, H=300 r ice loads)	nm)	
Cantilever/span lengths: Cantilever/Span: Span 1 Total:	Horizontal [mm]: 4670.0 4670.0			36 7 69
Support: 1: 2:	Position x [mm]: 0 4670	Width [mm]: 150 150	Type: Pinned support (X,Z) Pinned support (Z)	
My,k: Mz,k: Vz,k: Vy,k: Nt,k: Nc,k: Ely: Elz: GAz: GAy: EA:	18.33 kNm 1.20 kNm 16.02 kN 6.51 kN 66.70 kN 66.70 kN 1196.88 kNm2 13.59 kNm2 4860.00 kN 2858.40 kN 65743.20 kN			
Partial factor, flange: Partial factor, web Load duration class: Permanent: Long-term: Medium-term:	1.20 1.20 kmod,flange: 0.600 0.700 0.800	kmod,web: 0.400 0.500 0.700		

Finnwood 3.0 UK (2.4.089)

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Short-torm:	0.000	0.900
Short-term.	0.900	0.900
Instantaneous:	1.100	1.100
kdef,flange:	0.600	
lud of	4 500	
Kdel,web:	1.500	



LOADING INFORMATION:

Self-weight (Self-weight, Per	manent):	
Self-weight:	QZ = 0.039 kN/m	x = 0 - 4670 mm
Surface load: 1:	x = 0 - 4670 mm	
Partition load (Partition load,	Permanent, ULS/SLS-movability =	100.0 %):
Surface load: 1:	QZ = 0.250 kN/m2	x = 0 - 4670 mm
Imposed load (A, domestic, r	residential areas, Medium-term, UL	S/SLS-movability = 100.0 %):
Surface load: 1:	QZ = 1.500 kN/m2	x = 0 - 4670 mm

LOAD COMBINATIONS:

Combination 1 (ULS, Permanent) 1.35*Self-weight + 1.35*Partition load

Combination 2 (ULS, Medium-term)

1.35*Self-weight + 1.35*Partition load + 1.50*0.70*Imposed load	
Combination 10 (ULS, Medium-term) 1.25*Self-weight + 1.25*Partition load + 1.50*Imposed load	
Combination 11 (ULS, Permanent) 1.25*Self-weight + 1.25*Partition load	
Combination 17 (ULS, Medium-term) 1.25*Self-weight + 1.25*Partition load + 1.50*0.70*Imposed load	
Combination 24 (ULS, Permanent) 1.00*Self-weight + 1.00*Partition load	
Combination 25 (ULS, Medium-term) 1.00*Self-weight + 1.00*Partition load + 1.50*Imposed load	
Combination 32 (ULS, Medium-term) 1.00*Self-weight + 1.00*Partition load + 1.50*0.70*Imposed load	
Combination 39 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load	
Combination 40 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load + 1.00*Imposed load	
Combination 47 (SLS, Characteristic) 1.00*Self-weight + 1.00*Partition load + 1.00*0.70*Imposed load	
DESIGN RESULTS:	
Norm/Standard: Maximum utilization rate:	BS EN 1995-1-1:2004+A1:2008 and UK NA 67.2 %
DESIGN PARAMETERS: Allowed Wnet,fin: L/250 (characteristic) Allowed Winst: L/350 and 12.00 mr(characteristic) Factor for left cantilever: Factor for right cantilever: NOTE! SLS design limits above are set by the user and can differ Buckling is prevented on both directions (y and z) Lateral torsional buckling for bending My about the y-axis: Distance between supports above the beam: Lk1 = 300.00 mm Distance between supports below the beam: Lk2 = 300.00 mm	2.00 2.00 to BS EN 1995-1-1:2004+A1:2008

NOTE! Lk1 is used when My>0 and Lk2 when My<0

VIBRATION DESIGN PARAMETERS:

efined below)		

