CALCULATION PACKAGE
LIGHT GAUGE STEEL

RELEVANT STANDARDS:
National Construction Code (NCC)
AS/NZS 1170 series: Minimum Design Loads On Structures

AS/NZS 4600-2018: ColdFormed Steel Structures
OTHER REFERENCES:
NASH Handbook: Residential and Low-Rise Steel Framing (2009), Part 1: Design Criteria
CALCULATION BASIS:
AS/NZS 4600-2018 Section 7: Direct Strength Method

Use of these calculations is subject to the NOTES and DISCLAIMERS detailed on page C2
These calculations do not imply certification.
All designs must be certified by an independant, suitably qualified engineer registered according to legislation in your state or region.

*** PRELIMINARY - NOT FOR DISTRIBUTION ***

NOTES

- Analysis considers Lip Cuts in profiles at connections
- Alalysis does not consider Web Notches in profiles
- Additional reinforcing members are required where web notches are used at nodes
- Analysis does not consider penetrations in sections apart from those required for connection fixings
- This tool does not check geometry requirements such as maximum span, overhang or roof pitch in NASH standard section 6.2.7

DISCLAIMERS

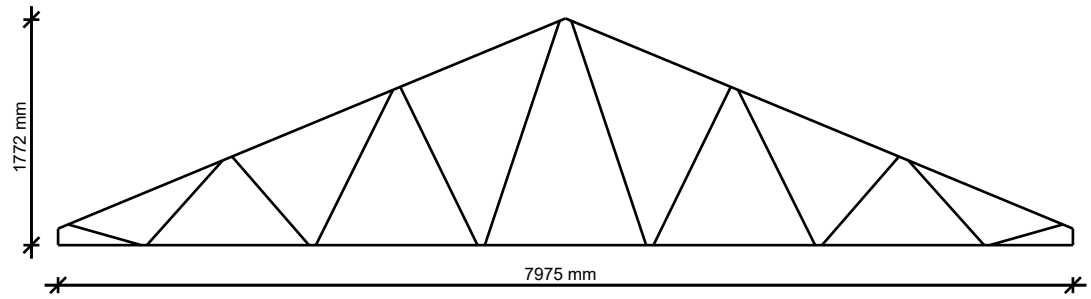
MEMBER INFORMATION *** PRELIMINARY, NOT FOR DISTRIBUTION ***

Job ID: Demo | Roof Load Type: Metal | Date: 19/10/23 | Member: mem1

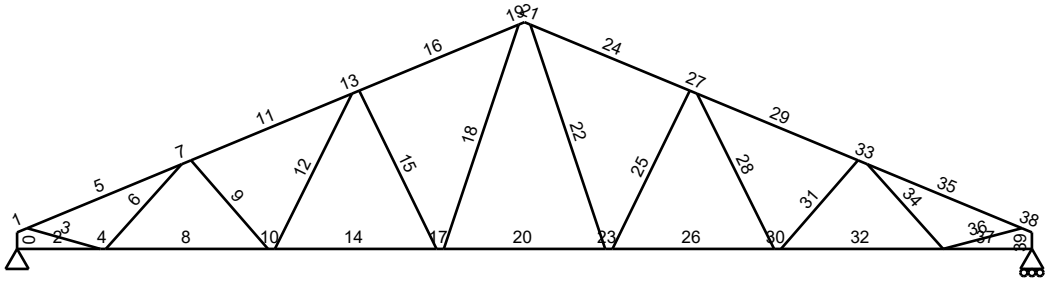
Wind Rating: N3 | Spacing (mm): 1200 | Ceiling Type: Plaster | Page: 1/2

OVERALL ASSESEMENT: Strength PASS, Deflection PASS, Connections with extra screws PASS

MEMBER GEOMETRY



ENGINEERING MODEL (FOR NON-LINEAR ANALYSIS)



LOAD CASES

Case:	Type:
G	Dead
Q1	Live
Q2	Concentrated
Fsn	Snow
Wu	Wind Up
Wd	Wind Down

DESIGN LOADS

Case:	Load:
G	0.12 TOP, 0.14 BTM kPa
Q1	0.25 kPa
Q2	1.1 kN
Fsn	0 kPa
Wu	-1.5 kPa
Wd	0.54 kPa

LOAD COMBINATIONS

Case:	Combination:	Case:	Combination:
LC1	0.44Wu	LC7	1.2G + Wd
LC2	G	LC8	0.9G + Wu
LC3	Q2	LC9	1.2G + Fsn
LC4	1.35G		
LC5	1.2G + 1.5Q1		
LC6	1.2G + 1.5ksQ2		

