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DS40 Stage
Fold-Out Roof
Daytona Stage Hire

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Contents

1.0 Introduction

Scott White and Hookins LLP were instructed by Daytona Stage Hire to assess the load capacity of the DS40 Trailer Stage and the maximum payload that the structure can withstand. This report considers the front section of the stage super-structure/roof that folds out from the trailer. The general arrangement of the structure can be seen on the drawing created by Total Solutions and reproduced in Appendix C.

The structure is supported on the trailer chassis and travels in a different configuration than when is deployed. The side stage units fold down and sections of the roof fold up on pneumatic ramps. The folding stage and roof sections are secured to the trailer unit prior to towing.

The signboard located across the top front edge of the stage has been modelled in order to consider the wind force it applies to the main roof structure. However, its analysis falls out of the scope of this report.

The roof of the 'fold out' front stage is always clad, however the side walls have been considered open since this attracts the maximum wind uplift.

This document presents the background and assumptions used for the analysis and design capacity checks carried out on the various structural elements. The analysis comprised of modelling the structures 3 dimensionally to determine the adequacy to resist the applied loading.

The structure is intended for external use during short duration events. The design wind speeds are this limited, as agreed with the client, in accordance with the recommendations contained in "Temporary Demountable Structures" which is published by the Institution of Structural Engineers. The design wind speed for the main structure will therefore be taken to be 25m/s. It must be noted that this recommendation for the wind speed requires a regime of active wind monitoring to ensure the stability and safety of the structure.

The structure is intended to be used within the summer months so it has not been designed to resist the loads associated with ice and snow. Where use falls outside of this period, an active monitoring system is required to ensure the structure is not subjected to any snow or ice loading.

The structure has not been designed to resist seismic forces. The probability of seismic forces occurring during operation is assumed to be negligible. If the operator considers that circumstances of use increase the risk above the assumed level, then advice must be sought from a suitably qualified and experienced structural engineer.

It is the operator's responsibility to provide adequate bearing plates, bearing surfaces, anchorages, restraints etc. for the system to function safely in accordance with the design assumptions.

The operator must read and fully understand the operating manual provided by Daytona Stage Hire, before erecting the structure. A copy of this document may be obtained from Daytona Stage Hire, PO Box 43, Huddersfield, HD8 9YU. (Tel: 01484 605555).

It is assumed in the preparation of this report that the structure will be used by competent and suitably experienced people and organisations that have the necessary experience of structures of this type. It is also assumed that the fabrication of the elements conforms to the requirements of BS EN 1999: Design of aluminium structures.

1.1 Codes and Standards

The structure has been designed using the current editions of the relevant Eurocodes, British Standards and British Standard Codes of Practice. The principle codes used were:

BS EN 1991	Actions on Structures Part 1-1: General actions – Densities, Self-weights, imposed loads Part 1-4: General actions – Wind actions
BS EN 1999	Design of Aluminium Structures Part 1-1: General structural rules
CWA 15902-02	Lifting and load-bearing equipment for stages and other production areas within the entertainment industry.

The operator shall also make reference to the following documents:

- The Event Safety Guide – Guidance to Health, Safety and Welfare at Music and Similar Events – HSG195 Health and Safety Commission.
- Temporary Demountable Structure – The Institution of Structural Engineers.

1.2 Materials

All materials used shall comply with the appropriate Eurocodes. The structural members within each truss section shall be formed from aluminium alloy designation 6082-T6. This material was formerly known as HE30TF and is now known as EN AW 6082 T6.

EN AW 6082 T6 is a heat treated alloy with a durability rating of "B" which means that surface protection is only required where the material is used in severe, urban or marine environments. It is therefore considered that surface protection is not required for uses in temporary structures for the entertainment industry.

It should be noted that some oxidation of the alloy will take place when it is used outdoors.

Some minor pitting is likely, but this should not affect the structural performance of the members.

The T6 temper condition means that the alloy has been solution treated and artificially aged. This is done to increase the proof stress, tensile stress and hardness of the alloy. The effects of tempering are significantly reduced by welding as the material in the heat affected zone is softened.

1.3 Erection

The design checks are for the structure in its fully erected condition. The erection processes must be carried out in accordance with the recommendations provided in the operating manual provided by Daytona Stage Hire. in order to ensure that temporary stresses are not induced to the detriment of the structure. Any deviation from the recommended procedures must be discussed and agreed with a suitably qualified and experienced structural engineer.

1.4 Repetitive Use of Elements

Temporary structures are designed for use on a number of occasions; therefore the allowable loads have to be reduced to allow for minor damage to individual members. This factor, by which the theoretical loads are reduced, is called the allowable load reduction factor and is defined in CWA 15902 Part 2. The calculated capacities are divided by 1.2 to allow for repetitive use. This is, in effect, the same as multiplying the calculated loads by 0.83; a slightly more onerous value than the 0.85 value recommended in BS7906.

1.5 Ground Conditions

Scott White and Hookins have not assessed the existing ground under which the structure will be supported.

The ground beneath the structure must be considered by the operator to ensure it is suitable to carry the loads imposed through the ground supports The allowable pressures that can safely be carried applied to the ground must be determined on site and be agreed with the local statutory authorities. Spreader plates can be inserted to assist this process.

The structure should not be erected in areas subject to flooding or poor drainage as the water content of the ground could increase appreciably and reduce the allowable ground bearing pressure. Consideration may thus need to be given to providing adequate drainage in the areas around and under the structure.

The event organiser should advise the operator of the position of underground services or overhead cables which may present hazards to the use of the structure. Advice concerning such services may be obtained from the relevant utility company.

Demountable structures are generally loaded for relatively short periods. Long term settlements in the ground need not be taken into account unless the structure is to be in place for more than 28 days. In such a case, a full engineering assessment of the ground and the bearing pressures upon should be undertaken. It should be noted in this context that the ground supported structures are particularly sensitive to differential movements which may cause tilting of the structure.

The greatest risk of foundation failure is due to soft spots. This can result from peat layers, unconsolidated fill, cavities, land drains, previous excavations, etc. Unequal settlements

could result and set up high stresses in the structure. The position of the supports should therefore be set out on site prior to erecting the structure and any soft spots which coincide with support positions should be filled and compacted or be bridged with grillages or other suitable transfer structures.

When making any assessment, thought must be given to future as well as existing weather conditions. For example, frozen or dried out ground will support greater loads than it will when it has thawed or become waterlogged.

1.6 User Information

Reference shall be made to the User Manual (if applicable) and CWA 15902 Part for guidance on the level of user inspection.

In accordance with current best practice:

- The User shall designate a competent person to have overall responsibility on site for the structure.
- The User shall be sufficiently familiar with the engineering documentation for the structure configuration in use. Any deviations from the original intended use shall necessitate the engagement of a competent engineer to provide engineering guidance.
- The User shall be responsible for complying with local codes, standards and regulations.
- The User shall develop a risk assessment plan and make all workers aware of the hazards involved with the erection, use and dismantling of the structure.
- The User shall adhere to the guidelines set forth in the Operations Management Plan (if applicable).
- Adequate safety equipment shall be provided to access and operate the structure during the erection and dismantling of the structure
- The User shall be responsible for ensuring that the entire structure is electrically grounded prior to energising any electrical component attached to the structure.

2.0 Load and Material Factors

From NA to BS EN 1990 2002 + A1:2005 Table NA.A.1.2 (B) and Table NA.A.1.1

Permanent Action factor	=1.35
Leading Variable Action Factor	=1.5
Accompanying factor (Wind)	=0.75
Accompanying factor (Live Load)	=1.05

From BS EN 1993 Table 6.1: Partial Safety Factors for Members

Resistance of cross section γ_{M1}	= 1.10
Resistance of cross section in tension γ_{M2}	= 1.25

3.0 Material Properties

Density of aluminium	ρ = 2700 kg/m^3
Modulus of elasticity	E = 70000 N/mm^2
Modulus of rigidity	E = 2700N/mm^2

4.0 Extent of Heat Affected Zone

From BS EN 1999 6.1.6.3;

0< t ≤ 6 mm	b_{haz} = 20mm
6< t ≤ 12 mm	b_{haz} = 30 mm
12< t ≤ 25 mm	b_{haz} = 35 mm

5.0 Structural Member Properties

The capacity calculations of each section are provided in Appendix B to this report. The following summarises the key capacities of each section:

48.3 x 3.25 CHS Chord

Area	= 141 mm^2
Second moment of area	= 13031 mm^4
Maximum permissible compression	= 31.02 kN
Maximum permissible tension	= 31.02 kN
Maximum permissible moment	= 0.2 kNm
Maximum permissible shear force	= 8.95 kN

38.2 x 3.25 CHS Diagonals

Area	= 216 mm^2
Second moment of area	= 23400 mm^4
Maximum permissible compression	= 47.5 kN
Maximum permissible tension	= 47.5 kN
Maximum permissible moment(x-x)	= 0.46 kNm
Maximum permissible moment(y-y)	= 0.76 kNm

Maximum permissible shear force	= 18.2 kN

25.4 x 25.4 x 2.54 SHS

Area	= 288 mm^2
Second moment of area	= 24053 mm^4
Maximum permissible compression	= 27.26 kN
Maximum permissible tension	= 27.26 kN
Maximum permissible moment (unwelded)	= 0.39 kNm
Maximum permissible moment (welded)	= 0.26 kNm
Maximum permissible shear force (unwelded)	= 19.27 kN
Maximum permissible shear force (welded)	= 9.44 kN

50.8 x 50.8 x 3.25 SHS

Area	= 232 mm^2
Second moment of area	= 20479 mm^4
Maximum permissible compression	= 21.99 kN
Maximum permissible tension	= 21.99 kN
Maximum permissible moment (unwelded)	= 0.33 kNm
Maximum permissible moment (welded)	= 0.21 kNm
Maximum permissible shear force (unwelded)	= 15.54kN
Maximum permissible shear force (welded)	= 7.62kN

48.32 x 3.25 CHS Column Chord

Area	= 618 mm^2
Second moment of area	= 234028 mm^4
Maximum permissible compression	= 58.51 kN
Maximum permissible tension	= 58.51 kN
Maximum permissible moment (unwelded)	= 1.90 kNm
Maximum permissible moment (welded)	= 1.12 kNm
Maximum permissible shear force (unwelded)	= 41.37 kN
Maximum permissible shear force (welded)	= 20.27 kN

48.32 x 3.25 CHS Column Chord

Area	= 460 mm^2
Second moment of area	= 117296 mm^4
Maximum permissible compression	= 43.54 kN
Maximum permissible tension	= 43.54 kN
Maximum permissible moment (unwelded)	= 1.00 kNm
Maximum permissible moment (welded)	= 0.67 kNm
Maximum permissible shear force (unwelded)	= 30.78 kN
Maximum permissible shear force (welded)	= 15.08 kN

25.4 x 3.2 CHS Column Diagonal

Area	= 223 mm^2

Second moment of area	= 14035 mm^4
Maximum permissible compression	= 21.13 kN
Maximum permissible tension	= 21.13 kN
Maximum permissible moment (unwelded)	= 0.23 kNm
Maximum permissible moment (welded)	= 0.17 kNm
Maximum permissible shear force (unwelded)	= 14.94 kN
Maximum permissible shear force (welded)	= 7.32 kN

6.0 Design Loads

6.1 Dead Loads

6.1.1 Self-Weight

The self-weight of the components is calculated automatically within the design software, based on the material and members properties given in sections 3.0 and 5.0 respectively.

6.1.2 Roof Cladding

The frame is clad using 17mm Nidafont L GRP panel which have a weight of 4.6 kg/m^2 per sheet, as indicated by the client.

6.2 Variable loads

6.2.1 Live load

The maximum imposed load that the structure can carry within its capacity is of 50 kg/m on the middle and rear trusses (along their bottom chords) and 100kg/m over the front truss (shared equally along both bottom chords), as shown in Appendix A.

6.2.2 Rain Load

The rain water has been allowed at a depth of 100mm over the whole roof, therefore a load of 10 kg/m^2 has been applied to the structure.

6.2.3 Wind Load

The structure has been designed for wind speed gusts of up to 25m/s. This equates to a wind pressure of:

$$q_s = 0.625V_e^2 = 0.625 \text{ x } 25^2 = 0.39 \text{ kN/m}^2$$

The pressure coefficients have been calculated in accordance with BS EN 1991:1-4. As discussed in section 1.0, for this scenario the structure is considered as a canopy without side panels installed. Also, a wind pressure has been applied to the signboard located at the front of the structure, assuming the worst case scenario of wind from the front of the structure since this applied the most onerous forces to the structure.

The following table gives the pressure coefficients considered for the wind load:

Table 1: Wind loading pressure coefficients

Location	Pressure Coefficient
Roof	2
Side Walls	1.8

The values of this loading can be seen in Appendix A.

7.0 Analysis and Member Capacity Checks

The structure has been analysed under the described loading using a 3 dimensional analysis model. The input and headline results from the analysis software, Midas Gen, is presented in Appendix A.

The analysis model contains the load combinations listed below. The maximum applied loads acting on the structural members will be used in combination to determine the structure's suitability for the defined operating criteria.

Each load case has been entered separately using working loads. Load combinations have then been analysed for the loading described in section 5.0 using load factors so that the output loads for individual members are factored loads when considering the member capacity checks to BS EN 1993-1. The full analysis output files can be found within Appendix A of this report.

The following load cases have been defined within the model:

1-Self-weight of the structure
2- Live Load
3-Roof Cladding
4-Wind Load (no side/rear walls)
5-Rain Load
5-Wind Load Signboard.

For ease of reference to the analysis output files, the following load combinations (C) have been entered into the analysis model. Note that the load factors used, shown in brackets, are in accordance with the requirements laid out within section 2 of this report.

Factored combinations:
1: (1.35)D+(1.5)L (Live+Rain)
2: (1.35)D+(1.5)L (Live+Rain)+0.75W
3: (1.35)D+(1.5)W + 1.05 Live
4: (1.35)D+(1.5)W

Un-factored combinations:
5: (1.00)DL+ (1.00)L(Live+Rain)

7.1 Design forces from computer analysis

With the analysis output values for the applied loads obtained from the main structure model, each individual structural component can be reviewed in turn.

The analysis output values for the factored combination cases and the maximum applied forces per member are shown below as an extract from the full analysis output files contained within Appendix A of this report.

C1:1.35D+1.5L(Live+Rain)

Section	Axial Force (kN)	Shear (kN)	Bending (kNm)	Utilisation (%)
48.3x3.25 CHS Chord	7.07	2.62	0.42	84
50.8x50.8x3.25 RHS Chord	3.74	4.94	0.56	50
25.4x25.4x3.25 RHS	0.00	0.01	0.04	14
38.2x3.25 CHS Diagonals	1.52	0.06	0.16	51
25.4x3.2 Column Diagonals	1.63	0.00	0.00	8
48.3x3.25 Column Chord	4.03	0.49	0.09	23

C2:1.35D+1.5(Live+Rain)+0.75W

Section	Axial Force (kN)	Shear (kN)	Bending (kNm)	Utilisation (%)
48.3x3.25 CHS Chord	16.95	0.45	0.18	92
50.8x50.8x3.25 RHS Chord	1.71	2.76	0.32	34
25.4x25.4x3.25 RHS	0.03	0.03	0.11	40
38.2x3.25 CHS Diagonals	0.02	0.08	0.21	54
25.4x3.2 Column Diagonals	1.04	0.00	0.00	5
48.3x3.25 Column Chord	2.59	0.33	0.06	17

C3: 1.35D+1.5W+1.05Live

Section	Axial Force (kN)	Shear (kN)	Bending (kNm)	Utilisation (%)
48.3x3.25 CHS Chord	7.07	2.62	0.42	84
50.8x50.8x3.25 RHS Chord	11.68	0.43	0.29	48
25.4x25.4x3.25 RHS	0.98	0.27	0.12	64
38.2x3.25 CHS Diagonals	0.02	0.09	0.29	74
25.4x3.2 Column Diagonals	0.28	0.00	0.00	1
48.3x3.25 Column Chord	0.71	0.08	0.2	5

C4: 1.35D+1.5W

Section	Axial Force (kN)	Shear (kN)	Bending (kNm)	Utilisation (%)
48.3x3.25 CHS Chord	19.11	0.7	0.16	93
50.8x50.8x3.25 RHS Chord	22.41	0.30	0.11	74
25.4x25.4x3.25 RHS	0.88	0.27	0.1	53
38.2x3.25 CHS Diagonals	0.18	1.67	0.17	56
25.4x3.2 Column Diagonals	1.22	0.00	0.00	4
48.3x3.25 Column Chord	3.01	0.36	0.07	20

The values obtained are to be compared to the individual member capacities in order to determine the suitability for each member type.

The analysis showed that under the described loading all members within the structure are within capacity.

8.0 Appendices

A. Summary of Structural Analysis
B. Member Capacity Calculations
C. Arrangements Drawings and Photographs

Appendix A
Summary of Structural Analysis

Table 1 Material

Name	Type	Standard	Elasticity (N/mm^2)	Poisson	Density (kg/m^3)
Aluminium	User Defined	None	70000	0.3	2700

Table 2 Section Properties

Name	Area (mm^2)	Asy (mm^2)	Asz (mm^2)	Ixx (mm^4)	Iyy (mm^4)	Izz (mm^4)
48.2x3.25 CHS	458.95	229.47	229.47	233038.01	116519.00	116519.00
50.8x50.8x3.25 RHS	618.15	330.20	330.20	349409.67	234027.98	234027.98
25.4x25.4x3.25 SHS	287.95	165.10	165.10	35318.69	24052.70	24052.70
38.2x3.25 CHS	356.85	178.42	178.42	109914.26	54957.13	54957.13
25.4x3.2 CHS Column	223.18	111.59	111.59	28069.19	14034.60	14034.60
48.3x3.25 CHS Column	459.97	229.98	229.98	234591.38	117295.69	117295.69
48.4x4.47 CHS Front	616.91	308.45	308.45	300714.54	150357.27	150357.27
Connection	458.95	229.47	229.47	233038.01	116519.00	116519.00

Table 3 Load Case

No	Name	Type
1	Self-weight	Dead Load (D)
2	Live Load	Live Load (L)
3	Roof Cladding	Dead Load (D)
4	Wind (no side walls)	Live Load (L)
5	Rain	Live Load (L)
6	Wind Signboard	Wind Load on Structure (W)

Table 4 Load Combination

No	Name	Active
1	1.35D+1.5L	Active
2	1.35D+1.5L+0.75W	Active
3	1.35D+1.5W+1.05L	Active
4	1.35D+1.5W	Active
5	1.0D+1.0Live	Active

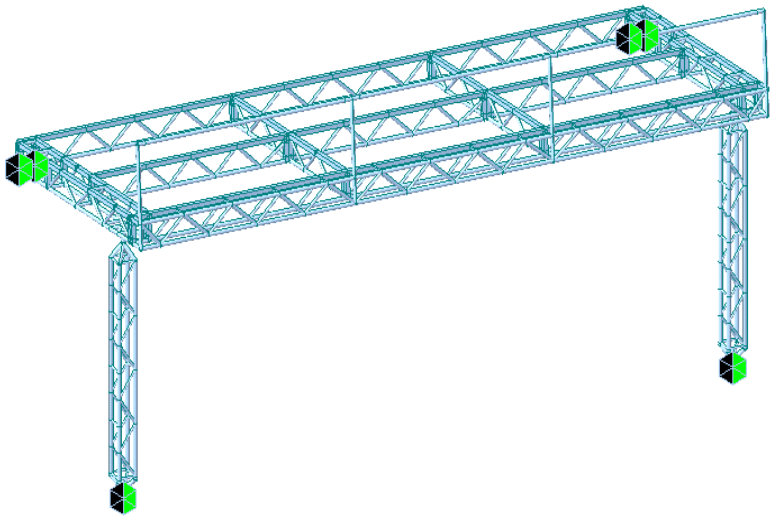


Figure 1 Whole Structure

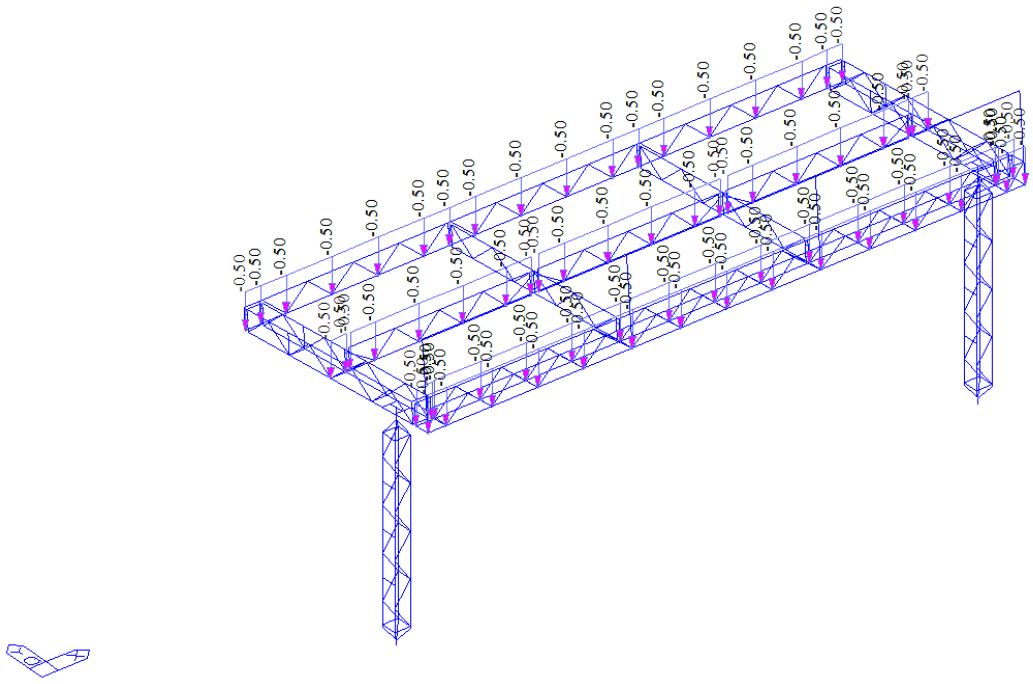


Figure 2 Live Load

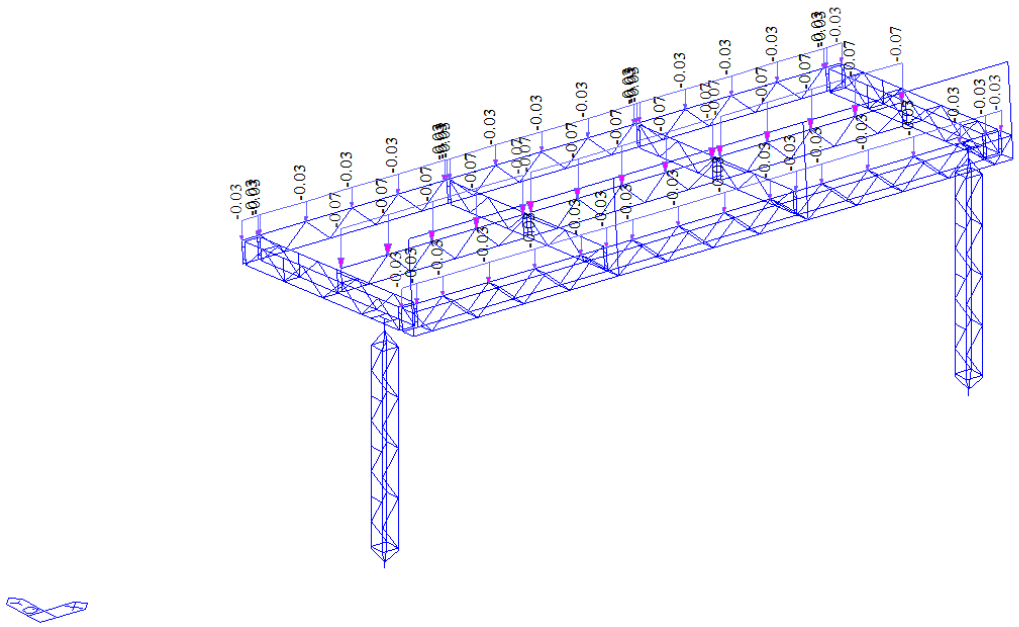


Figure 3 Roof Cladding

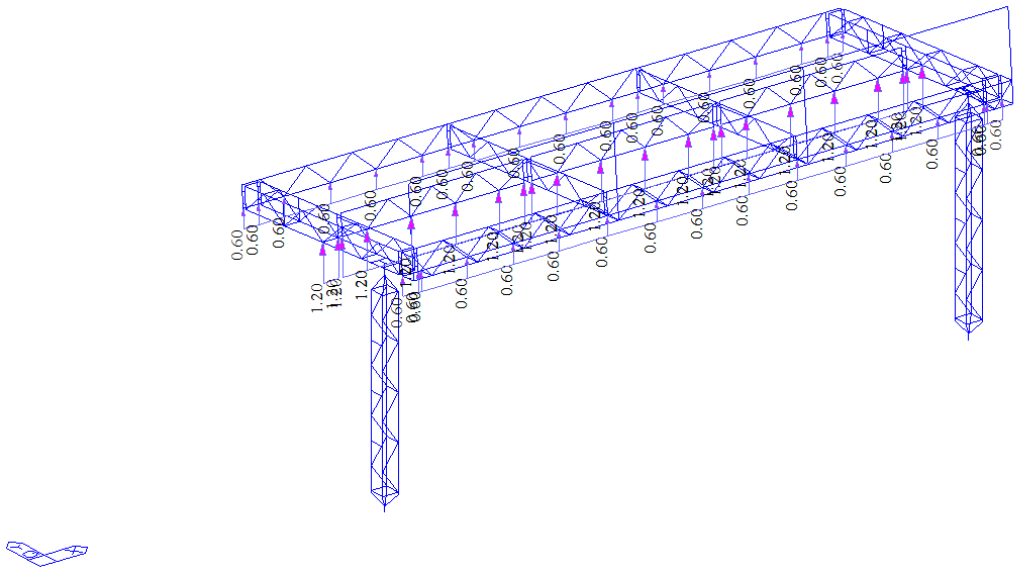


Figure 4 Roof Wind

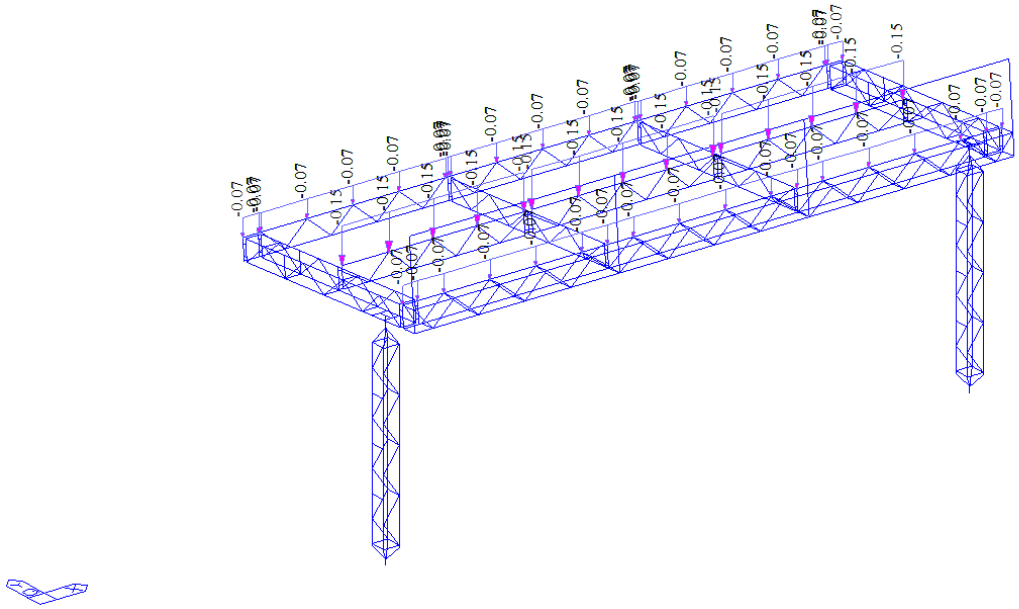


Figure 5 Rain Load

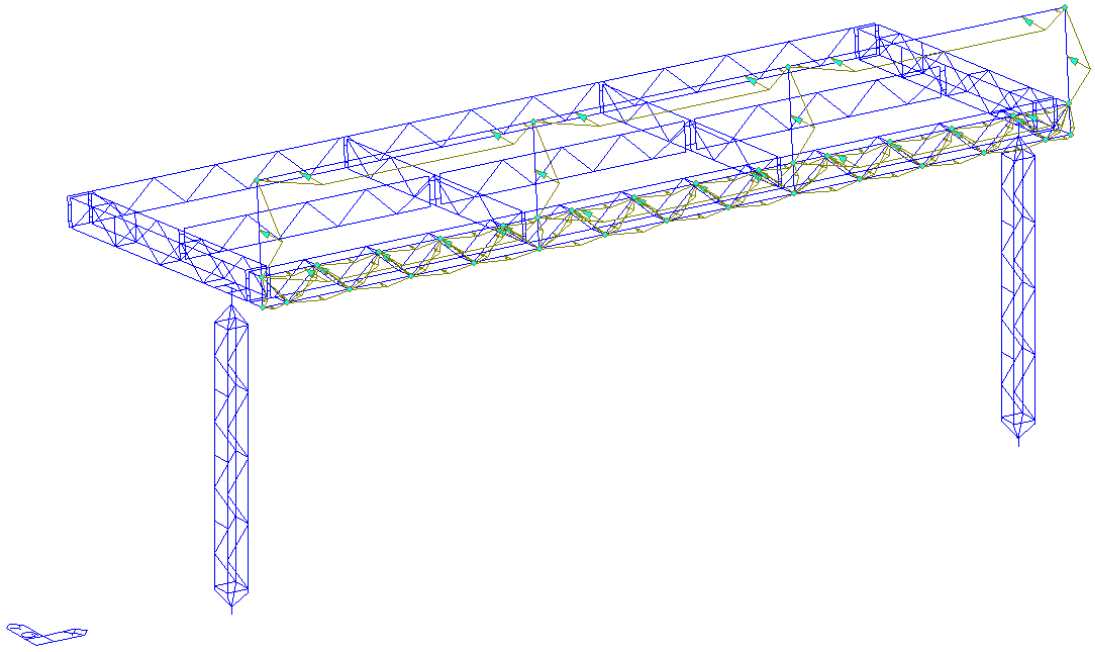


Figure 6 Signboard Wind (0.7kN/m^2)

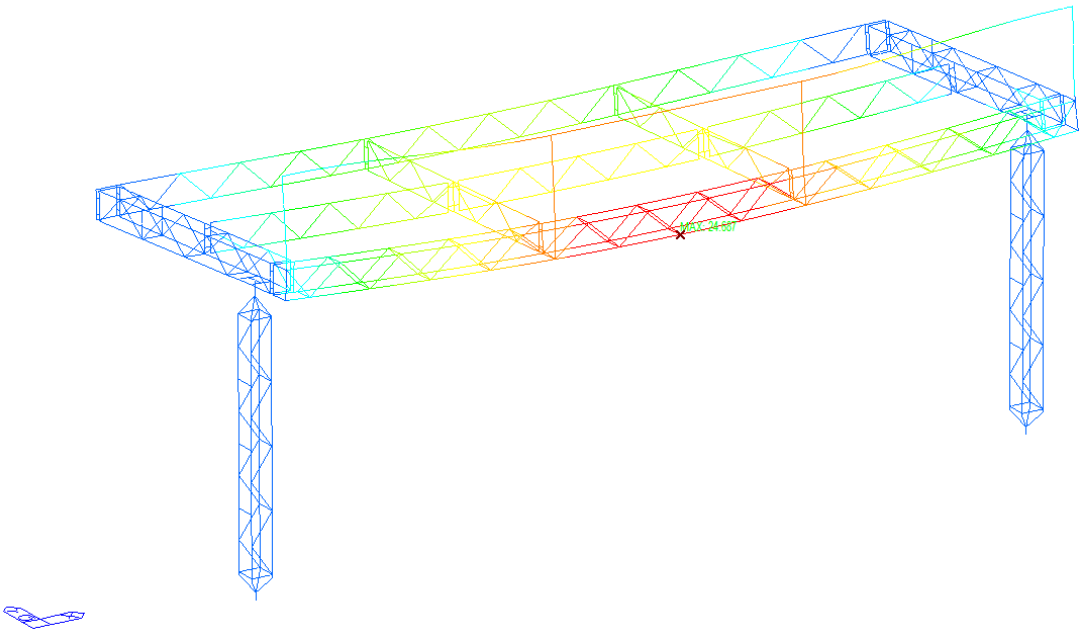


Figure 7 Maximum Displacement (1.0D+1.0L)

