

MASON STRUCTURES CONSULTING STRUCTURAL ENGINEERS	Property Address: Stoke Golding, UK		Job Ref. M313	
	Description: General Structural Inspection and Report		Page no. 1	
	Prepared by: AJ	Date: 23/11/2023	Approved by: TB	Date 24/11/2023

BARN CONVERSION
LITTLE MULBERRY, UPTON LANE STOKE GOLDING, CV13 6EU
STRUCTURAL INSPECTION AND ASSESSMENT OF SUITABILITY OF
EXISTING BARN FOR CONVERSION.

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1.0 INTRODUCTION

- 1.1 MASON Structures were instructed by LiteBox Architecture, on behalf of Mr Paul Morris, to inspect and report upon the existing agricultural building located in Little Mulberry, Upton Lane, Stoke Golding, CV13 6EU. A Structural Engineer's report was required to support a planning application, to advise on the suitability of the existing steel frame to be retained in the proposed conversion of the barn into a residential dwelling. This report is for the sole use of Mr Paul Morris and cannot be assigned without the consent of MASON Structures.
- 1.2 The building was inspected on Tuesday 31st October 2023. The inspection was made by Mr Tim Bolojan, the managing director of MASON Structures. The survey was done from ground level and from a manitou to inspect the roof structure, no intrusive opening up work was done however.
- 1.3 A structural assessment has been carried to determine the capacity of the principal members of the existing steel frame, to support loadings associated with the proposed change of use. Copies of the calculations are appended to this report.
- 1.4 The calculations and details provided in this report do not form part of any Building Regulation submission. A separate full Building Regulation application will be required when planning permitted for conversion of the Barn.

2.0 DESCRIPTION OF THE BUILDING

- 2.1 The building is of steel portal framed construction, with a lean-to brickwork structure at the back of the main portal frame. The portal frame is a 2 bay structure, with frames spaced at 4.5m centres, with a 6.28m clear span and 4.4m eaves height. The lean-to brickwork structure is 9.2m wide (as the main portal frame) The overall footprint of the building is approximately 9.2m long and 11m wide.
- 2.2 The steel frame column and rafters are a mixture 152x89x16 UB "Universal Beams" and 152x89 RSJ "Rolled Steel Joist" sections. The roof purlins, front, back and side face cladding rails and eaves beams are all rolled steel angle sections. The portal frames have knee bracing for longitudinal stability on the front and rear of the portal frame. The lateral stability is provided by the brickwork structure at the rear.
- 2.3 The roof has corrugated cement sheets fixed to the rolled steel angle purlins. The barn has corrugates cement sheets cladding on all but on front elevation. In addition to these the rear portal frame elevation has a brickwork wall between the steel bays, to a height of approximately 3.2m above floor level.
- 2.4 There is a concrete floor slab covering to the whole of the ground floor plan area of the Barn.

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3.0 OBSERVATIONS

- 3.1 The steelwork forming the frame to the building is generally in reasonable condition. The steel columns remain plumb and show no sign of significant impact damage. There has been widespread breakdown of protective paintwork, but the extent of surface corrosion is generally not serious. However, there has been some more significant loss of section due to corrosion in the web at the base of some of the steel columns, in more exposed locations. This corrosion has not adversely affected the overall structural adequacy of the steel frame but will need to be repaired.
- 3.2 As far as can be discerned from visual observation, the line of the roof and the elevations appear true and there is no indication of movement or damage that might be associated with foundation settlement.
- 3.3 The condition of the concrete floor slab is generally good and there is no significant damage which might indicate settlement movement of the slab or the steel frame.

4.0 CONSIDERATION OF SUITABILITY FOR CONVERSION

- 4.1 A structural assessment of the steel frame has been made using the sizes of members, overall dimensions and condition, as recorded when the building was surveyed. Structural calculations made to determine the load capacity have been prepared using current design codes of practice from the relevant British Standards. The steel frames have been checked to determine their adequacy to support the roof loads, the external cladding and the associated wind loads.
- 4.2 The assessment shows that the steel rafters and columns have sufficient capacity to support the existing roof loading and can be used to support the external cladding enclosure to the building. It is therefore concluded that they are adequate to retained in the proposed conversion into a dwelling in accordance with the requirements of Class Q Permitted Development.

It is also assumed that proposed new first floor structure will be supported off new internal load bearing walls, thus avoiding additional loading on the existing steel columns. It is understood that this “Internal Works” is not considered as development and is therefore deemed as appropriate and is not prohibited by Class Q.

- 4.3 It will be necessary for the existing steel frame to be shot blast cleaned and painted with a modern epoxy base corrosion protection system. In addition, minor welded patch repairs will also be required to those isolated areas where corrosion damage has occurred at the base of some columns identified in the survey.
- 4.4 In order to meet building regulations standards it is likely that:
Due to the proximity of some trees it is recommended that a soils investigation is carried out.

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5.0 CONCLUSION & RECOMMENDATION

5.1 On the basis of the above comments and observations, it is concluded that it is feasible for the existing steelwork frame to be retained to provide support to the roof and the external envelope for the proposed conversion into a dwelling.

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PHOTOGRAPH 1 –BARN FRONT ELEVATION

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PHOTOGRAPH 2 –BARN LEFT SIDE ELEVATION

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PHOTOGRAPH 3 –BARN RIGHT SIDE ELEVATION

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PHOTOGRAPH 4 –BARN REAR ELEVATION



PHOTOGRAPH 5 – INTERNAL VIEW OF FRAME

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APPENDIX B

STRUCTURAL ASSESSMENT CALCULATIONS

Job Information

	Engineer	Checked	Approved
Name:	AJ	TB	TB
Date:	23-Nov-23	24.11.2023	24.11.2023

Structure Type	SPACE FRAME		
Number of Nodes	102	Highest Node	109
Number of Elements	162	Highest Beam	174
Number of Basic Load Cases	-2		
Number of Combination Load Cases	2		

Included in this printout are data
for:

All	The Whole Structure
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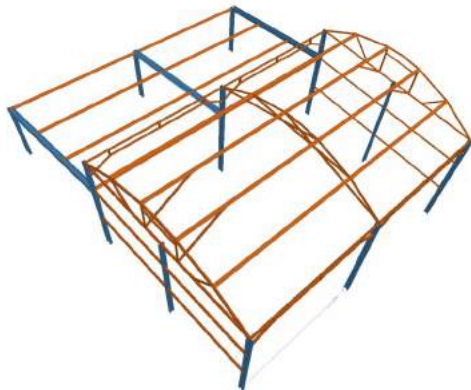
Included in this printout are results for load cases:

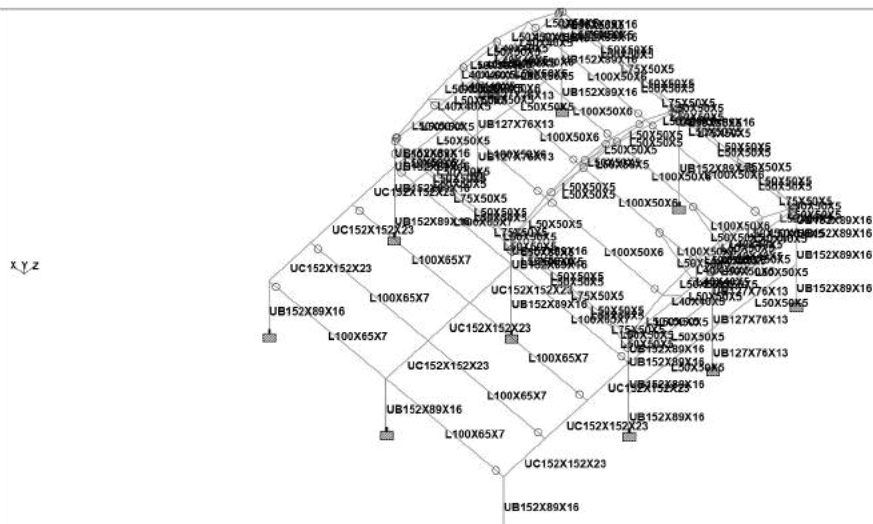
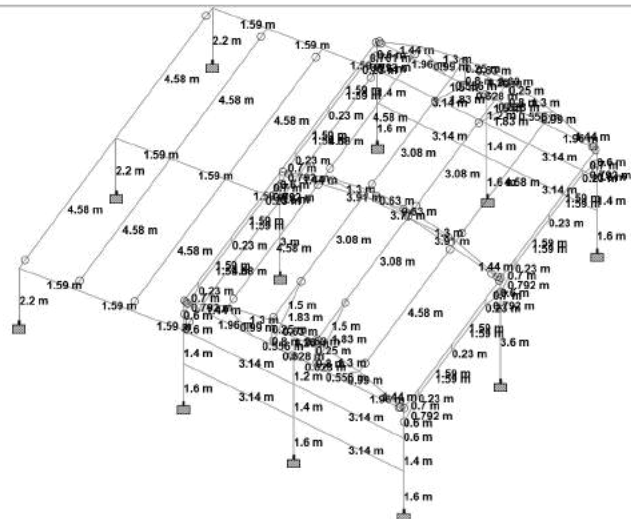
Type	L/C	Name
Primary	1	DL
Primary	2	LL
Combination	3	DL+LL
Combination	4	1.35DL+1.5LL



3D Rendered View

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Section properties

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Node Displacement Summary									
	Node	L/C	X (mm)	Y (mm)	Z (mm)	Resultant (mm)	rX (rad)	rY (rad)	rZ (rad)
Max X	15	4:1.35DL+1.5LL	125.393	- 0.010	0.366	125.394	- 0.001	- 0.003	- 0.037
Min X	15	1:DL	- 8.102	- 0.006	- 0.175	8.104	- 0.000	- 0.001	- 0.003
Max Y	64	2:LL	54.139	25.528	1.381	59.872	0.000	0.001	- 0.006
Min Y	48	4:1.35DL+1.5LL	88.027	- 68.608	22.714	113.894	- 0.075	- 0.005	- 0.029
Max Z	13	4:1.35DL+1.5LL	40.273	- 0.254	44.198	59.795	0.016	- 0.000	- 0.005
Min Z	87	4:1.35DL+1.5LL	74.300	- 8.192	- 7.364	75.112	- 0.007	- 0.000	- 0.007
Max rX	49	4:1.35DL+1.5LL	81.219	- 68.585	14.082	107.232	0.075	- 0.006	- 0.029
Min rX	48	4:1.35DL+1.5LL	88.027	- 68.608	22.714	113.894	- 0.075	- 0.005	- 0.029
Max rY	41	4:1.35DL+1.5LL	105.015	- 2.409	0.250	105.042	- 0.002	0.028	0.018
Min rY	42	4:1.35DL+1.5LL	98.204	- 2.396	0.481	98.235	0.002	- 0.039	0.018
Max rZ	41	2:LL	77.235	- 0.944	0.356	77.241	- 0.001	0.020	0.019
Min rZ	28	4:1.35DL+1.5LL	80.374	- 0.009	1.320	80.384	- 0.000	- 0.003	- 0.038
Max Rst	15	4:1.35DL+1.5LL	125.393	- 0.010	0.366	125.394	- 0.001	- 0.003	- 0.037