28.11.2022

Floor width:		5 m	5 m			
Structure above:			Custom floor stiffness (defined below)			
Transverse stiffness of floor structure:			1907 Nm2/m			
Minimum frequency allowed:			8 Hz			
Frequency f1 is calculat	ed according:		Eurocode 5			
Deflection limit with 1 kN:			As per BS NA	to EC5		
Type of the beam:			Joist			
GOVERNING DESIGN	- RESULTS:					
Check:	Actual:	Allowable:	% allowable:	Location x:		
Shear (z):	3.84 kN	9.34 kN	41.1 %	4295 mm	Comb. 10/1, Medium-term	
Bending (My):	5.35 kNm	12.22 kNm	43.8 %	2335 mm	Comb. 10/1, Medium-term	
(without kcrit):	5.35 kNm	12.22 kNm	43.8 %	2335 mm	Comb. 10/1, Medium-term	
Bearing, support 1:	4.58 kN	17.79 kN	25.7 %	0 mm	Comb. 10/1, Medium-term	
Bearing, support 2:	4.58 kN	17.79 kN	25.7 %	4670 mm	Comb. 10/1, Medium-term	
Span 1, Wz,inst:	8.0 mm	12.0 mm	66.4 %	2335 mm	Comb. 40/1 (characteristic)	
Span 1, Wz,net,fin:	11.0 mm	18.7 mm	58.7 %	2335 mm	Comb. 40/1 (characteristic)	
Deflection U:	1.02 mm	1.52 mm	67.2%	(Vibration ch	eck)	
Frequency f1:	13.60 Hz	8.00 Hz	58.8%	(Vibration check)		
velocity v: 0.0172 m/(Ns2) 0.0352 m/(Ns		\$2) 48.8%	(Vibration ch	eck)		
GOVERNING DESIGN	- RESULT COMBINATIO	ONS:				
Combination 10/1 (Medi	ium-term):					
1.25*Self-weight + 1.25*	Partition load + 1.50*In	nposed load				
Combination 40/1 (char	acteristic):					

1.00*Self-weight + 1.00*Partition load + 1.00*Imposed load

EXTREME FORCES:

Result:	Maximum value:	Location x:
Vz,max	4.58 kN	4670 mm
My,max	5.35 kNm	2335 mm

SUPPORT REACTIONS: _____

Support:	ULSmax:	ULSmin:	SLSmax:	SLSmin:	Rd/A:
1:	4.58 kN	0.79 kN	3.24 kN	0.79 kN	0.44 N/mm2
2:	4.58 kN	0.79 kN	3.24 kN	0.79 kN	0.44 N/mm2
- SLS support reactions are for reference use only					

NOTES:

- Design is done in accordance with BS EN 1995-1-1 2004+A1 (2008)+A2 (2014) and

UK NA (Oct 2012) and PD 6693-1 (2012)

- ULS = Ultimate Limit State, SLS = Serviceability Limit State

- Permanent load consists of dead load and partition load

- Self-weight according to BS EN 1991-1-1 (Table A.3) or calculated as the mean density times the acceleration of gravity
- SLS design limits used are set by the user and can differ from BS EN 1995-1-1:2004+A1:2008
- *) The percentage value of the checking of the combined actions stands for the ratio of design value and design resistance, not the actual utilization rate
- Bearing resistance of the structure underneath shall be separately checked
- Design calculations do not take into account upward deflection of cantilevers less than 4.0 mm
- Deflection checking is not carried out for cantilevers shorter than 350 mm.
- Second order analysis/loading was not taken into account
- Shear deflection was taken into account in the SLS design
- Shear deflection was taken into account when calculating the ULS forces
- Reduction of shear force is taken into account close to supports, and loads are assumed to act on the opposite side of the structure than the support area
- Shear force reduction is made to the shear force curve of the load combinations at the distance of H from the edge of the support

These calculations do not take into account loads or moisture conditions during construction. The need for additional bracing during construction has to be checked separately. The overall stability of the building and horizontal loads have not been considered. The building designer, main structural engineer or other person responsible for the structural behaviour of the whole building has to check separately the applicability of the structural member to the building.

The following member analysis is only valid for the engineering data below. The actual length of the structural member might be different to the engineering length shown.