Element: 48.4 x3.25 CHS

Element No	Load Case	End	Axial N_{ed} (kN)	Shear $V_{y,ed}$ (kN)	Shear $V_{z,ed}$ (kN)	Torsion $M_{x,Ed}$ (kNm)	Bending $M_{y,Ed}$ (kNm)	Bending $M_{z,Ed}$ (kNm)	Stress Ratio	Pass/ Fail
308	1.35D+1.5W	I[215]	1.53	-0.65	1.69	-0.03	0.16	-0.03	0.29	PASS
308	1.35D+1.5W	J[43]	1.53	-0.65	1.7	-0.03	-0.28	0.14	0.62	PASS
309	1.35D+1.5W	I[5]	6.39	0.26	-1.43	-0.05	-0.23	0.05	0.53	PASS
309	1.35D+1.5W	J[219]	6.39	0.26	-1.42	-0.05	0.2	-0.03	0.46	PASS
310	1.35D+1.5W	I[219]	5.42	0.1	0.3	0.01	0.21	0.02	0.44	PASS
310	1.35D+1.5W	J[217]	5.42	0.1	0.3	0.01	0.15	0	0.32	PASS
311	1.35D+1.5W	I[217]	4.81	0.29	1.79	0.04	0.12	0.05	0.33	PASS
311	1.35D+1.5W	J[89]	4.81	0.29	1.79	0.04	-0.19	0	0.36	PASS
312	1.35D+1.5W	I[89]	2.67	0.15	-0.15	0	-0.07	0.05	0.21	PASS
312	1.35D+1.5W	J[87]	2.66	0.15	-0.14	0	0.03	-0.05	0.15	PASS
313	1.35D+1.5W	I[87]	0.39	-0.11	0.03	-0.02	0.02	-0.04	0.09	PASS
313	1.35D+1.5W	J[3]	0.39	-0.11	0.04	-0.02	-0.01	0.03	0.06	PASS
314	1.35D+1.5W	I[3]	-0.82	-0.1	-0.01	-0.02	0	-0.03	0.05	PASS
314	1.35D+1.5W	J[1]	-0.83	-0.1	0.01	-0.02	0	0.04	0.06	PASS
315	1.35D+1.5W	I[13]	0.84	0.24	-1.85	-0.01	-0.28	0.05	0.48	PASS
315	1.35D+1.5W	J[218]	0.84	0.24	-1.84	-0.01	0.28	-0.02	0.44	PASS
316	1.35D+1.5W	I[218]	0.99	0.01	0.4	0	0.27	0.01	0.41	PASS
316	1.35D+1.5W	J[216]	0.99	0.01	0.4	0	0.18	0	0.27	PASS
317	1.35D+1.5W	I[216]	1.73	0.29	2.82	0	0.2	0.06	0.39	PASS
317	1.35D+1.5W	J[88]	1.73	0.29	2.83	0	-0.29	0.01	0.45	PASS
318	1.35D+1.5W	I[88]	-0.37	0.18	-0.18	0	-0.09	0.06	0.21	PASS
318	1.35D+1.5W	J[11]	-0.37	0.18	-0.17	0	0.03	-0.07	0.14	PASS
319	1.35D+1.5W	I[11]	-2.76	-0.09	-0.01	-0.03	0	-0.03	0.09	PASS
319	1.35D+1.5W	J[9]	-2.77	-0.09	0	-0.03	0	0.03	0.09	PASS
320	1.35D+1.5W	I[9]	-2.3	-0.09	-0.03	-0.02	-0.01	-0.03	0.09	PASS
320	1.35D+1.5W	J[14]	-2.3	-0.09	-0.02	-0.02	0	0.03	0.08	PASS
321	1.35D+1.5W	I[19]	0.67	-0.32	-1.85	0.01	-0.28	-0.07	0.51	PASS
321	1.35D+1.5W	J[225]	0.67	-0.32	-1.84	0.01	0.28	0.03	0.45	PASS
322	1.35D+1.5W	I[225]	1.02	-0.04	0.39	0	0.26	-0.01	0.40	PASS
322	1.35D+1.5W	J[223]	1.02	-0.04	0.39	0	0.18	0	0.27	PASS
323	1.35D+1.5W	I[223]	1.94	-0.36	2.83	0	0.2	-0.06	0.40	PASS
323	1.35D+1.5W	J[96]	1.94	-0.36	2.83	0	-0.29	0	0.44	PASS
324	1.35D+1.5W	I[96]	-0.28	-0.2	-0.18	0	-0.09	-0.06	0.21	PASS
324	1.35D+1.5W	J[25]	-0.28	-0.2	-0.17	0	0.03	0.07	0.14	PASS
325	1.35D+1.5W	I[25]	-2.95	0.02	-0.01	0.02	0	0.01	0.06	PASS
325	1.35D+1.5W	J[17]	-2.95	0.02	0	0.02	0	-0.01	0.06	PASS
326	1.35D+1.5W	I[17]	-2.48	0.05	-0.02	0.01	-0.01	0.03	0.09	PASS
326	1.35D+1.5W	J[15]	-2.49	0.05	-0.01	0.01	0	-0.01	0.05	PASS
327	1.35D+1.5W	I[27]	6.55	-0.33	-1.42	0.05	-0.23	-0.06	0.55	PASS
327	1.35D+1.5W	J[224]	6.55	-0.33	-1.41	0.05	0.2	0.04	0.48	PASS
328	1.35D+1.5W	I[224]	5.38	-0.13	0.3	0	0.21	-0.03	0.45	PASS
328	1.35D+1.5W	J[222]	5.38	-0.13	0.31	0	0.15	0	0.32	PASS
329	1.35D+1.5W	I[222]	4.59	-0.38	1.78	-0.04	0.11	-0.06	0.33	PASS
329	1.35D+1.5W	J[95]	4.59	-0.38	1.78	-0.04	-0.19	0	0.36	PASS
330	1.35D+1.5W	I[95]	2.56	-0.16	-0.15	0	-0.07	-0.06	0.22	PASS
330	1.35D+1.5W	J[94]	2.56	-0.16	-0.14	0	0.03	0.05	0.15	PASS
331	1.35D+1.5W	I[94]	0.57	0.05	0.03	0.02	0.02	0.02	0.06	PASS
331	1.35D+1.5W	J[23]	0.56	0.05	0.04	0.02	-0.01	-0.01	0.03	PASS
332	1.35D+1.5W	I[23]	-0.65	0.07	-0.01	0.01	0	0.03	0.05	PASS

332	1.35D+1.5W	J[28]	-0.65	0.07	0	0.01	0	-0.02	0.03	PASS
333	1.35D+1.5W	I[216]	0.28	-0.95	-2.35	-0.02	0	-0.05	0.07	PASS
333	1.35D+1.5W	J[220]	0.28	-0.95	-2.35	-0.02	0.23	0.04	0.39	PASS
334	1.35D+1.5W	I[220]	-0.19	-0.47	1.53	-0.03	0.11	0	0.16	PASS
334	1.35D+1.5W	J[217]	-0.19	-0.47	1.54	-0.03	-0.04	0.05	0.13	PASS
335	1.35D+1.5W	I[218]	-0.23	-0.35	-2.21	0.02	0.02	-0.02	0.06	PASS
335	1.35D+1.5W	J[221]	-0.23	-0.35	-2.21	0.02	0.24	0.01	0.36	PASS
336	1.35D+1.5W	I[221]	0.16	-0.82	1.8	0.01	0.12	-0.04	0.23	PASS
336	1.35D+1.5W	J[219]	0.16	-0.82	1.8	0.01	-0.06	0.05	0.15	PASS
337	1.35D+1.5W	I[220]	0.14	0.47	-3.91	0.12	-0.02	0.03	0.07	PASS
337	1.35D+1.5W	J[311]	0.14	0.47	-3.91	0.12	0.41	-0.02	0.62	PASS
338	1.35D+1.5W	I[222]	-0.25	0.66	-1.54	0.03	-0.04	0.06	0.14	PASS
338	1.35D+1.5W	J[226]	-0.25	0.66	-1.53	0.03	0.11	-0.01	0.17	PASS
339	1.35D+1.5W	I[226]	0.32	1.13	2.34	0.01	0.23	0.05	0.40	PASS
339	1.35D+1.5W	J[223]	0.32	1.13	2.34	0.01	0	-0.06	0.09	PASS
340	1.35D+1.5W	I[224]	0.2	1.01	-1.81	-0.01	-0.06	0.06	0.17	PASS
340	1.35D+1.5W	J[227]	0.2	1.01	-1.81	-0.01	0.12	-0.04	0.23	PASS
341	1.35D+1.5W	I[227]	-0.29	0.55	2.19	-0.02	0.23	0.02	0.36	PASS
341	1.35D+1.5W	J[225]	-0.29	0.55	2.2	-0.02	0.02	-0.04	0.08	PASS
342	1.35D+1.5W	I[226]	0.13	-0.57	-3.9	-0.12	-0.02	-0.04	0.08	PASS
342	1.35D+1.5W	J[313]	0.13	-0.57	-3.9	-0.12	0.41	0.02	0.62	PASS
343	1.35D+1.5W	I[40]	0	-1.17	-4.56	-0.03	-0.44	-0.09	0.76	PASS
343	1.35D+1.5W	J[38]	0	-1.17	-4.73	-0.03	0.48	0.15	0.91	PASS
344	1.35D+1.5W	I[38]	18.48	0.13	0.7	-0.01	0.16	0.1	0.91	PASS
344	1.35D+1.5W	J[102]	18.48	0.13	0.4	-0.01	-0.02	0.06	0.65	PASS
345	1.35D+1.5W	I[102]	11.21	0.04	0.24	-0.01	0.02	0.05	0.38	PASS
345	1.35D+1.5W	J[104]	11.21	0.04	-0.28	-0.01	0.03	0.03	0.36	PASS
346	1.35D+1.5W	I[104]	3.75	0.06	0.3	0	0.04	0.03	0.16	PASS
346	1.35D+1.5W	J[106]	3.75	0.06	-0.22	0	0.01	-0.01	0.09	PASS
347	1.35D+1.5W	I[106]	-2.52	0.08	0.29	0	0.02	-0.01	0.08	PASS
347	1.35D+1.5W	J[108]	-2.52	0.08	-0.23	0	0	-0.05	0.11	PASS
348	1.35D+1.5W	I[108]	-7.84	0.13	0.24	0	0.01	-0.05	0.26	PASS
348	1.35D+1.5W	J[36]	-7.84	0.13	-0.06	0	-0.02	-0.09	0.33	PASS
349	1.35D+1.5W	I[36]	-8.14	-0.02	0.21	0	0	-0.03	0.23	PASS
349	1.35D+1.5W	J[111]	-8.14	-0.02	-0.08	0	-0.02	-0.02	0.24	PASS
350	1.35D+1.5W	I[111]	-9.65	-0.02	0.25	0	0	-0.02	0.26	PASS
350	1.35D+1.5W	J[113]	-9.65	-0.02	-0.27	0	0	-0.02	0.26	PASS
351	1.35D+1.5W	I[113]	-10.12	0	0.26	0	0	-0.02	0.27	PASS
351	1.35D+1.5W	J[115]	-10.12	0	-0.26	0	0	-0.02	0.27	PASS
352	1.35D+1.5W	I[115]	-9.57	0.02	0.27	0	0	-0.02	0.26	PASS
352	1.35D+1.5W	J[117]	-9.57	0.02	-0.25	0	0	-0.03	0.27	PASS
353	1.35D+1.5W	I[117]	-7.97	0.02	0.08	0	-0.02	-0.02	0.24	PASS
353	1.35D+1.5W	J[34]	-7.97	0.02	-0.22	0	0	-0.03	0.22	PASS
354	1.35D+1.5W	I[34]	-7.65	-0.13	0.05	0	-0.02	-0.09	0.32	PASS
354	1.35D+1.5W	J[120]	-7.65	-0.13	-0.24	0	0.01	-0.05	0.25	PASS
355	1.35D+1.5W	I[120]	-2.25	-0.08	0.23	0	0	-0.05	0.10	PASS
355	1.35D+1.5W	J[122]	-2.25	-0.08	-0.3	0	0.02	0	0.06	PASS
356	1.35D+1.5W	I[122]	4.13	-0.06	0.22	0	0.01	-0.01	0.10	PASS
356	1.35D+1.5W	J[124]	4.13	-0.06	-0.3	0	0.04	0.03	0.17	PASS
357	1.35D+1.5W	I[124]	11.67	-0.04	0.28	0.01	0.03	0.03	0.38	PASS
357	1.35D+1.5W	J[126]	11.67	-0.04	-0.24	0.01	0.02	0.06	0.41	PASS
358	1.35D+1.5W	I[126]	19.11	-0.14	-0.4	0.01	-0.02	0.06	0.67	PASS
358	1.35D+1.5W	J[32]	19.11	-0.14	-0.7	0.01	0.16	0.1	0.93	PASS
359	1.35D+1.5W	I[32]	0	1	4.48	0.04	0.46	0.13	0.85	PASS
359	1.35D+1.5W	J[31]	0	1	4.3	0.04	-0.42	-0.07	0.70	PASS
360	1.35D+1.5W	I[48]	-0.87	0.82	0.04	-0.03	0	0.06	0.09	PASS
360	1.35D+1.5W	J[46]	-0.87	0.82	-0.13	-0.03	0.01	-0.1	0.16	PASS
361	1.35D+1.5W	I[46]	-1.71	-2	2.56	0.09	0.08	-0.2	0.42	PASS
361	1.35D+1.5W	J[150]	-1.71	-2	2.53	0.09	-0.01	-0.13	0.22	PASS
362	1.35D+1.5W	I[150]	-3.84	-0.31	0.24	0.01	0.01	-0.12	0.25	PASS
362	1.35D+1.5W	J[148]	-3.84	-0.31	-0.28	0.01	0.02	0.06	0.18	PASS

363	1.35D+1.5W	I[148]	-6.14	-0.29	0.26	0	0.01	-0.08	0.25	PASS
363	1.35D+1.5W	J[146]	-6.14	-0.29	-0.26	0	0.01	0.09	0.27	PASS
364	1.35D+1.5W	I[146]	-7.82	-0.2	0.26	0	0.01	-0.05	0.26	PASS
364	1.35D+1.5W	J[144]	-7.82	-0.2	-0.27	0	0.01	0.07	0.29	PASS
365	1.35D+1.5W	I[144]	-9.59	-0.17	0.3	-0.01	0.01	-0.03	0.28	PASS
365	1.35D+1.5W	J[51]	-9.59	-0.17	-0.26	-0.01	0	0.08	0.34	PASS
366	1.35D+1.5W	I[51]	-10.92	-0.11	0.27	0.01	0	-0.02	0.30	PASS
366	1.35D+1.5W	J[141]	-10.92	-0.11	-0.29	0.01	0.01	0.05	0.36	PASS
367	1.35D+1.5W	I[141]	-10.93	-0.04	0.26	0	0	0.01	0.29	PASS
367	1.35D+1.5W	J[139]	-10.93	-0.04	-0.26	0	0	0.04	0.33	PASS
368	1.35D+1.5W	I[139]	-10.93	0.04	0.26	0	0	0.04	0.33	PASS
368	1.35D+1.5W	J[137]	-10.93	0.04	-0.26	0	0	0.01	0.29	PASS
369	1.35D+1.5W	I[137]	-10.93	0.11	0.29	-0.01	0.01	0.05	0.36	PASS
369	1.35D+1.5W	J[53]	-10.93	0.11	-0.27	-0.01	0	-0.02	0.30	PASS
370	1.35D+1.5W	I[53]	-9.6	0.17	0.26	0.01	0	0.08	0.34	PASS
370	1.35D+1.5W	J[134]	-9.6	0.17	-0.3	0.01	0.01	-0.02	0.27	PASS
371	1.35D+1.5W	I[134]	-7.85	0.2	0.27	0	0.01	0.07	0.29	PASS
371	1.35D+1.5W	J[132]	-7.85	0.2	-0.26	0	0.01	-0.05	0.26	PASS
372	1.35D+1.5W	I[132]	-6.19	0.29	0.26	0	0.01	0.09	0.27	PASS
372	1.35D+1.5W	J[130]	-6.19	0.29	-0.26	0	0.01	-0.08	0.26	PASS
373	1.35D+1.5W	I[130]	-3.93	0.31	0.28	-0.01	0.02	0.06	0.18	PASS
373	1.35D+1.5W	J[128]	-3.93	0.31	-0.24	-0.01	0.01	-0.12	0.25	PASS
374	1.35D+1.5W	I[128]	-1.84	2	-2.49	-0.09	-0.01	-0.13	0.22	PASS
374	1.35D+1.5W	J[49]	-1.84	2	-2.52	-0.09	0.08	-0.21	0.44	PASS
375	1.35D+1.5W	I[49]	-0.92	-0.79	0.1	0.03	0.01	-0.1	0.16	PASS
375	1.35D+1.5W	J[45]	-0.92	-0.79	-0.07	0.03	0.01	0.06	0.11	PASS
376	1.35D+1.5W	I[228]	1.68	-1.1	-0.07	-0.02	-0.01	-0.11	0.19	PASS
376	1.35D+1.5W	J[151]	1.68	-1.11	-0.06	-0.02	0	0.15	0.24	PASS
377	1.35D+1.5W	I[151]	-1.43	0.32	-0.02	0	-0.01	0.12	0.20	PASS
377	1.35D+1.5W	J[152]	-1.43	0.29	-0.01	0	0	-0.06	0.10	PASS
378	1.35D+1.5W	I[152]	-7.99	0.3	0	0	-0.01	0.08	0.31	PASS
378	1.35D+1.5W	J[153]	-7.99	0.26	0.01	0	-0.01	-0.09	0.32	PASS
379	1.35D+1.5W	I[153]	-13.93	0.24	0	0	-0.02	0.05	0.47	PASS
379	1.35D+1.5W	J[154]	-13.93	0.21	0.01	0	-0.02	-0.08	0.51	PASS
380	1.35D+1.5W	I[154]	-18.85	0.15	-0.02	-0.01	-0.03	0.03	0.64	PASS
380	1.35D+1.5W	J[155]	-18.85	0.12	-0.01	-0.01	-0.02	-0.06	0.66	PASS
381	1.35D+1.5W	I[155]	-20.93	0.06	-0.01	0.01	-0.03	0	0.68	PASS
381	1.35D+1.5W	J[156]	-20.93	0.03	0	0.01	-0.03	-0.03	0.72	PASS
382	1.35D+1.5W	I[156]	-22.01	0.04	0	0	-0.03	-0.01	0.73	PASS
382	1.35D+1.5W	J[157]	-22.01	0.01	0.01	0	-0.03	-0.03	0.76	PASS
383	1.35D+1.5W	I[157]	-22	-0.01	-0.01	0	-0.03	-0.03	0.76	PASS
383	1.35D+1.5W	J[158]	-22	-0.04	0	0	-0.03	-0.01	0.73	PASS
384	1.35D+1.5W	I[158]	-20.9	-0.03	0	-0.01	-0.03	-0.03	0.72	PASS
384	1.35D+1.5W	J[159]	-20.9	-0.07	0.01	-0.01	-0.03	0	0.68	PASS
385	1.35D+1.5W	I[159]	-18.8	-0.12	0.01	0.01	-0.02	-0.06	0.66	PASS
385	1.35D+1.5W	J[160]	-18.8	-0.16	0.02	0.01	-0.03	0.03	0.63	PASS
386	1.35D+1.5W	I[160]	-13.86	-0.21	-0.01	0	-0.02	-0.08	0.51	PASS
386	1.35D+1.5W	J[161]	-13.86	-0.24	0	0	-0.02	0.05	0.47	PASS
387	1.35D+1.5W	I[161]	-7.91	-0.26	-0.01	0	-0.01	-0.09	0.32	PASS
387	1.35D+1.5W	J[162]	-7.91	-0.3	0	0	-0.01	0.08	0.30	PASS
388	1.35D+1.5W	I[162]	-1.35	-0.28	0.01	0	0	-0.06	0.10	PASS
388	1.35D+1.5W	J[163]	-1.35	-0.31	0.02	0	-0.01	0.12	0.20	PASS
389	1.35D+1.5W	I[163]	1.68	1.12	0.06	0.02	0	0.15	0.24	PASS
389	1.35D+1.5W	J[215]	1.68	1.11	0.07	0.02	-0.01	-0.11	0.19	PASS
390	1.35D+1.5W	I[159]	0.16	-0.34	1.61	-0.01	-0.06	-0.02	0.11	PASS
390	1.35D+1.5W	J[229]	0.16	-0.34	1.63	-0.01	-0.49	0.07	0.81	PASS
391	1.35D+1.5W	I[155]	0.16	0.34	1.61	0.01	-0.06	0.02	0.11	PASS
391	1.35D+1.5W	J[230]	0.16	0.34	1.63	0.01	-0.49	-0.07	0.81	PASS
392	1.35D+1.5W	I[228]	1.55	0.64	1.71	0.03	0.17	0.03	0.30	PASS
392	1.35D+1.5W	J[44]	1.55	0.64	1.71	0.03	-0.28	-0.14	0.62	PASS
393	1.35D+1.5W	I[44]	0.27	-0.04	0.25	0.02	0.1	-0.01	0.16	PASS

393	1.35D+1.5W	J[164]	0.27	-0.2	0.26	0.02	-0.04	0.05	0.13	PASS
394	1.35D+1.5W	I[164]	2.7	0.54	-0.03	0	-0.02	0.15	0.28	PASS
394	1.35D+1.5W	J[165]	2.7	0.28	-0.02	0	0	-0.1	0.18	PASS
395	1.35D+1.5W	I[165]	4.52	0.44	0	-0.01	-0.01	0.09	0.23	PASS
395	1.35D+1.5W	J[166]	4.52	0.18	0.01	-0.01	-0.02	-0.09	0.24	PASS
396	1.35D+1.5W	I[166]	6.23	0.21	0.01	-0.02	-0.02	0.04	0.21	PASS
396	1.35D+1.5W	J[167]	6.23	-0.05	0.02	-0.02	-0.03	-0.01	0.19	PASS
397	1.35D+1.5W	I[167]	7.41	1.58	0.01	-0.14	-0.04	0.21	0.52	PASS
397	1.35D+1.5W	J[230]	7.41	1.51	0.02	-0.14	-0.05	-0.3	0.66	PASS
398	1.35D+1.5W	I[230]	6.63	-1.25	0.52	0.14	0.09	-0.28	0.67	PASS
398	1.35D+1.5W	J[168]	6.63	-1.31	0.52	0.14	-0.08	0.15	0.47	PASS
399	1.35D+1.5W	I[168]	7.08	0.35	-0.05	0.01	-0.05	0.08	0.34	PASS
399	1.35D+1.5W	J[169]	7.08	0.09	-0.04	0.01	-0.02	-0.05	0.25	PASS
400	1.35D+1.5W	I[169]	7.06	0.13	0	0	-0.03	-0.02	0.22	PASS
400	1.35D+1.5W	J[170]	7.06	-0.13	0	0	-0.03	-0.02	0.22	PASS
401	1.35D+1.5W	I[170]	7.08	-0.09	0.04	-0.01	-0.02	-0.05	0.25	PASS
401	1.35D+1.5W	J[171]	7.08	-0.35	0.05	-0.01	-0.05	0.08	0.34	PASS
402	1.35D+1.5W	I[171]	6.62	1.31	-0.52	-0.14	-0.08	0.15	0.47	PASS
402	1.35D+1.5W	J[229]	6.62	1.24	-0.52	-0.14	0.09	-0.28	0.67	PASS
403	1.35D+1.5W	I[229]	7.41	-1.51	-0.02	0.14	-0.05	-0.3	0.66	PASS
403	1.35D+1.5W	J[172]	7.41	-1.58	-0.01	0.14	-0.04	0.21	0.52	PASS
404	1.35D+1.5W	I[172]	6.22	0.05	-0.02	0.02	-0.03	-0.01	0.19	PASS
404	1.35D+1.5W	J[173]	6.22	-0.21	-0.01	0.02	-0.02	0.04	0.21	PASS
405	1.35D+1.5W	I[173]	4.5	-0.18	-0.01	0.01	-0.01	-0.09	0.23	PASS
405	1.35D+1.5W	J[174]	4.5	-0.44	0	0.01	-0.01	0.09	0.23	PASS
406	1.35D+1.5W	I[174]	2.66	-0.28	0.02	0	0	-0.1	0.18	PASS
406	1.35D+1.5W	J[175]	2.66	-0.55	0.03	0	-0.02	0.15	0.28	PASS
407	1.35D+1.5W	I[175]	0.24	0.2	-0.26	-0.02	-0.04	0.05	0.13	PASS
407	1.35D+1.5W	J[43]	0.24	0.05	-0.25	-0.02	0.1	-0.01	0.16	PASS
408	1.35D+1.5W	I[48]	2.8	-1.03	1.36	0	0.13	-0.13	0.41	PASS
408	1.35D+1.5W	J[215]	2.8	-1.03	1.36	0	-0.14	0.08	0.36	PASS
409	1.35D+1.5W	I[228]	2.8	1.03	-1.39	0	-0.15	0.08	0.37	PASS
409	1.35D+1.5W	J[45]	2.8	1.03	-1.38	0	0.13	-0.13	0.41	PASS
410	1.35D+1.5W	I[59]	1.58	0.09	0.07	0	0.02	0.05	0.12	PASS
410	1.35D+1.5W	J[176]	1.58	0.09	0.08	0	-0.01	0.02	0.06	PASS
411	1.35D+1.5W	I[176]	-2.66	0.07	0	0	0	0.03	0.08	PASS
411	1.35D+1.5W	J[178]	-2.66	0.07	0.01	0	0	-0.02	0.07	PASS
412	1.35D+1.5W	I[178]	-6.79	0.07	0.09	0	0	-0.02	0.17	PASS
412	1.35D+1.5W	J[57]	-6.79	0.07	0.1	0	-0.03	-0.04	0.24	PASS
413	1.35D+1.5W	I[57]	-6.44	0.08	-0.1	0	-0.03	0.04	0.23	PASS
413	1.35D+1.5W	J[179]	-6.44	0.08	-0.1	0	0	0.01	0.15	PASS
414	1.35D+1.5W	I[179]	-3.46	0.06	-0.01	0	-0.01	0.02	0.10	PASS
414	1.35D+1.5W	J[181]	-3.46	0.06	0	0	0	-0.03	0.10	PASS
415	1.35D+1.5W	I[181]	-0.5	0.08	-0.07	0	-0.01	-0.02	0.05	PASS
415	1.35D+1.5W	J[60]	-0.5	0.08	-0.06	0	0.01	-0.05	0.09	PASS
416	1.35D+1.5W	I[65]	1.58	-0.09	0.07	0	0.02	-0.06	0.13	PASS
416	1.35D+1.5W	J[182]	1.58	-0.09	0.08	0	-0.01	-0.02	0.06	PASS
417	1.35D+1.5W	I[182]	-2.65	-0.07	0	0	0	-0.03	0.08	PASS
417	1.35D+1.5W	J[184]	-2.65	-0.07	0.01	0	0	0.02	0.07	PASS
418	1.35D+1.5W	I[184]	-6.76	-0.08	0.09	0	0	0.02	0.17	PASS
418	1.35D+1.5W	J[63]	-6.76	-0.08	0.1	0	-0.03	0.04	0.24	PASS
419	1.35D+1.5W	I[63]	-6.41	-0.09	-0.1	0	-0.03	-0.04	0.23	PASS
419	1.35D+1.5W	J[185]	-6.41	-0.09	-0.1	0	0	-0.01	0.15	PASS
420	1.35D+1.5W	I[185]	-3.44	-0.07	-0.01	0	-0.01	-0.02	0.10	PASS
420	1.35D+1.5W	J[187]	-3.44	-0.07	0	0	0	0.03	0.10	PASS
421	1.35D+1.5W	I[187]	-0.5	-0.09	-0.06	0	-0.01	0.03	0.06	PASS
421	1.35D+1.5W	J[66]	-0.5	-0.09	-0.06	0	0.01	0.06	0.10	PASS
422	1.35D+1.5W	I[70]	-7.71	-0.11	0.49	0	0.06	-0.1	0.40	PASS
422	1.35D+1.5W	J[189]	-7.71	-0.11	-0.08	0	0	-0.06	0.26	PASS
423	1.35D+1.5W	I[189]	-8.46	-0.11	0.48	0	0.02	-0.06	0.31	PASS
423	1.35D+1.5W	J[191]	-8.46	-0.11	-0.54	0	0.04	0	0.25	PASS

424	1.35D+1.5W	I[191]	-7.65	-0.06	0.5	0	0.03	0	0.21	PASS
424	1.35D+1.5W	J[193]	-7.65	-0.06	-0.51	0	0.04	0.03	0.27	PASS
425	1.35D+1.5W	I[193]	-4.61	-0.03	0.53	0.01	0.03	0.03	0.17	PASS
425	1.35D+1.5W	J[195]	-4.61	-0.03	-0.47	0.01	0.02	0.05	0.19	PASS
426	1.35D+1.5W	I[195]	0.84	0.03	0.21	0.01	0	0.06	0.09	PASS
426	1.35D+1.5W	J[69]	0.84	0.03	-0.37	0.01	0.03	0.05	0.12	PASS
427	1.35D+1.5W	I[74]	-7.81	-0.06	0.54	-0.01	0.06	-0.03	0.30	PASS
427	1.35D+1.5W	J[198]	-7.81	-0.06	-0.04	-0.01	-0.02	-0.01	0.22	PASS
428	1.35D+1.5W	I[198]	-10.7	-0.04	0.47	0	0.01	-0.01	0.29	PASS
428	1.35D+1.5W	J[200]	-10.7	-0.04	-0.54	0	0.03	0.01	0.32	PASS
429	1.35D+1.5W	I[200]	-11.81	0	0.51	0	0.03	0	0.34	PASS
429	1.35D+1.5W	J[202]	-11.81	0	-0.51	0	0.03	0	0.34	PASS
430	1.35D+1.5W	I[202]	-10.66	0.04	0.54	0	0.03	0.01	0.32	PASS
430	1.35D+1.5W	J[204]	-10.66	0.04	-0.46	0	0.01	-0.02	0.30	PASS
431	1.35D+1.5W	I[204]	-7.74	0.06	0.04	0.01	-0.02	-0.01	0.21	PASS
431	1.35D+1.5W	J[73]	-7.74	0.06	-0.54	0.01	0.06	-0.03	0.30	PASS
432	1.35D+1.5W	I[78]	0.74	-0.02	0.37	-0.01	0.03	0.05	0.12	PASS
432	1.35D+1.5W	J[207]	0.74	-0.02	-0.21	-0.01	0	0.06	0.09	PASS
433	1.35D+1.5W	I[207]	-4.72	0.03	0.48	-0.01	0.02	0.05	0.19	PASS
433	1.35D+1.5W	J[209]	-4.72	0.03	-0.54	-0.01	0.04	0.03	0.19	PASS
434	1.35D+1.5W	I[209]	-7.74	0.07	0.52	0	0.04	0.03	0.27	PASS
434	1.35D+1.5W	J[211]	-7.74	0.07	-0.5	0	0.03	0	0.22	PASS
435	1.35D+1.5W	I[211]	-8.53	0.11	0.53	0	0.04	0	0.25	PASS
435	1.35D+1.5W	J[213]	-8.53	0.11	-0.47	0	0.02	-0.06	0.31	PASS
436	1.35D+1.5W	I[213]	-7.78	0.11	0.08	0	-0.01	-0.06	0.27	PASS
436	1.35D+1.5W	J[77]	-7.78	0.11	-0.5	0	0.06	-0.1	0.40	PASS
508	1.35D+1.5W	I[311]	0.82	0.39	3.96	-0.12	0.41	0	0.60	PASS
508	1.35D+1.5W	J[221]	0.82	0.39	3.96	-0.12	0.01	-0.04	0.08	PASS
509	1.35D+1.5W	I[313]	0.81	-0.49	3.95	0.11	0.41	0	0.60	PASS
509	1.35D+1.5W	J[227]	0.81	-0.49	3.95	0.11	0.01	0.05	0.09	PASS