Beam Displacement Detail Summary							
Displacements shown in italic indicate the presence of an offset							
	Beam	L/C	d (m)	X (mm)	Y (mm)	Z (mm)	Resultant (mm)
Max X	19	4:1.35DL+1.5LL	0.000	125.393	- 0.010	0.366	125.394
Min X	19	1:DL	0.314	- 8.142	- 0.436	- 0.157	8.155
Max Y	67	2:LL	2.769	54.140	26.217	1.843	60.182
Min Y	51	4:1.35DL+1.5LL	0.913	86.961	- 84.154	27.375	124.070

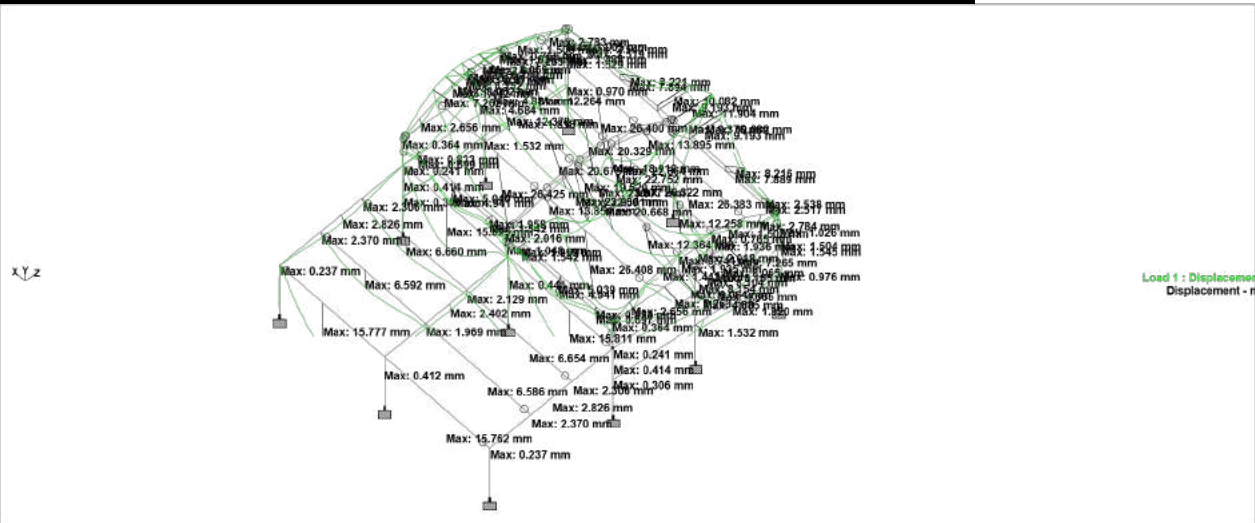
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Max Z	28	4:1.35DL+1.5LL	0.000	40.274	-	0.254	44.198	59.795
Min Z	26	4:1.35DL+1.5LL	0.350	74.303	-	-	7.426	74.804
Max Rst	19	4:1.35DL+1.5LL	0.000	125.393	-	0.010	0.366	125.394

Beam End Displacement Summary

Displacements shown in *italic* indicate the presence of an offset

	Beam	Node	L/C	X (mm)	Y (mm)	Z (mm)	Resultant (mm)
Max X	19	15	4:1.35DL+1.5LL	125.393	-	0.010	125.394
Min X	19	15	1:DL	-	-	-	8.104
				8.102	0.006	0.175	
Max Y	67	64	2:LL	54.139	25.528	1.381	59.872
Min Y	51	48	4:1.35DL+1.5LL	88.027	-	22.714	113.894
				88.027	68.608	22.714	
Max Z	28	13	4:1.35DL+1.5LL	40.274	-	0.254	59.795
				40.274	0.254	44.198	
Min Z	26	87	4:1.35DL+1.5LL	74.301	-	-	75.113
				74.301	8.192	7.364	
Max Rst	19	15	4:1.35DL+1.5LL	125.393	-	0.010	125.394
				125.393	0.010	0.366	



Displacements 8mm:1m 1 DL

Beam End Force Summary

The signs of the forces at end B of each beam have been reversed. For example: this means that the Min Fx entry gives the largest tension value for an beam.

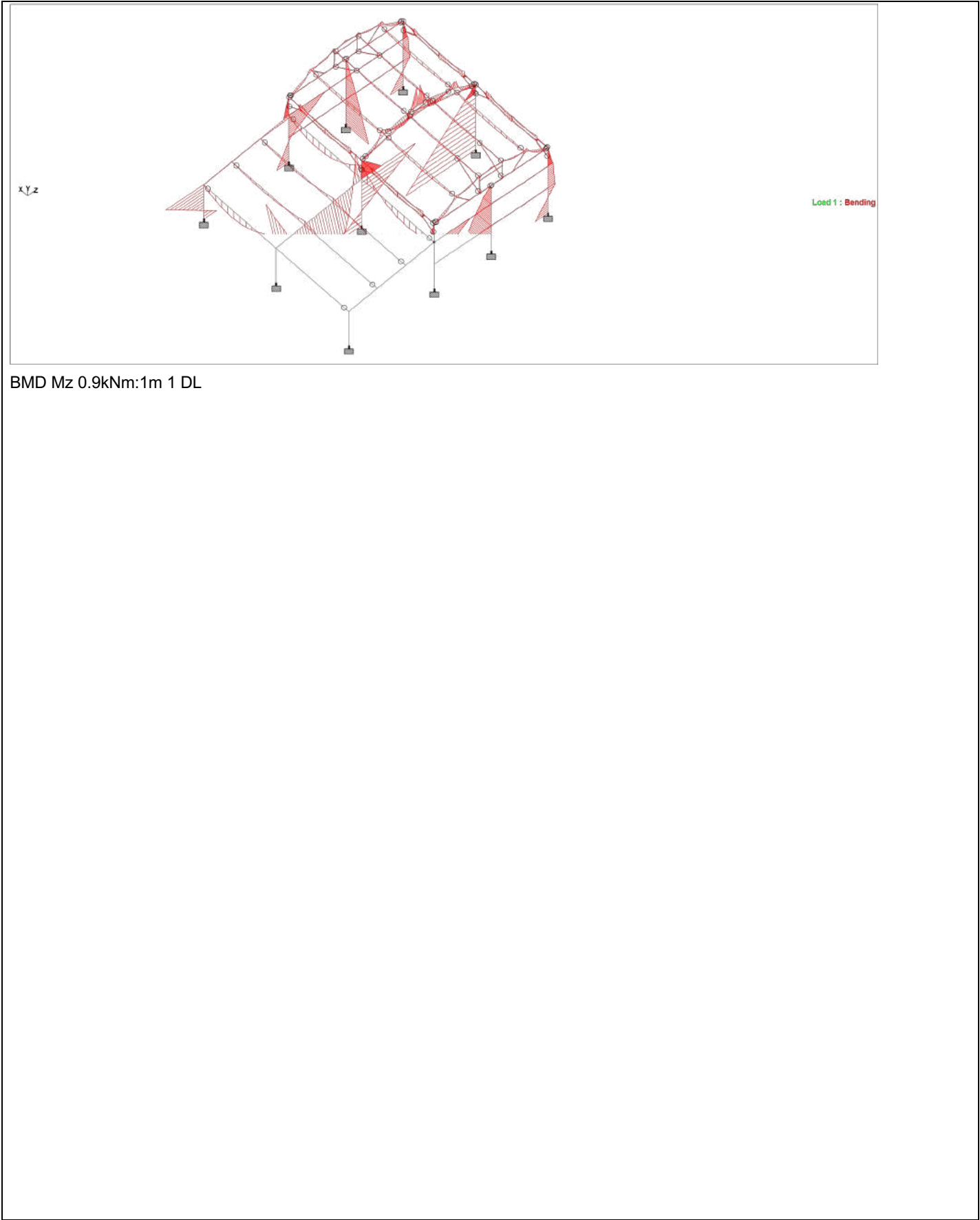
				Axial	Shear		Torsion	Bending	
	Beam	Node	L/C	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kNm)	My (kNm)	Mz (kNm)
Max Fx	52	48	4:1.35DL+1.5LL	132.963	-6.781	0.000	0.001	0.008	-1.424
Min Fx	90	48	4:1.35DL+1.5LL	-59.061	0.094	0.000	0.000	0.000	0.000
Max Fy	4	4	4:1.35DL+1.5LL	1.312	17.066	-0.168	0.003	0.182	30.694
Min Fy	150	24	4:1.35DL+1.5LL	10.388	-16.426	1.974	-0.014	1.836	10.665
Max Fz	152	25	4:1.35DL+1.5LL	5.278	-0.093	8.483	0.005	6.047	-0.008
Min Fz	15	20	4:1.35DL+1.5LL	2.244	-0.251	-8.761	0.003	6.685	-0.258
Max Mx	32	29	4:1.35DL+1.5LL	14.471	0.132	-1.380	0.030	-0.164	0.968
Min Mx	47	36	4:1.35DL+1.5LL	16.147	1.286	-0.000	-0.019	0.243	0.204
Max My	5	5	4:1.35DL+1.5LL	23.393	-1.565	-8.299	-0.002	8.082	-2.263
Min My	147	97	4:1.35DL+1.5LL	3.919	0.207	2.513	0.003	-3.244	-0.189
Max Mz	4	4	4:1.35DL+1.5LL	1.312	17.066	-0.168	0.003	0.182	30.694
Min Mz	2	2	4:1.35DL+1.5LL	26.709	-3.045	-1.090	0.000	2.351	-12.785

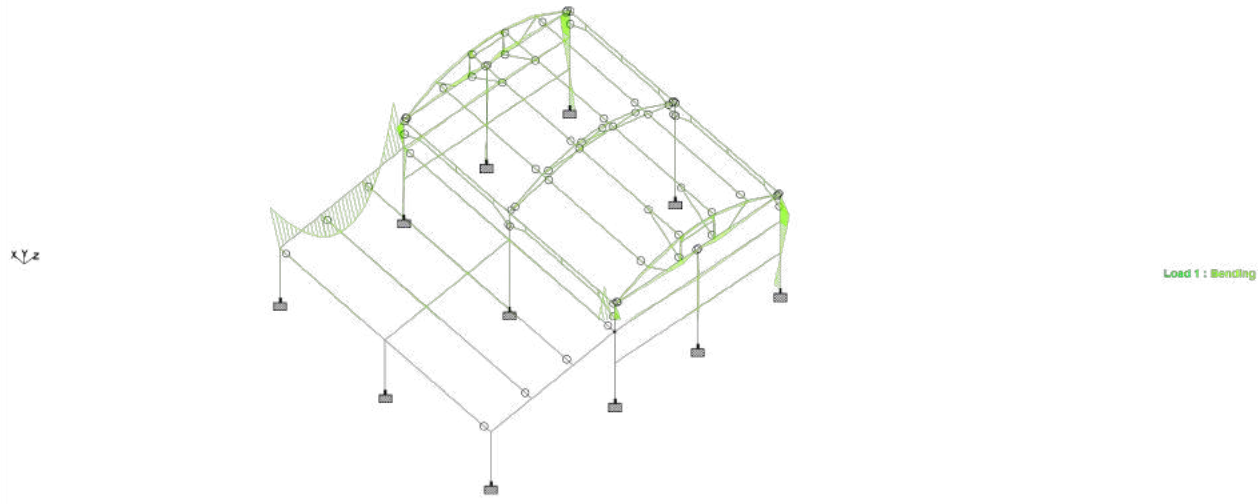
Beam Force Detail Summary

Sign convention as diagrams:- positive above line, negative below line except Fx where positive is compression. Distance d is given from beam end A.