Finnwood 3.0 UK (2.4.089)

UK public (17.09.2021) Structural design without fire/accidental cases

PROJECT INFORMATION:

STRUCTURAL INFORMATION:

Type of structure: Profile: Web stiffeners: Service class: Spacing:	Floor beam FJI 96x220 (B=96 Never 1 300 mm (for surfa	mm, H=220 mm ice loads))	39 -2 2 220
Cantilever/span lengths: Cantilever/Span: Span 1 Total:	Horizontal [mm]: 4670.0 4670.0			396 396
Support: 1: 2:	Position x [mm]: 0 4670	Width [mm]: 150 150	Type: Pinned support (X,Z) Pinned support (Z)	
My,k: Mz,k: Vz,k: Vy,k: Nt,k: Nc,k: Ely: Elz: GAz: GAy: EA:	18.94 kNm 2.42 kNm 13.63 kN 9.89 kN 101.26 kN 101.26 kN 848.85 kNm2 39.67 kNm2 3564.00 kN 4339.80 kN 99815.40 kN			
Partial factor, flange: Partial factor, web Load duration class: Permanent: Long-term: Medium-term:	1.20 1.20 kmod,flange: 0.600 0.700 0.800	kmod,web: 0.400 0.500 0.700		



Finnwood 3.0 UK (2.4.089)

28.11.2022

Short-term:	0.900	0.900
	0.000	0.000
Instantaneous:	1.100	1.100
kdef,flange:	0.600	
kdef,web:	1.500	



LOADING INFORMATION:

Self-weight (Self-weight, Per	manent):		
Self-weight:	QZ = 0.047 kN/m	x = 0 - 4670 mm	
Surface load: 1:	x = 0 - 4670 mm		
Partition load (Partition load,	Permanent, ULS/SLS-movability =	100.0 %):	
Surface load: 1:	QZ = 0.250 kN/m2	x = 0 - 4670 mm	
Imposed load (A, domestic, I	residential areas, Medium-term, UL	S/SLS-movability = 100.0 %):	
Surface load: 1:	QZ = 1.500 kN/m2	x = 0 - 4670 mm	

LOAD COMBINATIONS:

Combination 1 (ULS, Permanent) 1.35*Self-weight + 1.35*Partition load

Combination 2 (ULS, Medium-term)

1.35*Self-weight + 1.35*Part	tition load + 1.5	0*0.70*lmp	osed load	
Combination 10 (ULS, Medi 1.25*Self-weight + 1.25*Par	um-term) tition load + 1.5	50*Imposed	load	
Combination 11 (ULS, Perm 1.25*Self-weight + 1.25*Part	nanent) tition load			
Combination 17 (ULS, Media 1.25*Self-weight + 1.25*Part	um-term) tition load + 1.5	60*0.70*Imp	osed load	
Combination 24 (ULS, Perm 1.00*Self-weight + 1.00*Part	nanent) tition load			
Combination 25 (ULS, Medi 1.00*Self-weight + 1.00*Part	um-term) tition load + 1.5	50*Imposed	load	
Combination 32 (ULS, Medi 1.00*Self-weight + 1.00*Part	um-term) tition load + 1.5	60*0.70*Imp	osed load	
Combination 39 (SLS, Chara 1.00*Self-weight + 1.00*Part	acteristic) tition load			
Combination 40 (SLS, Chara 1.00*Self-weight + 1.00*Part	acteristic) tition load + 1.()0*Imposed	load	
Combination 47 (SLS, Chara 1.00*Self-weight + 1.00*Part	acteristic) tition load + 1.0	0*0.70*lmp	osed load	
DESIGN RESULTS:				
Norm/Standard: Maximum utilization rate:				BS EN 1995-1-1:2004+A1:2008 and UK NA 94.3 %
DESIGN PARAMETERS: Allowed Wnet,fin: Allowed Winst:	L/250 L/350 and 12	(chai 2.00 mr(chai	racteristic) racteristic)	
Factor for left cantilever: Factor for right cantilever: NOTE! SLS design limits ab	oove are set by	the user an	, id can diffei	2.00 2.00 r to BS EN 1995-1-1:2004+A1:2008
Buckling is prevented on bo Lateral torsional buckling fo Distance between supports	oth directions (y or bending My a above the bea	v and z) about the y- m: Lk1 = 30	axis: 00.00 mm	