Calculation Sheet

Element: 50.8 x 50.8 x 3.25 SHS

Element No	Load Case	End	Axial N_{ed} (kN)	Shear $V_{y,ed}$ (kN)	Shear $V_{z,ed}$ (kN)	Torsion $M_{x,Ed}$ (kNm)	Bending $M_{y,Ed}$ (kNm)	Bending $M_{z,Ed}$ (kNm)	6.2.9 Stress Ratio	Pass/ Fail
1	1.35D+1.5W	I[1]	2.59	-0.28	1.6	0	0.03	-0.15	0.16	PASS
1	1.35D+1.5W	J[302]	2.59	-0.28	1.6	0	-0.06	-0.13	0.17	PASS
2	1.35D+1.5W	I[3]	0.05	-0.01	-0.05	0.03	0	0	0.00	PASS
2	1.35D+1.5W	J[4]	0.05	-0.01	-0.05	0.03	0.01	0	0.01	PASS
3	1.35D+1.5W	I[5]	1.57	-0.1	5.92	-0.06	0.23	-0.04	0.21	PASS
3	1.35D+1.5W	J[295]	1.57	-0.1	5.92	-0.06	-0.09	-0.03	0.10	PASS
4	1.35D+1.5W	I[6]	-2.32	0.16	-0.13	0	-0.02	0.07	0.09	PASS
4	1.35D+1.5W	J[79]	-2.32	0.16	-0.12	0	0.03	0.01	0.05	PASS
5	1.35D+1.5W	I[4]	-1.45	0.22	0.06	-0.04	0.01	0	0.02	PASS
5	1.35D+1.5W	J[86]	-1.45	0.22	0.06	-0.04	-0.01	-0.07	0.07	PASS
6	1.35D+1.5W	I[7]	-6.13	0.23	-0.37	0	-0.1	0.09	0.23	PASS
6	1.35D+1.5W	J[80]	-6.13	0.23	-0.37	0	0.04	0	0.12	PASS
7	1.35D+1.5W	I[12]	0.62	0.35	-0.09	-0.04	-0.03	0.05	0.06	PASS
7	1.35D+1.5W	J[83]	0.62	0.35	-0.09	-0.04	0	-0.07	0.06	PASS
8	1.35D+1.5W	I[10]	0.69	0.21	0.02	-0.04	0	0	0.01	PASS
8	1.35D+1.5W	J[85]	0.69	0.21	0.03	-0.04	-0.01	-0.07	0.06	PASS
9	1.35D+1.5W	I[9]	0.07	0.01	0.01	0.02	0	0	0.00	PASS
9	1.35D+1.5W	J[10]	0.07	0.01	0.01	0.02	0	0	0.00	PASS
10	1.35D+1.5W	I[11]	2.48	0.78	0.12	-0.06	0.01	-0.02	0.05	PASS
10	1.35D+1.5W	J[246]	2.49	0.78	0.12	-0.06	0.01	-0.06	0.08	PASS
11	1.35D+1.5W	I[13]	2.57	-0.44	-0.31	-0.08	0.21	-0.01	0.19	PASS
11	1.35D+1.5W	J[299]	2.57	-0.44	-0.31	-0.08	0.22	0.01	0.20	PASS
13	1.35D+1.5W	I[14]	-2.23	0.1	2.09	-0.02	-0.01	-0.14	0.13	PASS
13	1.35D+1.5W	J[304]	-2.22	0.1	2.09	-0.02	-0.12	-0.15	0.22	PASS
14	1.35D+1.5W	I[15]	-0.47	0.04	1.91	0	0.01	-0.01	0.02	PASS
14	1.35D+1.5W	J[265]	-0.47	0.04	1.91	0	-0.1	-0.01	0.08	PASS
15	1.35D+1.5W	I[17]	0.06	-0.01	-0.01	-0.03	0	0	0.00	PASS
15	1.35D+1.5W	J[18]	0.07	-0.01	-0.01	-0.03	0	0	0.00	PASS
16	1.35D+1.5W	I[19]	2.42	0.51	-0.34	0.08	0.21	0.01	0.19	PASS
16	1.35D+1.5W	J[282]	2.42	0.51	-0.34	0.08	0.23	-0.01	0.20	PASS
17	1.35D+1.5W	I[20]	-5.9	-0.14	-0.36	0.01	-0.09	-0.09	0.21	PASS
17	1.35D+1.5W	J[97]	-5.9	-0.14	-0.35	0.01	0.03	-0.04	0.13	PASS
18	1.35D+1.5W	I[26]	0.9	-0.21	-0.06	0.04	-0.03	-0.07	0.08	PASS
18	1.35D+1.5W	J[98]	0.9	-0.21	-0.05	0.04	-0.01	0.01	0.02	PASS
19	1.35D+1.5W	I[18]	0.41	-0.2	0.03	0.04	0	0.02	0.02	PASS
19	1.35D+1.5W	J[93]	0.41	-0.2	0.04	0.04	-0.01	0.09	0.07	PASS
20	1.35D+1.5W	I[21]	-2.54	-0.15	-0.15	0.01	-0.02	-0.09	0.11	PASS
20	1.35D+1.5W	J[99]	-2.54	-0.15	-0.14	0.01	0.03	-0.03	0.07	PASS
21	1.35D+1.5W	I[24]	-1.16	-0.14	0.05	0.04	0.01	0.02	0.03	PASS
21	1.35D+1.5W	J[92]	-1.16	-0.14	0.06	0.04	-0.01	0.07	0.07	PASS
22	1.35D+1.5W	I[23]	0.06	-0.04	-0.03	-0.02	0	-0.01	0.01	PASS
22	1.35D+1.5W	J[24]	0.06	-0.04	-0.03	-0.02	0.01	0	0.01	PASS
23	1.35D+1.5W	I[25]	2.5	-0.68	0.08	0.06	0.01	0.02	0.05	PASS
23	1.35D+1.5W	J[275]	2.5	-0.68	0.08	0.06	0	0.06	0.07	PASS
24	1.35D+1.5W	I[27]	1.71	0.14	5.94	0.07	0.23	0.04	0.22	PASS
24	1.35D+1.5W	J[278]	1.71	0.14	5.94	0.07	-0.09	0.03	0.10	PASS
25	1.35D+1.5W	I[28]	0.83	0.08	1.78	-0.02	0.01	0	0.01	PASS
25	1.35D+1.5W	J[271]	0.83	0.08	1.78	-0.02	-0.08	-0.01	0.07	PASS
26	1.35D+1.5W	I[29]	-4.23	-0.72	-5.7	-0.04	-0.51	-0.02	0.45	PASS
26	1.35D+1.5W	J[39]	-4.23	-0.72	-5.69	-0.04	0.63	0.13	0.63	PASS
27	1.35D+1.5W	I[39]	-6.97	0.32	3.33	-0.03	0.31	0.16	0.45	PASS
27	1.35D+1.5W	J[101]	-6.97	0.32	3.33	-0.03	0.19	0.14	0.35	PASS
28	1.35D+1.5W	I[37]	19.84	0.02	0.75	-0.01	-0.04	-0.07	0.48	PASS
28	1.35D+1.5W	J[110]	19.84	0.02	0.75	-0.01	-0.07	-0.07	0.50	PASS
29	1.35D+1.5W	I[35]	19.18	-0.33	-2.17	0	-0.1	-0.17	0.58	PASS

29	1.35D+1.5W	J[119]	19.18	-0.33	-2.17	0	-0.02	-0.16	0.52	PASS
30	1.35D+1.5W	I[33]	-4.51	0.66	5.52	0.04	0.61	0.12	0.61	PASS
30	1.35D+1.5W	J[30]	-4.51	0.66	5.53	0.04	-0.49	-0.01	0.43	PASS
31	1.35D+1.5W	I[31]	-9.97	-4.3	-2.11	-0.03	0.04	-0.42	0.51	PASS
31	1.35D+1.5W	J[303]	-9.96	-4.3	-2.11	-0.03	0.15	-0.19	0.41	PASS
32	1.35D+1.5W	I[32]	12.93	-3.49	-1.49	0	-0.02	-0.3	0.47	PASS
32	1.35D+1.5W	J[305]	12.93	-3.49	-1.49	0	0.06	-0.11	0.35	PASS
33	1.35D+1.5W	I[34]	-0.26	0.32	-0.17	0.06	0	0.03	0.02	PASS
33	1.35D+1.5W	J[258]	-0.26	0.32	-0.17	0.06	0.01	0.02	0.02	PASS
34	1.35D+1.5W	I[36]	-0.26	-0.3	-0.17	-0.06	0	-0.03	0.02	PASS
34	1.35D+1.5W	J[262]	-0.26	-0.3	-0.17	-0.06	0.01	-0.01	0.02	PASS
35	1.35D+1.5W	I[38]	11.47	3	-1.56	0.02	-0.02	0.32	0.45	PASS
35	1.35D+1.5W	J[264]	11.48	3	-1.56	0.02	0.06	0.16	0.36	PASS
36	1.35D+1.5W	I[40]	-8.55	4.16	-2.05	0.05	0.03	0.45	0.49	PASS
36	1.35D+1.5W	J[270]	-8.55	4.16	-2.05	0.05	0.15	0.23	0.41	PASS
37	1.35D+1.5W	I[41]	-0.92	2.45	0.34	0	0.05	0.18	0.18	PASS
37	1.35D+1.5W	J[47]	-0.92	2.45	0.35	0	-0.02	-0.31	0.25	PASS
38	1.35D+1.5W	I[47]	-0.93	-1.51	0.11	0.01	0.01	-0.41	0.32	PASS
38	1.35D+1.5W	J[149]	-0.93	-1.51	0.13	0.01	-0.03	0.09	0.09	PASS
39	1.35D+1.5W	I[52]	22.37	-1.49	-0.3	0.02	-0.11	-0.25	0.73	PASS
39	1.35D+1.5W	J[142]	22.37	-1.49	-0.28	0.02	-0.01	0.24	0.65	PASS
40	1.35D+1.5W	I[54]	22.44	-0.94	-0.33	0.02	-0.12	-0.15	0.67	PASS
40	1.35D+1.5W	J[135]	22.44	-0.94	-0.3	0.02	-0.01	0.16	0.60	PASS
41	1.35D+1.5W	I[50]	-0.82	-2.39	-0.4	0	-0.02	-0.3	0.24	PASS
41	1.35D+1.5W	J[42]	-0.82	-2.39	-0.39	0	0.06	0.17	0.17	PASS
42	1.35D+1.5W	I[43]	-2.38	-0.67	-0.2	0.07	0.14	0.1	0.20	PASS
42	1.35D+1.5W	J[41]	-2.38	-0.67	-0.2	0.07	0.18	0.24	0.34	PASS
43	1.35D+1.5W	I[44]	-2.39	0.66	-0.21	-0.07	0.14	-0.11	0.21	PASS
43	1.35D+1.5W	J[42]	-2.39	0.66	-0.21	-0.07	0.18	-0.24	0.34	PASS
44	1.35D+1.5W	I[42]	0.39	0.16	-0.02	0.06	-0.18	0.03	0.16	PASS
44	1.35D+1.5W	J[277]	0.39	0.16	-0.02	0.06	-0.18	0.02	0.15	PASS
45	1.35D+1.5W	I[46]	-2.93	0.84	2.58	0.1	0.12	0.08	0.18	PASS
45	1.35D+1.5W	J[298]	-2.93	0.84	2.58	0.1	-0.02	0.03	0.07	PASS
46	1.35D+1.5W	I[48]	-1.33	-0.16	-3.62	0.07	0.1	0	0.08	PASS
46	1.35D+1.5W	J[294]	-1.33	-0.16	-3.62	0.07	0.29	0.01	0.23	PASS
47	1.35D+1.5W	I[49]	-2.85	-0.92	2.55	-0.1	0.12	-0.08	0.18	PASS
47	1.35D+1.5W	J[283]	-2.85	-0.92	2.55	-0.1	-0.02	-0.03	0.07	PASS
48	1.35D+1.5W	I[51]	1.21	0.17	-1.58	0.06	0.06	0.01	0.06	PASS
48	1.35D+1.5W	J[290]	1.21	0.17	-1.58	0.06	0.15	0.01	0.13	PASS
49	1.35D+1.5W	I[53]	1.2	-0.17	-1.58	-0.06	0.06	-0.01	0.06	PASS
49	1.35D+1.5W	J[286]	1.2	-0.17	-1.58	-0.06	0.15	-0.01	0.13	PASS
50	1.35D+1.5W	I[55]	-0.3	0.11	0.01	0	0	0.08	0.06	PASS
50	1.35D+1.5W	J[177]	-0.3	0.11	0.02	0	-0.01	0.01	0.02	PASS
51	1.35D+1.5W	I[58]	4.68	0.09	-0.05	0	-0.04	0.05	0.13	PASS
51	1.35D+1.5W	J[180]	4.68	0.09	-0.04	0	-0.01	-0.01	0.08	PASS
52	1.35D+1.5W	I[57]	0.2	-0.01	0.35	-0.08	0	0	0.00	PASS
52	1.35D+1.5W	J[316]	0.2	-0.01	0.35	-0.08	-0.02	0	0.02	PASS
53	1.35D+1.5W	I[59]	-0.07	-0.09	1.58	-0.05	-0.02	0	0.01	PASS
53	1.35D+1.5W	J[291]	-0.07	-0.09	1.58	-0.05	-0.1	0	0.07	PASS
54	1.35D+1.5W	I[60]	-0.06	0.08	0.5	-0.05	0.01	0	0.01	PASS
54	1.35D+1.5W	J[259]	-0.06	0.08	0.5	-0.05	-0.01	0	0.01	PASS
55	1.35D+1.5W	I[61]	-0.31	-0.11	0.01	0	0	-0.09	0.07	PASS
55	1.35D+1.5W	J[183]	-0.31	-0.11	0.02	0	-0.01	-0.01	0.02	PASS
56	1.35D+1.5W	I[64]	4.66	-0.1	-0.05	0	-0.04	-0.06	0.13	PASS
56	1.35D+1.5W	J[186]	4.66	-0.1	-0.04	0	-0.01	0.01	0.07	PASS
57	1.35D+1.5W	I[63]	0.2	0.01	0.35	0.09	0	0	0.00	PASS
57	1.35D+1.5W	J[315]	0.2	0.01	0.35	0.09	-0.02	0	0.02	PASS
58	1.35D+1.5W	I[65]	-0.07	0.09	1.58	0.06	-0.02	0	0.01	PASS
58	1.35D+1.5W	J[287]	-0.07	0.09	1.58	0.06	-0.1	0	0.07	PASS
59	1.35D+1.5W	I[66]	-0.06	-0.09	0.5	0.06	0.01	0	0.01	PASS
59	1.35D+1.5W	J[263]	-0.06	-0.09	0.5	0.06	-0.01	0	0.01	PASS
60	1.35D+1.5W	I[67]	9.3	-0.14	0.14	0	0.05	-0.15	0.30	PASS
60	1.35D+1.5W	J[190]	9.3	-0.14	0.21	0	-0.06	-0.07	0.24	PASS
61	1.35D+1.5W	I[69]	-0.37	-0.84	-0.06	0.05	0.01	0.03	0.03	PASS
61	1.35D+1.5W	J[247]	-0.37	-0.84	-0.06	0.05	0.02	0.08	0.07	PASS
62	1.35D+1.5W	I[70]	-0.48	-7.71	-0.15	0.1	0	-0.05	0.04	PASS

62	1.35D+1.5W	J[253]	-0.48	-7.71	-0.15	0.1	0.01	0.36	0.28	PASS
63	1.35D+1.5W	I[71]	10.64	-0.02	0.2	-0.01	0.06	-0.03	0.24	PASS
63	1.35D+1.5W	J[199]	10.64	-0.02	0.27	-0.01	-0.08	-0.02	0.25	PASS
64	1.35D+1.5W	I[73]	-0.53	7.74	-0.11	-0.04	0.01	0.06	0.05	PASS
64	1.35D+1.5W	J[252]	-0.53	7.74	-0.11	-0.04	0.01	-0.36	0.28	PASS
65	1.35D+1.5W	I[74]	-0.53	-7.81	-0.11	0.04	0.01	-0.06	0.05	PASS
65	1.35D+1.5W	J[251]	-0.53	-7.81	-0.11	0.04	0.01	0.36	0.28	PASS
66	1.35D+1.5W	I[75]	3.65	0.08	0.19	-0.02	0.06	0.13	0.18	PASS
66	1.35D+1.5W	J[208]	3.65	0.08	0.26	-0.02	-0.07	0.08	0.15	PASS
67	1.35D+1.5W	I[77]	-0.49	7.78	-0.16	-0.1	0	0.05	0.04	PASS
67	1.35D+1.5W	J[250]	-0.48	7.78	-0.16	-0.1	0.01	-0.37	0.29	PASS
68	1.35D+1.5W	I[78]	-0.36	0.74	-0.06	-0.05	0.01	-0.03	0.03	PASS
68	1.35D+1.5W	J[274]	-0.36	0.74	-0.06	-0.05	0.02	-0.07	0.07	PASS
69	1.35D+1.5W	I[79]	-3.89	0.23	0.07	-0.01	0.04	0.09	0.14	PASS
69	1.35D+1.5W	J[82]	-3.89	0.23	0.08	-0.01	-0.01	-0.06	0.10	PASS
70	1.35D+1.5W	I[80]	-7.11	0.2	0.06	-0.01	0.04	0.08	0.19	PASS
70	1.35D+1.5W	J[81]	-7.11	0.2	0.08	-0.01	0	-0.04	0.13	PASS
71	1.35D+1.5W	I[81]	0.79	0.39	0.23	-0.01	0.04	0.05	0.07	PASS
71	1.35D+1.5W	J[12]	0.79	0.39	0.24	-0.01	-0.05	-0.09	0.11	PASS
72	1.35D+1.5W	I[82]	-2.05	0.12	0.03	-0.02	0.02	0.03	0.06	PASS
72	1.35D+1.5W	J[84]	-2.05	0.12	0.04	-0.02	-0.01	-0.05	0.06	PASS
73	1.35D+1.5W	I[83]	0.71	0.2	-0.06	-0.04	-0.01	0.05	0.05	PASS
73	1.35D+1.5W	J[10]	0.71	0.2	-0.05	-0.04	0	-0.02	0.02	PASS
74	1.35D+1.5W	I[84]	-1.5	0.23	0	-0.04	0	0.06	0.06	PASS
74	1.35D+1.5W	J[4]	-1.5	0.23	0	-0.04	0	-0.02	0.03	PASS
75	1.35D+1.5W	I[85]	0.41	0.22	-0.13	-0.02	-0.02	0.01	0.02	PASS
75	1.35D+1.5W	J[8]	0.41	0.22	-0.12	-0.02	0.02	-0.06	0.06	PASS
76	1.35D+1.5W	I[86]	-0.29	0.17	0.13	-0.02	0.01	0.01	0.02	PASS
76	1.35D+1.5W	J[2]	-0.29	0.17	0.14	-0.02	-0.03	-0.05	0.06	PASS
77	1.35D+1.5W	I[90]	-2.29	-0.12	0.02	0.02	0.02	-0.05	0.07	PASS
77	1.35D+1.5W	J[100]	-2.3	-0.12	0.03	0.02	0	0.03	0.05	PASS
78	1.35D+1.5W	I[91]	1.04	-0.35	0.25	0	0.04	-0.05	0.07	PASS
78	1.35D+1.5W	J[26]	1.03	-0.35	0.26	0	-0.05	0.08	0.10	PASS
79	1.35D+1.5W	I[92]	-0.14	-0.15	0.13	0.02	0.01	-0.01	0.01	PASS
79	1.35D+1.5W	J[22]	-0.14	-0.15	0.14	0.02	-0.03	0.04	0.05	PASS
80	1.35D+1.5W	I[93]	0.26	-0.16	-0.13	0.02	-0.03	0	0.02	PASS
80	1.35D+1.5W	J[16]	0.26	-0.16	-0.12	0.02	0.02	0.06	0.06	PASS
81	1.35D+1.5W	I[97]	-7.39	-0.17	0.06	0	0.04	-0.06	0.18	PASS
81	1.35D+1.5W	J[91]	-7.39	-0.17	0.07	0	0	0.05	0.15	PASS
82	1.35D+1.5W	I[98]	0.4	-0.19	-0.05	0.04	-0.01	-0.02	0.02	PASS
82	1.35D+1.5W	J[18]	0.4	-0.19	-0.04	0.04	0	0.04	0.03	PASS
83	1.35D+1.5W	I[99]	-3.59	-0.15	0.07	0.01	0.04	-0.05	0.11	PASS
83	1.35D+1.5W	J[90]	-3.59	-0.15	0.09	0.01	-0.01	0.05	0.09	PASS
84	1.35D+1.5W	I[100]	-1.19	-0.1	-0.02	0.03	0	0.01	0.02	PASS
84	1.35D+1.5W	J[24]	-1.19	-0.1	-0.01	0.03	0	0.04	0.04	PASS
85	1.35D+1.5W	I[101]	-3.67	0.09	0.28	-0.02	0.15	0.13	0.25	PASS
85	1.35D+1.5W	J[103]	-3.67	0.09	0.32	-0.02	-0.03	0.08	0.12	PASS
86	1.35D+1.5W	I[103]	4.28	0.11	0.01	-0.01	0	0.09	0.12	PASS
86	1.35D+1.5W	J[105]	4.28	0.11	0.05	-0.01	-0.01	0.02	0.08	PASS
87	1.35D+1.5W	I[105]	11.11	0.14	0.03	-0.01	0	0.02	0.20	PASS
87	1.35D+1.5W	J[107]	11.11	0.14	0.07	-0.01	-0.03	-0.06	0.25	PASS
88	1.35D+1.5W	I[107]	16.88	0.14	-0.01	0	-0.02	-0.06	0.38	PASS
88	1.35D+1.5W	J[109]	16.88	0.14	0.03	0	-0.03	-0.14	0.45	PASS
89	1.35D+1.5W	I[109]	19.35	0.33	2.13	0	-0.02	-0.16	0.52	PASS
89	1.35D+1.5W	J[37]	19.35	0.33	2.13	0	-0.1	-0.17	0.59	PASS
90	1.35D+1.5W	I[110]	20.75	-0.03	-0.03	-0.01	-0.06	-0.06	0.51	PASS
90	1.35D+1.5W	J[112]	20.75	-0.03	0.01	-0.01	-0.05	-0.04	0.49	PASS
91	1.35D+1.5W	I[112]	21.83	-0.01	-0.01	0	-0.05	-0.04	0.52	PASS
91	1.35D+1.5W	J[114]	21.83	-0.01	0.03	0	-0.05	-0.03	0.51	PASS
92	1.35D+1.5W	I[114]	21.79	0.01	-0.04	0	-0.05	-0.03	0.51	PASS
92	1.35D+1.5W	J[116]	21.79	0.01	0.01	0	-0.05	-0.04	0.52	PASS
93	1.35D+1.5W	I[116]	20.63	0.04	-0.01	0.01	-0.05	-0.04	0.49	PASS
93	1.35D+1.5W	J[118]	20.63	0.04	0.03	0.01	-0.05	-0.07	0.51	PASS
94	1.35D+1.5W	I[118]	19.67	-0.02	-0.78	0.01	-0.06	-0.08	0.50	PASS
94	1.35D+1.5W	J[35]	19.67	-0.02	-0.78	0.01	-0.04	-0.08	0.48	PASS
95	1.35D+1.5W	I[119]	16.69	-0.14	-0.03	0	-0.03	-0.14	0.44	PASS

95	1.35D+1.5W	J[121]	16.69	-0.14	0.01	0	-0.02	-0.06	0.38	PASS
96	1.35D+1.5W	I[121]	10.83	-0.14	-0.07	0.01	-0.03	-0.06	0.25	PASS
96	1.35D+1.5W	J[123]	10.83	-0.14	-0.03	0.01	0	0.02	0.20	PASS
97	1.35D+1.5W	I[123]	3.91	-0.11	-0.05	0.01	-0.01	0.02	0.07	PASS
97	1.35D+1.5W	J[125]	3.91	-0.11	-0.01	0.01	0.01	0.09	0.12	PASS
98	1.35D+1.5W	I[125]	-4.15	-0.09	-0.3	0.02	-0.03	0.08	0.13	PASS
98	1.35D+1.5W	J[127]	-4.15	-0.09	-0.26	0.02	0.14	0.13	0.25	PASS
99	1.35D+1.5W	I[127]	-7.58	-0.32	-3.37	0.03	0.18	0.14	0.35	PASS
99	1.35D+1.5W	J[33]	-7.58	-0.32	-3.37	0.03	0.3	0.15	0.45	PASS
100	1.35D+1.5W	I[129]	-0.78	1.5	-0.12	-0.01	-0.03	0.09	0.09	PASS
100	1.35D+1.5W	J[50]	-0.78	1.5	-0.1	-0.01	0.01	-0.41	0.32	PASS
101	1.35D+1.5W	I[131]	5.83	0.39	0	-0.01	-0.02	0.12	0.18	PASS
101	1.35D+1.5W	J[129]	5.83	0.39	0.04	-0.01	-0.03	-0.11	0.18	PASS
102	1.35D+1.5W	I[133]	12.16	0.34	-0.02	-0.01	-0.03	0.12	0.32	PASS
102	1.35D+1.5W	J[131]	12.16	0.34	0.02	-0.01	-0.03	-0.08	0.29	PASS
103	1.35D+1.5W	I[135]	17.6	0.49	0.03	0	-0.02	0.22	0.52	PASS
103	1.35D+1.5W	J[133]	17.6	0.49	0.07	0	-0.05	-0.07	0.43	PASS
104	1.35D+1.5W	I[136]	22.41	1.49	0.28	-0.02	-0.01	0.24	0.65	PASS
104	1.35D+1.5W	J[54]	22.41	1.49	0.3	-0.02	-0.11	-0.26	0.74	PASS
105	1.35D+1.5W	I[138]	23.45	-0.13	-0.06	-0.01	-0.06	0.04	0.57	PASS
105	1.35D+1.5W	J[136]	23.45	-0.13	-0.02	-0.01	-0.04	0.12	0.61	PASS
106	1.35D+1.5W	I[140]	23.96	0	-0.02	0	-0.06	0.04	0.58	PASS
106	1.35D+1.5W	J[138]	23.96	0	0.02	0	-0.06	0.04	0.58	PASS
107	1.35D+1.5W	I[142]	23.43	0.13	0.02	0.01	-0.04	0.12	0.61	PASS
107	1.35D+1.5W	J[140]	23.43	0.13	0.06	0.01	-0.06	0.04	0.57	PASS
108	1.35D+1.5W	I[143]	22.4	0.94	0.31	-0.02	-0.01	0.16	0.59	PASS
108	1.35D+1.5W	J[52]	22.4	0.94	0.33	-0.02	-0.12	-0.15	0.67	PASS
109	1.35D+1.5W	I[145]	17.52	-0.49	-0.07	0	-0.05	-0.07	0.43	PASS
109	1.35D+1.5W	J[143]	17.52	-0.49	-0.03	0	-0.02	0.22	0.52	PASS
110	1.35D+1.5W	I[147]	12.07	-0.34	-0.02	0.01	-0.03	-0.08	0.29	PASS
110	1.35D+1.5W	J[145]	12.07	-0.34	0.03	0.01	-0.03	0.12	0.32	PASS
111	1.35D+1.5W	I[149]	5.72	-0.39	-0.04	0.01	-0.03	-0.11	0.18	PASS
111	1.35D+1.5W	J[147]	5.72	-0.39	0	0.01	-0.02	0.12	0.18	PASS
112	1.35D+1.5W	I[177]	3.81	0.11	0.06	0	0	0.01	0.05	PASS
112	1.35D+1.5W	J[58]	3.81	0.11	0.08	0	-0.05	-0.07	0.13	PASS
113	1.35D+1.5W	I[180]	1.57	0.09	-0.04	0	-0.01	-0.01	0.03	PASS
113	1.35D+1.5W	J[56]	1.57	0.09	-0.02	0	0.01	-0.07	0.07	PASS
114	1.35D+1.5W	I[183]	3.79	-0.12	0.06	0	0	-0.01	0.05	PASS
114	1.35D+1.5W	J[64]	3.79	-0.12	0.08	0	-0.05	0.07	0.13	PASS
115	1.35D+1.5W	I[186]	1.56	-0.1	-0.04	0	-0.01	0.01	0.03	PASS
115	1.35D+1.5W	J[62]	1.56	-0.1	-0.02	0	0.01	0.08	0.08	PASS
116	1.35D+1.5W	I[188]	-0.58	2.12	0.01	0.02	0	-0.17	0.13	PASS
116	1.35D+1.5W	J[255]	-0.58	2.12	0.01	0.02	0	-0.22	0.17	PASS
117	1.35D+1.5W	I[190]	9.44	-0.16	-0.06	0	-0.05	-0.06	0.23	PASS
117	1.35D+1.5W	J[192]	9.44	-0.16	0.01	0	-0.03	0.03	0.20	PASS
118	1.35D+1.5W	I[192]	7.52	-0.11	-0.01	0.01	-0.03	0.02	0.15	PASS
118	1.35D+1.5W	J[194]	7.52	-0.11	0.05	0.01	-0.04	0.09	0.21	PASS
119	1.35D+1.5W	I[194]	3.57	-0.08	-0.26	0.02	-0.07	0.08	0.15	PASS
119	1.35D+1.5W	J[68]	3.57	-0.08	-0.19	0.02	0.06	0.12	0.17	PASS
120	1.35D+1.5W	I[196]	-1.75	3.54	0.13	0.01	0	0.09	0.08	PASS
120	1.35D+1.5W	J[245]	-1.75	3.54	0.13	0.01	0	0.01	0.02	PASS
121	1.35D+1.5W	I[197]	-1.2	1	0.06	0.01	0	-0.2	0.16	PASS
121	1.35D+1.5W	J[249]	-1.2	1	0.06	0.01	0	-0.22	0.17	PASS
122	1.35D+1.5W	I[199]	12.69	-0.02	-0.06	0	-0.06	-0.01	0.27	PASS
122	1.35D+1.5W	J[201]	12.69	-0.02	0	0	-0.04	0	0.25	PASS
123	1.35D+1.5W	I[201]	12.67	0.03	0	0	-0.04	0	0.25	PASS
123	1.35D+1.5W	J[203]	12.67	0.03	0.06	0	-0.06	-0.01	0.27	PASS
124	1.35D+1.5W	I[203]	10.6	0.02	-0.27	0.01	-0.08	-0.02	0.25	PASS
124	1.35D+1.5W	J[72]	10.6	0.02	-0.2	0.01	0.06	-0.03	0.24	PASS
125	1.35D+1.5W	I[205]	-1.21	-0.94	0.06	-0.01	0	0.2	0.16	PASS
125	1.35D+1.5W	J[254]	-1.21	-0.94	0.06	-0.01	0	0.22	0.17	PASS
126	1.35D+1.5W	I[206]	-1.76	-3.49	0.12	-0.01	0	-0.09	0.08	PASS
126	1.35D+1.5W	J[272]	-1.76	-3.49	0.12	-0.01	0	-0.01	0.02	PASS
127	1.35D+1.5W	I[208]	7.65	0.12	-0.05	-0.01	-0.05	0.09	0.22	PASS
127	1.35D+1.5W	J[210]	7.65	0.12	0.01	-0.01	-0.03	0.02	0.15	PASS
128	1.35D+1.5W	I[210]	9.54	0.16	-0.01	0	-0.03	0.03	0.20	PASS

128	1.35D+1.5W	J[212]	9.54	0.16	0.06	0	-0.05	-0.07	0.24	PASS
129	1.35D+1.5W	I[212]	9.38	0.14	-0.21	0	-0.06	-0.07	0.25	PASS
129	1.35D+1.5W	J[76]	9.38	0.14	-0.14	0	0.05	-0.16	0.31	PASS
130	1.35D+1.5W	I[214]	-0.58	-2.14	0.01	-0.02	0	0.18	0.14	PASS
130	1.35D+1.5W	J[248]	-0.58	-2.14	0.01	-0.02	0	0.22	0.17	PASS
444	1.35D+1.5W	I[244]	-0.34	-0.04	0.16	0.14	0.03	0.03	0.04	PASS
444	1.35D+1.5W	J[12]	-0.34	-0.04	0.16	0.14	0.02	0.03	0.04	PASS
445	1.35D+1.5W	I[245]	0.19	3.57	-0.06	-0.12	-0.02	0.09	0.08	PASS
445	1.35D+1.5W	J[68]	0.2	3.57	-0.06	-0.12	-0.02	-0.07	0.07	PASS
446	1.35D+1.5W	I[246]	1.6	-0.01	-0.03	0.01	0.01	0.01	0.03	PASS
446	1.35D+1.5W	J[244]	1.61	-0.01	-0.03	0.01	0.01	0.01	0.03	PASS
447	1.35D+1.5W	I[247]	0.51	-0.06	0.09	-0.02	0.01	0.05	0.05	PASS
447	1.35D+1.5W	J[196]	0.52	-0.06	0.09	-0.02	0	0.06	0.05	PASS
448	1.35D+1.5W	I[248]	0.13	9.38	0.15	0.16	0.01	0.39	0.30	PASS
448	1.35D+1.5W	J[76]	0.13	9.38	0.15	0.16	0	-0.03	0.02	PASS
449	1.35D+1.5W	I[249]	0.2	-10.64	0.04	-0.03	-0.01	-0.43	0.33	PASS
449	1.35D+1.5W	J[71]	0.2	-10.64	0.04	-0.03	-0.01	0.06	0.05	PASS
450	1.35D+1.5W	I[250]	-0.16	-2.92	0.08	0.02	0.01	-0.23	0.18	PASS
450	1.35D+1.5W	J[214]	-0.16	-2.92	0.08	0.02	-0.01	0.19	0.15	PASS
451	1.35D+1.5W	I[251]	0	2.99	0.08	0	0	0.22	0.16	PASS
451	1.35D+1.5W	J[197]	0	2.99	0.08	0	-0.01	-0.21	0.16	PASS
452	1.35D+1.5W	I[252]	0	-2.96	0.08	0	0	-0.21	0.16	PASS
452	1.35D+1.5W	J[205]	0	-2.96	0.08	0	-0.01	0.2	0.15	PASS
453	1.35D+1.5W	I[253]	-0.16	2.9	0.08	-0.02	0.01	0.22	0.17	PASS
453	1.35D+1.5W	J[188]	-0.15	2.9	0.08	-0.02	-0.01	-0.19	0.15	PASS
454	1.35D+1.5W	I[254]	0.2	10.6	0.04	0.04	-0.01	0.42	0.32	PASS
454	1.35D+1.5W	J[72]	0.2	10.6	0.04	0.04	-0.01	-0.06	0.05	PASS
455	1.35D+1.5W	I[255]	0.13	-9.3	0.15	-0.16	0.01	-0.39	0.30	PASS
455	1.35D+1.5W	J[67]	0.13	-9.3	0.15	-0.16	0	0.03	0.02	PASS
456	1.35D+1.5W	I[256]	-1.41	0.49	0.19	-0.09	0	-0.04	0.04	PASS
456	1.35D+1.5W	J[35]	-1.41	0.49	0.19	-0.09	-0.01	-0.07	0.07	PASS
457	1.35D+1.5W	I[257]	1.11	-0.09	0.14	0.08	0	-0.01	0.02	PASS
457	1.35D+1.5W	J[56]	1.11	-0.09	0.14	0.08	-0.01	0	0.02	PASS
458	1.35D+1.5W	I[258]	-0.71	0.33	0.2	0	0.01	0.01	0.02	PASS
458	1.35D+1.5W	J[256]	-0.71	0.33	0.2	0	-0.01	-0.03	0.03	PASS
459	1.35D+1.5W	I[259]	0.4	0.08	0.13	0.01	0	0	0.00	PASS
459	1.35D+1.5W	J[257]	0.4	0.08	0.13	0.01	-0.01	-0.01	0.02	PASS
460	1.35D+1.5W	I[260]	-1.41	-0.49	0.19	0.09	0	0.04	0.04	PASS
460	1.35D+1.5W	J[37]	-1.41	-0.49	0.19	0.09	-0.01	0.07	0.07	PASS
461	1.35D+1.5W	I[261]	1.1	0.1	0.14	-0.09	0	0.01	0.02	PASS
461	1.35D+1.5W	J[62]	1.1	0.1	0.14	-0.09	-0.01	0	0.02	PASS
462	1.35D+1.5W	I[262]	-0.71	-0.32	0.2	0	0.01	-0.01	0.02	PASS
462	1.35D+1.5W	J[260]	-0.71	-0.32	0.2	0	-0.01	0.03	0.03	PASS
463	1.35D+1.5W	I[263]	0.4	-0.08	0.13	-0.01	0	0	0.00	PASS
463	1.35D+1.5W	J[261]	0.4	-0.08	0.13	-0.01	-0.01	0.01	0.02	PASS
464	1.35D+1.5W	I[264]	9.42	2.12	0.48	0.04	0.07	0.14	0.31	PASS
464	1.35D+1.5W	J[266]	9.42	2.12	0.48	0.04	0	-0.16	0.27	PASS
465	1.35D+1.5W	I[265]	1.59	0.93	-0.13	0.02	0	0.01	0.02	PASS
465	1.35D+1.5W	J[267]	1.59	0.93	-0.13	0.02	0.02	-0.12	0.12	PASS
466	1.35D+1.5W	I[266]	9.07	2.74	-0.26	0.06	0	-0.14	0.25	PASS
466	1.35D+1.5W	J[39]	9.07	2.74	-0.26	0.06	0.02	-0.32	0.40	PASS
467	1.35D+1.5W	I[267]	1.94	0.31	0.61	-0.02	0.04	-0.15	0.16	PASS
467	1.35D+1.5W	J[16]	1.94	0.31	0.61	-0.02	0	-0.17	0.14	PASS
468	1.35D+1.5W	I[268]	-5.74	4.23	0.22	0.03	-0.03	-0.23	0.27	PASS
468	1.35D+1.5W	J[29]	-5.74	4.23	0.22	0.03	-0.04	-0.51	0.49	PASS
469	1.35D+1.5W	I[269]	-1.96	0	-0.49	0	-0.01	-0.16	0.14	PASS
469	1.35D+1.5W	J[22]	-1.96	0	-0.49	0	0.02	-0.16	0.15	PASS
470	1.35D+1.5W	I[270]	-6.51	3.09	0.26	0.05	0.03	0.2	0.26	PASS
470	1.35D+1.5W	J[268]	-6.51	3.09	0.26	0.05	-0.01	-0.24	0.28	PASS
471	1.35D+1.5W	I[271]	-1.2	1.15	-0.53	0.03	-0.07	0.02	0.08	PASS
471	1.35D+1.5W	J[269]	-1.2	1.15	-0.53	0.03	0	-0.14	0.11	PASS
472	1.35D+1.5W	I[272]	0.19	-3.65	-0.06	0.12	-0.02	-0.09	0.08	PASS
472	1.35D+1.5W	J[75]	0.19	-3.65	-0.06	0.12	-0.02	0.07	0.07	PASS
473	1.35D+1.5W	I[273]	-0.32	0.14	0.13	-0.15	0.03	-0.03	0.04	PASS
473	1.35D+1.5W	J[26]	-0.32	0.14	0.13	-0.15	0.03	-0.03	0.04	PASS
474	1.35D+1.5W	I[274]	0.51	0.08	0.08	0.02	0.01	-0.05	0.05	PASS