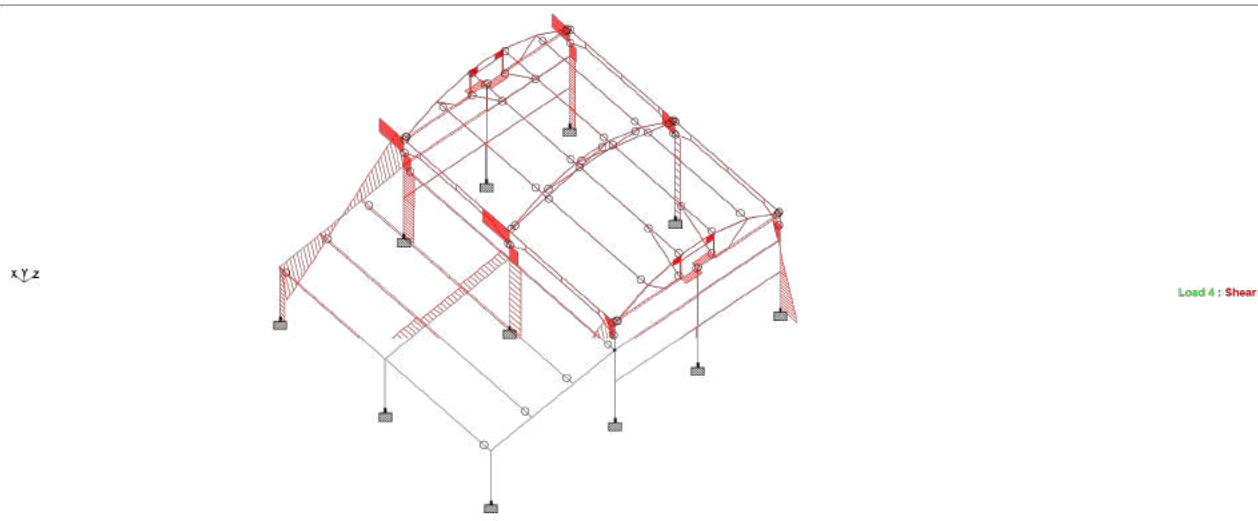
				Axial	Shear		Torsion	Bending	
	Beam	L/C	d (m)	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kNm)	My (kNm)	Mz (kNm)
Max Fx	52	4:1.35DL+1.5LL	0.000	132.963	-6.781	0.000	0.001	0.008	-1.424
Min Fx	90	4:1.35DL+1.5LL	0.000	-59.061	0.094	0.000	0.000	0.000	0.000
Max Fy	4	4:1.35DL+1.5LL	0.000	1.312	17.066	-0.168	0.003	0.182	30.694
Min Fy	150	4:1.35DL+1.5LL	1.589	10.388	-16.426	1.974	-0.014	1.836	10.665
Max Fz	152	4:1.35DL+1.5LL	1.589	5.278	-0.093	8.483	0.005	6.047	-0.008
Min Fz	15	4:1.35DL+1.5LL	0.000	2.244	-0.251	-8.761	0.003	6.685	-0.258
Max Mx	32	4:1.35DL+1.5LL	0.000	14.471	0.132	-1.380	0.030	-0.164	0.968
Min Mx	47	4:1.35DL+1.5LL	0.000	16.147	1.286	-0.000	-0.019	0.243	0.204
Max My	5	4:1.35DL+1.5LL	0.000	23.393	-1.565	-8.299	-0.002	8.082	-2.263
Min My	147	4:1.35DL+1.5LL	0.795	3.407	0.207	-0.257	0.003	-4.140	-0.024
Max Mz	4	4:1.35DL+1.5LL	0.000	1.312	17.066	-0.168	0.003	0.182	30.694
Min Mz	2	4:1.35DL+1.5LL	0.000	26.709	-3.045	-1.090	0.000	2.351	-12.785

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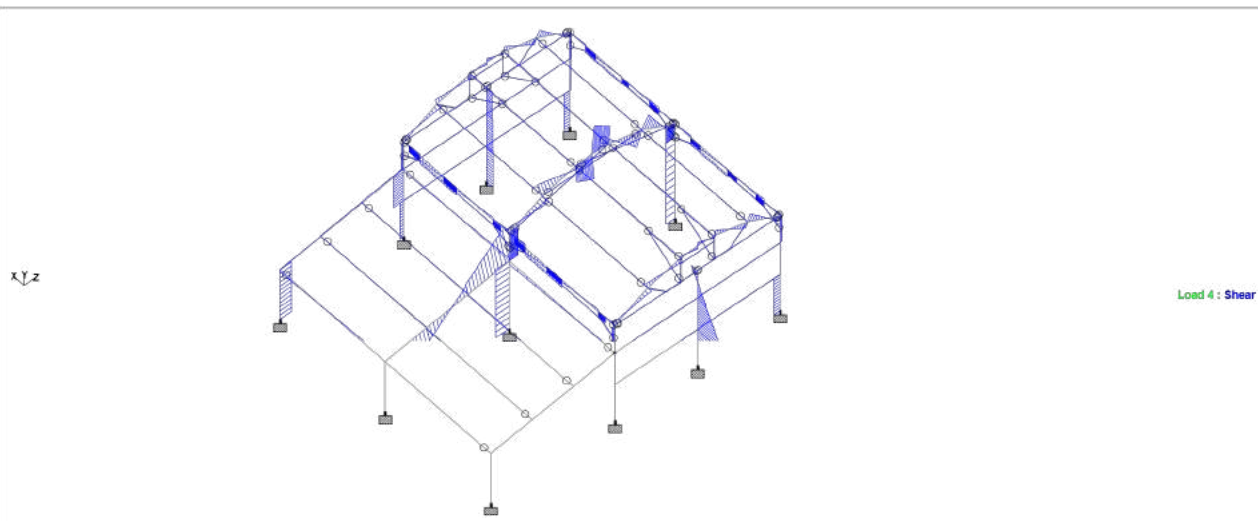




BMD M_y 0.9kNm:1m 1 DL



SFD F_z 5kN:1m 4 1.35DL+1.5LL



SFD F_y 9kN:1m 4 1.35DL+1.5LL

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Beam Combined Axial and Bending Stresses Summary

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
1	1:DL	1.600	19.120	0.000	1	- 14.187	0.000	2
	2:LL	1.600	149.476	0.000	2	-144.134	0.000	1
	3:DL+LL	1.600	146.659	0.000	2	-136.383	0.000	1
	4:1.35DL+1.5LL	1.600	220.410	0.000	2	-205.737	0.000	1
2	1:DL	3.600	35.269	0.000	1	- 27.733	0.000	3
	2:LL	3.600	132.384	0.000	2	-121.622	0.000	1
	3:DL+LL	3.600	167.575	0.000	1	-149.278	0.000	4
	4:1.35DL+1.5LL	3.600	246.083	0.000	1	-219.769	0.000	4
3	1:DL	1.600	19.063	0.000	2	- 14.130	0.000	1
	2:LL	1.600	86.630	0.000	2	- 80.700	0.000	1
	3:DL+LL	1.600	105.693	0.000	2	- 94.830	0.000	1
	4:1.35DL+1.5LL	1.600	155.680	0.000	2	-140.126	0.000	1
4	1:DL	1.600	21.126	0.000	1	- 20.087	0.000	3
	2:LL	1.600	295.577	0.000	3	-295.451	0.000	1
	3:DL+LL	1.600	282.184	0.000	3	-281.020	0.000	1
	4:1.35DL+1.5LL	1.600	425.285	0.000	3	-423.694	0.000	1
5	1:DL	1.600	11.258	0.000	1	-3.180	0.000	4
	2:LL	1.600	277.422	0.000	2	-269.327	0.000	1
	3:DL+LL	1.600	288.680	0.000	2	-272.507	0.000	1
	4:1.35DL+1.5LL	1.600	431.331	0.000	2	-408.284	0.000	1
6	1:DL	3.000	30.379	3.000	3	- 18.103	3.000	1
	2:LL	3.000	186.171	0.000	2	-169.867	0.000	1
	3:DL+LL	3.000	203.377	0.000	2	-174.336	0.000	1

	4:1.35DL+1.5LL	3.000	302.484	0.000	2	-260.833	0.000	1
7	1:DL	1.600	21.121	0.000	3	- 20.083	0.000	1
	2:LL	1.600	75.766	0.000	3	- 75.639	0.000	1
	3:DL+LL	1.600	96.887	0.000	3	- 95.722	0.000	1
	4:1.35DL+1.5LL	1.600	142.162	0.000	3	-140.570	0.000	1
8	1:DL	1.600	11.252	0.000	1	-3.174	0.000	3
	2:LL	1.600	165.742	0.000	2	-156.501	0.000	1
	3:DL+LL	1.600	173.440	0.000	2	-156.122	0.000	1
	4:1.35DL+1.5LL	1.600	259.005	0.000	2	-234.239	0.000	1
9	1:DL	0.600	17.521	0.600	2	- 13.197	0.600	4
	2:LL	0.600	43.792	0.500	1	- 38.723	0.500	3
	3:DL+LL	0.600	41.558	0.200	1	- 32.104	0.200	3
	4:1.35DL+1.5LL	0.600	61.989	0.250	1	- 48.477	0.250	3
10	1:DL	0.600	12.442	0.000	3	-5.482	0.000	1
	2:LL	0.600	105.926	0.600	4	- 95.108	0.600	2
	3:DL+LL	0.600	113.832	0.600	4	- 96.147	0.600	2
	4:1.35DL+1.5LL	0.600	169.562	0.600	4	-144.064	0.600	2
11	1:DL	0.600	17.546	0.600	1	- 13.222	0.600	3
	2:LL	0.600	96.247	0.600	1	- 90.099	0.600	3
	3:DL+LL	0.600	113.793	0.600	1	-103.321	0.600	3
	4:1.35DL+1.5LL	0.600	168.057	0.600	1	-152.998	0.600	3
12	1:DL	2.200	18.639	2.200	1	- 15.272	2.200	3
	2:LL	2.200	123.158	0.000	2	-119.931	0.000	1
	3:DL+LL	2.200	130.761	0.000	2	-123.829	0.000	1
	4:1.35DL+1.5LL	2.200	195.002	0.000	2	-185.158	0.000	1