Distance between supports below the beam: Lk2 = 300.00 mm

NOTE! Lk1 is used when My>0 and Lk2 when My<0

VIBRATION DESIGN PARAMETERS: Floor width: Structure above: Transverse stiffness of floor structure: Minimum frequency allowed: Frequency f1 is calculated according: Deflection limit with 1 kN: Type of the beam:			5 m Custom floor stiffness (defined below) 1907 Nm2/m 8 Hz Eurocode 5 As per BS NA to EC5 Joist		
GOVERNING DESIGN RE	SULTS:				
Check: Shear (z): Bending (My): (without kcrit): Bearing, support 1: Bearing, support 2: Span 1, Wz,inst: Span 1, Wz pet fin:	Actual: 2.07 kN 2.77 kNm 2.77 kNm 2.37 kN 2.37 kN 5.8 mm	Allowable: 7.95 kN 12.63 kNm 12.63 kNm 18.70 kN 18.70 kN 12.0 mm	% allowable: 26.0 % 21.9 % 21.9 % 12.7 % 48.5 % 43.2 %	Location x: 295 mm 2335 mm 2335 mm 0 mm 4670 mm 2335 mm	Comb. 10/1, Medium-term Comb. 10/1, Medium-term Comb. 10/1, Medium-term Comb. 10/1, Medium-term Comb. 10/1, Medium-term Comb. 40/1 (characteristic)
Span 1, wz,net,fin: Deflection U: Frequency f1: velocity v:	8.1 mm 1.43 mm 10.55 Hz 0.0156 m/(Ns2)	18.7 mm 1.52 mm 8.00 Hz 0.0266 m/(Ns2	43.2 % 94.3% 75.8%) 58.9%	(Vibration check)(Vibration check)(Vibration check)(Vibration check)	
GOVERNING DESIGN RESULT COMBINATIONS: Combination 10/1 (Medium-term): 1.25*Self-weight + 1.25*Partition load + 1.50*Imposed load Combination 40/1 (characteristic): 1.00*Self-weight + 1.00*Partition load + 1.00*Imposed load					
EXTREME FORCES: Result: Vz,max My,max	Maximum value: 2.37 kN 2.77 kNm	Location x: 0 mm 2335 mm			
SUPPORT REACTIONS:					
Support: 1:	ULSmax: 2.37 kN	ULSmin: 0.46 kN	SLSmax: 1.69 kN	SLSmin: 0.46 kN	Rd/A: 0.16 N/mm2

NOTES:

2:

- Design is done in accordance with BS EN 1995-1-1 2004+A1 (2008)+A2 (2014) and

0.46 kN

UK NA (Oct 2012) and PD 6693-1 (2012)

- SLS support reactions are for reference use only

- ULS = Ultimate Limit State, SLS = Serviceability Limit State

2.37 kN

- Permanent load consists of dead load and partition load

1.69 kN

0.46 kN

0.16 N/mm2

- Self-weight according to BS EN 1991-1-1 (Table A.3) or calculated as the mean density times the acceleration of gravity
- SLS design limits used are set by the user and can differ from BS EN 1995-1-1:2004+A1:2008
- *) The percentage value of the checking of the combined actions stands for the ratio of design value and design resistance, not the actual utilization rate
- Bearing resistance of the structure underneath shall be separately checked
- Design calculations do not take into account upward deflection of cantilevers less than 4.0 mm
- Deflection checking is not carried out for cantilevers shorter than 350 mm.
- Second order analysis/loading was not taken into account
- Shear deflection was taken into account in the SLS design
- Shear deflection was taken into account when calculating the ULS forces
- Reduction of shear force is taken into account close to supports, and loads are assumed to act on the opposite side of the structure than the support area
- Shear force reduction is made to the shear force curve of the load combinations at the distance of H from the edge of the support

These calculations do not take into account loads or moisture conditions during construction. The need for additional bracing during construction has to be checked separately. The overall stability of the building and horizontal loads have not been considered. The building designer, main structural engineer or other person responsible for the structural behaviour of the whole building has to check separately the applicability of the structural member to the building.