474	1.35D+1.5W	J[206]	0.51	0.08	0.08	0.02	0	-0.06	0.05	PASS
475	1.35D+1.5W	I[275]	1.63	-0.02	-0.05	-0.01	0.01	-0.01	0.03	PASS
475	1.35D+1.5W	J[273]	1.63	-0.02	-0.05	-0.01	0.02	-0.01	0.04	PASS
476	1.35D+1.5W	I[276]	-0.05	0.09	2.32	-0.06	0.13	0	0.10	PASS
476	1.35D+1.5W	J[21]	-0.05	0.09	2.32	-0.06	-0.02	0	0.01	PASS
477	1.35D+1.5W	I[277]	-0.85	0.11	-2.31	0	-0.13	0.02	0.12	PASS
477	1.35D+1.5W	J[279]	-0.86	0.11	-2.31	0	0.2	0	0.15	PASS
478	1.35D+1.5W	I[278]	1.18	0.14	0.04	0	0.03	0.02	0.05	PASS
478	1.35D+1.5W	J[276]	1.19	0.14	0.04	0	0.02	0	0.02	PASS
479	1.35D+1.5W	I[279]	-1.39	0.11	3.59	-0.07	0.29	0.01	0.24	PASS
479	1.35D+1.5W	J[45]	-1.39	0.11	3.59	-0.07	0.1	0.01	0.09	PASS
480	1.35D+1.5W	I[280]	-0.46	-0.37	6.12	-0.08	0.3	-0.02	0.24	PASS
480	1.35D+1.5W	J[20]	-0.46	-0.37	6.12	-0.08	-0.1	0	0.08	PASS
481	1.35D+1.5W	I[281]	0.04	-0.04	-3.9	0.1	-0.26	0.03	0.21	PASS
481	1.35D+1.5W	J[50]	0.04	-0.04	-3.9	0.1	-0.01	0.04	0.04	PASS
482	1.35D+1.5W	I[282]	1.48	-0.03	0.61	0	0.17	-0.01	0.15	PASS
482	1.35D+1.5W	J[280]	1.49	-0.03	0.61	0	0.09	-0.01	0.09	PASS
483	1.35D+1.5W	I[283]	-1.91	-0.38	1.61	0	0.08	-0.03	0.10	PASS
483	1.35D+1.5W	J[281]	-1.91	-0.38	1.61	0	-0.15	0.02	0.14	PASS
484	1.35D+1.5W	I[284]	-0.42	0.04	-2.47	0.1	-0.2	0.02	0.16	PASS
484	1.35D+1.5W	J[54]	-0.42	0.04	-2.47	0.1	-0.04	0.01	0.04	PASS
485	1.35D+1.5W	I[285]	1.56	-0.11	2.48	-0.1	0.16	-0.01	0.14	PASS
485	1.35D+1.5W	J[61]	1.56	-0.11	2.48	-0.1	0	0	0.02	PASS
486	1.35D+1.5W	I[286]	0.42	-0.1	1.01	0.01	0.06	0	0.05	PASS
486	1.35D+1.5W	J[284]	0.43	-0.1	1.01	0.01	-0.08	0.01	0.07	PASS
487	1.35D+1.5W	I[287]	0.71	0.02	-1.01	-0.01	-0.06	0	0.05	PASS
487	1.35D+1.5W	J[285]	0.71	0.02	-1.01	-0.01	0.08	0	0.06	PASS
488	1.35D+1.5W	I[288]	-0.42	-0.03	-2.47	-0.1	-0.2	-0.02	0.16	PASS
488	1.35D+1.5W	J[52]	-0.42	-0.03	-2.47	-0.1	-0.04	-0.01	0.04	PASS
489	1.35D+1.5W	I[289]	1.56	0.11	2.48	0.09	0.16	0.01	0.14	PASS
489	1.35D+1.5W	J[55]	1.56	0.11	2.48	0.09	0	0	0.02	PASS
490	1.35D+1.5W	I[290]	0.43	0.1	1.01	-0.01	0.06	0	0.05	PASS
490	1.35D+1.5W	J[288]	0.43	0.1	1.01	-0.01	-0.08	-0.01	0.07	PASS
491	1.35D+1.5W	I[291]	0.71	-0.02	-1.01	0.01	-0.06	0	0.05	PASS
491	1.35D+1.5W	J[289]	0.71	-0.02	-1.01	0.01	0.08	0	0.06	PASS
492	1.35D+1.5W	I[292]	0.32	-0.25	0.09	-0.05	-0.17	0.02	0.14	PASS
492	1.35D+1.5W	J[41]	0.32	-0.25	0.09	-0.05	-0.18	0.04	0.16	PASS
493	1.35D+1.5W	I[293]	-0.06	-0.01	2.21	0.06	0.13	0	0.10	PASS
493	1.35D+1.5W	J[6]	-0.06	-0.01	2.21	0.06	-0.01	0	0.01	PASS
494	1.35D+1.5W	I[294]	-0.88	-0.12	2.27	0.01	0.2	0	0.15	PASS
494	1.35D+1.5W	J[292]	-0.87	-0.12	2.27	0.01	-0.12	0.02	0.11	PASS
495	1.35D+1.5W	I[295]	1.12	-0.14	0.03	0	0.03	-0.02	0.05	PASS
495	1.35D+1.5W	J[293]	1.13	-0.14	0.03	0	0.02	0	0.02	PASS
496	1.35D+1.5W	I[296]	0.1	-0.01	-3.97	-0.1	-0.27	-0.03	0.22	PASS
496	1.35D+1.5W	J[47]	0.1	-0.01	-3.97	-0.1	-0.01	-0.03	0.03	PASS
497	1.35D+1.5W	I[297]	-0.45	0.41	6.24	0.08	0.3	0.02	0.24	PASS
497	1.35D+1.5W	J[7]	-0.45	0.41	6.24	0.08	-0.11	-0.01	0.09	PASS
498	1.35D+1.5W	I[298]	-1.91	0.36	1.65	0	0.08	0.03	0.10	PASS
498	1.35D+1.5W	J[296]	-1.91	0.36	1.65	0	-0.16	-0.02	0.15	PASS
499	1.35D+1.5W	I[299]	1.56	0.03	0.62	0	0.18	0.01	0.15	PASS
499	1.35D+1.5W	J[297]	1.56	0.03	0.62	0	0.09	0.01	0.09	PASS
500	1.35D+1.5W	I[300]	-1.79	-0.08	-0.69	0.01	-0.03	0.14	0.14	PASS
500	1.35D+1.5W	J[2]	-1.79	-0.08	-0.69	0.01	0.02	0.14	0.13	PASS
501	1.35D+1.5W	I[301]	-5.57	-4.51	0.18	-0.03	-0.03	0.2	0.25	PASS
501	1.35D+1.5W	J[30]	-5.57	-4.51	0.18	-0.03	-0.04	0.49	0.47	PASS
502	1.35D+1.5W	I[302]	-0.43	-1.6	-0.61	-0.04	-0.08	-0.11	0.14	PASS
502	1.35D+1.5W	J[300]	-0.43	-1.6	-0.61	-0.04	0.01	0.12	0.10	PASS
503	1.35D+1.5W	I[303]	-6.94	-2.98	0.1	-0.06	0.02	-0.21	0.27	PASS
503	1.35D+1.5W	J[301]	-6.94	-2.98	0.1	-0.06	0	0.22	0.27	PASS
504	1.35D+1.5W	I[304]	0.81	-1.41	-0.06	-0.04	0	-0.11	0.09	PASS
504	1.35D+1.5W	J[306]	0.81	-1.41	-0.06	-0.04	0.01	0.09	0.08	PASS
505	1.35D+1.5W	I[305]	9.9	-1.98	0.66	-0.05	0.08	-0.15	0.33	PASS
505	1.35D+1.5W	J[307]	9.9	-1.98	0.66	-0.05	-0.01	0.14	0.27	PASS
506	1.35D+1.5W	I[306]	1.77	-0.32	0.81	0.02	0.05	0.13	0.15	PASS
506	1.35D+1.5W	J[8]	1.77	-0.32	0.81	0.02	0	0.15	0.13	PASS
507	1.35D+1.5W	I[307]	8.94	-3.07	-0.21	-0.06	0	0.1	0.22	PASS

507	1.35D+1.5W	J[33]	8.94	-3.07	-0.21	-0.06	0.02	0.3	0.38	PASS
553	1.35D+1.5W	I[314]	-2.75	0.02	-0.2	-0.15	0	0	0.03	PASS
553	1.35D+1.5W	J[64]	-2.74	0.02	-0.2	-0.15	0.01	0	0.04	PASS
555	1.35D+1.5W	I[315]	-0.65	-0.09	-0.08	0	-0.01	-0.01	0.02	PASS
555	1.35D+1.5W	J[314]	-0.64	-0.09	-0.07	0	0	0.01	0.01	PASS
557	1.35D+1.5W	I[316]	-0.65	0.09	-0.08	0	-0.01	0.01	0.02	PASS
557	1.35D+1.5W	J[317]	-0.64	0.09	-0.07	0	0	-0.01	0.01	PASS
559	1.35D+1.5W	I[317]	-2.76	-0.03	-0.2	0.14	0	0	0.03	PASS
559	1.35D+1.5W	J[58]	-2.75	-0.03	-0.2	0.14	0.01	0	0.04	PASS

Calculation Sheet

Element: 25.4 x 25.4 x 3.25 SHS

Element No	Load Case	End	Axial N_{ed} (kN)	Shear $V_{y,ed}$ (kN)	Shear $V_{z,ed}$ (kN)	Torsion $M_{x,Ed}$ (kNm)	Bending $M_{y,Ed}$ (kNm)	Bending $M_{z,Ed}$ (kNm)	6.2.9 Stress Ratio	Pass/ Fail
726	1.35D+1.5W+1.05L	I[175]	-0.61	1.14	0.02	0	0	0.1	0.38	PASS
726	1.35D+1.5W+1.05L	J[149]	-0.61	1.14	0.02	0	0	-0.13	0.49	PASS
727	1.35D+1.5W+1.05L	I[174]	-0.07	1.6	0.05	0	0	0.16	0.59	PASS
727	1.35D+1.5W+1.05L	J[147]	-0.07	1.6	0.05	0	-0.01	-0.16	0.63	PASS
728	1.35D+1.5W+1.05L	I[173]	0.01	1.37	0.06	0	0.01	0.13	0.51	PASS
728	1.35D+1.5W+1.05L	J[145]	0.01	1.37	0.06	0	0	-0.14	0.52	PASS
729	1.35D+1.5W+1.05L	I[172]	-0.98	1.05	0.27	0	0.05	0.12	0.64	PASS
729	1.35D+1.5W+1.05L	J[143]	-0.98	1.05	0.27	0	-0.01	-0.09	0.39	PASS
730	1.35D+1.5W+1.05L	I[171]	-1.09	0.38	0.23	0	0.04	0.01	0.20	PASS
730	1.35D+1.5W+1.05L	J[142]	-1.09	0.38	0.23	0	-0.01	-0.06	0.28	PASS
731	1.35D+1.5W+1.05L	I[170]	0.01	0.18	0.02	0	0	0.02	0.07	PASS
731	1.35D+1.5W+1.05L	J[140]	0.01	0.18	0.03	0	0	-0.01	0.03	PASS
732	1.35D+1.5W+1.05L	I[169]	0.01	-0.18	0.02	0	0	-0.02	0.07	PASS
732	1.35D+1.5W+1.05L	J[138]	0.01	-0.18	0.03	0	0	0.01	0.03	PASS
733	1.35D+1.5W+1.05L	I[168]	-1.09	-0.38	0.23	0	0.04	-0.01	0.20	PASS
733	1.35D+1.5W+1.05L	J[136]	-1.09	-0.38	0.23	0	-0.01	0.06	0.28	PASS
734	1.35D+1.5W+1.05L	I[167]	-0.98	-1.05	0.27	0	0.05	-0.12	0.64	PASS
734	1.35D+1.5W+1.05L	J[135]	-0.98	-1.05	0.27	0	-0.01	0.08	0.35	PASS
735	1.35D+1.5W+1.05L	I[166]	0.01	-1.37	0.06	0	0.01	-0.13	0.51	PASS
735	1.35D+1.5W+1.05L	J[133]	0.01	-1.37	0.06	0	0	0.14	0.52	PASS
736	1.35D+1.5W+1.05L	I[165]	-0.07	-1.6	0.05	0	0	-0.16	0.59	PASS
736	1.35D+1.5W+1.05L	J[131]	-0.07	-1.6	0.05	0	-0.01	0.16	0.63	PASS
737	1.35D+1.5W+1.05L	I[164]	-0.6	-1.14	0.03	0	0	-0.1	0.38	PASS
737	1.35D+1.5W+1.05L	J[129]	-0.6	-1.14	0.03	0	0	0.13	0.49	PASS
738	1.35D+1.5W+1.05L	I[175]	-0.61	1.14	0.02	0	0	0.1	0.38	PASS
738	1.35D+1.5W+1.05L	J[149]	-0.61	1.14	0.02	0	0	-0.13	0.49	PASS
739	1.35D+1.5W+1.05L	I[174]	-0.07	1.6	0.05	0	0	0.16	0.59	PASS
739	1.35D+1.5W+1.05L	J[147]	-0.07	1.6	0.05	0	-0.01	-0.16	0.63	PASS
740	1.35D+1.5W+1.05L	I[173]	0.01	1.37	0.06	0	0.01	0.13	0.51	PASS
740	1.35D+1.5W+1.05L	J[145]	0.01	1.37	0.06	0	0	-0.14	0.52	PASS
741	1.35D+1.5W+1.05L	I[172]	-0.98	1.05	0.27	0	0.05	0.12	0.64	PASS
741	1.35D+1.5W+1.05L	J[143]	-0.98	1.05	0.27	0	-0.01	-0.09	0.39	PASS
742	1.35D+1.5W+1.05L	I[171]	-1.09	0.38	0.23	0	0.04	0.01	0.20	PASS
742	1.35D+1.5W+1.05L	J[142]	-1.09	0.38	0.23	0	-0.01	-0.06	0.28	PASS
743	1.35D+1.5W+1.05L	I[170]	0.01	0.18	0.02	0	0	0.02	0.07	PASS
743	1.35D+1.5W+1.05L	J[140]	0.01	0.18	0.03	0	0	-0.01	0.03	PASS
744	1.35D+1.5W+1.05L	I[169]	0.01	-0.18	0.02	0	0	-0.02	0.07	PASS
744	1.35D+1.5W+1.05L	J[138]	0.01	-0.18	0.03	0	0	0.01	0.03	PASS
745	1.35D+1.5W+1.05L	I[168]	-1.09	-0.38	0.23	0	0.04	-0.01	0.20	PASS
745	1.35D+1.5W+1.05L	J[136]	-1.09	-0.38	0.23	0	-0.01	0.06	0.28	PASS
746	1.35D+1.5W+1.05L	I[167]	-0.98	-1.05	0.27	0	0.05	-0.12	0.64	PASS
746	1.35D+1.5W+1.05L	J[135]	-0.98	-1.05	0.27	0	-0.01	0.08	0.35	PASS
747	1.35D+1.5W+1.05L	I[166]	0.01	-1.37	0.06	0	0.01	-0.13	0.51	PASS
747	1.35D+1.5W+1.05L	J[133]	0.01	-1.37	0.06	0	0	0.14	0.52	PASS
748	1.35D+1.5W+1.05L	I[165]	-0.07	-1.6	0.05	0	0	-0.16	0.59	PASS
748	1.35D+1.5W+1.05L	J[131]	-0.07	-1.6	0.05	0	-0.01	0.16	0.63	PASS
749	1.35D+1.5W+1.05L	I[164]	-0.6	-1.14	0.03	0	0	-0.1	0.38	PASS
749	1.35D+1.5W+1.05L	J[129]	-0.6	-1.14	0.03	0	0	0.13	0.49	PASS

Element: 38.2x 3.25CHS

Element No	Load Case	End	Axial N_{ed} (kN)	Shear $V_{y,ed}$ (kN)	Shear $V_{z,ed}$ (kN)	Torsion $M_{x,Ed}$ (kNm)	Bending $M_{y,Ed}$ (kNm)	Bending $M_{z,Ed}$ (kNm)	Stress Ratio	Pass/ Fail
12	1.35D+1.5W+1.05L	I[7]	-0.21	0.11	-0.02	-0.02	0	0.01	0.03	PASS
12	1.35D+1.5W+1.05L	J[6]	-0.21	0.11	-0.02	-0.02	0	-0.01	0.03	PASS
131	1.35D+1.5W+1.05L	I[79]	-0.08	-0.75	0.13	0	0.01	-0.07	0.19	PASS
131	1.35D+1.5W+1.05L	J[80]	-0.08	-0.75	0.13	0	-0.01	0.07	0.19	PASS
132	1.35D+1.5W+1.05L	I[81]	0.3	-1.31	-0.04	0	0	-0.14	0.34	PASS
132	1.35D+1.5W+1.05L	J[82]	0.3	-1.31	-0.03	0	0.01	0.12	0.32	PASS
133	1.35D+1.5W+1.05L	I[83]	-0.12	-0.69	-0.02	0	0	-0.07	0.17	PASS
133	1.35D+1.5W+1.05L	J[84]	-0.12	-0.69	-0.02	0	0	0.07	0.17	PASS
134	1.35D+1.5W+1.05L	I[85]	0.06	-0.53	0.14	0.01	0.02	-0.05	0.17	PASS
134	1.35D+1.5W+1.05L	J[86]	0.06	-0.53	0.15	0.01	-0.01	0.05	0.14	PASS
135	1.35D+1.5W+1.05L	I[8]	0.19	-0.16	0.77	0.01	0.08	-0.01	0.22	PASS
135	1.35D+1.5W+1.05L	J[2]	0.19	-0.16	0.77	0.01	-0.07	0.02	0.22	PASS
136	1.35D+1.5W+1.05L	I[14]	0.31	0.19	0.77	0.01	0.07	0.02	0.22	PASS
136	1.35D+1.5W+1.05L	J[1]	0.31	0.19	0.77	0.01	-0.08	-0.01	0.22	PASS
137	1.35D+1.5W+1.05L	I[11]	0.38	-0.52	0.16	0	0.01	-0.04	0.12	PASS
137	1.35D+1.5W+1.05L	J[87]	0.38	-0.52	-0.09	0	0	0.07	0.17	PASS
138	1.35D+1.5W+1.05L	I[88]	0.07	-1.14	-0.14	0	-0.01	-0.11	0.29	PASS
138	1.35D+1.5W+1.05L	J[89]	0.07	-1.14	-0.14	0	0.02	0.11	0.31	PASS
139	1.35D+1.5W+1.05L	I[9]	-0.02	-0.17	0.01	0	0	-0.02	0.05	PASS
139	1.35D+1.5W+1.05L	J[3]	-0.02	-0.17	0.01	0	0	0.02	0.05	PASS
140	1.35D+1.5W+1.05L	I[5]	0.55	0.04	-0.04	0.01	-0.01	0.01	0.05	PASS
140	1.35D+1.5W+1.05L	J[79]	0.55	0.04	-0.03	0.01	0.01	0	0.03	PASS
141	1.35D+1.5W+1.05L	I[79]	-0.26	-0.02	-0.04	0	0	0	0.00	PASS
141	1.35D+1.5W+1.05L	J[89]	-0.27	-0.02	-0.03	0	0.01	0.01	0.05	PASS
142	1.35D+1.5W+1.05L	I[89]	0.62	0.21	-0.06	0	-0.02	0.04	0.15	PASS
142	1.35D+1.5W+1.05L	J[82]	0.63	0.21	-0.06	0	0.01	-0.05	0.15	PASS
143	1.35D+1.5W+1.05L	I[82]	-0.4	0.09	0	0	0	0.02	0.05	PASS
143	1.35D+1.5W+1.05L	J[87]	-0.41	0.09	0.01	0	0	-0.02	0.05	PASS
144	1.35D+1.5W+1.05L	I[87]	0.13	-0.03	0.01	0	0	-0.01	0.02	PASS
144	1.35D+1.5W+1.05L	J[84]	0.13	-0.03	0.01	0	0	0.01	0.02	PASS
145	1.35D+1.5W+1.05L	I[84]	-0.08	0.02	0	0	0	0	0.00	PASS
145	1.35D+1.5W+1.05L	J[3]	-0.08	0.02	0	0	0	-0.01	0.02	PASS
146	1.35D+1.5W+1.05L	I[3]	0.07	0.02	0	0	0	0.01	0.02	PASS
146	1.35D+1.5W+1.05L	J[86]	0.08	0.02	0.01	0	0	0	0.00	PASS
147	1.35D+1.5W+1.05L	I[86]	-0.25	0	-0.03	0	0	0	0.00	PASS
147	1.35D+1.5W+1.05L	J[1]	-0.25	0	-0.02	0	0.01	0	0.03	PASS
148	1.35D+1.5W+1.05L	I[13]	0.21	0.06	0.13	0.01	0.04	0.02	0.14	PASS
148	1.35D+1.5W+1.05L	J[80]	0.21	0.06	0.13	0.01	-0.02	-0.01	0.07	PASS
149	1.35D+1.5W+1.05L	I[80]	-0.45	-0.03	-0.12	0	-0.02	0	0.05	PASS
149	1.35D+1.5W+1.05L	J[88]	-0.46	-0.03	-0.12	0	0.03	0.01	0.10	PASS
150	1.35D+1.5W+1.05L	I[88]	2.03	0.2	-0.06	0	-0.02	0.04	0.18	PASS
150	1.35D+1.5W+1.05L	J[81]	2.03	0.2	-0.06	0	0.01	-0.04	0.16	PASS
151	1.35D+1.5W+1.05L	I[81]	-2.25	0.12	0	0.01	0	0.02	0.10	PASS
151	1.35D+1.5W+1.05L	J[11]	-2.25	0.12	0.01	0.01	0	-0.04	0.14	PASS
152	1.35D+1.5W+1.05L	I[11]	-0.42	0.03	0.02	0	0	0.01	0.03	PASS
152	1.35D+1.5W+1.05L	J[83]	-0.42	0.03	0.02	0	-0.01	0	0.03	PASS
153	1.35D+1.5W+1.05L	I[83]	0.1	0.01	-0.01	0	0	0	0.00	PASS
153	1.35D+1.5W+1.05L	J[9]	0.09	0.01	-0.01	0	0	-0.01	0.02	PASS
154	1.35D+1.5W+1.05L	I[9]	-0.24	0.01	0.01	0	0	0.01	0.03	PASS
154	1.35D+1.5W+1.05L	J[85]	-0.24	0.01	0.01	0	0	0	0.00	PASS
155	1.35D+1.5W+1.05L	I[85]	0.11	0.02	-0.04	0	-0.01	0	0.02	PASS
155	1.35D+1.5W+1.05L	J[14]	0.1	0.02	-0.04	0	0.01	-0.01	0.05	PASS
156	1.35D+1.5W+1.05L	I[13]	-0.31	-0.08	0.01	0.01	0	-0.01	0.03	PASS
156	1.35D+1.5W+1.05L	J[5]	-0.31	-0.08	0.01	0.01	0	0.01	0.03	PASS

157	1.35D+1.5W+1.05L	I[90]	0.25	1.41	0.09	0	0.01	0.14	0.36	PASS
157	1.35D+1.5W+1.05L	J[91]	0.25	1.41	0.09	0	0	-0.15	0.37	PASS
158	1.35D+1.5W+1.05L	I[92]	0.02	0.55	-0.17	-0.01	-0.01	0.05	0.14	PASS
158	1.35D+1.5W+1.05L	J[93]	0.02	0.55	-0.17	-0.01	0.02	-0.06	0.19	PASS
159	1.35D+1.5W+1.05L	I[22]	0.24	0.15	-0.84	-0.01	-0.08	0.02	0.24	PASS
159	1.35D+1.5W+1.05L	J[16]	0.24	0.15	-0.84	-0.01	0.09	-0.01	0.24	PASS
160	1.35D+1.5W+1.05L	I[94]	0.33	0.71	0.08	0	0	0.09	0.22	PASS
160	1.35D+1.5W+1.05L	J[25]	0.33	0.71	-0.17	0	0.01	-0.05	0.15	PASS
161	1.35D+1.5W+1.05L	I[95]	0.08	1.26	0.19	0	0.02	0.12	0.34	PASS
161	1.35D+1.5W+1.05L	J[96]	0.08	1.26	0.2	0	-0.02	-0.13	0.36	PASS
162	1.35D+1.5W+1.05L	I[23]	-0.04	0.37	-0.02	0	0	0.03	0.07	PASS
162	1.35D+1.5W+1.05L	J[17]	-0.04	0.37	-0.02	0	0.01	-0.04	0.12	PASS
163	1.35D+1.5W+1.05L	I[19]	0.53	-0.02	0.13	-0.01	0.04	-0.02	0.15	PASS
163	1.35D+1.5W+1.05L	J[97]	0.53	-0.02	0.13	-0.01	-0.02	-0.01	0.08	PASS
164	1.35D+1.5W+1.05L	I[97]	-0.48	0.04	-0.13	0	-0.02	0.01	0.08	PASS
164	1.35D+1.5W+1.05L	J[96]	-0.48	0.04	-0.13	0	0.03	-0.01	0.10	PASS
165	1.35D+1.5W+1.05L	I[96]	2.14	-0.24	-0.06	0	-0.02	-0.05	0.21	PASS
165	1.35D+1.5W+1.05L	J[91]	2.14	-0.24	-0.06	0	0.01	0.05	0.19	PASS
166	1.35D+1.5W+1.05L	I[91]	-2.45	-0.12	0.01	-0.01	0	-0.02	0.10	PASS
166	1.35D+1.5W+1.05L	J[25]	-2.45	-0.12	0.01	-0.01	0	0.03	0.12	PASS
167	1.35D+1.5W+1.05L	I[25]	-0.2	-0.01	0.02	0	0	-0.01	0.03	PASS
167	1.35D+1.5W+1.05L	J[98]	-0.2	-0.01	0.02	0	-0.01	-0.01	0.05	PASS
168	1.35D+1.5W+1.05L	I[98]	-0.01	-0.02	-0.02	0	0	0	0.00	PASS
168	1.35D+1.5W+1.05L	J[17]	-0.02	-0.02	-0.01	0	0	0.01	0.02	PASS
169	1.35D+1.5W+1.05L	I[17]	-0.14	-0.02	0.01	0	0	-0.01	0.02	PASS
169	1.35D+1.5W+1.05L	J[93]	-0.14	-0.02	0.01	0	0	0	0.00	PASS
170	1.35D+1.5W+1.05L	I[93]	0.03	-0.02	-0.04	0	-0.01	0	0.02	PASS
170	1.35D+1.5W+1.05L	J[15]	0.03	-0.02	-0.04	0	0.01	0.01	0.05	PASS
171	1.35D+1.5W+1.05L	I[27]	0.24	-0.01	-0.04	-0.01	-0.01	-0.01	0.05	PASS
171	1.35D+1.5W+1.05L	J[99]	0.24	-0.01	-0.03	-0.01	0.01	-0.01	0.05	PASS
172	1.35D+1.5W+1.05L	I[99]	-0.24	0.05	-0.03	0	0	0.01	0.03	PASS
172	1.35D+1.5W+1.05L	J[95]	-0.25	0.05	-0.03	0	0.01	-0.01	0.05	PASS
173	1.35D+1.5W+1.05L	I[95]	0.5	-0.24	-0.06	0	-0.02	-0.05	0.17	PASS
173	1.35D+1.5W+1.05L	J[90]	0.51	-0.24	-0.06	0	0.01	0.05	0.15	PASS
174	1.35D+1.5W+1.05L	I[90]	-0.19	-0.1	0	0	0	-0.02	0.05	PASS
174	1.35D+1.5W+1.05L	J[94]	-0.19	-0.1	0.01	0	0	0.02	0.05	PASS
175	1.35D+1.5W+1.05L	I[94]	-0.1	0.02	0.01	0	0	0	0.00	PASS
175	1.35D+1.5W+1.05L	J[100]	-0.1	0.02	0.01	0	0	-0.01	0.02	PASS
176	1.35D+1.5W+1.05L	I[100]	0.03	-0.01	0	0	0	0	0.00	PASS
176	1.35D+1.5W+1.05L	J[23]	0.03	-0.01	0	0	0	0.01	0.02	PASS
177	1.35D+1.5W+1.05L	I[23]	-0.04	-0.02	0	0	0	-0.01	0.02	PASS
177	1.35D+1.5W+1.05L	J[92]	-0.03	-0.02	0.01	0	0	0	0.00	PASS
178	1.35D+1.5W+1.05L	I[92]	-0.16	0.01	-0.02	0	0	0	0.00	PASS
178	1.35D+1.5W+1.05L	J[28]	-0.17	0.01	-0.02	0	0.01	0	0.02	PASS
179	1.35D+1.5W+1.05L	I[27]	-0.32	0.14	0	-0.01	0	0.02	0.05	PASS
179	1.35D+1.5W+1.05L	J[19]	-0.32	0.14	0	-0.01	0	-0.01	0.03	PASS
180	1.35D+1.5W+1.05L	I[21]	-0.27	0	0.05	0.01	0	0	0.00	PASS
180	1.35D+1.5W+1.05L	J[20]	-0.27	0	0.06	0.01	-0.01	0	0.03	PASS
181	1.35D+1.5W+1.05L	I[101]	-2.02	-0.03	0.05	-0.02	0.02	0.01	0.11	PASS
181	1.35D+1.5W+1.05L	J[102]	-2.02	-0.03	0.06	-0.02	0	0.03	0.11	PASS
182	1.35D+1.5W+1.05L	I[102]	2.35	0.04	-0.09	0.02	-0.02	0.02	0.14	PASS
182	1.35D+1.5W+1.05L	J[103]	2.35	0.04	-0.09	0.02	0.02	0.01	0.12	PASS
183	1.35D+1.5W+1.05L	I[103]	-2.49	0	0.01	-0.01	0	0.01	0.08	PASS
183	1.35D+1.5W+1.05L	J[104]	-2.5	0	0.01	-0.01	0	0.01	0.08	PASS
184	1.35D+1.5W+1.05L	I[104]	2.19	0.02	-0.03	0.01	-0.01	0.01	0.09	PASS
184	1.35D+1.5W+1.05L	J[105]	2.2	0.02	-0.03	0.01	0.01	0	0.07	PASS
185	1.35D+1.5W+1.05L	I[105]	-2.18	0.01	0.01	0	0	0	0.05	PASS
185	1.35D+1.5W+1.05L	J[106]	-2.19	0.01	0.01	0	0	0	0.05	PASS
186	1.35D+1.5W+1.05L	I[106]	1.93	0.02	-0.04	-0.01	-0.01	-0.01	0.09	PASS
186	1.35D+1.5W+1.05L	J[107]	1.94	0.02	-0.03	-0.01	0.01	-0.01	0.09	PASS
187	1.35D+1.5W+1.05L	I[107]	-1.96	0.04	0.01	0.01	0	0	0.04	PASS
187	1.35D+1.5W+1.05L	J[108]	-1.97	0.04	0.01	0.01	0	-0.02	0.09	PASS
188	1.35D+1.5W+1.05L	I[108]	1.73	-0.01	-0.03	-0.02	-0.01	-0.02	0.10	PASS
188	1.35D+1.5W+1.05L	J[109]	1.73	-0.01	-0.02	-0.02	0	-0.02	0.08	PASS
189	1.35D+1.5W+1.05L	I[110]	-0.42	-0.02	-0.01	0.01	0	-0.01	0.03	PASS
189	1.35D+1.5W+1.05L	J[111]	-0.43	-0.02	0	0.01	0	-0.01	0.03	PASS