MASON STRUCTURES CONSULTING STRUCTURAL ENGINEERS	Property Address: Stoke Golding, UK		Job Ref. M313	
	Description: General Structural Inspection and Report		Page no. 23	
	Prepared by: AJ	Date: 23/11/2023	Approved by: TB	Date 24/11/2023

13	1:DL	2.200	30.450	2.200	1	- 23.890	2.200	3
	2:LL	2.200	110.767	0.000	2	-103.359	0.000	1
	3:DL+LL	2.200	128.602	0.000	2	-114.295	0.000	1
	4:1.35DL+1.5LL	2.200	190.228	0.000	2	-169.803	0.000	1
14	1:DL	2.200	18.639	2.200	1	- 15.272	2.200	3
	2:LL	2.200	90.567	0.000	2	- 87.010	0.000	1
	3:DL+LL	2.200	98.158	0.000	2	- 90.895	0.000	1
	4:1.35DL+1.5LL	2.200	146.098	0.000	2	-135.760	0.000	1
15	1:DL	1.589	40.255	0.000	2	- 39.801	0.000	1

Beam	L/C	Length (m)	Max Comp			Max Tens		
			Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	2:LL	1.589	51.090	0.000	2	- 50.475	0.000	1
	3:DL+LL	1.589	90.260	0.000	2	- 89.190	0.000	1
	4:1.35DL+1.5LL	1.589	129.515	0.000	2	-127.978	0.000	1
16	1:DL	1.589	16.755	1.589	1	- 15.475	1.589	3
	2:LL	1.589	39.538	1.589	2	- 37.555	1.589	4
	3:DL+LL	1.589	56.291	1.589	2	- 53.028	1.589	4
	4:1.35DL+1.5LL	1.589	81.924	1.589	2	- 77.221	1.589	4
17	1:DL	1.589	40.257	0.000	2	- 39.803	0.000	1
	2:LL	1.589	45.841	0.000	2	- 45.409	0.000	1
	3:DL+LL	1.589	85.012	0.000	2	- 84.125	0.000	1
	4:1.35DL+1.5LL	1.589	121.643	0.000	2	-120.381	0.000	1
19	1:DL	0.628	3.646	0.628	2	- 41.205	0.628	1
	2:LL	0.628	49.577	0.628	2	-100.249	0.628	1
	3:DL+LL	0.628	53.223	0.628	2	-141.455	0.628	1
	4:1.35DL+1.5LL	0.628	79.288	0.628	2	-206.001	0.628	1
21	1:DL	1.956	4.885	1.956	1	- 27.704	1.630	2
	2:LL	1.956	30.618	1.956	1	- 68.743	1.956	2
	3:DL+LL	1.956	35.503	1.956	1	- 95.817	1.956	2
	4:1.35DL+1.5LL	1.956	52.521	1.956	1	-139.664	1.956	2
22	1:DL	0.628	3.644	0.628	1	- 41.204	0.628	2
	2:LL	0.628	40.768	0.628	1	- 91.282	0.628	2

	3:DL+LL	0.628	44.412	0.628	1	-132.486	0.628	2
	4:1.35DL+1.5LL	0.628	66.071	0.628	1	-192.548	0.628	2
23	1:DL	4.576	113.553	4.576	2	- 93.381	4.576	3
	2:LL	4.576	58.461	4.576	2	- 18.191	4.576	1
	3:DL+LL	4.576	172.013	4.576	2	-111.572	4.576	3
	4:1.35DL+1.5LL	4.576	240.987	4.576	2	-153.351	4.576	3
24	1:DL	4.577	113.596	0.000	1	- 93.412	0.000	3
	2:LL	4.577	20.556	0.000	1	- 59.184	0.000	2
	3:DL+LL	4.577	61.576	0.000	1	- 87.981	2.670	2
	4:1.35DL+1.5LL	4.577	86.210	0.000	1	-122.412	2.670	2
25	1:DL	0.700	4.429	0.700	1	-8.233	0.700	3
	2:LL	0.700	71.643	0.700	3	- 46.514	0.700	1
	3:DL+LL	0.700	63.913	0.642	3	- 43.079	0.642	2
	4:1.35DL+1.5LL	0.700	96.709	0.642	3	- 64.890	0.642	2
26	1:DL	0.700	8.265	0.700	1	- 12.110	0.700	3
	2:LL	0.700	83.114	0.700	3	- 83.141	0.000	3
	3:DL+LL	0.700	71.979	0.000	1	- 86.963	0.000	3
	4:1.35DL+1.5LL	0.700	108.321	0.700	3	-129.871	0.000	3
27	1:DL	0.700	17.193	0.583	3	- 15.278	0.583	1
	2:LL	0.700	23.659	0.467	3	- 14.995	0.467	1
	3:DL+LL	0.700	40.571	0.525	3	- 30.071	0.525	1
	4:1.35DL+1.5LL	0.700	58.305	0.525	3	- 42.837	0.525	1
28	1:DL	0.700	2.127	0.292	3	-7.073	0.700	3
	2:LL	0.700	35.092	0.583	3	- 25.447	0.583	1

	3:DL+LL	0.700	33.671	0.467	3	- 28.749	0.467	1
	4:1.35DL+1.5LL	0.700	50.524	0.525	3	- 42.529	0.525	2
29	1:DL	1.400	23.872	1.400	4	- 16.310	1.400	2
	2:LL	1.400	68.237	0.817	4	- 60.137	0.817	2
	3:DL+LL	1.400	85.955	0.933	4	- 70.222	0.933	2
	4:1.35DL+1.5LL	1.400	126.232	0.933	4	-103.778	0.933	2
30	1:DL	1.400	13.177	0.000	1	- 12.525	0.000	3
	2:LL	1.400	95.813	0.000	3	- 95.688	0.000	1
	3:DL+LL	1.400	86.543	0.000	3	- 85.767	0.000	1
	4:1.35DL+1.5LL	1.400	131.205	0.000	3	-130.139	0.000	1
31	1:DL	1.200	8.640	0.000	1	-8.341	0.000	3
	2:LL	1.200	14.256	0.000	3	- 14.128	0.000	1

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	3:DL+LL	1.200	11.303	0.000	1	- 10.876	0.000	2
	4:1.35DL+1.5LL	1.200	17.398	0.000	1	- 16.802	0.000	2
32	1:DL	1.400	17.326	1.400	3	- 12.912	1.400	1
	2:LL	1.400	41.997	1.167	4	- 36.659	1.167	2
	3:DL+LL	1.400	36.938	0.933	4	- 27.114	0.933	2
	4:1.35DL+1.5LL	1.400	56.050	0.933	4	- 41.987	0.933	2
33	1:DL	0.600	20.011	0.600	3	- 15.745	0.600	1
	2:LL	0.600	40.344	0.000	1	- 35.005	0.000	2
	3:DL+LL	0.600	31.830	0.000	1	- 22.132	0.000	2

	4:1.35DL+1.5LL	0.600	49.022	0.000	1	- 35.129	0.000	2
34	1:DL	1.400	23.865	1.400	3	- 16.303	1.400	1
	2:LL	1.400	98.788	1.400	4	- 89.547	1.400	2
	3:DL+LL	1.400	114.849	1.400	4	- 98.045	1.400	2
	4:1.35DL+1.5LL	1.400	169.864	1.400	4	-145.793	1.400	2
35	1:DL	1.400	13.174	0.000	3	- 12.523	0.000	1
	2:LL	1.400	45.212	0.000	3	- 45.087	0.000	1
	3:DL+LL	1.400	58.387	0.000	3	- 57.610	0.000	1
	4:1.35DL+1.5LL	1.400	85.604	0.000	3	- 84.536	0.000	1
36	1:DL	1.200	8.639	0.000	3	-8.340	0.000	1
	2:LL	1.200	20.201	0.000	3	- 20.072	0.000	1
	3:DL+LL	1.200	28.840	0.000	3	- 28.413	0.000	1
	4:1.35DL+1.5LL	1.200	41.964	0.000	3	- 41.368	0.000	1
37	1:DL	1.400	17.315	1.400	4	- 12.901	1.400	2
	2:LL	1.400	38.415	1.400	1	- 32.485	1.400	2
	3:DL+LL	1.400	55.730	1.400	4	- 45.387	1.400	2
	4:1.35DL+1.5LL	1.400	80.998	1.400	4	- 66.145	1.400	2
38	1:DL	0.600	19.985	0.600	4	- 15.719	0.600	2
	2:LL	0.600	62.768	0.600	4	- 56.834	0.600	2
	3:DL+LL	0.600	82.753	0.600	4	- 72.553	0.600	2
	4:1.35DL+1.5LL	0.600	121.132	0.600	4	-106.472	0.600	2
41	1:DL	0.628	3.579	0.000	2	- 41.278	0.000	1
	2:LL	0.628	49.497	0.000	2	-100.335	0.000	1

	3:DL+LL	0.628	53.076	0.000	2	-141.612	0.000	1
	4:1.35DL+1.5LL	0.628	79.077	0.000	2	-206.227	0.000	1
42	1:DL	0.556	17.208	0.000	2	- 34.950	0.556	1
	2:LL	0.556	65.356	0.000	2	- 87.627	0.556	1
	3:DL+LL	0.556	82.564	0.000	2	-122.577	0.556	1
	4:1.35DL+1.5LL	0.556	121.265	0.000	2	-178.623	0.556	1
44	1:DL	1.438	80.799	1.438	2	- 63.842	1.438	3
	2:LL	1.438	131.812	1.438	1	- 99.832	1.438	3
	3:DL+LL	1.438	189.013	1.438	1	-163.674	1.438	3
	4:1.35DL+1.5LL	1.438	274.940	1.438	1	-235.934	1.438	3
45	1:DL	1.304	71.571	0.000	1	- 50.521	0.000	3
	2:LL	1.304	122.366	0.000	1	- 83.037	0.000	3
	3:DL+LL	1.304	168.013	0.000	1	-133.557	0.000	3
	4:1.35DL+1.5LL	1.304	245.172	0.000	1	-192.758	0.000	3
46	1:DL	0.630	39.583	0.630	2	- 19.562	0.630	3
	2:LL	0.630	75.217	0.630	1	- 31.165	0.262	2
	3:DL+LL	0.630	100.716	0.630	1	- 38.231	0.630	3
	4:1.35DL+1.5LL	0.630	147.249	0.630	1	- 54.413	0.630	3
47	1:DL	0.630	39.583	0.000	1	- 19.562	0.000	3
	2:LL	0.630	75.217	0.000	1	- 31.161	0.367	2
	3:DL+LL	0.630	100.716	0.000	1	- 38.231	0.000	3
	4:1.35DL+1.5LL	0.630	147.249	0.000	1	- 54.413	0.000	3
48	1:DL	1.304	71.547	1.304	2	- 50.523	1.304	3
	2:LL	1.304	122.386	1.304	1	- 83.039	1.304	3

