

Check of the existing timber structure - Preliminary

October 2021

Properties Joists	
Bending Strength	7.50 N/mm ²
Shear Strength	0.71 N/mm ²
E _{min}	7,200.00 N/mm ²
E _{mean}	10,800.00 N/mm ²

Properties Bressumers	
Bending Strength	7.50 N/mm ²
Shear Strength	0.71 N/mm ²
E _{min}	7,200.00 N/mm ²
E _{mean}	10,800.00 N/mm ²

Deflection Limits	
Instantaneous	L/250
Long Term	L/150
K _{def} for creep	0.8
Factor live load	0.7

Loads	
Dead Load GF	0.85 KN/m ²
Target Live Load	4.00 KN/m ²

Reference of the element	Depth (mm)	Breadth (mm)	Span (m)	Load Sharing	Load Duration	T.width (m)	Dead Load (KN/m)	Point Load (KN)	Distance Point Load (m)	Depth at bearing (mm)	Breadth at bearing (mm)	% of Target Live load allowed in bending	% of Target Live load allowed in deflection	% of Target Live load allowed in shear (section)	% of Target Live load allowed in shear (tenon)	Summary of the results	Action Needed
A-Bressumer	220	250	4.20	No	Long Term	2.50	2.13	0.00	0.00	220.00	250.00	50%	42%	103%	N/A	FAIL	Strengthening
B-Bressumer	220	250	4.00	No	Long Term	2.50	2.13	0.00	0.00	220.00	250.00	57%	52%	109%	N/A	FAIL	Strengthening
C-1	160	65	1.70	Yes	Long Term	0.29	0.25	0.00	0.00	80.00*	65.00	564%	1116%	528%	116%	CHECKED	None
C-2/3/4	160	195	1.70	Yes	Long Term	0.29	0.25	0.00	0.00	80.00*	195.00	1734%	3390%	1626%	391%	CHECKED	None
C-5/6	160	65	1.70	Yes	Long Term	0.29	0.25	0.00	0.00	80.00*	65.00	564%	1116%	528%	116%	CHECKED	None
C-7	160	65	1.70	Yes	Long Term	0.29	0.25	0.00	0.00	80.00*	65.00	564%	1116%	528%	116%	CHECKED	None
F-beam	180	60	3.56	No	Long Term	0.14	0.12	1.84	2.85	90.00*	60.00	23%	53%	43% Fail Dead Load		FAIL	Replacement
G-beam	155	120	3.56	No	Long Term	0.14	0.12	1.84	2.85	77.50*	120.00	46%	74%	90%	7%	FAIL	Replacement
H-beam	175	75	2.70	No	Long Term	1.60	1.36	0.00	0.00	87.50*	75.00	31%	62%	51% Fail Dead Load		FAIL	Replacement
J-beam	100	125	1.55	No	Long Term	1.90	1.62	0.00	0.00	100.00	125.00	56%	94%	79%	79%	FAIL	None *1
K-1	190	60	2.46	Yes	Long Term	0.28	0.23	0.00	0.00	190.00*	60.00	355%	615%	417%	417%	CHECKED	None
N-1	185	55	1.90	Yes	Long Term	0.41	0.35	0.00	0.00	185.00*	55.00	348%	726%	319%	319%	CHECKED	None
P-1	160	65	2.25	Yes	Long Term	0.29	0.25	0.00	0.00	160.00*	65.00	313%	496%	394%	394%	CHECKED	None
Q-1	160	65	2.25	Yes	Long Term	0.40	0.34	0.00	0.00	160.00*	65.00	221%	354%	280%	280%	CHECKED	None
R-1	190	60	3.56	Yes	Long Term	0.35	0.30	0.00	0.00	95.00*	60.00	120%	151%	217%	98%	FAIL	None

* The size of the tenons varies, in this assessment 50% of the depth has been considered. Further investigations will be required to confirm the assumption.

*1 Please note that the joists "R" are able to span between the bressumer "A" and the party wall, and therefore no actions is needed on beam "J". The bearing of the joists is to be improved with a pair of steel angle brackets as shown in SK05