190	1.35D+1.5W+1.05L	I[111]	0.25	0.01	-0.03	-0.01	-0.01	-0.01	0.05	PASS
190	1.35D+1.5W+1.05L	J[112]	0.25	0.01	-0.02	-0.01	0	-0.01	0.03	PASS
191	1.35D+1.5W+1.05L	I[112]	-0.24	-0.01	0.02	0.01	0	-0.01	0.03	PASS
191	1.35D+1.5W+1.05L	J[113]	-0.25	-0.01	0.02	0.01	-0.01	-0.01	0.05	PASS
192	1.35D+1.5W+1.05L	I[113]	-0.04	0	-0.02	-0.01	-0.01	-0.01	0.05	PASS
192	1.35D+1.5W+1.05L	J[114]	-0.04	0	-0.01	-0.01	0	-0.01	0.02	PASS
193	1.35D+1.5W+1.05L	I[114]	-0.01	0	0.01	0.01	0	-0.01	0.02	PASS
193	1.35D+1.5W+1.05L	J[115]	-0.02	0	0.02	0.01	-0.01	-0.01	0.05	PASS
194	1.35D+1.5W+1.05L	I[115]	-0.27	0.01	-0.02	-0.01	-0.01	-0.01	0.05	PASS
194	1.35D+1.5W+1.05L	J[116]	-0.27	0.01	-0.02	-0.01	0	-0.01	0.03	PASS
195	1.35D+1.5W+1.05L	I[116]	0.27	-0.01	0.02	0.01	0	-0.01	0.03	PASS
195	1.35D+1.5W+1.05L	J[117]	0.27	-0.01	0.03	0.01	-0.01	-0.01	0.05	PASS
196	1.35D+1.5W+1.05L	I[117]	-0.45	0.01	0	-0.01	0	-0.01	0.03	PASS
196	1.35D+1.5W+1.05L	J[118]	-0.45	0.01	0.01	-0.01	0	-0.01	0.03	PASS
197	1.35D+1.5W+1.05L	I[119]	1.74	0.01	0.02	0.01	0	-0.02	0.08	PASS
197	1.35D+1.5W+1.05L	J[120]	1.74	0.01	0.03	0.01	-0.01	-0.02	0.10	PASS
198	1.35D+1.5W+1.05L	I[120]	-2	-0.04	-0.01	-0.01	0	-0.02	0.09	PASS
198	1.35D+1.5W+1.05L	J[121]	-2	-0.04	-0.01	-0.01	0	0	0.04	PASS
199	1.35D+1.5W+1.05L	I[121]	1.96	-0.02	0.03	0	0.01	-0.01	0.09	PASS
199	1.35D+1.5W+1.05L	J[122]	1.95	-0.02	0.04	0	-0.01	-0.01	0.09	PASS
200	1.35D+1.5W+1.05L	I[122]	-2.23	-0.01	-0.01	0	0	0	0.05	PASS
200	1.35D+1.5W+1.05L	J[123]	-2.22	-0.01	-0.01	0	0	0.01	0.07	PASS
201	1.35D+1.5W+1.05L	I[123]	2.21	-0.02	0.03	-0.01	0.01	0	0.07	PASS
201	1.35D+1.5W+1.05L	J[124]	2.21	-0.02	0.03	-0.01	-0.01	0.01	0.09	PASS
202	1.35D+1.5W+1.05L	I[124]	-2.53	0	-0.01	0.01	0	0.01	0.08	PASS
202	1.35D+1.5W+1.05L	J[125]	-2.53	0	-0.01	0.01	0	0.01	0.08	PASS
203	1.35D+1.5W+1.05L	I[125]	2.38	-0.04	0.09	-0.02	0.02	0.01	0.12	PASS
203	1.35D+1.5W+1.05L	J[126]	2.38	-0.04	0.09	-0.02	-0.02	0.02	0.15	PASS
204	1.35D+1.5W+1.05L	I[126]	-2.09	0.03	-0.05	0.02	0	0.03	0.11	PASS
204	1.35D+1.5W+1.05L	J[127]	-2.08	0.03	-0.05	0.02	0.02	0.01	0.11	PASS
205	1.35D+1.5W+1.05L	I[128]	0.21	0.16	-0.01	0.01	-0.01	0.06	0.17	PASS
205	1.35D+1.5W+1.05L	J[129]	0.21	0.16	-0.01	0.01	0	-0.01	0.03	PASS
206	1.35D+1.5W+1.05L	I[129]	-0.45	0.2	-0.04	0	-0.01	0.04	0.12	PASS
206	1.35D+1.5W+1.05L	J[130]	-0.45	0.2	-0.03	0	0.01	-0.04	0.12	PASS
207	1.35D+1.5W+1.05L	I[130]	0.25	0.28	-0.04	0	-0.01	0.06	0.17	PASS
207	1.35D+1.5W+1.05L	J[131]	0.26	0.28	-0.04	0	0.01	-0.05	0.14	PASS
208	1.35D+1.5W+1.05L	I[131]	-0.43	0.21	-0.01	0.01	0	0.04	0.10	PASS
208	1.35D+1.5W+1.05L	J[132]	-0.43	0.21	-0.01	0.01	0	-0.05	0.12	PASS
209	1.35D+1.5W+1.05L	I[132]	0.37	0.23	-0.06	0	-0.01	0.05	0.15	PASS
209	1.35D+1.5W+1.05L	J[133]	0.37	0.23	-0.05	0	0.01	-0.04	0.12	PASS
210	1.35D+1.5W+1.05L	I[133]	-0.6	0.09	0.03	0.01	0.01	0.01	0.05	PASS
210	1.35D+1.5W+1.05L	J[134]	-0.61	0.09	0.03	0.01	-0.01	-0.03	0.10	PASS
211	1.35D+1.5W+1.05L	I[134]	0.6	0.37	-0.13	-0.01	-0.02	0.06	0.20	PASS
211	1.35D+1.5W+1.05L	J[135]	0.61	0.37	-0.12	-0.01	0.03	-0.09	0.30	PASS
212	1.35D+1.5W+1.05L	I[135]	-0.93	0.06	0.03	0.01	0	0.01	0.04	PASS
212	1.35D+1.5W+1.05L	J[53]	-0.94	0.06	0.04	0.01	-0.01	-0.01	0.06	PASS
213	1.35D+1.5W+1.05L	I[53]	-0.32	0.14	-0.06	0	-0.02	0.04	0.14	PASS
213	1.35D+1.5W+1.05L	J[136]	-0.32	0.14	-0.05	0	0.01	-0.02	0.07	PASS
214	1.35D+1.5W+1.05L	I[136]	0.13	-0.14	0.1	0.01	0.02	-0.05	0.17	PASS
214	1.35D+1.5W+1.05L	J[137]	0.13	-0.14	0.11	0.01	-0.02	0.01	0.07	PASS
215	1.35D+1.5W+1.05L	I[137]	-0.09	0.11	-0.08	-0.01	-0.02	0.02	0.09	PASS
215	1.35D+1.5W+1.05L	J[138]	-0.09	0.11	-0.08	-0.01	0.02	-0.03	0.12	PASS
216	1.35D+1.5W+1.05L	I[138]	0.04	-0.01	0.06	0.01	0.01	0	0.02	PASS
216	1.35D+1.5W+1.05L	J[139]	0.03	-0.01	0.06	0.01	-0.01	0	0.02	PASS
217	1.35D+1.5W+1.05L	I[139]	0.03	0.01	-0.06	-0.01	-0.01	0	0.02	PASS
217	1.35D+1.5W+1.05L	J[140]	0.03	0.01	-0.06	-0.01	0.01	0	0.02	PASS
218	1.35D+1.5W+1.05L	I[140]	-0.08	-0.11	0.08	0.01	0.02	-0.03	0.12	PASS
218	1.35D+1.5W+1.05L	J[141]	-0.08	-0.11	0.08	0.01	-0.02	0.02	0.09	PASS
219	1.35D+1.5W+1.05L	I[141]	0.12	0.14	-0.11	-0.01	-0.02	0.01	0.07	PASS
219	1.35D+1.5W+1.05L	J[142]	0.13	0.14	-0.1	-0.01	0.02	-0.05	0.17	PASS
220	1.35D+1.5W+1.05L	I[142]	-0.31	-0.14	0.05	0	0.01	-0.02	0.07	PASS
220	1.35D+1.5W+1.05L	J[51]	-0.32	-0.14	0.06	0	-0.02	0.04	0.14	PASS
221	1.35D+1.5W+1.05L	I[51]	-0.95	-0.06	-0.04	-0.01	-0.01	-0.01	0.06	PASS
221	1.35D+1.5W+1.05L	J[143]	-0.95	-0.06	-0.03	-0.01	0	0.01	0.04	PASS
222	1.35D+1.5W+1.05L	I[143]	0.62	-0.37	0.12	0.01	0.03	-0.09	0.30	PASS
222	1.35D+1.5W+1.05L	J[144]	0.61	-0.37	0.13	0.01	-0.02	0.06	0.20	PASS

223	1.35D+1.5W+1.05L	I[144]	-0.62	-0.09	-0.03	-0.01	-0.01	-0.03	0.10	PASS
223	1.35D+1.5W+1.05L	J[145]	-0.62	-0.09	-0.03	-0.01	0.01	0.01	0.06	PASS
224	1.35D+1.5W+1.05L	I[145]	0.38	-0.23	0.05	0	0.01	-0.04	0.12	PASS
224	1.35D+1.5W+1.05L	J[146]	0.38	-0.23	0.06	0	-0.01	0.05	0.15	PASS
225	1.35D+1.5W+1.05L	I[146]	-0.45	-0.21	0.01	-0.01	0	-0.05	0.12	PASS
225	1.35D+1.5W+1.05L	J[147]	-0.44	-0.21	0.01	-0.01	0	0.04	0.10	PASS
226	1.35D+1.5W+1.05L	I[147]	0.27	-0.28	0.04	0	0.01	-0.05	0.14	PASS
226	1.35D+1.5W+1.05L	J[148]	0.27	-0.28	0.04	0	-0.01	0.06	0.17	PASS
227	1.35D+1.5W+1.05L	I[148]	-0.47	-0.2	0.03	0	0.01	-0.04	0.12	PASS
227	1.35D+1.5W+1.05L	J[149]	-0.47	-0.2	0.04	0	-0.01	0.04	0.12	PASS
228	1.35D+1.5W+1.05L	I[149]	0.23	-0.16	0.01	-0.01	0	0	0.01	PASS
228	1.35D+1.5W+1.05L	J[150]	0.23	-0.16	0.01	-0.01	-0.01	0.06	0.17	PASS
229	1.35D+1.5W+1.05L	I[128]	-2.44	-0.25	0.12	0	0.04	-0.03	0.22	PASS
229	1.35D+1.5W+1.05L	J[151]	-2.44	-0.25	0.12	0	0.01	0.02	0.12	PASS
230	1.35D+1.5W+1.05L	I[152]	0.02	-2.92	0.09	0	0.01	-0.29	0.74	PASS
230	1.35D+1.5W+1.05L	J[130]	0.02	-2.92	0.09	0	-0.01	0.29	0.74	PASS
231	1.35D+1.5W+1.05L	I[132]	-0.1	-2.75	-0.13	0	-0.01	-0.27	0.69	PASS
231	1.35D+1.5W+1.05L	J[153]	-0.1	-2.75	-0.13	0	0.01	0.27	0.69	PASS
232	1.35D+1.5W+1.05L	I[134]	0.23	-2.09	-0.14	0	-0.02	-0.21	0.56	PASS
232	1.35D+1.5W+1.05L	J[154]	0.23	-2.09	-0.14	0	0.01	0.2	0.51	PASS
233	1.35D+1.5W+1.05L	I[53]	1.89	-1.07	-0.19	0	0.02	-0.1	0.33	PASS
233	1.35D+1.5W+1.05L	J[155]	1.89	-1.07	-0.19	0	0.06	0.12	0.47	PASS
234	1.35D+1.5W+1.05L	I[137]	0.16	-0.61	-0.13	0	-0.02	-0.06	0.19	PASS
234	1.35D+1.5W+1.05L	J[156]	0.16	-0.61	-0.13	0	0.01	0.06	0.17	PASS
235	1.35D+1.5W+1.05L	I[139]	-0.1	0	-0.16	0	-0.01	0	0.02	PASS
235	1.35D+1.5W+1.05L	J[157]	-0.1	0	-0.15	0	0.02	0	0.05	PASS
236	1.35D+1.5W+1.05L	I[141]	0.16	0.62	-0.13	0	-0.02	0.06	0.19	PASS
236	1.35D+1.5W+1.05L	J[158]	0.16	0.62	-0.13	0	0.01	-0.06	0.17	PASS
237	1.35D+1.5W+1.05L	I[51]	1.89	1.08	-0.19	0	0.02	0.1	0.33	PASS
237	1.35D+1.5W+1.05L	J[159]	1.89	1.08	-0.19	0	0.06	-0.12	0.47	PASS
238	1.35D+1.5W+1.05L	I[144]	0.23	2.09	-0.14	0	-0.02	0.21	0.56	PASS
238	1.35D+1.5W+1.05L	J[160]	0.23	2.09	-0.14	0	0.01	-0.2	0.51	PASS
239	1.35D+1.5W+1.05L	I[146]	-0.1	2.75	-0.13	0	-0.01	0.27	0.69	PASS
239	1.35D+1.5W+1.05L	J[161]	-0.1	2.75	-0.13	0	0.01	-0.27	0.69	PASS
240	1.35D+1.5W+1.05L	I[148]	0.02	2.92	-0.08	0	-0.01	0.29	0.74	PASS
240	1.35D+1.5W+1.05L	J[162]	0.02	2.92	-0.08	0	0.01	-0.29	0.74	PASS
241	1.35D+1.5W+1.05L	I[150]	-2.45	0.23	0.14	0	0.04	0.03	0.22	PASS
241	1.35D+1.5W+1.05L	J[163]	-2.45	0.23	0.14	0	0.01	-0.02	0.12	PASS
242	1.35D+1.5W+1.05L	I[44]	0.07	-0.04	0.04	0.01	0.01	-0.01	0.05	PASS
242	1.35D+1.5W+1.05L	J[151]	0.07	-0.07	0.05	0.01	-0.01	0.01	0.05	PASS
243	1.35D+1.5W+1.05L	I[151]	0.53	0.25	-0.04	0.01	-0.01	0.05	0.15	PASS
243	1.35D+1.5W+1.05L	J[164]	0.53	0.2	-0.04	0.01	0.01	-0.03	0.10	PASS
244	1.35D+1.5W+1.05L	I[164]	-0.43	0.39	-0.05	-0.01	-0.01	0.09	0.24	PASS
244	1.35D+1.5W+1.05L	J[152]	-0.43	0.35	-0.04	-0.01	0.01	-0.06	0.17	PASS
245	1.35D+1.5W+1.05L	I[152]	0.77	0.34	-0.03	0	-0.01	0.07	0.20	PASS
245	1.35D+1.5W+1.05L	J[165]	0.77	0.29	-0.02	0	0	-0.06	0.15	PASS
246	1.35D+1.5W+1.05L	I[165]	-0.64	0.26	-0.06	0	-0.01	0.05	0.15	PASS
246	1.35D+1.5W+1.05L	J[153]	-0.64	0.21	-0.06	0	0.01	-0.05	0.15	PASS
247	1.35D+1.5W+1.05L	I[153]	0.85	0.33	0	-0.01	0	0.06	0.16	PASS
247	1.35D+1.5W+1.05L	J[166]	0.85	0.28	0.01	-0.01	0	-0.06	0.16	PASS
248	1.35D+1.5W+1.05L	I[166]	-0.73	0.23	-0.09	0.01	-0.02	0.04	0.15	PASS
248	1.35D+1.5W+1.05L	J[154]	-0.74	0.18	-0.08	0.01	0.01	-0.04	0.13	PASS
249	1.35D+1.5W+1.05L	I[154]	0.86	0.02	0.09	-0.01	0.01	0.02	0.08	PASS
249	1.35D+1.5W+1.05L	J[167]	0.87	-0.02	0.09	-0.01	-0.02	0.02	0.11	PASS
250	1.35D+1.5W+1.05L	I[167]	-0.48	0.11	-0.07	0.02	-0.01	0.01	0.05	PASS
250	1.35D+1.5W+1.05L	J[155]	-0.48	0.07	-0.06	0.02	0.01	-0.03	0.10	PASS
251	1.35D+1.5W+1.05L	I[155]	0.01	0.1	0.04	-0.02	0.01	0.01	0.05	PASS
251	1.35D+1.5W+1.05L	J[168]	0.01	0.06	0.05	-0.02	-0.01	-0.03	0.09	PASS
252	1.35D+1.5W+1.05L	I[168]	0.17	0.32	-0.15	0.01	-0.04	0.08	0.29	PASS
252	1.35D+1.5W+1.05L	J[156]	0.17	0.27	-0.14	0.01	0.02	-0.04	0.14	PASS
253	1.35D+1.5W+1.05L	I[156]	-0.1	0.09	0.08	-0.01	0.01	0.01	0.05	PASS
253	1.35D+1.5W+1.05L	J[169]	-0.1	0.04	0.09	-0.01	-0.02	-0.01	0.07	PASS
254	1.35D+1.5W+1.05L	I[169]	0.03	-0.02	-0.08	0.01	-0.02	-0.01	0.07	PASS
254	1.35D+1.5W+1.05L	J[157]	0.03	-0.06	-0.08	0.01	0.01	0.01	0.05	PASS
255	1.35D+1.5W+1.05L	I[157]	0.02	0.06	0.08	-0.01	0.01	0	0.02	PASS
255	1.35D+1.5W+1.05L	J[170]	0.02	0.02	0.08	-0.01	-0.02	-0.01	0.07	PASS

256	1.35D+1.5W+1.05L	I[170]	-0.09	-0.04	-0.09	0.01	-0.02	-0.01	0.07	PASS
256	1.35D+1.5W+1.05L	J[158]	-0.1	-0.09	-0.08	0.01	0.01	0.01	0.05	PASS
257	1.35D+1.5W+1.05L	I[158]	0.17	-0.27	0.14	-0.01	0.02	-0.04	0.14	PASS
257	1.35D+1.5W+1.05L	J[171]	0.17	-0.32	0.15	-0.01	-0.04	0.08	0.29	PASS
258	1.35D+1.5W+1.05L	I[171]	0.02	-0.06	-0.05	0.02	-0.01	-0.03	0.09	PASS
258	1.35D+1.5W+1.05L	J[159]	0.02	-0.11	-0.04	0.02	0.01	0.01	0.05	PASS
259	1.35D+1.5W+1.05L	I[159]	-0.48	-0.07	0.06	-0.02	0.01	-0.03	0.10	PASS
259	1.35D+1.5W+1.05L	J[172]	-0.48	-0.11	0.07	-0.02	-0.01	0.01	0.05	PASS
260	1.35D+1.5W+1.05L	I[172]	0.87	0.02	-0.09	0.01	-0.02	0.02	0.11	PASS
260	1.35D+1.5W+1.05L	J[160]	0.87	-0.02	-0.09	0.01	0.01	0.02	0.08	PASS
261	1.35D+1.5W+1.05L	I[160]	-0.74	-0.18	0.08	-0.01	0.01	-0.04	0.13	PASS
261	1.35D+1.5W+1.05L	J[173]	-0.74	-0.23	0.09	-0.01	-0.02	0.04	0.15	PASS
262	1.35D+1.5W+1.05L	I[173]	0.85	-0.28	-0.01	0.01	0	-0.06	0.16	PASS
262	1.35D+1.5W+1.05L	J[161]	0.85	-0.33	0	0.01	0	0.06	0.16	PASS
263	1.35D+1.5W+1.05L	I[161]	-0.65	-0.21	0.06	0	0.01	-0.05	0.15	PASS
263	1.35D+1.5W+1.05L	J[174]	-0.65	-0.26	0.06	0	-0.01	0.05	0.15	PASS
264	1.35D+1.5W+1.05L	I[174]	0.77	-0.29	0.02	0	0	-0.06	0.15	PASS
264	1.35D+1.5W+1.05L	J[162]	0.77	-0.33	0.03	0	-0.01	0.07	0.20	PASS
265	1.35D+1.5W+1.05L	I[162]	-0.43	-0.35	0.04	0.01	0.01	-0.06	0.17	PASS
265	1.35D+1.5W+1.05L	J[175]	-0.43	-0.39	0.05	0.01	-0.01	0.09	0.24	PASS
266	1.35D+1.5W+1.05L	I[175]	0.52	-0.2	0.04	-0.01	0.01	-0.03	0.10	PASS
266	1.35D+1.5W+1.05L	J[163]	0.51	-0.24	0.04	-0.01	-0.01	0.05	0.15	PASS
267	1.35D+1.5W+1.05L	I[163]	0.11	0.07	-0.05	-0.01	-0.01	0.01	0.05	PASS
267	1.35D+1.5W+1.05L	J[43]	0.11	0.04	-0.04	-0.01	0.01	-0.01	0.05	PASS
268	1.35D+1.5W+1.05L	I[55]	-2.34	0	-0.02	-0.01	-0.01	0.01	0.10	PASS
268	1.35D+1.5W+1.05L	J[176]	-2.35	0	-0.02	-0.01	0	0.01	0.07	PASS
269	1.35D+1.5W+1.05L	I[176]	2.3	0.03	-0.01	0	0	0.01	0.07	PASS
269	1.35D+1.5W+1.05L	J[177]	2.3	0.03	-0.01	0	0	0	0.07	PASS
270	1.35D+1.5W+1.05L	I[177]	-2.25	0.03	-0.03	0	-0.01	0.01	0.09	PASS
270	1.35D+1.5W+1.05L	J[178]	-2.26	0.03	-0.02	0	0	-0.01	0.07	PASS
271	1.35D+1.5W+1.05L	I[178]	2.25	0	0.01	-0.01	0	-0.01	0.07	PASS
271	1.35D+1.5W+1.05L	J[58]	2.25	0	0.02	-0.01	-0.01	-0.01	0.09	PASS
272	1.35D+1.5W+1.05L	I[58]	1.31	0	-0.01	-0.01	-0.01	0.01	0.07	PASS
272	1.35D+1.5W+1.05L	J[179]	1.3	0	-0.01	-0.01	0	0.01	0.05	PASS
273	1.35D+1.5W+1.05L	I[179]	-1.44	0.03	0.02	0	0	0.01	0.05	PASS
273	1.35D+1.5W+1.05L	J[180]	-1.44	0.03	0.02	0	-0.01	-0.01	0.07	PASS
274	1.35D+1.5W+1.05L	I[180]	1.41	0.03	0	0	0	0	0.04	PASS
274	1.35D+1.5W+1.05L	J[181]	1.4	0.03	0.01	0	0	-0.01	0.05	PASS
275	1.35D+1.5W+1.05L	I[181]	-1.3	-0.01	0	-0.01	0	-0.02	0.07	PASS
275	1.35D+1.5W+1.05L	J[56]	-1.3	-0.01	0	-0.01	0	-0.01	0.05	PASS
276	1.35D+1.5W+1.05L	I[61]	-2.34	0	-0.02	0.01	-0.01	-0.01	0.10	PASS
276	1.35D+1.5W+1.05L	J[182]	-2.34	0	-0.02	0.01	0	-0.01	0.07	PASS
277	1.35D+1.5W+1.05L	I[182]	2.29	-0.04	-0.01	0	0	-0.01	0.07	PASS
277	1.35D+1.5W+1.05L	J[183]	2.29	-0.04	-0.01	0	0	0	0.07	PASS
278	1.35D+1.5W+1.05L	I[183]	-2.25	-0.03	-0.03	0	-0.01	-0.01	0.09	PASS
278	1.35D+1.5W+1.05L	J[184]	-2.25	-0.03	-0.02	0	0	0.01	0.07	PASS
279	1.35D+1.5W+1.05L	I[184]	2.24	0	0.01	0.01	0	0.01	0.07	PASS
279	1.35D+1.5W+1.05L	J[64]	2.24	0	0.02	0.01	-0.01	0.01	0.09	PASS
280	1.35D+1.5W+1.05L	I[64]	1.3	0	-0.01	0.01	-0.01	-0.01	0.07	PASS
280	1.35D+1.5W+1.05L	J[185]	1.3	0	0	0.01	0	-0.01	0.05	PASS
281	1.35D+1.5W+1.05L	I[185]	-1.44	-0.03	0.02	0	0	-0.01	0.05	PASS
281	1.35D+1.5W+1.05L	J[186]	-1.43	-0.03	0.02	0	-0.01	0.01	0.07	PASS
282	1.35D+1.5W+1.05L	I[186]	1.4	-0.04	0	0	0	0	0.04	PASS
282	1.35D+1.5W+1.05L	J[187]	1.4	-0.04	0.01	0	0	0.01	0.05	PASS
283	1.35D+1.5W+1.05L	I[187]	-1.3	0.01	0	0.01	0	0.02	0.07	PASS
283	1.35D+1.5W+1.05L	J[62]	-1.29	0.01	0	0.01	0	0.01	0.05	PASS
284	1.35D+1.5W+1.05L	I[188]	-1.44	-0.08	0.03	0.02	0.01	-0.05	0.17	PASS
284	1.35D+1.5W+1.05L	J[189]	-1.44	-0.08	0.04	0.02	0	-0.02	0.07	PASS
285	1.35D+1.5W+1.05L	I[189]	0.5	-0.06	-0.06	-0.01	-0.01	-0.02	0.08	PASS
285	1.35D+1.5W+1.05L	J[190]	0.5	-0.06	-0.05	-0.01	0.01	0	0.03	PASS
286	1.35D+1.5W+1.05L	I[190]	-0.74	-0.03	0	0.01	0	-0.02	0.06	PASS
286	1.35D+1.5W+1.05L	J[191]	-0.75	-0.03	0	0.01	0	-0.01	0.03	PASS
287	1.35D+1.5W+1.05L	I[191]	-0.34	0	0	0	0	0	0.01	PASS
287	1.35D+1.5W+1.05L	J[192]	-0.34	0	0.01	0	0	0	0.01	PASS
288	1.35D+1.5W+1.05L	I[192]	0.29	-0.04	0	0	0	-0.01	0.03	PASS
288	1.35D+1.5W+1.05L	J[193]	0.28	-0.04	0.01	0	0	0.01	0.03	PASS

289	1.35D+1.5W+1.05L	I[193]	-1.37	0.01	0	0.01	0	0.01	0.05	PASS
289	1.35D+1.5W+1.05L	J[194]	-1.36	0.01	0.01	0.01	-0.01	0.01	0.07	PASS
290	1.35D+1.5W+1.05L	I[194]	1.1	-0.06	0.08	-0.01	0.01	0	0.04	PASS
290	1.35D+1.5W+1.05L	J[195]	1.1	-0.06	0.08	-0.01	-0.02	0.03	0.14	PASS
291	1.35D+1.5W+1.05L	I[195]	-2.24	-0.06	-0.05	0.02	-0.01	0.02	0.12	PASS
291	1.35D+1.5W+1.05L	J[196]	-2.23	-0.06	-0.05	0.02	0.01	0.04	0.17	PASS
292	1.35D+1.5W+1.05L	I[197]	-1.77	-0.01	0.03	0	0.01	-0.01	0.08	PASS
292	1.35D+1.5W+1.05L	J[198]	-1.78	-0.01	0.04	0	0	-0.01	0.06	PASS
293	1.35D+1.5W+1.05L	I[198]	0.79	-0.01	-0.07	0	-0.02	0	0.06	PASS
293	1.35D+1.5W+1.05L	J[199]	0.79	-0.01	-0.06	0	0.01	0	0.04	PASS
294	1.35D+1.5W+1.05L	I[199]	-1.06	-0.02	-0.01	0	0	-0.01	0.04	PASS
294	1.35D+1.5W+1.05L	J[200]	-1.06	-0.02	0	0	0	0	0.02	PASS
295	1.35D+1.5W+1.05L	I[200]	-0.04	0.02	0	0	0	0	0.00	PASS
295	1.35D+1.5W+1.05L	J[201]	-0.04	0.02	0	0	0	0	0.00	PASS
296	1.35D+1.5W+1.05L	I[201]	-0.01	-0.02	0	0	0	0	0.00	PASS
296	1.35D+1.5W+1.05L	J[202]	-0.02	-0.02	0	0	0	0	0.00	PASS
297	1.35D+1.5W+1.05L	I[202]	-1.07	0.02	0	0	0	0	0.02	PASS
297	1.35D+1.5W+1.05L	J[203]	-1.07	0.02	0.01	0	-0.01	-0.01	0.06	PASS
298	1.35D+1.5W+1.05L	I[203]	0.79	0.01	0.07	0	0.01	0	0.04	PASS
298	1.35D+1.5W+1.05L	J[204]	0.79	0.01	0.07	0	-0.02	0	0.06	PASS
299	1.35D+1.5W+1.05L	I[204]	-1.79	0.01	-0.04	0	0	-0.01	0.06	PASS
299	1.35D+1.5W+1.05L	J[205]	-1.79	0.01	-0.03	0	0.01	-0.01	0.08	PASS
300	1.35D+1.5W+1.05L	I[206]	-2.23	0.06	0.05	-0.02	0.01	0.04	0.17	PASS
300	1.35D+1.5W+1.05L	J[207]	-2.23	0.06	0.05	-0.02	-0.01	0.02	0.12	PASS
301	1.35D+1.5W+1.05L	I[207]	1.11	0.06	-0.08	0.01	-0.02	0.03	0.14	PASS
301	1.35D+1.5W+1.05L	J[208]	1.11	0.06	-0.08	0.01	0.01	0	0.04	PASS
302	1.35D+1.5W+1.05L	I[208]	-1.36	-0.01	-0.01	-0.01	-0.01	0.01	0.07	PASS
302	1.35D+1.5W+1.05L	J[209]	-1.37	-0.01	0	-0.01	0	0.01	0.05	PASS
303	1.35D+1.5W+1.05L	I[209]	0.27	0.04	-0.01	0	0	0.01	0.03	PASS
303	1.35D+1.5W+1.05L	J[210]	0.27	0.04	0	0	0	-0.01	0.03	PASS
304	1.35D+1.5W+1.05L	I[210]	-0.33	0	-0.01	0	0	0	0.00	PASS
304	1.35D+1.5W+1.05L	J[211]	-0.33	0	0	0	0	0	0.00	PASS
305	1.35D+1.5W+1.05L	I[211]	-0.75	0.03	0	-0.01	0	-0.01	0.03	PASS
305	1.35D+1.5W+1.05L	J[212]	-0.74	0.03	0	-0.01	0	-0.02	0.06	PASS
306	1.35D+1.5W+1.05L	I[212]	0.5	0.06	0.05	0.01	0.01	0	0.03	PASS
306	1.35D+1.5W+1.05L	J[213]	0.49	0.06	0.06	0.01	-0.01	-0.02	0.08	PASS
307	1.35D+1.5W+1.05L	I[213]	-1.44	0.08	-0.04	-0.02	0	-0.02	0.07	PASS
307	1.35D+1.5W+1.05L	J[214]	-1.43	0.08	-0.03	-0.02	0.01	-0.06	0.19	PASS

Element: 25.4 x 3.2 CHS

Element No	Load Case	End	Axial N_{ed} (kN)	Shear $V_{y,ed}$ (kN)	Shear $V_{z,ed}$ (kN)	Torsion $M_{x,Ed}$ (kNm)	Bending $M_{y,Ed}$ (kNm)	Bending $M_{z,Ed}$ (kNm)	Stress Ratio	Pass/ Fail
632	1.35D+1.5L	I[321]	1.46	-0.05	-0.02	0	0	0	0.07	PASS
632	1.35D+1.5L	J[323]	1.46	-0.05	-0.02	0	0	0	0.07	PASS
633	1.35D+1.5L	I[334]	1.41	0	-0.01	0	0	0	0.07	PASS
633	1.35D+1.5L	J[335]	1.41	0	-0.01	0	0	0	0.07	PASS
634	1.35D+1.5L	I[323]	1.63	0	0	0	0	0	0.08	PASS
634	1.35D+1.5L	J[325]	1.63	0	0	0	0	0	0.08	PASS
635	1.35D+1.5L	I[321]	1.17	0	0	0	0	0	0.06	PASS
635	1.35D+1.5L	J[319]	1.17	0	0	0	0	0	0.06	PASS
636	1.35D+1.5L	I[319]	1.43	0.05	-0.02	0	0	0	0.07	PASS
636	1.35D+1.5L	J[325]	1.43	0.05	-0.02	0	0	0	0.07	PASS
637	1.35D+1.5L	I[325]	-0.16	0.01	0.02	0	0	0	0.01	PASS
637	1.35D+1.5L	J[336]	-0.16	0.01	0.02	0	0	0	0.01	PASS
638	1.35D+1.5L	I[336]	0.1	0	0.01	0	0	0	0.00	PASS
638	1.35D+1.5L	J[337]	0.1	0	0.01	0	0	0	0.00	PASS
639	1.35D+1.5L	I[337]	-0.1	0	0.01	0	0	0	0.00	PASS
639	1.35D+1.5L	J[338]	-0.1	0	0.01	0	0	0	0.00	PASS
640	1.35D+1.5L	I[338]	0.08	0	0.01	0	0	0	0.00	PASS
640	1.35D+1.5L	J[339]	0.08	0	0.01	0	0	0	0.00	PASS
641	1.35D+1.5L	I[339]	-0.11	0	0.01	0	0	0	0.00	PASS
641	1.35D+1.5L	J[340]	-0.11	0	0.01	0	0	0	0.00	PASS
642	1.35D+1.5L	I[340]	0.08	0	0.01	0	0	0	0.00	PASS
642	1.35D+1.5L	J[341]	0.08	0	0.01	0	0	0	0.00	PASS
643	1.35D+1.5L	I[341]	-0.13	0	0.01	0	0	0	0.00	PASS
643	1.35D+1.5L	J[342]	-0.13	0	0.01	0	0	0	0.00	PASS
644	1.35D+1.5L	I[342]	0.04	0	0	0	0	0	0.00	PASS
644	1.35D+1.5L	J[335]	0.03	0	0.01	0	0	0	0.00	PASS
663	1.35D+1.5L	I[323]	-0.16	-0.01	0.02	0	0	0	0.01	PASS
663	1.35D+1.5L	J[343]	-0.16	-0.01	0.02	0	0	0	0.01	PASS
664	1.35D+1.5L	I[343]	0.1	0	0.01	0	0	0	0.00	PASS
664	1.35D+1.5L	J[344]	0.1	0	0.01	0	0	0	0.00	PASS
665	1.35D+1.5L	I[344]	-0.1	0	0.01	0	0	0	0.00	PASS
665	1.35D+1.5L	J[345]	-0.1	0	0.01	0	0	0	0.00	PASS
666	1.35D+1.5L	I[345]	0.08	0	0.01	0	0	0	0.00	PASS
666	1.35D+1.5L	J[346]	0.07	0	0.01	0	0	0	0.00	PASS
667	1.35D+1.5L	I[346]	-0.11	0	0.01	0	0	0	0.00	PASS
667	1.35D+1.5L	J[347]	-0.11	0	0.01	0	0	0	0.00	PASS
668	1.35D+1.5L	I[347]	0.08	0	0.01	0	0	0	0.00	PASS
668	1.35D+1.5L	J[348]	0.08	0	0.01	0	0	0	0.00	PASS
669	1.35D+1.5L	I[348]	-0.13	0	0.01	0	0	0	0.00	PASS
669	1.35D+1.5L	J[349]	-0.13	0	0.01	0	0	0	0.00	PASS
670	1.35D+1.5L	I[349]	0.04	0	0	0	0	0	0.00	PASS
670	1.35D+1.5L	J[350]	0.03	0	0.01	0	0	0	0.00	PASS
671	1.35D+1.5L	I[351]	1.42	0	-0.01	0	0	0	0.07	PASS
671	1.35D+1.5L	J[350]	1.42	0	-0.01	0	0	0	0.07	PASS
672	1.35D+1.5L	I[351]	1.36	0	0	0	0	0	0.06	PASS
672	1.35D+1.5L	J[334]	1.36	0	0	0	0	0	0.06	PASS
673	1.35D+1.5L	I[335]	1.43	0	0	0	0	0	0.07	PASS
673	1.35D+1.5L	J[350]	1.43	0	0	0	0	0	0.07	PASS
674	1.35D+1.5L	I[348]	-0.01	0	0.01	0	0	0	0.00	PASS
674	1.35D+1.5L	J[341]	-0.01	0	0.01	0	0	0	0.00	PASS
675	1.35D+1.5L	I[346]	-0.01	0	0.01	0	0	0	0.00	PASS
675	1.35D+1.5L	J[339]	-0.01	0	0.01	0	0	0	0.00	PASS