	3:DL+LL	1.304	168.060	1.304	1	-133.563	1.304	3
			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	4:1.35DL+1.5LL	1.304	245.239	1.304	1	-192.766	1.304	3
49	1:DL	1.438	80.779	0.000	1	- 63.847	0.000	3
	2:LL	1.438	131.832	0.000	1	- 99.838	0.000	3
	3:DL+LL	1.438	189.061	0.000	1	-163.685	0.000	3
	4:1.35DL+1.5LL	1.438	275.007	0.000	1	-235.951	0.000	3
50	1:DL	1.438	146.571	1.438	1	-111.010	1.438	3
	2:LL	1.438	264.500	1.438	1	-217.021	1.438	3
	3:DL+LL	1.438	411.072	1.438	1	-328.031	1.438	3
	4:1.35DL+1.5LL	1.438	594.622	1.438	1	-475.395	1.438	3
51	1:DL	1.304	235.722	1.087	3	-102.551	0.000	3
	2:LL	1.304	372.304	0.978	3	-204.016	0.000	3
	3:DL+LL	1.304	605.384	0.978	3	-306.567	0.000	3
	4:1.35DL+1.5LL	1.304	873.114	0.978	3	-444.468	0.000	3
52	1:DL	0.630	426.399	0.630	1	-400.100	0.630	3
	2:LL	0.630	666.628	0.630	1	-619.702	0.630	3
	3:DL+LL	0.630	1.09 E +3	0.630	1	-1.02 E +3	0.630	3
	4:1.35DL+1.5LL	0.630	1.58 E +3	0.630	1	-1.47 E +3	0.630	3
53	1:DL	0.630	426.399	0.000	1	-400.100	0.000	3
	2:LL	0.630	666.628	0.000	1	-619.702	0.000	3
	3:DL+LL	0.630	1.09 E +3	0.000	1	-1.02 E +3	0.000	3
	4:1.35DL+1.5LL	0.630	1.58 E +3	0.000	1	-1.47 E +3	0.000	3
54	1:DL	1.304	235.696	0.217	3	-102.552	1.304	3
	2:LL	1.304	372.304	0.326	3	-204.017	1.304	3
	3:DL+LL	1.304	605.359	0.326	3	-306.569	1.304	3

	4:1.35DL+1.5LL	1.304	873.080	0.326	3	-444.471	1.304	3
55	1:DL	1.438	146.572	0.000	1	-111.011	0.000	3
	2:LL	1.438	264.504	0.000	1	-217.022	0.000	3
	3:DL+LL	1.438	411.076	0.000	1	-328.033	0.000	3
	4:1.35DL+1.5LL	1.438	594.628	0.000	1	-475.397	0.000	3
56	1:DL	1.438	80.805	1.438	1	-63.841	1.438	3
	2:LL	1.438	104.365	1.438	2	-99.840	1.438	3
	3:DL+LL	1.438	179.474	1.438	1	-163.681	1.438	3
	4:1.35DL+1.5LL	1.438	257.091	1.438	1	-235.945	1.438	3
57	1:DL	1.304	71.578	0.000	1	-50.520	0.000	3
	2:LL	1.304	91.917	0.000	1	-83.034	0.000	3
	3:DL+LL	1.304	156.724	0.000	1	-133.554	0.000	3
	4:1.35DL+1.5LL	1.304	224.350	0.000	1	-192.753	0.000	3
58	1:DL	0.630	39.593	0.630	1	-19.563	0.630	3
	2:LL	0.630	39.415	0.630	1	-18.666	0.630	3
	3:DL+LL	0.630	79.009	0.630	1	-38.229	0.630	3
	4:1.35DL+1.5LL	0.630	112.574	0.630	1	-54.409	0.630	3
59	1:DL	0.630	39.593	0.000	1	-19.563	0.000	3
	2:LL	0.630	39.415	0.000	1	-18.666	0.000	3
	3:DL+LL	0.630	79.009	0.000	1	-38.229	0.000	3
	4:1.35DL+1.5LL	0.630	112.574	0.000	1	-54.409	0.000	3
60	1:DL	1.304	71.554	1.304	1	-50.523	1.304	3
	2:LL	1.304	91.933	1.304	1	-83.036	1.304	3
	3:DL+LL	1.304	156.689	1.304	1	-133.559	1.304	3
	4:1.35DL+1.5LL	1.304	224.300	1.304	1	-192.761	1.304	3

61	1:DL	1.438	80.786	0.000	1	- 63.847	0.000	3
	2:LL	1.438	104.382	0.000	1	- 99.846	0.000	3
	3:DL+LL	1.438	179.447	0.000	1	-163.692	0.000	3
	4:1.35DL+1.5LL	1.438	257.053	0.000	1	-235.961	0.000	3
62	1:DL	4.576	33.095	2.288	3	- 49.302	2.288	2
	2:LL	4.576				-0.059	0.000	1
	3:DL+LL	4.576	33.036	2.288	3	- 49.361	2.288	2
	4:1.35DL+1.5LL	4.576	44.590	2.288	3	- 66.646	2.288	2

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
63	1:DL	4.577	33.109	2.288	3	- 49.324	2.288	2
	2:LL	4.577				-0.044	0.000	1
	3:DL+LL	4.577	33.066	2.288	3	- 49.367	2.288	2
	4:1.35DL+1.5LL	4.577	44.632	2.288	3	- 66.652	2.288	2
64	1:DL	1.500	4.987	0.875	3	-7.536	0.875	2
	2:LL	1.500	131.080	1.500	2	- 87.691	1.500	3
	3:DL+LL	1.500	127.024	1.500	2	- 85.034	1.500	3
	4:1.35DL+1.5LL	1.500	191.144	1.500	2	-127.950	1.500	3
65	1:DL	3.077	16.538	1.538	3	- 24.083	1.538	2
	2:LL	3.077	131.839	3.077	2	- 86.954	3.077	3
	3:DL+LL	3.077	128.057	3.077	2	- 84.007	3.077	3
	4:1.35DL+1.5LL	3.077	192.652	3.077	2	-126.453	3.077	3
66	1:DL	1.500	4.991	0.875	3	-7.541	0.875	2
	2:LL	1.500	131.072	1.500	2	- 87.686	1.500	3

	3:DL+LL	1.500	127.008	1.500	2	- 85.023	1.500	3
	4:1.35DL+1.5LL	1.500	191.122	1.500	2	-127.934	1.500	3
67	1:DL	3.077	16.541	1.538	3	- 24.087	1.538	2
	2:LL	3.077	131.833	3.077	2	- 86.950	3.077	3
	3:DL+LL	3.077	128.042	3.077	2	- 83.997	3.077	3
	4:1.35DL+1.5LL	3.077	192.631	3.077	2	-126.438	3.077	3
68	1:DL	4.576	33.095	2.288	3	- 49.302	2.288	2
	2:LL	4.576				-0.059	0.000	1
	3:DL+LL	4.576	33.036	2.288	3	- 49.361	2.288	2
	4:1.35DL+1.5LL	4.576	44.589	2.288	3	- 66.647	2.288	2
69	1:DL	4.577	33.109	2.288	3	- 49.324	2.288	2
	2:LL	4.577				-0.044	0.000	1
	3:DL+LL	4.577	33.065	2.288	3	- 49.368	2.288	2
	4:1.35DL+1.5LL	4.577	44.632	2.288	3	- 66.653	2.288	2
70	1:DL	0.800	12.911	0.000	1	- 14.417	0.000	2
	2:LL	0.800	19.188	0.800	1	- 30.564	0.800	3
	3:DL+LL	0.800	24.407	0.000	1	- 37.686	0.000	2
	4:1.35DL+1.5LL	0.800	34.673	0.000	1	- 54.366	0.000	2
71	1:DL	0.250	39.592	0.000	1	- 31.373	0.000	2
	2:LL	0.250	38.995	0.000	1	- 71.950	0.000	2
	3:DL+LL	0.250	53.095	0.000	1	-103.323	0.000	2
	4:1.35DL+1.5LL	0.250	73.704	0.000	1	-150.279	0.000	2
72	1:DL	0.250	29.693	0.000	2	- 41.273	0.000	1

	2:LL	0.250	40.002	0.000	2	- 45.458	0.000	1
	3:DL+LL	0.250	69.695	0.000	2	- 86.732	0.000	1
	4:1.35DL+1.5LL	0.250	100.089	0.000	2	-123.906	0.000	1
73	1:DL	0.250	29.689	0.000	1	- 41.277	0.000	2
	2:LL	0.250	40.001	0.000	1	- 45.460	0.000	2
	3:DL+LL	0.250	69.690	0.000	1	- 86.737	0.000	2
	4:1.35DL+1.5LL	0.250	100.081	0.000	1	-123.915	0.000	2
74	1:DL	0.556	17.140	0.556	2	- 35.019	0.000	1
	2:LL	0.556	65.275	0.556	2	- 87.710	0.000	1
	3:DL+LL	0.556	82.415	0.556	2	-122.728	0.000	1
	4:1.35DL+1.5LL	0.556	121.052	0.556	2	-178.840	0.000	1
75	1:DL	0.990	20.775	0.990	2	- 22.226	0.990	3
	2:LL	0.990	33.271	0.990	1	- 27.518	0.990	3
	3:DL+LL	0.990	43.768	0.990	1	- 49.744	0.990	3
	4:1.35DL+1.5LL	0.990	64.078	0.990	1	- 71.283	0.990	3
77	1:DL	0.990	20.768	0.990	1	- 22.231	0.990	3
	2:LL	0.990	33.282	0.990	2	- 27.524	0.990	3
	3:DL+LL	0.990	43.792	0.990	2	- 49.754	0.990	3
	4:1.35DL+1.5LL	0.990	64.111	0.990	2	- 71.297	0.990	3
80	1:DL	1.956	4.888	1.956	2	- 27.705	1.630	1

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	2:LL	1.956	38.426	1.956	2	- 76.791	1.956	1