676	1.35D+1.5L	I[344]	0.03	0	0.01	0	0	0	0.00	PASS
676	1.35D+1.5L	J[337]	0.03	0	0.01	0	0	0	0.00	PASS
677	1.35D+1.5L	I[352]	-0.01	0	0.01	0	0	0	0.00	PASS
677	1.35D+1.5L	J[353]	-0.01	0	0.01	0	0	0	0.00	PASS
678	1.35D+1.5L	I[354]	0	0	0.01	0	0	0	0.00	PASS
678	1.35D+1.5L	J[355]	0	0	0.01	0	0	0	0.00	PASS
679	1.35D+1.5L	I[356]	0.01	0	0.01	0	0	0	0.00	PASS
679	1.35D+1.5L	J[357]	0.01	0	0.01	0	0	0	0.00	PASS
680	1.35D+1.5L	I[358]	1.46	0	0	0	0	0	0.07	PASS
680	1.35D+1.5L	J[359]	1.46	0	0	0	0	0	0.07	PASS
681	1.35D+1.5L	I[360]	-0.11	-0.01	0.01	0	0	0	0.00	PASS
681	1.35D+1.5L	J[361]	-0.11	-0.01	0.01	0	0	0	0.00	PASS
682	1.35D+1.5L	I[361]	0.08	0	0.01	0	0	0	0.00	PASS
682	1.35D+1.5L	J[362]	0.08	0	0.01	0	0	0	0.00	PASS
683	1.35D+1.5L	I[362]	-0.11	0	0.01	0	0	0	0.00	PASS
683	1.35D+1.5L	J[363]	-0.11	0	0.01	0	0	0	0.00	PASS
684	1.35D+1.5L	I[363]	0.09	0	0.01	0	0	0	0.00	PASS
684	1.35D+1.5L	J[364]	0.08	0	0.01	0	0	0	0.00	PASS
685	1.35D+1.5L	I[364]	-0.11	0	0.01	0	0	0	0.00	PASS
685	1.35D+1.5L	J[365]	-0.11	0	0.01	0	0	0	0.00	PASS
686	1.35D+1.5L	I[365]	0.06	0	0.01	0	0	0	0.00	PASS
686	1.35D+1.5L	J[366]	0.06	0	0.01	0	0	0	0.00	PASS
687	1.35D+1.5L	I[366]	-0.15	0	0	0	0	0	0.01	PASS
687	1.35D+1.5L	J[359]	-0.15	0	0.01	0	0	0	0.01	PASS
697	1.35D+1.5L	I[329]	0.13	-0.01	0.01	0	0	0	0.01	PASS
697	1.35D+1.5L	J[360]	0.13	-0.01	0.01	0	0	0	0.01	PASS
705	1.35D+1.5L	I[328]	0.14	0.01	0.01	0	0	0	0.01	PASS
705	1.35D+1.5L	J[367]	0.13	0.01	0.01	0	0	0	0.01	PASS
706	1.35D+1.5L	I[367]	-0.11	0.01	0.01	0	0	0	0.00	PASS
706	1.35D+1.5L	J[368]	-0.11	0.01	0.01	0	0	0	0.00	PASS
707	1.35D+1.5L	I[368]	0.08	0	0.01	0	0	0	0.00	PASS
707	1.35D+1.5L	J[369]	0.08	0	0.01	0	0	0	0.00	PASS
708	1.35D+1.5L	I[369]	-0.11	0	0.01	0	0	0	0.00	PASS
708	1.35D+1.5L	J[370]	-0.11	0	0.01	0	0	0	0.00	PASS
709	1.35D+1.5L	I[370]	0.09	0	0.01	0	0	0	0.00	PASS
709	1.35D+1.5L	J[371]	0.08	0	0.01	0	0	0	0.00	PASS
710	1.35D+1.5L	I[371]	-0.11	0	0.01	0	0	0	0.00	PASS
710	1.35D+1.5L	J[372]	-0.11	0	0.01	0	0	0	0.00	PASS
711	1.35D+1.5L	I[372]	0.06	0	0.01	0	0	0	0.00	PASS
711	1.35D+1.5L	J[373]	0.06	0	0.01	0	0	0	0.00	PASS
712	1.35D+1.5L	I[373]	-0.15	0	0	0	0	0	0.01	PASS
712	1.35D+1.5L	J[374]	-0.15	0	0.01	0	0	0	0.01	PASS
713	1.35D+1.5L	I[375]	1.47	0	0	0	0	0	0.07	PASS
713	1.35D+1.5L	J[374]	1.47	0	0	0	0	0	0.07	PASS
714	1.35D+1.5L	I[375]	1.43	0	0	0	0	0	0.07	PASS
714	1.35D+1.5L	J[358]	1.43	0	0	0	0	0	0.07	PASS
715	1.35D+1.5L	I[359]	1.37	0	0	0	0	0	0.06	PASS
715	1.35D+1.5L	J[374]	1.37	0	0	0	0	0	0.06	PASS
716	1.35D+1.5L	I[372]	-0.01	0	0.01	0	0	0	0.00	PASS
716	1.35D+1.5L	J[365]	-0.01	0	0.01	0	0	0	0.00	PASS
717	1.35D+1.5L	I[370]	0	0	0.01	0	0	0	0.00	PASS
717	1.35D+1.5L	J[363]	0	0	0.01	0	0	0	0.00	PASS
718	1.35D+1.5L	I[368]	0.01	0	0.01	0	0	0	0.00	PASS
718	1.35D+1.5L	J[361]	0.01	0	0.01	0	0	0	0.00	PASS
719	1.35D+1.5L	I[376]	-0.01	0	0.01	0	0	0	0.00	PASS
719	1.35D+1.5L	J[377]	-0.01	0	0.01	0	0	0	0.00	PASS
720	1.35D+1.5L	I[378]	-0.01	0	0.01	0	0	0	0.00	PASS
720	1.35D+1.5L	J[379]	-0.01	0	0.01	0	0	0	0.00	PASS
721	1.35D+1.5L	I[380]	0.02	0	0.01	0	0	0	0.00	PASS
721	1.35D+1.5L	J[381]	0.02	0	0.01	0	0	0	0.00	PASS
722	1.35D+1.5L	I[327]	1.37	0.05	0.03	0	0	0	0.06	PASS
722	1.35D+1.5L	J[328]	1.37	0.05	0.03	0	0	0	0.06	PASS
723	1.35D+1.5L	I[328]	1.17	0	0	0	0	0	0.06	PASS
723	1.35D+1.5L	J[329]	1.17	0	0	0	0	0	0.06	PASS

724	1.35D+1.5L	I[327]	1.63	0	0	0	0	0	0.08	PASS
724	1.35D+1.5L	J[326]	1.63	0	0	0	0	0	0.08	PASS
725	1.35D+1.5L	I[326]	1.34	-0.05	0.03	0	0	0	0.06	PASS
725	1.35D+1.5L	J[329]	1.34	-0.05	0.03	0	0	0	0.06	PASS

Element: 48.3 x 3.25 CHS

Element No	Load Case	End	Axial N_{ed} (kN)	Shear $V_{y,ed}$ (kN)	Shear $V_{z,ed}$ (kN)	Torsion $M_{x,Ed}$ (kNm)	Bending $M_{y,Ed}$ (kNm)	Bending $M_{z,Ed}$ (kNm)	Stress Ratio	Pass/ Fail
560	1.35D+1.5L	I[318]	-2.57	1.35	1.37	0	0.03	0.03	0.12	PASS
560	1.35D+1.5L	J[334]	-2.57	1.35	1.37	0	-0.01	0	0.06	PASS
561	1.35D+1.5L	I[319]	-2.53	-0.22	0.23	-0.01	0	0	0.04	PASS
561	1.35D+1.5L	J[312]	-2.53	-0.22	0.23	-0.01	-0.05	0.04	0.17	PASS
562	1.35D+1.5L	I[318]	-3.17	-0.01	0.46	0	0.05	0	0.12	PASS
562	1.35D+1.5L	J[242]	-3.18	-0.01	0.46	0	-0.05	0	0.12	PASS
563	1.35D+1.5L	I[320]	-2.59	-1.35	1.37	0	0.03	-0.04	0.14	PASS
563	1.35D+1.5L	J[351]	-2.59	-1.35	1.37	0	-0.01	0	0.06	PASS
564	1.35D+1.5L	I[321]	-2.6	0.24	0.19	0.01	0	0	0.04	PASS
564	1.35D+1.5L	J[312]	-2.6	0.24	0.19	0.01	-0.04	-0.05	0.17	PASS
565	1.35D+1.5L	I[320]	-3.19	0.02	0.47	0	0.05	0	0.12	PASS
565	1.35D+1.5L	J[242]	-3.19	0.02	0.47	0	-0.05	0	0.12	PASS
566	1.35D+1.5L	I[322]	-2.75	-1.43	-1.43	0	-0.04	-0.04	0.16	PASS
566	1.35D+1.5L	J[350]	-2.75	-1.43	-1.43	0	0	0	0.05	PASS
567	1.35D+1.5L	I[323]	-4.02	0.22	-0.49	0.01	-0.02	0	0.10	PASS
567	1.35D+1.5L	J[312]	-4.02	0.22	-0.49	0.01	0.09	-0.04	0.26	PASS
568	1.35D+1.5L	I[322]	-3.37	0	0.52	0	0.05	0	0.13	PASS
568	1.35D+1.5L	J[242]	-3.37	0	0.52	0	-0.05	0	0.13	PASS
569	1.35D+1.5L	I[324]	-2.73	1.42	-1.42	0	-0.04	0.04	0.16	PASS
569	1.35D+1.5L	J[335]	-2.73	1.42	-1.42	0	0	0	0.05	PASS
570	1.35D+1.5L	I[325]	-3.94	-0.24	-0.46	-0.01	-0.02	0	0.10	PASS
570	1.35D+1.5L	J[312]	-3.94	-0.24	-0.45	-0.01	0.08	0.05	0.25	PASS
571	1.35D+1.5L	I[324]	-3.35	0	0.51	0	0.05	0	0.13	PASS
571	1.35D+1.5L	J[242]	-3.35	0	0.51	0	-0.05	0	0.13	PASS
572	1.35D+1.5L	I[326]	-3.94	0.24	-0.45	0.01	-0.02	0	0.10	PASS
572	1.35D+1.5L	J[310]	-3.94	0.24	-0.45	0.01	0.08	-0.05	0.25	PASS
573	1.35D+1.5L	I[327]	-4.02	-0.22	-0.49	-0.01	-0.02	0	0.10	PASS
573	1.35D+1.5L	J[310]	-4.02	-0.22	-0.49	-0.01	0.09	0.04	0.26	PASS
574	1.35D+1.5L	I[328]	-2.61	-0.24	0.19	-0.01	0	0	0.04	PASS
574	1.35D+1.5L	J[310]	-2.61	-0.24	0.19	-0.01	-0.04	0.05	0.17	PASS
575	1.35D+1.5L	I[329]	-2.54	0.22	0.22	0.01	0	0	0.04	PASS
575	1.35D+1.5L	J[310]	-2.54	0.22	0.23	0.01	-0.05	-0.04	0.17	PASS
576	1.35D+1.5L	I[330]	-2.71	1.41	1.42	0	0.03	0.04	0.14	PASS
576	1.35D+1.5L	J[358]	-2.7	1.41	1.42	0	-0.01	0	0.06	PASS
577	1.35D+1.5L	I[330]	-3.33	-0.01	0.5	0	0.05	0	0.13	PASS
577	1.35D+1.5L	J[309]	-3.33	-0.01	0.5	0	-0.05	0	0.13	PASS
578	1.35D+1.5L	I[331]	-2.72	-1.42	1.43	0	0.03	-0.04	0.14	PASS
578	1.35D+1.5L	J[375]	-2.72	-1.42	1.43	0	-0.01	0	0.06	PASS
579	1.35D+1.5L	I[331]	-3.35	0.01	0.5	0	0.05	0	0.13	PASS
579	1.35D+1.5L	J[309]	-3.35	0.01	0.51	0	-0.05	0	0.13	PASS
580	1.35D+1.5L	I[332]	-2.62	-1.36	-1.37	0	-0.04	-0.04	0.15	PASS
580	1.35D+1.5L	J[374]	-2.62	-1.36	-1.37	0	0	0	0.04	PASS
581	1.35D+1.5L	I[332]	-3.22	-0.01	0.49	0	0.05	0	0.13	PASS
581	1.35D+1.5L	J[309]	-3.22	-0.01	0.49	0	-0.05	0	0.13	PASS
582	1.35D+1.5L	I[333]	-2.6	1.36	-1.37	0	-0.04	0.04	0.15	PASS
582	1.35D+1.5L	J[359]	-2.6	1.36	-1.37	0	0	0	0.04	PASS
583	1.35D+1.5L	I[333]	-3.2	0	0.48	0	0.05	0	0.12	PASS
583	1.35D+1.5L	J[309]	-3.2	0	0.48	0	-0.05	0	0.12	PASS
584	1.35D+1.5L	I[334]	-2.56	-0.01	-0.04	0	-0.01	0	0.05	PASS

584	1.35D+1.5L	J[342]	-2.55	-0.01	-0.04	0	0	0	0.04	PASS
585	1.35D+1.5L	I[335]	-2.76	-0.01	0.01	0	0	0	0.05	PASS
585	1.35D+1.5L	J[341]	-2.75	-0.01	0.01	0	0	0	0.05	PASS
586	1.35D+1.5L	I[336]	-1.83	0.01	0.01	0	0	0	0.03	PASS
586	1.35D+1.5L	J[319]	-1.83	0.01	0.01	0	0	0	0.03	PASS
587	1.35D+1.5L	I[337]	-3.18	-0.03	0.02	0	0	0	0.05	PASS
587	1.35D+1.5L	J[325]	-3.17	-0.03	0.02	0	-0.01	0.01	0.08	PASS
588	1.35D+1.5L	I[338]	-2.07	0	0	0	0	0	0.03	PASS
588	1.35D+1.5L	J[357]	-2.06	0	0	0	0	0	0.03	PASS
589	1.35D+1.5L	I[339]	-3.04	0	0	0	0	0	0.05	PASS
589	1.35D+1.5L	J[337]	-3.03	0	0	0	0	0	0.05	PASS
590	1.35D+1.5L	I[340]	-2.23	0	0	0	0	0	0.03	PASS
590	1.35D+1.5L	J[355]	-2.23	0	0	0	0	0	0.03	PASS
591	1.35D+1.5L	I[341]	-2.91	0	0	0	0	0	0.05	PASS
591	1.35D+1.5L	J[339]	-2.9	0	0	0	0	0	0.05	PASS
592	1.35D+1.5L	I[342]	-2.41	-0.01	0	0	0	0	0.04	PASS
592	1.35D+1.5L	J[353]	-2.4	-0.01	0	0	0	0	0.04	PASS
593	1.35D+1.5L	I[343]	-1.9	-0.01	0	0	0	0	0.03	PASS
593	1.35D+1.5L	J[321]	-1.9	-0.01	0	0	0	0	0.03	PASS
594	1.35D+1.5L	I[344]	-3.25	0.02	0.02	0	0	0	0.06	PASS
594	1.35D+1.5L	J[323]	-3.24	0.02	0.02	0	-0.01	-0.01	0.08	PASS
595	1.35D+1.5L	I[345]	-2.13	0	0	0	0	0	0.03	PASS
595	1.35D+1.5L	J[356]	-2.12	0	0	0	0	0	0.03	PASS
596	1.35D+1.5L	I[346]	-3.1	-0.01	0	0	0	0	0.05	PASS
596	1.35D+1.5L	J[344]	-3.09	-0.01	0	0	0	0	0.05	PASS
597	1.35D+1.5L	I[347]	-2.27	0	0	0	0	0	0.04	PASS
597	1.35D+1.5L	J[354]	-2.27	0	0	0	0	0	0.04	PASS
598	1.35D+1.5L	I[348]	-2.95	0	0	0	0	0	0.05	PASS
598	1.35D+1.5L	J[346]	-2.94	0	0	0	0	0	0.05	PASS
599	1.35D+1.5L	I[349]	-2.43	0	0	0	0	0	0.04	PASS
599	1.35D+1.5L	J[352]	-2.43	0	0	0	0	0	0.04	PASS
600	1.35D+1.5L	I[350]	-2.78	0	0.01	0	0	0	0.05	PASS
600	1.35D+1.5L	J[348]	-2.77	0	0.01	0	0	0	0.05	PASS
601	1.35D+1.5L	I[351]	-2.58	0.01	-0.04	0	-0.01	0	0.06	PASS
601	1.35D+1.5L	J[349]	-2.57	0.01	-0.04	0	0	0	0.04	PASS
602	1.35D+1.5L	I[352]	-2.43	0	0	0	0	0	0.04	PASS
602	1.35D+1.5L	J[347]	-2.43	0	0	0	0	0	0.04	PASS
603	1.35D+1.5L	I[353]	-2.4	0	0	0	0	0	0.04	PASS
603	1.35D+1.5L	J[340]	-2.39	0	0	0	0	0	0.04	PASS
604	1.35D+1.5L	I[354]	-2.27	0	0	0	0	0	0.04	PASS
604	1.35D+1.5L	J[345]	-2.27	0	0	0	0	0	0.04	PASS
605	1.35D+1.5L	I[355]	-2.22	0	0	0	0	0	0.03	PASS
605	1.35D+1.5L	J[338]	-2.21	0	0	0	0	0	0.03	PASS
606	1.35D+1.5L	I[356]	-2.13	0.01	0	0	0	0	0.03	PASS
606	1.35D+1.5L	J[343]	-2.12	0.01	0	0	0	0	0.03	PASS
607	1.35D+1.5L	I[357]	-2.06	-0.01	0	0	0	0	0.03	PASS
607	1.35D+1.5L	J[336]	-2.05	-0.01	0	0	0	0	0.03	PASS
608	1.35D+1.5L	I[358]	-2.7	-0.01	-0.03	0	-0.01	0	0.06	PASS
608	1.35D+1.5L	J[366]	-2.69	-0.01	-0.03	0	0	0	0.04	PASS
609	1.35D+1.5L	I[359]	-2.48	-0.01	0.01	0	0	0	0.04	PASS
609	1.35D+1.5L	J[365]	-2.47	-0.01	0.01	0	0	0	0.04	PASS
610	1.35D+1.5L	I[360]	-3.31	-0.04	-0.03	0	0	0	0.06	PASS
610	1.35D+1.5L	J[326]	-3.3	-0.04	-0.03	0	0.01	0.01	0.08	PASS
611	1.35D+1.5L	I[361]	-1.96	0	0	0	0	0	0.03	PASS
611	1.35D+1.5L	J[329]	-1.95	0	0	0	0	0	0.03	PASS
612	1.35D+1.5L	I[362]	-3.13	0	0	0	0	0	0.05	PASS
612	1.35D+1.5L	J[381]	-3.12	0	0	0	0	0	0.05	PASS
613	1.35D+1.5L	I[363]	-2.14	0	0	0	0	0	0.03	PASS
613	1.35D+1.5L	J[361]	-2.13	0	0	0	0	0	0.03	PASS
614	1.35D+1.5L	I[364]	-2.99	0	0	0	0	0	0.05	PASS
614	1.35D+1.5L	J[379]	-2.99	0	0	0	0	0	0.05	PASS

615	1.35D+1.5L	I[365]	-2.32	0	0	0	0	0	0.04	PASS
615	1.35D+1.5L	J[363]	-2.31	0	0	0	0	0	0.04	PASS
616	1.35D+1.5L	I[366]	-2.85	-0.01	0	0	0	0	0.05	PASS
616	1.35D+1.5L	J[377]	-2.85	-0.01	0	0	0	0	0.05	PASS
617	1.35D+1.5L	I[367]	-3.38	0.03	-0.03	0	0	0	0.06	PASS
617	1.35D+1.5L	J[327]	-3.37	0.03	-0.03	0	0.01	-0.01	0.09	PASS
618	1.35D+1.5L	I[368]	-2.03	0	0	0	0	0	0.03	PASS
618	1.35D+1.5L	J[328]	-2.02	0	0	0	0	0	0.03	PASS
619	1.35D+1.5L	I[369]	-3.18	-0.01	0	0	0	0	0.05	PASS
619	1.35D+1.5L	J[380]	-3.18	-0.01	0	0	0	0	0.05	PASS
620	1.35D+1.5L	I[370]	-2.19	0	0	0	0	0	0.03	PASS
620	1.35D+1.5L	J[368]	-2.18	0	0	0	0	0	0.03	PASS
621	1.35D+1.5L	I[371]	-3.03	0	0	0	0	0	0.05	PASS
621	1.35D+1.5L	J[378]	-3.02	0	0	0	0	0	0.05	PASS
622	1.35D+1.5L	I[372]	-2.36	0	0	0	0	0	0.04	PASS
622	1.35D+1.5L	J[370]	-2.35	0	0	0	0	0	0.04	PASS
623	1.35D+1.5L	I[373]	-2.88	0	0	0	0	0	0.05	PASS
623	1.35D+1.5L	J[376]	-2.87	0	0	0	0	0	0.05	PASS
624	1.35D+1.5L	I[374]	-2.5	0	0.01	0	0	0	0.04	PASS
624	1.35D+1.5L	J[372]	-2.49	0	0.01	0	0	0	0.04	PASS
625	1.35D+1.5L	I[375]	-2.72	0	-0.03	0	-0.01	0	0.06	PASS
625	1.35D+1.5L	J[373]	-2.72	0	-0.03	0	0	0	0.04	PASS
626	1.35D+1.5L	I[376]	-2.88	0	0	0	0	0	0.05	PASS
626	1.35D+1.5L	J[371]	-2.87	0	0	0	0	0	0.05	PASS
627	1.35D+1.5L	I[377]	-2.84	0	0	0	0	0	0.05	PASS
627	1.35D+1.5L	J[364]	-2.83	0	0	0	0	0	0.05	PASS
628	1.35D+1.5L	I[378]	-3.03	-0.01	0	0	0	0	0.05	PASS
628	1.35D+1.5L	J[369]	-3.03	-0.01	0	0	0	0	0.05	PASS
629	1.35D+1.5L	I[379]	-2.98	0	0	0	0	0	0.05	PASS
629	1.35D+1.5L	J[362]	-2.97	0	0	0	0	0	0.05	PASS
630	1.35D+1.5L	I[380]	-3.19	0.02	0	0	0	0	0.06	PASS
630	1.35D+1.5L	J[367]	-3.18	0.02	0	0	0	0	0.05	PASS
631	1.35D+1.5L	I[381]	-3.11	-0.02	0	0	0	0	0.05	PASS
631	1.35D+1.5L	J[360]	-3.11	-0.02	0	0	0	0	0.05	PASS

Appendix B
Member Capacity Calculations

Aluminium CHS Section Design to Eurocode 9

Location:	48.4 x3.25 CHS
Section size:	48 x 4.47

Applied Forces (From analysis results):

Element no:		**358**	
Axial;	N_{Ed} =	**19.11**	kN
Bending Moment (y-axis);	$M_{y,Ed}$ =	**0.16**	kNm
Bending Moment (z-axis);	$M_{z,Ed}$ =	**0.10**	kNm
Shear Force;	V_{Ed} =	**0.70**	kN

Partial Safety Factors:

From BS EN 1999 Table 6.1: Partial Safety Factors for Members

Resistance of cross section;	g_{M1} =	1.1
Resistance of cross section in tension;	g_{M2} =	1.25

From CWA15902-2, Lifting and load-bearing equipment for stages and other production area within the entertainment industry. Specifications for design, manufacture and for use of aluminium and steel trusses and towers

Allowable load reduction factor;	$g_{rf} = 1 / 1.2$ =	0.83

Material Properties: (Section 3.2.5)

Density of aluminium;	r =	2700	kg/m^3
Modulus of elasticity;	E =	70000	N/mm^2
Modulus of rigidity;	G =	27000	N/mm^2

Section Properties:

Outside diameter;	D =	48.40	mm;
Thickness;	t =	3.25	mm;
Internal diameter;	$d = D - 2 \times t$ =	41.90	mm
Area;	$A = p \times (D^2 - d^2) / 4$ =	461	mm^2
Inertia x-x;	$I_x = p \times (D^4 - d^4) / 64$ =	118076	mm^4
Inertia y-y;	$I_y = I_x$ =	118076	mm^4
Radius of gyration x-x;	$r_x = \sqrt{(I_x / A)}$ =	16.00	mm
Radius of gyration y-y;	$ry = r_x$ =	16.00	mm
Elastic Modulus x-x;	$W_{elx} = 2 \times I_x / D$ =	4879	mm^3
Elastic Modulus y-y;	$W_{ely} = W_{elx}$ =	4879	mm^3
Plastic Modulus x-x;	$W_{plx} = (D^3 - d^3) / 6$ =	6637	mm^3
Plastic Modulus y-y;	$W_{ply} = W_{plx}$ =	6637	mm^3

Material Properties: (Section 3.2.2)

From BS EN 1991-1-1 **Table 3.2**, 6082 T6 Aluminium alloy, Drawn Tube t< 5.0 mm

Proof strength;	f_0 =	255	N/mm^2
Ultimate Tensile strength;	f_u =	310	N/mm^2
HAZ proof strength;	$f_{0,haz}$ =	125	N/mm^2
HAZ Ultimate Tensile strength;	$f_{u,haz}$ =	185	N/mm^2
HAZ proof factor;	$r_{0,haz}$ =	0.49	
HAZ Ultimate factor;	$r_{u,haz}$ =	0.64	
Buckling Class;	BC =	A	

Section Classification: (Section 6.1.4)

Outstand;	$b = D - t$ =	45.15	mm
Slenderness parameter (Cl. 6.1.4.3, Eq 6.10);	$b = 3 \times \sqrt{(b/t)}$ =	11.182	

For an internal Class A member without welds:

	$e = \sqrt{(250\ N/mm^2 / f_0)}$ =	0.99	
Therefore using Table 6.2;	$b_1 = 11.0 \times e$ =	10.89	
	$b_2 = 16.0 \times e$ =	15.84	
	$b_3 = 22.0 \times e$ =	21.78	
		Strut is	**CLASS 2 (B1<B)**

Welded Section Properties: (Section
For a fully welded section

	$t_{0,haz} = r_{0,haz} \times t =$	1.5925	mm	
	$t_{u,haz} = r_{u,haz} \times t =$	2.08	mm	
	$W_{net} = p \times (D^4 - (D - 2 \times t_{u,haz})^4)/(32 \times D) =$	3361	mm^3	
	$W_{el,haz} = p \times (D^4 - (D - 2 \times t_{0,haz})^4)/(32 \times D) =$	2653	mm^3	
	$W_{pl,haz} = (D^3 - (D - 2 \times t_{0,haz})^3)/ 6 =$	3490	mm^3	

Capacity Calculations:

Tension: (Section 6.2.3)

Member is welded at its connections to diagonals

a) General yielding along member;	$A_g = A \times r_{0,haz} =$	225.9	mm^2	
Eq: 6.18;	$N_{t,Rd} = g_{rf} \times A_g \times f_0 / g_{M1} =$	43.64	kN	
b) Local failure at HAZ section;	$A_{eff} = A \times r_{u,haz} =$	295.0332	mm^2	
Eq: 6.19b;	$N_{u,Rd} = g_{rf} \times A_{eff} \times f_u / g_{M2} =$	60.97	kN	
	Therefore, $N_{t,Rd}$ =	**43.64**	**kN**	**for welded section**

Compression: (Section 6.2.4)

Local failure at HAZ section;	$A_{eff} = A \times r_{0,haz} =$	225.8848	mm^2	
Eq: 6.22;	$N_{0,Rd} = g_{rf} \times A_{eff} \times f_0 / g_{M1} =$	43.64	kN	
	Therefore, $N_{c,Rd}$ =	**43.64**	**kN**	**for welded section**

Moment Capacity (Unwelded section): (Section 6.2.5)
Moment Capacity (M_{RD}) is the lesser of $M_{U,RD}$ and $M_{c,RD}$.

Moment Capacity;	$W_{el} = W_{elx} =$	4879	mm^3	
Eq 6.24;	$M_{u,Rd} = g_{rf} \times W_{el} \times f_u / g_{M2} =$	1.01	kNm	
Moment Capacity;	$W_{pl} = W_{plx} =$	6637	mm^3	
	$a = W_{pl} / W_{el} =$	1.36		
Eq 6.25;	$M_{c,Rd} = g_{rf} \times a \times W_{el} \times f_0 / g_{M1} =$	1.28	kNm	
	Therefore, M_{Rd} =	**1.01**	**kNm**	**for unwelded section**

Moment Capacity (Welded section): (Section 6.2.5)

Moment Capacity;	$W_{net} =$	3361	mm^3	
Eq 6.24;	$M_{u,RD} = g_{rf} \times W_{net} \times f_u / g_{M2} =$	0.69	kNm	
Moment Capacity;	$W_{pl} = W_{pl,haz} =$	3490	mm^3	
	$a = W_{pl} / W_{el} =$	0.72		
Eq 6.25;	$M_{c,Rd} = g_{rf} \times a \times W_{el} \times f_0 / g_{M1} =$	0.67	kNm	
	Therefore, M_{Rd} =	**0.67**	**kNm**	**for welded section**

Shear Capacity (Unwelded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_v = h_v \times A =$	277	mm^2	
Eq 6.29;	$V_{Rd} = g_{rf} \times A_v \times f_0 / (g_{M1} \times 3^{0.5}) =$	30.85	kN	
	Therefore, V_{Rd} =	**30.85**	**kN**	**for unwelded section**

Shear Capacity (Welded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_e = A \times r_{0,haz} =$	225.8848	mm^2	
	$A_v = h_v \times A_e =$	136	mm^2	
Eq 6.29;	$V_{RD} = g_{rf} \times A_v \times f_0 / (g_{M1} \times 3^{0.5}) =$	15.12	kN	
	Therefore, V_{Rd} =	**15.12**	**kN**	**for welded section**

Summary of Section Capacities:

Tension;	$N_{t,Rd}$ =	**43.64**	kN	**SATISFACTORY**
Compression;	$N_{0,Rd}$ =	**43.64**	kN	**SATISFACTORY**
Moment (unwelded);	$M_{u,Rd}$ =	**1.01**	kNm	**SATISFACTORY**
Moment (welded);	$M_{u,RD}$ =	**0.67**	kNm	**SATISFACTORY**
Shear (unwelded);	V_{Rd} =	**30.85**	kN	**SATISFACTORY**
Shear (welded);	V_{RD} =	**15.12**	kN	**SATISFACTORY**

Capacity Checks:

Combined Bending and Shear: (Section 6.2.8)

Check shear;	V_{Ed} / V_{RD} =	0.05		

Therefore, Shear capacity SATISFACTORY

Shear force influence is; INSIGNIFICANT, No further check required

Combined Axial and Bending: (Section 6.2.9)

For hollow section (Cl. 6.2.9.2)	y =	1.3	
Accounting for HAZ zone;	$w_0 = (r_{u,haz} \times f_u / g_{M2}) / (f_0 / g_{M1})$ =	0.68	
		0.68	
For Hollow Sections, Eq 6.43;			
	$(N_{Ed} / (w_0 \times N_{0,Rd}))^y$ =	0.56	
	$((My,E_d / (w_0 \times My_{,RD}))^{1.70})^{0.6}$ =	0.23	
	$((Mz,E_d / (w_0 \times Mz_{,RD}))^{1.70})^{0.6}$ =	0.14	
	Total factor =	0.93	

Therefore, Combined Bending and Axial SATISFACTORY

Compression - Buckling Resistance: (Section 6.3.1)

Length of strut;	L =	306	mm	
Buckling length factor (Table 6.8);	k =	0.85		
Clauses 6.3.1.1 and 6.3.1.3;				
For Class 1 & 2 sections;	A_{eff} = A =	461.0	mm^2	
No logitudinal welds;	*k* =	1.0		
For Class A sections (Table 6.6);	a =	0.20		
	λ_0 =	0.10		
Therefore, buckling length;	Lcr = *k* x L =	260	mm	
Eq 6.52;	λ =	0.31		
Eq 6.51;	φ =	0.57		
Eq 6.50;	χ =	0.96		
Eq 6.49;	$N_{b,Rd} = k \times g_{rf} \times \chi \times A_{eff} \times f_0 / g_{M1}$ =	85.07	kN	
	Therefore, $N_{b,Rd}$ =	**85.07**	**kN**	**for section**
Eq 6.48;	$N_{Ed} / N_{b,Rd}$ =	0.22		

Therefore, Buckling capacity SATISFACTORY

Fillet weld capacity: (Section 8.6)

For 6082 material, assume a filler metal of 4043A.

Therefore from Table 8.8;	f_w =	190	N/mm^2
Where;	g_{Mw} =	1.25	
Fillet weld capacity;	Fillet weld capacity = fw / γMw =	152	N/mm^2

Where a welded connection exists, a fillet weld is to be run around the entire circumference of the CHS member.
However, due to the angle at which some tubular members are positioned, and to allow for run on run off of the weld, a 15 mm reduction in weld length should be taken.

Effective weld length;	Lw,eff = π x D - 15 =	137.1	mm	
Effective throat thickness;	a =	4	mm	
Weld Area;	= Sin45 x Lw,eff x a =	466.5	mm^2	
Therefore,	Allowable weld force =	59.09	kN	

Therefore, weld connection SATISFACTORY

Calculation Sheet

Aluminium RHS Section Design to Eurocode 9

Location:	50.8 x 50.8 x 3.25 SHS
Section size:	50.8x50.8x3.25

Applied Forces (From analysis results):

Element no:		**104**	from analysis model
Axial;	N_{Ed} =	**22.41**	kN
Bending Moment (y-axis);	$M_{y,Ed}$ =	**0.11**	kNm
Bending Moment (z-axis);	$M_{z,Ed}$ =	**0.26**	kNm
Shear Force;	V_{Ed} =	**0.30**	kN

Partial Safety Factors:

From BS EN 1999 Table 6.1: Partial Safety Factors for Members

Resistance of cross section;	g_{M1} =	1.1	
Resistance of cross section in tension;	g_{M2} =	1.25	

From CWA15902-2, Lifting and load-bearing equipment for stages and other production area within the entertainment industry. Specifications for design, manufacture and for use of aluminium and steel trusses and towers

Allowable load reduction factor;	g_{rf} = 1 / 1.2 =	0.83	

Material Properties: (Section 3.2.5)

Density of aluminium;	r =	2700	kg/m^3
Modulus of elasticity;	E =	70000	N/mm^2
Modulus of rigidity;	G =	27000	N/mm^2

Section Properties:

Outside depth;	D =	50.80	mm;
Outside width;	B =	50.80	mm;
Thickness;	t =	3.25	mm;
Internal depth;	$d = D - 2 \times t$ =	44.30	mm
Internal width;	$b = B - 2 \times t$ =	44.30	mm
Area;	$A = D^2 - d^2$ =	618	mm^2
Inertia x-x;	$I_x = (BD^3 - bd^3) / 12$ =	234028	mm^4
Inertia y-y;	$I_y = (DB^3 - db^3) / 12$ =	234028	mm^4
Radius of gyration x-x;	$r_x = \sqrt{(I_x / A)}$ =	19.46	mm
Radius of gyration y-y;	$r_y = \sqrt{(I_y / A)}$ =	19.46	mm
Elastic Modulus x-x;	$W_{elx} = 2 \times I_x / D$ =	9214	mm^3
Elastic Modulus y-y;	$W_{ely} = 2 \times I_y / B$ =	9214	mm^3
Plastic Modulus x-x;	$W_{plx} = (BD^2 - bd^2) / 4$ =	11040	mm^3
Plastic Modulus y-y;	$W_{ply} = (DB^2 - db^2) / 4$ =	11040	mm^3

Material Properties: (Section 3.2.2)

From BS EN 1991-1-1 **Table 3.2**, 6082 T6 Aluminium alloy, Drawn Tube t< 5.0 mm

Proof strength;	f_0 =	255	N/mm^2
Ultimate Tensile strength;	f_u =	310	N/mm^2
HAZ proof strength;	$f_{0,haz}$ =	125	N/mm^2
HAZ Ultimate Tensile strength;	$f_{u,haz}$ =	185	N/mm^2
HAZ proof factor;	$r_{0,haz}$ =	0.49	
HAZ Ultimate factor;	$r_{u,haz}$ =	0.64	
Buckling Class;	BC =	A	

Section Classification: (Section 6.1.4)

Outstand;	$b = D - t =$	47.55	mm	
Slenderness parameter (Cl. 6.1.4.3, Eq 6.2);	$b = 0.4(b/t) =$	5.852		
For an internal Class A member without welds:				
	$e = \sqrt{(250\ N/mm^2 / f_0)} =$	0.99		
Therefore using Table 6.2;	$b_1 = 11.0 \times e =$	10.89		
	$b_2 = 16.0 \times e =$	15.84		
	$b_3 = 22.0 \times e =$	21.78		
		Strut is CLASS 1 (B1>B)		

Welded Section Properties: (Section 6.1.6)
For a fully welded section

$t_{0,haz} = r_{0,haz} \times t =$	1.593	mm	
$t_{u,haz} = r_{u,haz} \times t =$	2.080	mm	
$W_{net} = (BD^3 - (B - 2 \times tu,haz)(D - 2 \times t_{u,haz})^3)/12.(2/D) =$	6325	mm^3	
$W_{el,haz} = (BD^3 - (B - 2 \times t0,haz)(D - 2 \times t0_{,haz})^3)/12.(2/D) =$	4985	mm^3	
$W_{pl,haz} = (BD^2 - (B - 2 \times t0,haz)(D - 2 \times t_{0,haz})^2)/4 =$	5786	mm^3	

Capacity Calculations:

Tension: (Section 6.2.3)

Member is welded at its connections to diagonals

a) General yielding along member;	$A_g = A \times r_{0,haz} =$	302.9	mm^2	
Eq: 6.18;	$N_{t,Rd} = g_{rf} \times A_g \times f_0 / g_{M1} =$	58.51	kN	
b) Local failure at HAZ section;	$A_{eff} = A \times r_{u,haz} =$	395.6	mm^2	
Eq: 6.19b;	$N_{u,Rd} = g_{rf} \times A_{eff} \times f_u / g_{M2} =$	81.76	kN	
	Therefore, $N_{t,Rd}$ =	**58.51**	**kN**	**for welded section**

Compression: (Section 6.2.4)

Local failure at HAZ section;	$A_{eff} = A \times r_{0,haz} =$	302.9	mm^2	
Eq: 6.22;	$N_{0,Rd} = g_{rf} \times A_{eff} \times f_0 / g_{M1} =$	58.51	kN	
	Therefore, $N_{c,Rd}$ =	**58.51**	**kN**	**for welded section**

Moment Capacity (Unwelded section): (Section 6.2.5)
Moment Capacity (M_{RD}) is the lesser of $M_{U,RD}$ and $M_{c,RD}$.

Moment Capacity;	$W_{el} = W_{elx} =$	9214	mm^3	
Eq 6.24;	$M_{u,Rd} = g_{rf}.W_{el}.f_u / g_{M2} =$	1.90	kNm	
Moment Capacity;	$W_{pl} = W_{plx} =$	11040	mm^3	
	$a = W_{pl} / W_{el} =$	1.20		
Eq 6.25;	$M_{c,Rd} = g_{rf}.a.W_{el}.f_0 / g_{M1} =$	2.13	kNm	
	Therefore, M_{Rd} =	**1.90**	**kNm**	**for unwelded section**

Moment Capacity (Welded section): (Section 6.2.5)

Moment Capacity;	$W_{net} =$	6325	mm^3	
Eq 6.24;	$M_{u,RD} = g_{rf} \times W_{net} \times f_u / g_{M2} =$	1.31	kNm	
Moment Capacity;	$W_{pl} = W_{pl,haz} =$	5786	mm^3	
	$a = W_{pl} / W_{el} =$	0.63		

Eq 6.25;	$M_{c,Rd} = g_{rf}.a.W_{el}.f_0 / g_{M1}$ =	1.12	kNm		
	Therefore, M_{Rd} =	**1.12**	**kNm**	**for welded section**	

Shear Capacity (Unwelded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;				
For round tube;	h_v =	0.6		
	$A_v = h_v.A$ =	371	mm^2	
Eq 6.29;	$V_{Rd} = g_{rf} .A_v. f_0 / (g_{M1.} 3^{0.5})$ =	41.37	kN	
	Therefore, V_{Rd} =	**41.37**	**kN**	**for unwelded section**

Shear Capacity (Welded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;				
For round tube;	h_v =	0.6		
	$A_e = A \times r_{0,haz}$ =	302.9	mm^2	
	$A_v = h_v \times A_e$ =	182	mm^2	
Eq 6.29;	$V_{RD} = g_{rf} \times A_v \times f_0 / (g_{M1} \times 3^{0.5})$ =	20.27	kN	
	Therefore, V_{Rd} =	**20.27**	**kN**	**for welded section**

Summary of Section Capacities:

Tension;	$N_{t,Rd}$ =	**58.51**	kN	**SATISFACTORY**
Compression;	$N_{0,Rd}$ =	**58.51**	kN	**SATISFACTORY**
Moment (unwelded);	$M_{u,Rd}$ =	**1.90**	kNm	**SATISFACTORY**
Moment (welded);	$M_{u,RD}$ =	**1.12**	kNm	**SATISFACTORY**
Shear (unwelded);	V_{Rd} =	**41.37**	kN	**SATISFACTORY**
Shear (welded);	V_{RD} =	**20.27**	kN	**SATISFACTORY**

Capacity Checks:
Combined Bending and Shear: (Section 6.2.8)

Check shear;	V_{Ed} / V_{RD} =	0.01		
		Therefore, Shear capacity		**SATISFACTORY**
	Shear force influence is;	**INSIGNIFICANT, No further check required**		

Combined Axial and Bending: (Section 6.2.9)

For hollow section (Cl. 6.2.9.2)	y =	1.3		
Accounting for HAZ zone;	$w_0 = (r_{u,haz} \times f_u / g_{M2}) / (f_0 / g_{M1})$ =	0.68		
For Hollow Sections, Eq 6.43;				
	$(N_{Ed} / (w_0 \times N_{0,Rd}))^y$ =	0.47		
	$((My,E_d / (w_0 \times My_{,RD}))^{1.70})^{0.6}$ =	0.08		
	$((Mz,E_d / (w_0 \times Mz_{,RD}))^{1.70})^{0.6}$ =	0.19		
	Total factor =	0.74		
		Therefore, Combined Bending and Axial		**SATISFACTORY**

Compression - Buckling Resistance: (Section 6.3.1)

Length of strut;	L =	594	mm	
Buckling length factor (Table 6.8);	k =	1.00		
Clauses 6.3.1.1 and 6.3.1.3;				
For Class 1 & 2 sections;	$A_{eff} = A$ =	618.2	mm^2	
No logitudinal welds;	*k* =	1.0		

For Class A sections (Table 6.6);	a =	0.20		
	λ_0 =	0.10		
Therefore, buckling length;	Lcr = k x L =	594	mm	
Eq 6.52;	λ =	0.59		
Eq 6.51;	φ =	0.72		
Eq 6.50;	ϟ =	0.88		
Eq 6.49;	$N_{b,Rd} = k \times g_{rf} \times$ ϟ ´ A_{eff} ´ f_0 / g_{M1} =	104.81	kN	
	Therefore, $N_{b,Rd}$ =	**104.81**	**kN**	**for section**

Fillet weld capacity: (Section 8.6)

For 6082 material, assume a filler metal of 4043A.

Therefore from Table 8.8;	f_w =	190	N/mm^2
Where;	g_{Mw} =	1.25	
Fillet weld capacity;	Fillet weld capacity = fw / γMw =	152	N/mm^2

Where a welded connection exists, a fillet weld is to be run around the entire circumference of the CHS member. However, due to the angle at which some tubular members are positioned, and to allow for run on run off of the weld, a 15 mm reduction in weld length should be taken.

Effective weld length;	Lw,eff = π x D - 15 =	144.6	mm
Effective throat thickness;	a =	4	mm
Weld Area;	= Sin45 x Lw,eff x a =	492.1	mm^2
Therefore,	Allowable weld force =	62.34	kN

Calculation Sheet

Aluminium RHS Section Design to Eurocode 9

Location:	25.4 x 25.4 x 3.25 SHS
Section size:	25.4x25.4x3.25

Applied Forces (From analysis results):

Element no:		**729**	from analysis model
Axial;	N_{Ed} =	**0.98**	kN
Bending Moment (y-axis);	$M_{y,Ed}$ =	**0.05**	kNm
Bending Moment (z-axis);	$M_{z,Ed}$ =	**0.12**	kNm
Shear Force;	V_{Ed} =	**0.27**	kN

Partial Safety Factors:

From BS EN 1999 Table 6.1: Partial Safety Factors for Members

Resistance of cross section;	g_{M1} =	1.1	
Resistance of cross section in tension;	g_{M2} =	1.25	

From CWA15902-2, Lifting and load-bearing equipment for stages and other production area within the entertainment industry. Specifications for design, manufacture and for use of aluminium and steel trusses and towers

Allowable load reduction factor;	g_{rf} = 1 / 1.2 =	0.83	

Material Properties: (Section 3.2.5)

Density of aluminium;	r =	2700	kg/m^3
Modulus of elasticity;	E =	70000	N/mm^2
Modulus of rigidity;	G =	27000	N/mm^2

Section Properties:

Outside depth;	D =	25.40	mm;
Outside width;	B =	25.40	mm;
Thickness;	t =	3.25	mm;
Internal depth;	$d = D - 2 \times t$ =	18.90	mm
Internal width;	$b = B - 2 \times t$ =	18.90	mm
Area;	$A = D^2 - d^2$ =	288	mm^2
Inertia x-x;	$I_x = (BD^3 - bd^3) / 12$ =	24053	mm^4
Inertia y-y;	$I_y = (DB^3 - db^3) / 12$ =	24053	mm^4
Radius of gyration x-x;	$r_x = \sqrt{(I_x / A)}$ =	9.14	mm
Radius of gyration y-y;	$r_y = \sqrt{(I_y / A)}$ =	9.14	mm
Elastic Modulus x-x;	$W_{elx} = 2 \times I_x / D$ =	1894	mm^3
Elastic Modulus y-y;	$W_{ely} = 2 \times I_y / B$ =	1894	mm^3
Plastic Modulus x-x;	$W_{plx} = (BD^2 - bd^2) / 4$ =	2409	mm^3
Plastic Modulus y-y;	$W_{ply} = (DB^2 - db^2) / 4$ =	2409	mm^3

Material Properties: (Section 3.2.2)

From BS EN 1991-1-1 **Table 3.2**, 6082 T6 Aluminium alloy, Drawn Tube t< 5.0 mm

Proof strength;	f_0 =	255	N/mm^2
Ultimate Tensile strength;	f_u =	310	N/mm^2
HAZ proof strength;	$f_{0,haz}$ =	125	N/mm^2
HAZ Ultimate Tensile strength;	$f_{u,haz}$ =	185	N/mm^2
HAZ proof factor;	$r_{0,haz}$ =	0.49	
HAZ Ultimate factor;	$r_{u,haz}$ =	0.64	
Buckling Class;	BC =	A	

Section Classification: (Section 6.1.4)

Outstand;	$b = D - t =$	22.15	mm	
Slenderness parameter (Cl. 6.1.4.3, Eq 6.2);	$b = 0.4(b/t) =$	2.726		
For an internal Class A member without welds:				
	$e = \sqrt{(250\ N/mm^2 / f_0)} =$	0.99		
Therefore using Table 6.2;	$b_1 = 11.0 \times e =$	10.89		
	$b_2 = 16.0 \times e =$	15.84		
	$b_3 = 22.0 \times e =$	21.78		
		Strut is CLASS 1 (B1>B)		

Welded Section Properties: (Section 6.1.6)
For a fully welded section

$t_{0,haz} = r_{0,haz} \times t =$	1.593	mm	
$t_{u,haz} = r_{u,haz} \times t =$	2.080	mm	
$W_{net} = (BD^3 - (B - 2 \times tu,haz)(D - 2 \times t_{u,haz})^3)/12.(2/D) =$	1396	mm^3	
$W_{el,haz} = (BD^3 - (B - 2 \times t0,haz)(D - 2 \times t0_{,haz})^3)/12.(2/D) =$	1133	mm^3	
$W_{pl,haz} = (BD^2 - (B - 2 \times t0,haz)(D - 2 \times t_{0,haz})^2)/4 =$	1356	mm^3	

Capacity Calculations:

Tension: (Section 6.2.3)

Member is welded at its connections to diagonals

a) General yielding along member;	$A_g = A \times r_{0,haz} =$	141.1	mm^2	
Eq: 6.18;	$N_{t,Rd} = g_{rf} \times A_g \times f_0 / g_{M1} =$	27.26	kN	
b) Local failure at HAZ section;	$A_{eff} = A \times r_{u,haz} =$	184.3	mm^2	
Eq: 6.19b;	$N_{u,Rd} = g_{rf} \times A_{eff} \times f_u / g_{M2} =$	38.09	kN	
	Therefore, $N_{t,Rd}$ =	**27.26**	**kN**	**for welded section**

Compression: (Section 6.2.4)

Local failure at HAZ section;	$A_{eff} = A \times r_{0,haz} =$	141.1	mm^2	
Eq: 6.22;	$N_{0,Rd} = g_{rf} \times A_{eff} \times f_0 / g_{M1} =$	27.26	kN	
	Therefore, $N_{c,Rd}$ =	**27.26**	**kN**	**for welded section**

Moment Capacity (Unwelded section): (Section 6.2.5)
Moment Capacity (M_{RD}) is the lesser of $M_{U,RD}$ and $M_{c,RD}$.

Moment Capacity;	$W_{el} = W_{elx} =$	1894	mm^3	
Eq 6.24;	$M_{u,Rd} = g_{rf}.W_{el}.f_u / g_{M2} =$	0.39	kNm	
Moment Capacity;	$W_{pl} = W_{plx} =$	2409	mm^3	
	$a = W_{pl} / W_{el} =$	1.27		
Eq 6.25;	$M_{c,Rd} = g_{rf}.a.W_{el}.f_0 / g_{M1} =$	0.47	kNm	
	Therefore, M_{Rd} =	**0.39**	**kNm**	**for unwelded section**

Moment Capacity (Welded section): (Section 6.2.5)

Moment Capacity;	$W_{net} =$	1396	mm^3	
Eq 6.24;	$M_{u,RD} = g_{rf} \times W_{net} \times f_u / g_{M2} =$	0.29	kNm	
Moment Capacity;	$W_{pl} = W_{pl,haz} =$	1356	mm^3	
	$a = W_{pl} / W_{el} =$	0.72		

Eq 6.25;	$M_{c,Rd} = g_{rf}.a.W_{el}.f_0 / g_{M1}$ =	0.26	kNm		
	Therefore, M_{Rd} =	**0.26**	**kNm**	**for welded section**	

Shear Capacity (Unwelded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;				
For round tube;	h_v =	0.6		
	$A_v = h_v.A$ =	173	mm^2	
Eq 6.29;	$V_{Rd} = g_{rf} .A_v. f_0 / (g_{M1.} 3^{0.5})$ =	19.27	kN	
	Therefore, V_{Rd} =	**19.27**	**kN**	**for unwelded section**

Shear Capacity (Welded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;				
For round tube;	h_v =	0.6		
	$A_e = A \cdot r_{0,haz}$ =	141.1	mm^2	
	$A_v = h_v \cdot A_e$ =	85	mm^2	
Eq 6.29;	$V_{RD} = g_{rf} \cdot A_v \cdot f_0 / (g_{M1} \cdot 3^{0.5})$ =	9.44	kN	
	Therefore, V_{Rd} =	**9.44**	**kN**	**for welded section**

Summary of Section Capacities:

Tension;	$N_{t,Rd}$ =	**27.26**	kN	**SATISFACTORY**
Compression;	$N_{0,Rd}$ =	**27.26**	kN	**SATISFACTORY**
Moment (unwelded);	$M_{u,Rd}$ =	**0.39**	kNm	**SATISFACTORY**
Moment (welded);	$M_{u,RD}$ =	**0.26**	kNm	**SATISFACTORY**
Shear (unwelded);	V_{Rd} =	**19.27**	kN	**SATISFACTORY**
Shear (welded);	V_{RD} =	**9.44**	kN	**SATISFACTORY**

Capacity Checks:
Combined Bending and Shear: (Section 6.2.8)

Check shear;	V_{Ed} / V_{RD} =	0.03		
		Therefore, Shear capacity		**SATISFACTORY**
	Shear force influence is;	**INSIGNIFICANT, No further check required**		

Combined Axial and Bending: (Section 6.2.9)

For hollow section (Cl. 6.2.9.2)	y =	1.3		
Accounting for HAZ zone;	$w_0 = (r_{u,haz} \cdot f_u / g_{M2}) / (f_0 / g_{M1})$ =	0.68		
For Hollow Sections, Eq 6.43;				
	$(N_{Ed} / (w_0 \cdot N_{0,Rd}))^y$ =	0.02		
	$((My,E_d / (w_0 \cdot My_{,RD}))^{1.70})^{0.6}$ =	0.18		
	$((Mz,E_d / (w_0 \cdot Mz_{,RD}))^{1.70})^{0.6}$ =	0.44		
	Total factor =	0.64		
		Therefore, Combined Bending and Axial		**SATISFACTORY**

Compression - Buckling Resistance: (Section 6.3.1)

Length of strut;	L =	594	mm	
Buckling length factor (Table 6.8);	k =	1.00		
Clauses 6.3.1.1 and 6.3.1.3;				
For Class 1 & 2 sections;	$A_{eff} = A$ =	288.0	mm^2	
No logitudinal welds;	*k* =	1.0		

For Class A sections (Table 6.6);	a =	0.20		
	λ_0 =	0.10		
Therefore, buckling length;	Lcr = k x L =	594	mm	
Eq 6.52;	λ =	1.25		
Eq 6.51;	φ =	1.39		
Eq 6.50;	ϟ =	0.50		
Eq 6.49;	$N_{b,Rd} = k \times g_{rf} \times ϟ \times A_{eff} \times f_0 / g_{M1}$ =	27.60	kN	
	Therefore, $N_{b,Rd}$ =	**27.60**	**kN**	**for section**

Fillet weld capacity: (Section 8.6)

For 6082 material, assume a filler metal of 4043A.

Therefore from Table 8.8;	f_w =	190	N/mm^2
Where;	g_{Mw} =	1.25	
Fillet weld capacity;	Fillet weld capacity = fw / γMw =	152	N/mm^2

Where a welded connection exists, a fillet weld is to be run around the entire circumference of the CHS member. However, due to the angle at which some tubular members are positioned, and to allow for run on run off of the weld, a 15 mm reduction in weld length should be taken.

Effective weld length;	Lw,eff = π x D - 15 =	64.8	mm
Effective throat thickness;	a =	4	mm
Weld Area;	= Sin45 x Lw,eff x a =	220.5	mm^2
Therefore,	Allowable weld force =	27.94	kN

Aluminium CHS Section Design to Eurocode 9

Location:	38.2x 3.25CHS
Section size:	38.2x3.25

Applied Forces (From analysis results):

Element no:		**230**	
Axial;	N_{Ed} =	**0.02**	kN
Bending Moment (y-axis);	$M_{y,Ed}$ =	**0.01**	kNm
Bending Moment (z-axis);	$M_{z,Ed}$ =	**0.29**	kNm
Shear Force;	V_{Ed} =	**0.09**	kN

Partial Safety Factors:

From BS EN 1999 Table 6.1: Partial Safety Factors for Members

Resistance of cross section;	g_{M1} =	1.1	
Resistance of cross section in tension;	g_{M2} =	1.25	

From CWA15902-2, Lifting and load-bearing equipment for stages and other production area within the entertainment industry. Specifications for design, manufacture and for use of aluminium and steel trusses and towers

Allowable load reduction factor;	g_{rf} = 1 / 1.2 =	0.83	

Material Properties: (Section 3.2.5)

Density of aluminium;	r =	2700	kg/m^3
Modulus of elasticity;	E =	70000	N/mm^2
Modulus of rigidity;	G =	27000	N/mm^2

Section Properties:

Outside diameter;	D =	38.20	mm;
Thickness;	t =	3.25	mm;
Internal diameter;	$d = D - 2 \times t$ =	31.70	mm
Area;	$A = p \times (D^2 - d^2) / 4$ =	357	mm^2
Inertia x-x;	$I_x = p \times (D^4 - d^4) / 64$ =	54957	mm^4
Inertia y-y;	$I_y = I_x$ =	54957	mm^4
Radius of gyration x-x;	$r_x = \sqrt{(I_x / A)}$ =	12.41	mm
Radius of gyration y-y;	$ry = r_x$ =	12.41	mm
Elastic Modulus x-x;	$W_{elx} = 2 \times I_x / D$ =	2877	mm^3
Elastic Modulus y-y;	$W_{ely} = W_{elx}$ =	2877	mm^3
Plastic Modulus x-x;	$W_{plx} = (D^3 - d^3) / 6$ =	3981	mm^3
Plastic Modulus y-y;	$W_{ply} = W_{plx}$ =	3981	mm^3

Material Properties: (Section 3.2.2)

From BS EN 1991-1-1 **Table 3.2**, 6082 T6 Aluminium alloy, Drawn Tube t< 5.0 mm

Proof strength;	f_0 =	255	N/mm^2
Ultimate Tensile strength;	f_u =	310	N/mm^2
HAZ proof strength;	$f_{0,haz}$ =	125	N/mm^2
HAZ Ultimate Tensile strength;	$f_{u,haz}$ =	185	N/mm^2
HAZ proof factor;	$r_{0,haz}$ =	0.49	
HAZ Ultimate factor;	$r_{u,haz}$ =	0.64	
Buckling Class;	BC =	A	

Section Classification: (Section 6.1.4)

Outstand;	$b = D - t$ =	34.95	mm
Slenderness parameter (Cl. 6.1.4.3, Eq 6.10);	$b = 3 \times \sqrt{(b/t)}$ =	9.838	

For an internal Class A member without welds:

	$e = \sqrt{(250\ N/mm^2 / f_0)}$ =	0.99	
Therefore using Table 6.2;	$b_1 = 11.0 \times e$ =	10.89	
	$b_2 = 16.0 \times e$ =	15.84	
	$b_3 = 22.0 \times e$ =	21.78	
		Strut is	**CLASS 1 (B1>B)**

Welded Section Properties: (Section
For a fully welded section

	$t_{0,haz} = r_{0,haz} \times t =$	1.5925	mm	
	$t_{u,haz} = r_{u,haz} \times t =$	2.08	mm	
	$W_{net} = p \times (D^4 - (D - 2 \times t_{u,haz})^4)/(32 \times D) =$	2022	mm^3	
	$W_{el,haz} = p \times (D^4 - (D - 2 \times t_{0,haz})^4)/(32 \times D) =$	1609	mm^3	
	$W_{pl,haz} = (D^3 - (D - 2 \times t_{0,haz})^3)/ 6 =$	2135	mm^3	

Capacity Calculations:

Tension: (Section 6.2.3)

Member is welded at its connections to diagonals

a) General yielding along member;	$A_g = A \times r_{0,haz} =$	174.9	mm^2	
Eq: 6.18;	$N_{t,Rd} = g_{rf} \times A_g \times f_0 / g_{M1} =$	33.78	kN	
b) Local failure at HAZ section;	$A_{eff} = A \times r_{u,haz} =$	228.3812	mm^2	
Eq: 6.19b;	$N_{u,Rd} = g_{rf} \times A_{eff} \times f_u / g_{M2} =$	47.20	kN	
	Therefore, $N_{t,Rd}$ =	**33.78**	**kN**	**for welded section**

Compression: (Section 6.2.4)

Local failure at HAZ section;	$A_{eff} = A \times r_{0,haz} =$	174.8544	mm^2	
Eq: 6.22;	$N_{0,Rd} = g_{rf} \times A_{eff} \times f_0 / g_{M1} =$	33.78	kN	
	Therefore, $N_{c,Rd}$ =	**33.78**	**kN**	**for welded section**

Moment Capacity (Unwelded section): (Section 6.2.5)
Moment Capacity (M_{RD}) is the lesser of $M_{U,RD}$ and $M_{c,RD}$.

Moment Capacity;	$W_{el} = W_{elx} =$	2877	mm^3	
Eq 6.24;	$M_{u,Rd} = g_{rf} \times W_{el} \times f_u / g_{M2} =$	0.59	kNm	
Moment Capacity;	$W_{pl} = W_{plx} =$	3981	mm^3	
	$a = W_{pl} / W_{el} =$	1.38		
Eq 6.25;	$M_{c,Rd} = g_{rf} \times a \times W_{el} \times f_0 / g_{M1} =$	0.77	kNm	
	Therefore, M_{Rd} =	**0.59**	**kNm**	**for unwelded section**

Moment Capacity (Welded section): (Section 6.2.5)

Moment Capacity;	$W_{net} =$	2022	mm^3	
Eq 6.24;	$M_{u,RD} = g_{rf} \times W_{net} \times f_u / g_{M2} =$	0.42	kNm	
Moment Capacity;	$W_{pl} = W_{pl,haz} =$	2135	mm^3	
	$a = W_{pl} / W_{el} =$	0.74		
Eq 6.25;	$M_{c,Rd} = g_{rf} \times a \times W_{el} \times f_0 / g_{M1} =$	0.41	kNm	
	Therefore, M_{Rd} =	**0.41**	**kNm**	**for welded section**

Shear Capacity (Unwelded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_v = h_v \times A =$	214	mm^2	
Eq 6.29;	$V_{Rd} = g_{rf} \times A_v \times f_0 / (g_{M1} \times 3^{0.5}) =$	23.88	kN	
	Therefore, V_{Rd} =	**23.88**	**kN**	**for unwelded section**

Shear Capacity (Welded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_e = A \times r_{0,haz} =$	174.8544	mm^2	
	$A_v = h_v \times A_e =$	105	mm^2	
Eq 6.29;	$V_{RD} = g_{rf} \times A_v \times f_0 / (g_{M1} \times 3^{0.5}) =$	11.70	kN	
	Therefore, V_{Rd} =	**11.70**	**kN**	**for welded section**

Summary of Section Capacities:

Tension;	$N_{t,Rd}$ =	**33.78**	kN	**SATISFACTORY**
Compression;	$N_{0,Rd}$ =	**33.78**	kN	**SATISFACTORY**
Moment (unwelded);	$M_{u,Rd}$ =	**0.59**	kNm	**SATISFACTORY**
Moment (welded);	$M_{u,RD}$ =	**0.41**	kNm	**SATISFACTORY**
Shear (unwelded);	V_{Rd} =	**23.88**	kN	**SATISFACTORY**
Shear (welded);	V_{RD} =	**11.70**	kN	**SATISFACTORY**

Capacity Checks:

Combined Bending and Shear: (Section 6.2.8)

Check shear;	V_{Ed} / V_{RD} =	0.01		
		Therefore, Shear capacity		**SATISFACTORY**
	Shear force influence is;	**INSIGNIFICANT, No further check required**		

Combined Axial and Bending: (Section 6.2.9)

For hollow section (Cl. 6.2.9.2)	y =	1.3		
Accounting for HAZ zone;	$w_0 = (r_{u,haz} \times f_u / g_{M2}) / (f_0 / g_{M1})$ =	0.68		
		0.68		
For Hollow Sections, Eq 6.43;				
	$(N_{Ed} / (w_0 \times N_{0,Rd}))^y$ =	0.00		
	$((My,E_d / (w_0 \times My_{,RD}))^{1.70})^{0.6}$ =	0.02		
	$((Mz,E_d / (w_0 \times Mz_{,RD}))^{1.70})^{0.6}$ =	0.71		
	Total factor =	0.74		
		Therefore, Combined Bending and Axial		**SATISFACTORY**

Compression - Buckling Resistance: (Section 6.3.1)

Length of strut;	L =	200	mm	
Buckling length factor (Table 6.8);	k =	0.85		
Clauses 6.3.1.1 and 6.3.1.3;				
For Class 1 & 2 sections;	A_{eff} = A =	356.8	mm^2	
No logitudinal welds;	*k* =	1.0		
For Class A sections (Table 6.6);	a =	0.20		
	λ_0 =	0.10		
Therefore, buckling length;	Lcr = *k* x L =	170	mm	
Eq 6.52;	λ =	0.26		
Eq 6.51;	φ =	0.55		
Eq 6.50;	ϟ =	0.97		
Eq 6.49;	$N_{b,Rd} = k \times g_{rf} \times ϟ \times A_{eff} \times f_0 / g_{M1}$ =	66.61	kN	
	Therefore, $N_{b,Rd}$ =	**66.61**	**kN**	**for section**
Eq 6.48;	$N_{Ed} / N_{b,Rd}$ =	0.00		
		Therefore, Buckling capacity		**SATISFACTORY**

Fillet weld capacity: (Section 8.6)

For 6082 material, assume a filler metal of 4043A.

Therefore from Table 8.8;	f_w =	190	N/mm^2	
Where;	g_{Mw} =	1.25		
Fillet weld capacity;	Fillet weld capacity = fw / γMw =	152	N/mm^2	

Where a welded connection exists, a fillet weld is to be run around the entire circumference of the CHS member.
However, due to the angle at which some tubular members are positioned, and to allow for run on run off of the weld, a 15 mm reduction in weld length should be taken.