	3:DL+LL	1.956	43.313	1.956	2	-103.866	1.956	1
	4:1.35DL+1.5LL	1.956	64.237	1.956	2	-151.738	1.956	1
81	1:DL	1.956	4.958	0.000	2	- 27.635	0.326	1
	2:LL	1.956	38.509	0.000	2	- 76.706	0.000	1
	3:DL+LL	1.956	43.468	0.000	2	-103.711	0.000	1
	4:1.35DL+1.5LL	1.956	64.458	0.000	2	-151.516	0.000	1
82	1:DL	3.140	14.615	3.140	2	- 12.943	3.140	3
	2:LL	3.140	15.811	3.140	1	-7.793	3.140	2
	3:DL+LL	3.140	25.663	3.140	1	- 13.814	3.140	3
	4:1.35DL+1.5LL	3.140	37.017	3.140	1	- 18.780	3.140	3
83	1:DL	3.140	12.933	0.000	1	- 12.609	3.140	3
	2:LL	3.140	12.316	0.000	1	- 12.168	0.000	2
	3:DL+LL	3.140	20.221	0.000	1	- 13.090	3.140	3
	4:1.35DL+1.5LL	3.140	29.145	0.000	1	- 17.744	3.140	3
84	1:DL	3.140	29.648	0.000	1	- 15.958	0.000	2
	2:LL	3.140	72.737	3.140	1	- 73.846	3.140	2
	3:DL+LL	3.140	67.860	3.140	1	- 52.203	3.140	2
	4:1.35DL+1.5LL	3.140	102.522	3.140	1	- 81.551	3.140	2
85	1:DL	3.140	24.114	0.000	2	- 14.207	0.000	1
	2:LL	3.140	73.882	0.000	1	- 72.569	0.000	2
	3:DL+LL	3.140	71.861	0.000	1	- 48.454	0.000	2
	4:1.35DL+1.5LL	3.140	108.095	0.000	1	- 76.299	0.000	2
86	1:DL	3.140	29.652	0.000	2	- 15.958	0.000	1

	2:LL	3.140	95.801	0.000	1	- 88.285	0.000	2
	3:DL+LL	3.140	91.121	0.000	1	- 58.633	0.000	2
	4:1.35DL+1.5LL	3.140	137.383	0.000	1	- 92.397	0.000	2
87	1:DL	3.140	24.132	0.000	1	- 14.207	0.000	2
	2:LL	3.140	50.041	0.000	2	- 45.760	0.000	1
	3:DL+LL	3.140	48.002	0.000	2	- 25.314	0.785	1
	4:1.35DL+1.5LL	3.140	72.310	0.000	2	- 39.363	0.785	1
88	1:DL	3.140	14.621	3.140	1	- 12.943	3.140	3
	2:LL	3.140	16.028	3.140	2	- 12.102	3.140	1
	3:DL+LL	3.140	25.875	3.140	2	- 11.585	3.140	3
	4:1.35DL+1.5LL	3.140	37.335	3.140	2	- 15.436	3.140	3
89	1:DL	3.140	12.938	0.000	1	- 12.609	3.140	3
	2:LL	3.140	16.778	0.000	2	- 13.470	0.000	1
	3:DL+LL	3.140	24.677	0.000	2	- 10.876	3.140	3
	4:1.35DL+1.5LL	3.140	35.831	0.000	2	- 14.422	3.140	3
90	1:DL	3.912				- 54.565	1.956	1
	2:LL	3.912				- 52.526	0.000	1
	3:DL+LL	3.912				-107.091	1.956	1
	4:1.35DL+1.5LL	3.912				-152.451	1.956	1
91	1:DL	3.912				- 54.565	1.956	1
	2:LL	3.912				- 52.526	0.000	1
	3:DL+LL	3.912				-107.091	1.956	1
	4:1.35DL+1.5LL	3.912				-152.451	1.956	1

92	1:DL	3.768	18.795	1.884	3	- 30.517	1.884	1
	2:LL	3.768				- 14.094	0.000	1
	3:DL+LL	3.768	4.701	1.884	3	- 44.610	1.884	1
	4:1.35DL+1.5LL	3.768	4.232	1.884	3	- 62.338	1.884	1
93	1:DL	3.076	16.528	1.538	3	- 24.067	1.538	2
	2:LL	3.076	131.828	0.000	1	- 86.930	0.000	3
	3:DL+LL	3.076	128.048	0.000	1	- 83.984	0.000	3
	4:1.35DL+1.5LL	3.076	192.638	0.000	1	-126.418	0.000	3
94	1:DL	3.076	16.525	1.538	3	- 24.064	1.538	2
	2:LL	3.076	131.836	0.000	1	- 86.935	0.000	3

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	3:DL+LL	3.076	128.063	0.000	1	- 83.995	0.000	3
	4:1.35DL+1.5LL	3.076	192.661	0.000	1	-126.433	0.000	3
95	1:DL	1.500	4.995	0.625	3	-7.547	0.625	2
	2:LL	1.500	131.076	0.000	1	- 87.706	0.000	3
	3:DL+LL	1.500	127.002	0.000	1	- 85.036	0.000	3
	4:1.35DL+1.5LL	1.500	191.115	0.000	1	-127.955	0.000	3
96	1:DL	1.500	4.991	0.625	3	-7.542	0.625	2
	2:LL	1.500	131.083	0.000	1	- 87.711	0.000	3
	3:DL+LL	1.500	127.017	0.000	1	- 85.047	0.000	3
	4:1.35DL+1.5LL	1.500	191.136	0.000	1	-127.970	0.000	3
97	1:DL	1.831	6.101	0.915	3	-3.438	0.915	1
	2:LL	1.831	1.679	0.000	1			

	3:DL+LL	1.831	7.780	0.915	3	-1.759	0.915	1
	4:1.35DL+1.5LL	1.831	10.755	0.915	3	-2.123	0.915	1
98	1:DL	1.831	6.101	0.915	3	-3.438	0.915	1
	2:LL	1.831	1.679	0.000	1			
	3:DL+LL	1.831	7.780	0.915	3	-1.759	0.915	1
	4:1.35DL+1.5LL	1.831	10.755	0.915	3	-2.123	0.915	1
101	1:DL	1.588	37.450	0.000	1	- 47.510	0.000	3
	2:LL	1.588	35.051	0.000	1	- 38.469	0.000	3
	3:DL+LL	1.588	72.501	0.000	1	- 85.979	0.000	3
	4:1.35DL+1.5LL	1.588	103.134	0.000	1	-121.843	0.000	3
102	1:DL	0.600	19.782	0.000	2	- 15.974	0.000	1
	2:LL	0.600	19.114	0.000	1	- 14.249	0.000	2
	3:DL+LL	0.600	8.180	0.000	1			
	4:1.35DL+1.5LL	0.600	11.460	0.200	4			
103	1:DL	0.792	25.506	0.792	3	- 16.140	0.792	1
	2:LL	0.792	33.659	0.792	3	- 22.202	0.792	1
	3:DL+LL	0.792	59.166	0.792	3	- 38.343	0.792	1
	4:1.35DL+1.5LL	0.792	84.922	0.792	3	- 55.093	0.792	1
104	1:DL	0.230	53.254	0.230	2	- 43.144	0.230	3
	2:LL	0.230	48.304	0.230	2	- 38.643	0.230	3
	3:DL+LL	0.230	101.558	0.230	2	- 81.787	0.230	3
	4:1.35DL+1.5LL	0.230	144.349	0.230	2	-116.209	0.230	3
105	1:DL	0.600	7.332	0.000	1	-1.687	0.000	3
	2:LL	0.600	63.376	0.000	1	- 54.400	0.000	2
	3:DL+LL	0.600	70.656	0.000	1	- 56.035	0.000	2

	4:1.35DL+1.5LL	0.600	104.892	0.000	1	- 83.807	0.000	2
106	1:DL	0.700	2.145	0.408	3	-7.033	0.000	3
	2:LL	0.700	55.018	0.000	1	- 81.071	0.000	3
	3:DL+LL	0.700	56.127	0.000	1	- 88.104	0.000	3
	4:1.35DL+1.5LL	0.700	84.024	0.000	1	-131.101	0.000	3
107	1:DL	0.792	6.452	0.726	3			
	2:LL	0.792	48.051	0.792	1	- 48.230	0.792	3
	3:DL+LL	0.792	48.545	0.792	1	- 41.826	0.792	3
	4:1.35DL+1.5LL	0.792	72.743	0.792	1	- 63.699	0.792	3
108	1:DL	0.230	47.837	0.000	1	- 53.998	0.230	2
	2:LL	0.230	48.301	0.230	3	- 54.422	0.230	2
	3:DL+LL	0.230	94.919	0.000	1	-108.421	0.230	2
	4:1.35DL+1.5LL	0.230	135.203	0.000	1	-154.531	0.230	2
109	1:DL	1.588	54.996	1.588	1	- 73.372	1.588	3
	2:LL	1.588	110.212	1.588	1	-149.253	1.588	3
	3:DL+LL	1.588	165.208	1.588	1	-222.625	1.588	3
	4:1.35DL+1.5LL	1.588	239.562	1.588	1	-322.932	1.588	3
110	1:DL	1.588	26.282	1.588	3	- 32.276	0.000	3
	2:LL	1.588	11.205	1.588	3	-9.417	1.588	1
	3:DL+LL	1.588	37.487	1.588	3	- 39.635	0.000	3

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	4:1.35DL+1.5LL	1.588	52.289	1.588	3	- 54.611	0.000	3
111	1:DL	1.588	50.079	0.000	3	- 55.914	1.588	3

	2:LL	1.588	113.155	0.000	3	-108.629	1.588	3
	3:DL+LL	1.588	163.234	0.000	3	-164.543	1.588	3
	4:1.35DL+1.5LL	1.588	237.339	0.000	3	-238.427	1.588	3
112	1:DL	0.230	18.425	0.000	1	- 17.938	0.230	2
	2:LL	0.230	78.230	0.000	1	- 77.470	0.230	2
	3:DL+LL	0.230	96.655	0.000	1	- 95.407	0.230	2
	4:1.35DL+1.5LL	0.230	142.219	0.000	1	-140.420	0.230	2
113	1:DL	1.589	55.069	0.000	1	- 73.472	0.000	3
	2:LL	1.589	33.103	0.000	1	- 37.074	0.000	3
	3:DL+LL	1.589	88.172	0.000	1	-110.546	0.000	3
	4:1.35DL+1.5LL	1.589	123.997	0.000	1	-154.798	0.000	3
114	1:DL	1.589	37.437	1.589	1	- 47.483	1.589	3
	2:LL	1.589	110.517	1.589	1	-151.181	1.589	3
	3:DL+LL	1.589	147.953	1.589	1	-198.664	1.589	3
	4:1.35DL+1.5LL	1.589	216.315	1.589	1	-290.873	1.589	3
115	1:DL	0.700	17.266	0.117	3	- 15.329	0.117	1
	2:LL	0.700	43.953	0.000	1	- 69.060	0.000	3
	3:DL+LL	0.700	29.479	0.000	1	- 52.533	0.000	3
	4:1.35DL+1.5LL	0.700	46.390	0.000	1	- 81.278	0.000	3
116	1:DL	0.792	6.428	0.726	3			
	2:LL	0.792	47.884	0.792	3	- 33.561	0.792	1
	3:DL+LL	0.792	54.262	0.792	3	- 33.421	0.792	1
	4:1.35DL+1.5LL	0.792	80.436	0.792	3	- 50.153	0.792	1
117	1:DL	1.589	50.160	1.589	3	- 56.002	0.000	3