Effective weld length;	Lw,eff = π x D - 15 =	105.0	mm	
Effective throat thickness;	a =	4	mm	
Weld Area;	= Sin45 x Lw,eff x a =	357.4	mm^2	
Therefore,	Allowable weld force =	45.27	kN	
		Therefore, weld connection		**SATISFACTORY**

Aluminium CHS Section Design to Eurocode 9

Location:	25.4 x 3.2 CHS
Section size:	25.4x3.2

Applied Forces (From analysis results):

Element no:		**634**	
Axial;	N_{Ed} =	**1.63**	kN
Bending Moment (y-axis);	$M_{y,Ed}$ =	**0.00**	kNm
Bending Moment (z-axis);	$M_{z,Ed}$ =	**0.00**	kNm
Shear Force;	V_{Ed} =	**0.00**	kN

Partial Safety Factors:

From BS EN 1999 Table 6.1: Partial Safety Factors for Members

Resistance of cross section;	g_{M1} =	1.1
Resistance of cross section in tension;	g_{M2} =	1.25

From CWA15902-2, Lifting and load-bearing equipment for stages and other production area within the entertainment industry. Specifications for design, manufacture and for use of aluminium and steel trusses and towers

Allowable load reduction factor;	$g_{rf} = 1 / 1.2$ =	0.83

Material Properties: (Section 3.2.5)

Density of aluminium;	r =	2700	kg/m^3
Modulus of elasticity;	E =	70000	N/mm^2
Modulus of rigidity;	G =	27000	N/mm^2

Section Properties:

Outside diameter;	D =	25.40	mm;
Thickness;	t =	3.20	mm;
Internal diameter;	$d = D - 2 \times t$ =	19.00	mm
Area;	$A = p \times (D^2 - d^2) / 4$ =	223	mm^2
Inertia x-x;	$I_x = p \times (D^4 - d^4) / 64$ =	14035	mm^4
Inertia y-y;	$I_y = I_x$ =	14035	mm^4
Radius of gyration x-x;	$r_x = \sqrt{(I_x / A)}$ =	7.93	mm
Radius of gyration y-y;	$ry = r_x$ =	7.93	mm
Elastic Modulus x-x;	$W_{elx} = 2 \times I_x / D$ =	1105	mm^3
Elastic Modulus y-y;	$W_{ely} = W_{elx}$ =	1105	mm^3
Plastic Modulus x-x;	$W_{plx} = (D^3 - d^3) / 6$ =	1588	mm^3
Plastic Modulus y-y;	$W_{ply} = W_{plx}$ =	1588	mm^3

Material Properties: (Section 3.2.2)

From BS EN 1991-1-1 **Table 3.2**, 6082 T6 Aluminium alloy, Drawn Tube t< 5.0 mm

Proof strength;	f_0 =	255	N/mm^2
Ultimate Tensile strength;	f_u =	310	N/mm^2
HAZ proof strength;	$f_{0,haz}$ =	125	N/mm^2
HAZ Ultimate Tensile strength;	$f_{u,haz}$ =	185	N/mm^2
HAZ proof factor;	$r_{0,haz}$ =	0.49	
HAZ Ultimate factor;	$r_{u,haz}$ =	0.64	
Buckling Class;	BC =	A	

Section Classification: (Section 6.1.4)

Outstand;	$b = D - t$ =	22.20	mm
Slenderness parameter (Cl. 6.1.4.3, Eq 6.10);	$b = 3 \times \sqrt{(b/t)}$ =	7.902	

For an internal Class A member without welds:

	$e = \sqrt{(250\ N/mm^2 / f_0)}$ =	0.99
Therefore using Table 6.2;	$b_1 = 11.0 \times e$ =	10.89
	$b_2 = 16.0 \times e$ =	15.84
	$b_3 = 22.0 \times e$ =	21.78

Strut is CLASS 1 (B1>B)

Welded Section Properties: (Section
For a fully welded section

	$t_{0,haz} = r_{0,haz} \times t =$	1.568	mm	
	$t_{u,haz} = r_{u,haz} \times t =$	2.048	mm	
	$W_{net} = p \times (D^4 - (D - 2 \times t_{u,haz})^4)/(32 \times D) =$	813	mm^3	
	$W_{el,haz} = p \times (D^4 - (D - 2 \times t_{0,haz})^4)/(32 \times D) =$	659	mm^3	
	$W_{pl,haz} = (D^3 - (D - 2 \times t_{0,haz})^3)/ 6 =$	892	mm^3	

Capacity Calculations:

Tension: (Section 6.2.3)

Member is welded at its connections to diagonals

a) General yielding along member;	$A_g = A \times r_{0,haz} =$	109.4	mm^2	
Eq: 6.18;	$N_{t,Rd} = \gamma_{rf} \times A_g \times f_0 / \gamma_{M1} =$	21.13	kN	
b) Local failure at HAZ section;	$A_{eff} = A \times r_{u,haz} =$	142.8344	mm^2	
Eq: 6.19b;	$N_{u,Rd} = \gamma_{rf} \times A_{eff} \times f_u / \gamma_{M2} =$	29.52	kN	
	Therefore, $N_{t,Rd}$ =	**21.13**	**kN**	**for welded section**

Compression: (Section 6.2.4)

Local failure at HAZ section;	$A_{eff} = A \times r_{0,haz} =$	109.3576	mm^2	
Eq: 6.22;	$N_{0,Rd} = \gamma_{rf} \times A_{eff} \times f_0 / \gamma_{M1} =$	21.13	kN	
	Therefore, $N_{c,Rd}$ =	**21.13**	**kN**	**for welded section**

Moment Capacity (Unwelded section): (Section 6.2.5)
Moment Capacity (M_{RD}) is the lesser of $M_{U,RD}$ and $M_{c,RD}$.

Moment Capacity;	$W_{el} = W_{elx} =$	1105	mm^3	
Eq 6.24;	$M_{u,Rd} = \gamma_{rf} \times W_{el} \times f_u / \gamma_{M2} =$	0.23	kNm	
Moment Capacity;	$W_{pl} = W_{plx} =$	1588	mm^3	
	$a = W_{pl} / W_{el} =$	1.44		
Eq 6.25;	$M_{c,Rd} = \gamma_{rf} \times a \times W_{el} \times f_0 / \gamma_{M1} =$	0.31	kNm	
	Therefore, M_{Rd} =	**0.23**	**kNm**	**for unwelded section**

Moment Capacity (Welded section): (Section 6.2.5)

Moment Capacity;	$W_{net} =$	813	mm^3	
Eq 6.24;	$M_{u,RD} = \gamma_{rf} \times W_{net} \times f_u / \gamma_{M2} =$	0.17	kNm	
Moment Capacity;	$W_{pl} = W_{pl,haz} =$	892	mm^3	
	$a = W_{pl} / W_{el} =$	0.81		
Eq 6.25;	$M_{c,Rd} = \gamma_{rf} \times a \times W_{el} \times f_0 / \gamma_{M1} =$	0.17	kNm	
	Therefore, M_{Rd} =	**0.17**	**kNm**	**for welded section**

Shear Capacity (Unwelded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_v = h_v \times A =$	134	mm^2	
Eq 6.29;	$V_{Rd} = \gamma_{rf} \times A_v \times f_0 / (\gamma_{M1} \times 3^{0.5}) =$	14.94	kN	
	Therefore, V_{Rd} =	**14.94**	**kN**	**for unwelded section**

Shear Capacity (Welded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_e = A \times r_{0,haz} =$	109.3576	mm^2	
	$A_v = h_v \times A_e =$	66	mm^2	
Eq 6.29;	$V_{RD} = \gamma_{rf} \times A_v \times f_0 / (\gamma_{M1} \times 3^{0.5}) =$	7.32	kN	
	Therefore, V_{Rd} =	**7.32**	**kN**	**for welded section**

Summary of Section Capacities:

Tension;	$N_{t,Rd}$ =	**21.13**	kN	**SATISFACTORY**
Compression;	$N_{0,Rd}$ =	**21.13**	kN	**SATISFACTORY**
Moment (unwelded);	$M_{u,Rd}$ =	**0.23**	kNm	**SATISFACTORY**
Moment (welded);	$M_{u,RD}$ =	**0.17**	kNm	**SATISFACTORY**
Shear (unwelded);	V_{Rd} =	**14.94**	kN	**SATISFACTORY**
Shear (welded);	V_{RD} =	**7.32**	kN	**SATISFACTORY**

Capacity Checks:

Combined Bending and Shear: (Section 6.2.8)

Check shear;	V_{Ed} / V_{RD} =	0.00		
		Therefore, Shear capacity		**SATISFACTORY**
	Shear force influence is;	**INSIGNIFICANT, No further check required**		

Combined Axial and Bending: (Section 6.2.9)

For hollow section (Cl. 6.2.9.2)	y =	1.3		
Accounting for HAZ zone;	$w_0 = (r_{u,haz} \times f_u / g_{M2}) / (f_0 / g_{M1})$ =	0.68		
		0.68		
For Hollow Sections, Eq 6.43;				
	$(N_{Ed} / (w_0 \times N_{0,Rd}))^y$ =	0.06		
	$((My,E_d / (w_0 \times My_{,RD}))^{1.70})^{0.6}$ =	0.00		
	$((Mz,E_d / (w_0 \times Mz_{,RD}))^{1.70})^{0.6}$ =	0.00		
	Total factor =	0.06		
		Therefore, Combined Bending and Axial		**SATISFACTORY**

Compression - Buckling Resistance: (Section 6.3.1)

Length of strut;	L =	500	mm	
Buckling length factor (Table 6.8);	k =	0.85		
Clauses 6.3.1.1 and 6.3.1.3;				
For Class 1 & 2 sections;	A_{eff} = A =	223.2	mm^2	
No logitudinal welds;	*k* =	1.0		
For Class A sections (Table 6.6);	a =	0.20		
	λ_0 =	0.10		
Therefore, buckling length;	Lcr = *k* x L =	425	mm	
Eq 6.52;	λ =	1.03		
Eq 6.51;	φ =	1.12		
Eq 6.50;	ϟ =	0.64		
Eq 6.49;	$N_{b,Rd} = k \times g_{rf} \times ϟ \times A_{eff} \times f_0 / g_{M1}$ =	27.44	kN	
	Therefore, $N_{b,Rd}$ =	**27.44**	**kN**	**for section**
Eq 6.48;	$N_{Ed} / N_{b,Rd}$ =	0.06		
		Therefore, Buckling capacity		**SATISFACTORY**

Fillet weld capacity: (Section 8.6)

For 6082 material, assume a filler metal of 4043A.

Therefore from Table 8.8;	f_w =	190	N/mm^2	
Where;	g_{Mw} =	1.25		
Fillet weld capacity;	Fillet weld capacity = fw / γMw =	152	N/mm^2	

Where a welded connection exists, a fillet weld is to be run around the entire circumference of the CHS member.
However, due to the angle at which some tubular members are positioned, and to allow for run on run off of the weld, a 15 mm reduction in weld length should be taken.

Effective weld length;	Lw,eff = π x D - 15 =	64.8	mm	
Effective throat thickness;	a =	4	mm	
Weld Area;	= Sin45 x Lw,eff x a =	220.5	mm^2	
Therefore,	Allowable weld force =	27.94	kN	
		Therefore, weld connection		**SATISFACTORY**

Aluminium CHS Section Design to Eurocode 9

Location:	48.3 x 3.25 CHS
Section size:	48 x 3.25

Applied Forces (From analysis results):

Element no:		**567**	
Axial;	N_{Ed} =	**4.02**	kN
Bending Moment (y-axis);	$M_{y,Ed}$ =	**0.09**	kNm
Bending Moment (z-axis);	$M_{z,Ed}$ =	**0.04**	kNm
Shear Force;	V_{Ed} =	**0.49**	kN

Partial Safety Factors:

From BS EN 1999 Table 6.1: Partial Safety Factors for Members

Resistance of cross section;	g_{M1} =	1.1
Resistance of cross section in tension;	g_{M2} =	1.25

From CWA15902-2, Lifting and load-bearing equipment for stages and other production area within the entertainment industry. Specifications for design, manufacture and for use of aluminium and steel trusses and towers

Allowable load reduction factor;	$g_{rf} = 1 / 1.2$ =	0.83

Material Properties: (Section 3.2.5)

Density of aluminium;	r =	2700	kg/m^3
Modulus of elasticity;	E =	70000	N/mm^2
Modulus of rigidity;	G =	27000	N/mm^2

Section Properties:

Outside diameter;	D =	48.30	mm;
Thickness;	t =	3.25	mm;
Internal diameter;	$d = D - 2 \times t$ =	41.80	mm
Area;	$A = p \times (D^2 - d^2) / 4$ =	460	mm^2
Inertia x-x;	$I_x = p \times (D^4 - d^4) / 64$ =	117296	mm^4
Inertia y-y;	$I_y = I_x$ =	117296	mm^4
Radius of gyration x-x;	$r_x = \sqrt{(I_x / A)}$ =	15.97	mm
Radius of gyration y-y;	$ry = r_x$ =	15.97	mm
Elastic Modulus x-x;	$W_{elx} = 2 \times I_x / D$ =	4857	mm^3
Elastic Modulus y-y;	$W_{ely} = W_{elx}$ =	4857	mm^3
Plastic Modulus x-x;	$W_{plx} = (D^3 - d^3) / 6$ =	6607	mm^3
Plastic Modulus y-y;	$W_{ply} = W_{plx}$ =	6607	mm^3

Material Properties: (Section 3.2.2)

From BS EN 1991-1-1 **Table 3.2**, 6082 T6 Aluminium alloy, Drawn Tube t< 5.0 mm

Proof strength;	f_0 =	255	N/mm^2
Ultimate Tensile strength;	f_u =	310	N/mm^2
HAZ proof strength;	$f_{0,haz}$ =	125	N/mm^2
HAZ Ultimate Tensile strength;	$f_{u,haz}$ =	185	N/mm^2
HAZ proof factor;	$r_{0,haz}$ =	0.49	
HAZ Ultimate factor;	$r_{u,haz}$ =	0.64	
Buckling Class;	BC =	A	

Section Classification: (Section 6.1.4)

Outstand;	$b = D - t$ =	45.05	mm
Slenderness parameter (Cl. 6.1.4.3, Eq 6.10);	$b = 3 \times \sqrt{(b/t)}$ =	11.169	

For an internal Class A member without welds:

	$e = \sqrt{(250\ N/mm^2 / f_0)}$ =	0.99
Therefore using Table 6.2;	$b_1 = 11.0 \times e$ =	10.89
	$b_2 = 16.0 \times e$ =	15.84
	$b_3 = 22.0 \times e$ =	21.78

Strut is CLASS 2 (B1<B)

Welded Section Properties: (Section
For a fully welded section

	$t_{0,haz} = r_{0,haz} \times t =$	1.5925	mm	
	$t_{u,haz} = r_{u,haz} \times t =$	2.08	mm	
	$W_{net} = p \times (D^4 - (D - 2 \times t_{u,haz})^4)/(32 \times D) =$	3346	mm^3	
	$W_{el,haz} = p \times (D^4 - (D - 2 \times t_{0,haz})^4)/(32 \times D) =$	2642	mm^3	
	$W_{pl,haz} = (D^3 - (D - 2 \times t_{0,haz})^3)/ 6 =$	3476	mm^3	

Capacity Calculations:

Tension: (Section 6.2.3)

Member is welded at its connections to diagonals

a) General yielding along member;	$A_g = A \times r_{0,haz} =$	225.4	mm^2	
Eq: 6.18;	$N_{t,Rd} = g_{rf} \times A_g \times f_0 / g_{M1} =$	43.54	kN	
b) Local failure at HAZ section;	$A_{eff} = A \times r_{u,haz} =$	294.3798	mm^2	
Eq: 6.19b;	$N_{u,Rd} = g_{rf} \times A_{eff} \times f_u / g_{M2} =$	60.84	kN	
	Therefore, $N_{t,Rd}$ =	**43.54**	**kN**	**for welded section**

Compression: (Section 6.2.4)

Local failure at HAZ section;	$A_{eff} = A \times r_{0,haz} =$	225.3845	mm^2	
Eq: 6.22;	$N_{0,Rd} = g_{rf} \times A_{eff} \times f_0 / g_{M1} =$	43.54	kN	
	Therefore, $N_{c,Rd}$ =	**43.54**	**kN**	**for welded section**

Moment Capacity (Unwelded section): (Section 6.2.5)
Moment Capacity (M_{RD}) is the lesser of $M_{U,RD}$ and $M_{c,RD}$.

Moment Capacity;	$W_{el} = W_{elx} =$	4857	mm^3	
Eq 6.24;	$M_{u,Rd} = g_{rf} \times W_{el} \times f_u / g_{M2} =$	1.00	kNm	
Moment Capacity;	$W_{pl} = W_{plx} =$	6607	mm^3	
	$a = W_{pl} / W_{el} =$	1.36		
Eq 6.25;	$M_{c,Rd} = g_{rf} \times a \times W_{el} \times f_0 / g_{M1} =$	1.28	kNm	
	Therefore, M_{Rd} =	**1.00**	**kNm**	**for unwelded section**

Moment Capacity (Welded section): (Section 6.2.5)

Moment Capacity;	$W_{net} =$	3346	mm^3	
Eq 6.24;	$M_{u,RD} = g_{rf} \times W_{net} \times f_u / g_{M2} =$	0.69	kNm	
Moment Capacity;	$W_{pl} = W_{pl,haz} =$	3476	mm^3	
	$a = W_{pl} / W_{el} =$	0.72		
Eq 6.25;	$M_{c,Rd} = g_{rf} \times a \times W_{el} \times f_0 / g_{M1} =$	0.67	kNm	
	Therefore, M_{Rd} =	**0.67**	**kNm**	**for welded section**

Shear Capacity (Unwelded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_v = h_v \times A =$	276	mm^2	
Eq 6.29;	$V_{Rd} = g_{rf} \times A_v \times f_0 / (g_{M1} \times 3^{0.5}) =$	30.78	kN	
	Therefore, V_{Rd} =	**30.78**	**kN**	**for unwelded section**

Shear Capacity (Welded Section): (Section 6.2.6)

Shear Capacity for non-slender sections ;

For round tube;	$h_v =$	0.6		
	$A_e = A \times r_{0,haz} =$	225.3845	mm^2	
	$A_v = h_v \times A_e =$	135	mm^2	
Eq 6.29;	$V_{RD} = g_{rf} \times A_v \times f_0 / (g_{M1} \times 3^{0.5}) =$	15.08	kN	
	Therefore, V_{Rd} =	**15.08**	**kN**	**for welded section**

Summary of Section Capacities:

Tension;	$N_{t,Rd}$ =	**43.54**	kN	**SATISFACTORY**
Compression;	$N_{0,Rd}$ =	**43.54**	kN	**SATISFACTORY**
Moment (unwelded);	$M_{u,Rd}$ =	**1.00**	kNm	**SATISFACTORY**
Moment (welded);	$M_{u,RD}$ =	**0.67**	kNm	**SATISFACTORY**
Shear (unwelded);	V_{Rd} =	**30.78**	kN	**SATISFACTORY**
Shear (welded);	V_{RD} =	**15.08**	kN	**SATISFACTORY**

Capacity Checks:

Combined Bending and Shear: (Section 6.2.8)

Check shear;	V_{Ed} / V_{RD} =	0.03		

Therefore, Shear capacity SATISFACTORY

Shear force influence is; INSIGNIFICANT, No further check required

Combined Axial and Bending: (Section 6.2.9)

For hollow section (Cl. 6.2.9.2)	y =	1.3	
Accounting for HAZ zone;	$w_0 = (r_{u,haz} \times f_u / g_{M2}) / (f_0 / g_{M1})$ =	0.68	
		0.68	
For Hollow Sections, Eq 6.43;			
	$(N_{Ed} / (w_0 \times N_{0,Rd}))^y$ =	0.07	
	$((My,E_d / (w_0 \times My_{,RD}))^{1.70})^{0.6}$ =	0.13	
	$((Mz,E_d / (w_0 \times Mz_{,RD}))^{1.70})^{0.6}$ =	0.06	
	Total factor =	0.26	

Therefore, Combined Bending and Axial SATISFACTORY

Compression - Buckling Resistance: (Section 6.3.1)

Length of strut;	L =	500	mm	
Buckling length factor (Table 6.8);	k =	0.85		
Clauses 6.3.1.1 and 6.3.1.3;				
For Class 1 & 2 sections;	A_{eff} = A =	460.0	mm^2	
No logitudinal welds;	*k* =	1.0		
For Class A sections (Table 6.6);	a =	0.20		
	λ_0 =	0.10		
Therefore, buckling length;	Lcr = *k* x L =	425	mm	
Eq 6.52;	λ =	0.51		
Eq 6.51;	φ =	0.67		
Eq 6.50;	ϟ =	0.90		
Eq 6.49;	$N_{b,Rd} = k \times g_{rf} \times ϟ \times A_{eff} \times f_0 / g_{M1}$ =	80.22	kN	
	Therefore, $N_{b,Rd}$ =	**80.22**	**kN**	**for section**
Eq 6.48;	$N_{Ed} / N_{b,Rd}$ =	0.05		

Therefore, Buckling capacity SATISFACTORY

Fillet weld capacity: (Section 8.6)

For 6082 material, assume a filler metal of 4043A.

Therefore from Table 8.8;	f_w =	190	N/mm^2
Where;	g_{Mw} =	1.25	
Fillet weld capacity;	Fillet weld capacity = fw / γMw =	152	N/mm^2

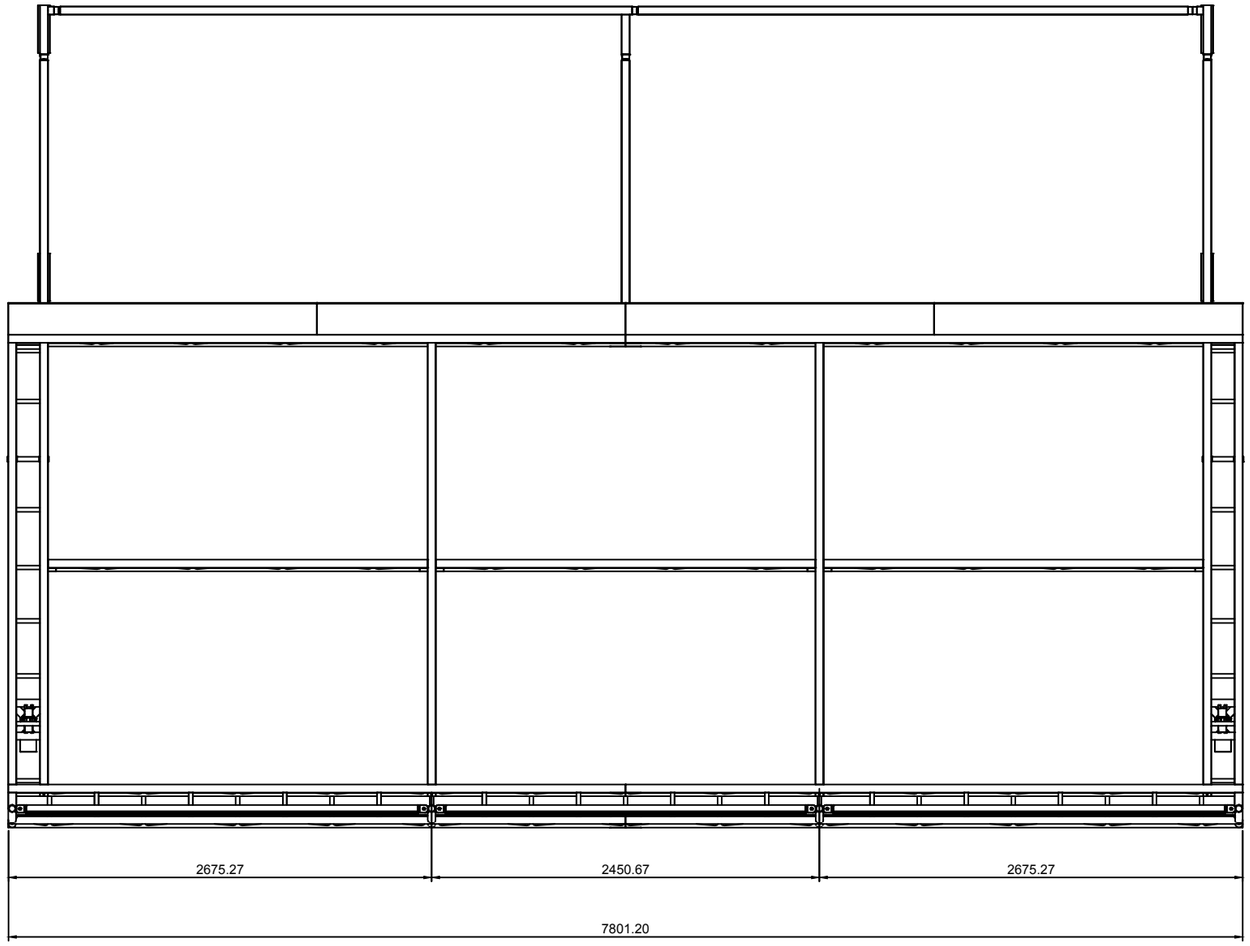
Where a welded connection exists, a fillet weld is to be run around the entire circumference of the CHS member.
However, due to the angle at which some tubular members are positioned, and to allow for run on run off of the weld, a 15 mm reduction in weld length should be taken.

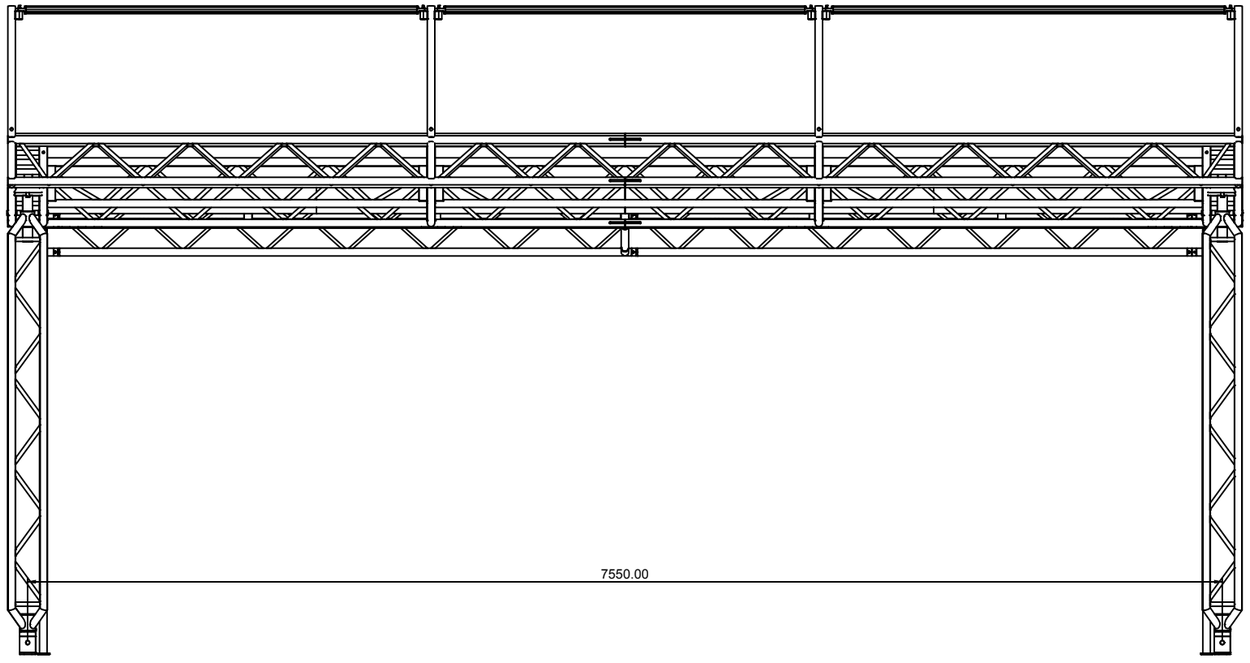
Effective weld length;	Lw,eff = π x D - 15 =	136.7	mm	
Effective throat thickness;	a =	4	mm	
Weld Area;	= Sin45 x Lw,eff x a =	465.4	mm^2	
Therefore,	Allowable weld force =	58.95	kN	

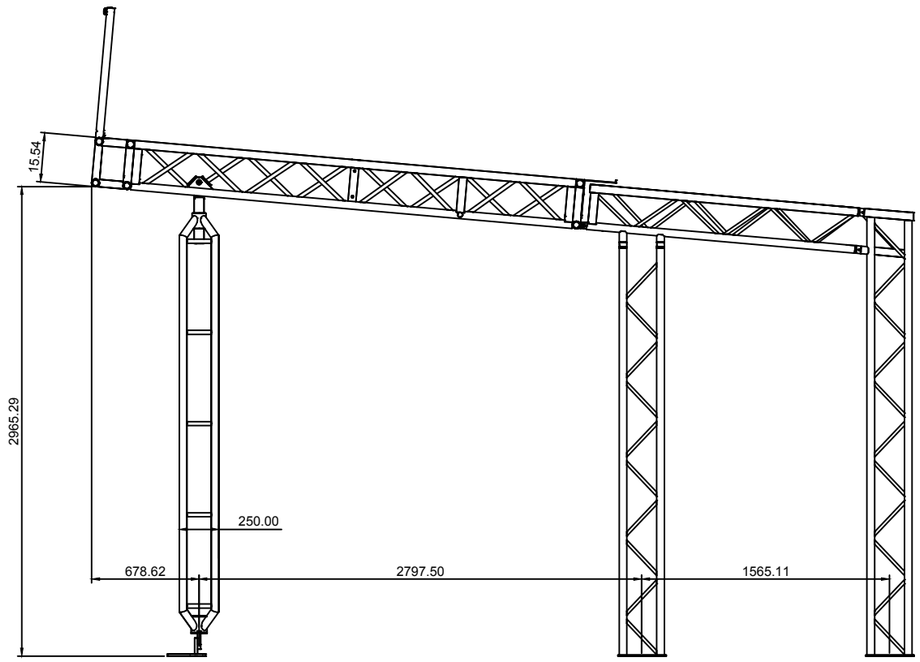
Therefore, weld connection SATISFACTORY

Appendix C
Structural Arrangement Drawings

REF	NOTE







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QUALITY & TESTING REQUIREMENTS: NON BUTT WELDS	
EXECUTION CLASS	EXC2
SERVICE CATEGORY	SC1
QUALITY LEVEL ACC. TO EN ISO 10042:2005	C
EXTENT OF NDT	5%

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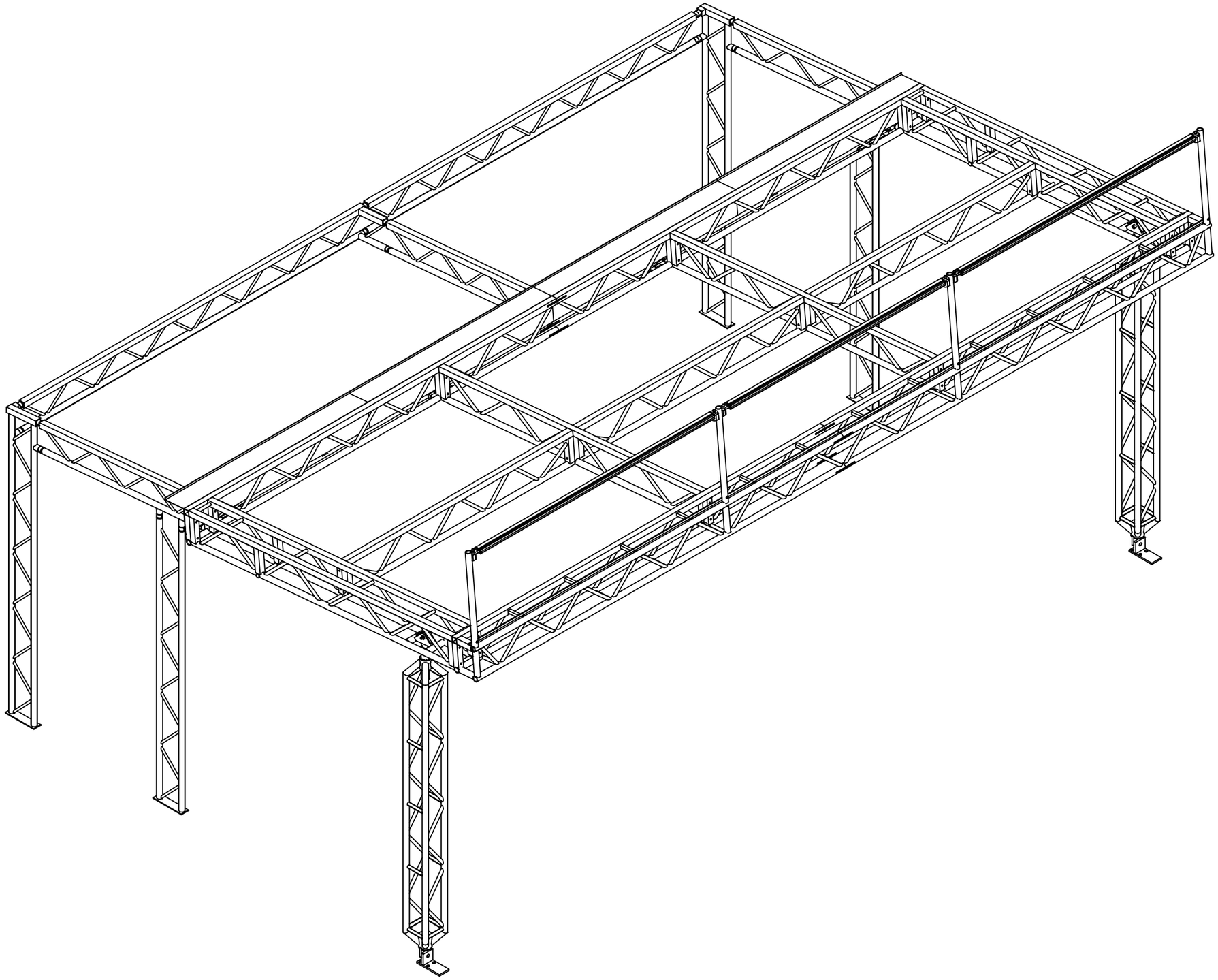
REV	DATE	DRN	DESCRIPTION	APP'D
-	26.08.16	MP	ORIGINAL	

TITLE : DAYTONA STAGE HIRE - DS40 STAGE

SIZE : A1 | SCALE : 1:20 | DRG REF : DS40-01-01 | REV : -

REF	NOTE



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QUALITY & TESTING REQUIREMENTS: NON BUTT WELDS	
EXECUTION CLASS	EXC2
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QUALITY LEVEL ACC. TO EN ISO 10042:2005	C
EXTENT OF NDT	5%

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REV	DATE	DRN	DESCRIPTION	APPD
-	26.08.16	MP	ORIGINAL	

TITLE : DAYTONA STAGE HIRE - DS40 STAGE

SIZE : A1 | SCALE : - | DRG REF : DS40-01-02 | REV : -