	2:LL	1.589	9.092	1.589	3	-9.594	1.589	1
	3:DL+LL	1.589	59.251	1.589	3	-62.630	0.000	3
	4:1.35DL+1.5LL	1.589	81.353	1.589	3	-85.545	0.000	3
118	1:DL	1.589	26.245	0.000	3	-32.247	1.589	3
	2:LL	1.589	114.124	0.000	3	-110.971	1.589	3
	3:DL+LL	1.589	140.369	0.000	3	-143.218	1.589	3
	4:1.35DL+1.5LL	1.589	206.617	0.000	3	-209.990	1.589	3
119	1:DL	0.600	19.756	0.000	1	-15.948	0.000	2
	2:LL	0.600	62.099	0.000	1	-57.503	0.000	2
	3:DL+LL	0.600	81.855	0.000	1	-73.451	0.000	2
	4:1.35DL+1.5LL	0.600	119.820	0.000	1	-107.784	0.000	2
120	1:DL	0.792	25.584	0.792	3	-16.203	0.792	1
	2:LL	0.792	38.922	0.792	1	-36.612	0.792	3
	3:DL+LL	0.792	23.097	0.792	1	-11.028	0.792	3
	4:1.35DL+1.5LL	0.792	37.019	0.792	1	-20.380	0.792	3
121	1:DL	0.230	44.199	0.000	1	-52.345	0.230	2
	2:LL	0.230	57.719	0.230	3	-66.122	0.230	2
	3:DL+LL	0.230	101.900	0.230	3	-118.467	0.230	2
	4:1.35DL+1.5LL	0.230	146.222	0.230	3	-169.849	0.230	2
122	1:DL	0.230	18.591	0.230	2	-17.916	0.000	1
	2:LL	0.230	80.579	0.000	1	-79.818	0.230	2
	3:DL+LL	0.230	62.664	0.000	1	-61.227	0.230	2
	4:1.35DL+1.5LL	0.230	96.683	0.000	1	-94.629	0.230	2
123	1:DL	0.230	55.622	0.230	2	-46.330	0.000	1

	2:LL	0.230	59.516	0.230	2	- 47.950	0.230	3
	3:DL+LL	0.230	115.138	0.230	2	- 92.528	0.230	3
	4:1.35DL+1.5LL	0.230	164.364	0.230	2	-132.105	0.230	3
124	1:DL	0.600	17.222	0.000	2	- 13.495	0.000	1
	2:LL	0.600	43.061	0.000	1	- 38.034	0.000	2
	3:DL+LL	0.600	32.001	0.000	1	- 23.247	0.000	2
	4:1.35DL+1.5LL	0.600	49.660	0.000	1	- 37.089	0.000	2

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
125	1:DL	0.600	7.282	0.000	3	-1.661	0.000	1
	2:LL	0.600	105.036	0.000	1	- 95.998	0.000	2
	3:DL+LL	0.600	112.319	0.000	1	- 97.660	0.000	2
	4:1.35DL+1.5LL	0.600	167.386	0.000	1	-146.240	0.000	2
126	1:DL	0.600	17.248	0.000	1	- 13.520	0.000	2
	2:LL	0.600	95.437	0.000	1	- 90.909	0.000	2
	3:DL+LL	0.600	112.684	0.000	1	-104.430	0.000	2
	4:1.35DL+1.5LL	0.600	166.439	0.000	1	-154.616	0.000	2
127	1:DL	1.588	45.397	0.000	1	- 58.752	0.000	3
	2:LL	1.588	62.342	1.588	1	- 68.304	1.588	3
	3:DL+LL	1.588	51.971	1.588	1	- 51.444	1.588	3
	4:1.35DL+1.5LL	1.588	79.512	1.588	1	- 79.695	1.588	3
128	1:DL	0.700	8.236	0.000	1	- 12.072	0.000	3
	2:LL	0.700	82.229	0.000	1	-121.007	0.000	3

	3:DL+LL	0.700	90.466	0.000	1	-133.079	0.000	3
	4:1.35DL+1.5LL	0.700	134.463	0.000	1	-197.808	0.000	3
129	1:DL	1.588	49.452	1.588	1	-62.880	1.588	3
	2:LL	1.588	148.504	1.588	1	-201.378	1.588	3
	3:DL+LL	1.588	197.957	1.588	1	-264.258	1.588	3
	4:1.35DL+1.5LL	1.588	289.517	1.588	1	-386.955	1.588	3
130	1:DL	1.589	49.467	0.000	1	-62.902	0.000	3
	2:LL	1.589	56.007	1.589	1	-62.963	1.589	3
	3:DL+LL	1.589	56.172	0.000	1	-57.257	0.000	3
	4:1.35DL+1.5LL	1.589	76.837	0.000	1	-76.450	0.000	3
131	1:DL	1.587	45.383	1.587	1	-58.735	1.587	3
	2:LL	1.587	137.814	1.587	1	-191.053	1.587	3
	3:DL+LL	1.587	183.197	1.587	1	-249.788	1.587	3
	4:1.35DL+1.5LL	1.587	267.988	1.587	1	-365.872	1.587	3
132	1:DL	0.701	4.410	0.000	1	-8.211	0.000	3
	2:LL	0.701	57.832	0.000	1	-92.698	0.000	3
	3:DL+LL	0.701	62.242	0.000	1	-100.909	0.000	3
	4:1.35DL+1.5LL	0.701	92.701	0.000	1	-150.131	0.000	3
133	1:DL	0.792	4.402	0.528	3			
	2:LL	0.792	76.335	0.792	3	-58.038	0.792	1
	3:DL+LL	0.792	80.147	0.792	3	-56.377	0.792	1
	4:1.35DL+1.5LL	0.792	119.649	0.792	3	-84.815	0.792	1
134	1:DL	1.588	36.856	1.588	3	-41.426	0.000	3
	2:LL	1.588	39.235	0.000	3	-36.142	1.588	3
	3:DL+LL	1.588	4.388	0.926	3	-8.008	0.926	2

	4:1.35DL+1.5LL	1.588	6.495	0.529	3	- 11.829	0.662	2
135	1:DL	1.588	40.720	0.000	3	- 45.320	1.588	3
	2:LL	1.588	159.413	0.000	3	-153.308	1.588	3
	3:DL+LL	1.588	200.133	0.000	3	-198.628	1.588	3
	4:1.35DL+1.5LL	1.588	294.091	0.000	3	-291.144	1.588	3
136	1:DL	0.792	5.067	0.000	1	-0.210	0.000	3
	2:LL	0.792	56.280	0.000	1	- 52.543	0.000	3
	3:DL+LL	0.792	61.346	0.000	1	- 52.753	0.000	3
	4:1.35DL+1.5LL	0.792	91.260	0.000	1	- 79.098	0.000	3
137	1:DL	0.792	5.085	0.792	1	-0.231	0.792	3
	2:LL	0.792	57.304	0.792	3	- 45.726	0.792	1
	3:DL+LL	0.792	57.072	0.792	3	- 40.792	0.792	1
	4:1.35DL+1.5LL	0.792	85.643	0.792	3	- 61.928	0.792	1
138	1:DL	1.589	40.722	1.589	3	- 45.324	0.000	3
	2:LL	1.589	27.100	0.000	3	- 27.914	1.589	3
	3:DL+LL	1.589	12.808	1.589	3	- 18.224	0.000	3
	4:1.35DL+1.5LL	1.589	13.104	1.589	3	- 20.537	0.000	3
139	1:DL	1.587	36.859	0.000	3	- 41.418	1.587	3

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	2:LL	1.587	150.831	0.000	3	-148.532	1.587	3
	3:DL+LL	1.587	187.690	0.000	3	-189.950	1.587	3
	4:1.35DL+1.5LL	1.587	276.006	0.000	3	-278.712	1.587	3
140	1:DL	0.793	4.426	0.264	3			

	2:LL	0.793	54.644	0.000	1	- 54.520	0.000	3
	3:DL+LL	0.793	56.394	0.000	1	- 50.678	0.000	3
	4:1.35DL+1.5LL	0.793	84.329	0.000	1	- 76.593	0.000	3
141	1:DL	0.230	35.177	0.000	3	- 40.965	0.000	1
	2:LL	0.230	39.810	0.000	3	- 47.540	0.000	1
	3:DL+LL	0.230	74.987	0.000	3	- 88.506	0.000	1
	4:1.35DL+1.5LL	0.230	107.203	0.000	3	-126.614	0.000	1
142	1:DL	0.230	3.187	0.000	1	-2.630	0.230	2
	2:LL	0.230	151.446	0.000	1	-148.332	0.230	2
	3:DL+LL	0.230	154.633	0.000	1	-150.961	0.230	2
	4:1.35DL+1.5LL	0.230	231.471	0.000	1	-226.048	0.230	2
143	1:DL	0.230	42.628	0.000	1	- 33.944	0.000	3
	2:LL	0.230	69.389	0.000	1	- 73.611	0.230	2
	3:DL+LL	0.230	112.017	0.000	1	-106.858	0.230	2
	4:1.35DL+1.5LL	0.230	161.631	0.000	1	-155.300	0.230	2
144	1:DL	0.230	35.369	0.000	3	- 41.187	0.000	1
	2:LL	0.230	52.062	0.000	3	- 63.551	0.000	1
	3:DL+LL	0.230	87.431	0.000	3	-104.738	0.000	1
	4:1.35DL+1.5LL	0.230	125.841	0.000	3	-150.929	0.000	1
145	1:DL	0.230	3.258	0.230	2	-2.640	0.000	1
	2:LL	0.230	138.752	0.000	1	-135.498	0.230	2
	3:DL+LL	0.230	136.112	0.000	1	-132.240	0.230	2
	4:1.35DL+1.5LL	0.230	204.565	0.000	1	-198.848	0.230	2
146	1:DL	0.230	42.405	0.000	1	- 33.767	0.000	3
	2:LL	0.230	83.275	0.000	1	- 68.845	0.230	2
	3:DL+LL	0.230	125.680	0.000	1	-102.237	0.230	2

	4:1.35DL+1.5LL	0.230	182.159	0.000	1	-148.347	0.230	2
147	1:DL	1.589	25.692	0.795	1	- 24.939	0.795	2
	2:LL	1.589	30.507	0.927	1	- 29.608	0.927	3
	3:DL+LL	1.589	56.124	0.927	1	- 54.458	0.927	3
	4:1.35DL+1.5LL	1.589	80.343	0.927	1	- 77.960	0.927	3
148	1:DL	1.589	35.826	1.589	2	- 34.733	1.589	1
	2:LL	1.589	38.096	1.589	2	- 36.957	1.589	1
	3:DL+LL	1.589	73.922	1.589	2	- 71.690	1.589	1
	4:1.35DL+1.5LL	1.589	105.509	1.589	2	-102.325	1.589	1
149	1:DL	1.589	18.680	0.662	1	- 17.244	0.662	3
	2:LL	1.589	38.342	0.000	1	- 36.365	0.000	3
	3:DL+LL	1.589	55.121	0.000	1	- 51.812	0.000	3
	4:1.35DL+1.5LL	1.589	80.165	0.000	1	- 75.401	0.000	3
150	1:DL	1.589	19.104	1.589	3	- 17.138	1.589	1
	2:LL	1.589	51.810	1.589	3	- 48.837	1.589	1
	3:DL+LL	1.589	70.911	1.589	3	- 65.971	1.589	1
	4:1.35DL+1.5LL	1.589	103.502	1.589	3	- 96.387	1.589	1
151	1:DL	1.589	25.693	0.795	1	- 24.940	0.795	2
	2:LL	1.589	29.895	0.795	1	- 28.966	0.795	2
	3:DL+LL	1.589	55.588	0.795	1	- 53.906	0.795	2
	4:1.35DL+1.5LL	1.589	79.528	0.795	1	- 77.119	0.795	2
152	1:DL	1.589	35.827	1.589	2	- 34.734	1.589	1
	2:LL	1.589	45.693	1.589	2	- 44.267	1.589	1

	3:DL+LL	1.589	81.520	1.589	2	- 79.001	1.589	1
	4:1.35DL+1.5LL	1.589	116.906	1.589	2	-113.291	1.589	1
153	1:DL	4.576	32.151	4.576	2	- 27.101	4.576	3
	2:LL	4.576	48.607	4.576	2	- 32.342	4.576	1

			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	3:DL+LL	4.576	80.758	4.576	2	-28.723	4.576	3
	4:1.35DL+1.5LL	4.576	116.314	4.576	2	-39.020	4.576	3
154	1:DL	4.577	32.157	0.000	1	-27.101	0.000	3
	2:LL	4.577	34.504	0.000	1	-50.587	0.000	2
	3:DL+LL	4.577	47.001	0.000	1	-42.453	1.907	2
	4:1.35DL+1.5LL	4.577	68.627	0.000	1	-61.748	1.907	2
155	1:DL	4.576	32.032	4.576	2	-26.873	4.576	3
	2:LL	4.576	47.956	4.576	2	-32.397	4.576	1
	3:DL+LL	4.576	79.988	4.576	2	-29.241	4.576	3
	4:1.35DL+1.5LL	4.576	115.178	4.576	2	-39.831	4.576	3
156	1:DL	4.577	32.039	0.000	1	-26.873	0.000	3
	2:LL	4.577	33.715	0.000	1	-50.823	0.000	2
	3:DL+LL	4.577	46.107	0.000	1	-42.620	1.907	2
	4:1.35DL+1.5LL	4.577	67.301	0.000	1	-61.991	1.907	2
157	1:DL	4.576	112.833	4.576	2	-94.059	4.576	3
	2:LL	4.576	75.160	4.576	2	-32.626	4.576	3
	3:DL+LL	4.576	187.994	4.576	2	-126.684	4.576	3
	4:1.35DL+1.5LL	4.576	265.065	4.576	2	-175.918	4.576	3
158	1:DL	4.577	112.884	0.000	1	-94.100	0.000	3
	2:LL	4.577	36.168	0.000	1	-72.671	0.000	2
	3:DL+LL	4.577	66.889	2.670	3	-93.837	2.670	2
	4:1.35DL+1.5LL	4.577	92.690	2.670	3	-131.868	2.288	2

159	1:DL	0.250	29.699	0.250	2	-41.265	0.250	1
	2:LL	0.250	69.218	0.250	2	-41.735	0.250	3
	3:DL+LL	0.250	98.917	0.250	2	-57.500	0.250	1
	4:1.35DL+1.5LL	0.250	143.921	0.250	2	-80.061	0.250	1
160	1:DL	0.800	12.998	0.800	2	-14.331	0.800	1
	2:LL	0.800	27.826	0.000	3	-21.920	0.000	1
	3:DL+LL	0.800	33.533	0.800	2	-28.562	0.800	1
	4:1.35DL+1.5LL	0.800	48.350	0.800	2	-40.693	0.800	1
161	1:DL	1.256	4.619	0.628	3	-1.770	0.628	2
	2:LL	1.256	3.721	1.256	3	-4.403	1.256	1
	3:DL+LL	1.256	8.340	0.628	3	-5.379	0.628	1
	4:1.35DL+1.5LL	1.256	11.817	0.628	3	-7.922	0.628	1
164	1:DL	1.256	4.619	0.628	3	-1.771	0.628	2
	2:LL	1.256	3.721	0.000	2	-1.017	0.000	1
	3:DL+LL	1.256	8.340	0.628	3	-1.993	0.628	1
	4:1.35DL+1.5LL	1.256	11.817	0.628	3	-2.843	0.628	1
165	1:DL	1.956	4.956	0.000	1	-27.634	0.326	2
	2:LL	1.956	30.697	0.000	1	-68.662	0.000	2
	3:DL+LL	1.956	35.654	0.000	1	-95.665	0.000	2
	4:1.35DL+1.5LL	1.956	52.737	0.000	1	-139.446	0.000	2
166	1:DL	0.990	20.771	0.990	2	-22.231	0.990	3
	2:LL	0.990	21.181	0.990	1	-27.541	0.990	3
	3:DL+LL	0.990	39.662	0.990	2	-49.772	0.990	3
	4:1.35DL+1.5LL	0.990	56.377	0.990	2	-71.323	0.990	3
167	1:DL	0.556	17.206	0.000	1	-34.949	0.556	2
	2:LL	0.556	57.529	0.000	1	-78.468	0.556	2
	3:DL+LL	0.556	74.735	0.000	1	-113.416	0.556	2
	4:1.35DL+1.5LL	0.556	109.522	0.000	1	-164.882	0.556	2
168	1:DL	0.800	12.912	0.800	2	-14.418	0.800	1
	2:LL	0.800	13.930	0.800	2	-20.914	0.800	1

	3:DL+LL	0.800	26.842	0.800	2	-35.333	0.800	1
	4:1.35DL+1.5LL	0.800	38.326	0.800	2	-50.836	0.800	1
169	1:DL	1.831	6.101	0.915	3	-3.438	0.915	1
	2:LL	1.831	1.679	0.000	1			
	3:DL+LL	1.831	7.780	0.915	3	-1.759	0.915	1
			Max Comp			Max Tens		
Beam	L/C	Length (m)	Stress (N/mm ²)	d (m)	Corner	Stress (N/mm ²)	d (m)	Corner
	4:1.35DL+1.5LL	1.831	10.755	0.915	3	-2.123	0.915	1
170	1:DL	0.628	3.576	0.000	1	-41.276	0.000	2
	2:LL	0.628	40.692	0.000	1	-91.364	0.000	2
	3:DL+LL	0.628	44.268	0.000	1	-132.640	0.000	2
	4:1.35DL+1.5LL	0.628	65.865	0.000	1	-192.768	0.000	2
171	1:DL	0.800	12.912	0.800	1	-14.417	0.800	2
	2:LL	0.800	13.930	0.800	1	-20.913	0.800	2
	3:DL+LL	0.800	26.842	0.800	1	-35.330	0.800	2
	4:1.35DL+1.5LL	0.800	38.326	0.800	1	-50.833	0.800	2
172	1:DL	0.556	17.138	0.556	1	-35.017	0.000	1
	2:LL	0.556	57.451	0.556	1	-78.547	0.000	2
	3:DL+LL	0.556	74.589	0.556	1	-113.565	0.000	2
	4:1.35DL+1.5LL	0.556	109.313	0.556	1	-165.094	0.000	2
173	1:DL	0.990	20.778	0.990	1	-22.226	0.990	3
	2:LL	0.990	21.172	0.990	2	-27.536	0.990	3
	3:DL+LL	0.990	39.670	0.990	1	-49.762	0.990	3
	4:1.35DL+1.5LL	0.990	56.389	0.990	1	-71.309	0.990	3
174	1:DL	1.831	6.101	0.915	3	-3.438	0.915	1

MASON STRUCTURES CONSULTING STRUCTURAL ENGINEERS	Property Address: Stoke Golding, UK		Job Ref. M313	
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	2:LL	1.831	1.679	0.000	1			
	3:DL+LL	1.831	7.780	0.915	3	-1.759	0.915	1
	4:1.35DL+1.5LL	1.831	10.755	0.915	3	-2.123	0.915	1

Reaction Summary

			Horizontal	V ertical	Horizontal	Moment		
	Node	L/C	FX (kN)	FY (kN)	FZ (kN)	MX (kNm)	MY (kNm)	MZ (kNm)
Max FX	4	1:DL	0.281	0.857	-0.049	- 0.049	0.000	-1.286
Min FX	4	4:1.35DL+1.5LL	-17.066	1.312	-0.168	- 0.182	0.003	30.694
Max FY	6	4:1.35DL+1.5LL	-2.506	42.276	-4.527	- 4.156	-0.004	4.934
Min FY	4	2:LL	-11.630	0.104	-0.068	- 0.077	0.002	21.619
Max FZ	10	4:1.35DL+1.5LL	-1.380	20.732	7.461	5.749	-0.007	2.581
Min FZ	6	4:1.35DL+1.5LL	-2.506	42.276	-4.527	- 4.156	-0.004	4.934
Max MX	10	4:1.35DL+1.5LL	-1.380	20.732	7.461	5.749	-0.007	2.581
Min MX	2	4:1.35DL+1.5LL	-1.093	26.709	-3.045	- 12.785	-0.002	2.351
Max MY	1	4:1.35DL+1.5LL	-3.659	14.893	-2.092	- 2.328	0.011	3.884
Min MY	9	4:1.35DL+1.5LL	-3.976	9.991	3.014	1.171	-0.008	3.632
Max MZ	4	4:1.35DL+1.5LL	-17.066	1.312	-0.168	- 0.182	0.003	30.694
Min MZ	4	1:DL	0.281	0.857	-0.049	- 0.049	0.000	-1.286

Base Pressure Summary

	Node	L/C	FX (N/mm ²)	FY (N/mm ²)	FZ (N/mm ²)
Max FX	1	1:DL	0.000	0.000	0.000
Min FX	1	1:DL	0.000	0.000	0.000
Max FY	1	1:DL	0.000	0.000	0.000
Min FY	1	1:DL	0.000	0.000	0.000
Max FZ	1	1:DL	0.000	0.000	0.000
Min FZ	1	1:DL	0.000	0.000	0.000

Statics Check Results

L/C		FX (kN)	FY (kN)	FZ (kN)	MX (kNm)	MY (kNm)	MZ (kNm)
1:DL	Loads	0.000	- 63.226	-0.000	- 344.689	0.000	- 289.345
1:DL	Reactions	-0.000	63.226	0.000	344.689	-0.000	289.345
	Difference	-0.000	-0.000	-0.000	0.000	0.000	0.000
2:LL	Loads	30.125	- 71.121	-0.000	- 367.056	- 137.507	- 385.631
2:LL	Reactions	- 30.125	71.121	0.000	367.056	137.507	385.631
	Difference	0.000	-0.000	-0.000	0.000	0.000	0.000