SECTIONS

Size:	Grade:	fy nom. (MPa):	fy adopted (MPa):	Depth (mm):	Width (mm):	Lip (mm):	Thickness (mm):
C089115	AS 1397: G550	550	500	89.00	41.00	11.00	1.15

SECTION PROPERTIES

Size:	Nt (kN):	Nt.lc (kN):	Ny (kN):	Ny.lc (kN):	My (kNm):	My.lc (kNm):	Vv (kN):
C089115 - YY	108.00	99.65	108.00	99.65	1.90	1.88	18.37

Note: The axis for Moment capacities is indicated by YY (weak) or XX (strong). Properties where lips are cut at nodes is denoted as lc.

ELASTIC BUCKLING PROPERTIES

Size:	Noc* (kN):	Nol (kN):	Nod (kN):	Mo* (kNm):	Mol (kNm):	Mod (kNm):
C089115 - YY	24.26	39.47	61.36	18.19	1.53	20.17

Note: The axis for Moment capacities is indicated by YY (weak) or XX (strong). *Noc, Mo depend on length with MIN values shown.

MEMBER DESIGN

			Compression (kN) - cl 7.2.1:						Tension (kN) - cl 3.2.1:				Shear (kN) - cl x:			
Part:	Size:	Length:	Case:	-N*:	phiNce:	phiNcl:	phiNcd:	(%):	Case:	+N*:	phiNt:	(%):	Case:	V*:	phiVv:	(%):
0	C089115	0.130	LC8	-6.3	55.1	39.6	53.7	17	LC7	4.7	66.8	7	LC8	0.0	16.5	1
1	C089115	0.086	LC8	-2.7	55.1	39.6	53.7	7	LC7	2.0	66.8	3	LC8	0.0	16.5	1
2	C089115	0.654	LC7	-0.2	55.1	39.6	53.7	1	LC8	0.3	66.8	1	LC8	0.0	16.5	1
3	C089115	0.597	LC7	-6.6	55.1	39.6	53.7	17	LC8	8.5	66.8	13	LC8	0.0	16.5	1
4	C089115	0.044	LC7	-6.5	55.1	39.6	53.7	17	LC8	8.5	66.8	13	LC4	0.0	16.5	1
5	C089115	1.314	LC8	-9.3	32.2	27.7	53.7	34	LC7	7.1	66.8	11	LC8	0.0	16.5	1
6	C089115	0.893	LC8	-3.5	53.5	38.9	53.7	9	LC7	2.1	66.8	4	LC8	0.0	16.5	1
7	C089115	0.080	LC8	-11.6	55.1	39.6	53.7	30	LC7	8.6	66.8	13	LC8	0.0	16.5	1
8	C089115	1.275	LC7	-7.9	34.7	29.2	53.7	28	LC8	10.8	66.8	17	LC4	0.0	16.5	1
9	C089115	0.922	LC8	-1.5	53.5	38.9	53.7	4	LC7	0.8	66.8	2	LC8	0.0	16.5	1
10	C089115	0.054	LC7	-7.4	55.1	39.6	53.7	19	LC8	9.8	66.8	15	LC8	0.0	16.5	1
11	C089115	1.369	LC8	-11.1	29.9	26.4	53.7	43	LC7	8.3	66.8	13	LC8	0.0	16.5	1
12	C089115	1.362	LC7	-1.2	29.9	26.4	53.7	5	LC8	1.2	66.8	2	LC8	0.0	16.5	1
13	C089115	0.061	LC8	-9.3	55.1	39.6	53.7	24	LC7	7.0	66.8	11	LC8	0.0	16.5	1
14	C089115	1.270	LC7	-6.9	34.7	29.2	53.7	24	LC8	9.2	66.8	14	LC8	0.0	16.5	1
15	C089115	1.384	LC8	-2.8	29.9	26.4	53.7	11	LC7	1.8	66.8	3	LC8	0.0	16.5	1
16	C089115	1.357	LC8	-9.1	29.9	26.4	53.7	35	LC7	6.8	66.8	11	LC8	0.0	16.5	1
17	C089115	0.057	LC7	-6.1	55.1	39.6	53.7	16	LC8	8.0	66.8	12	LC8	0.0	16.5	1
18	C089115	1.858	LC7	-2.0	18.1	18.1	53.7	11	LC8	2.3	66.8	4	LC8	0.0	16.5	1
19	C089115	0.049	LC8	-6.7	55.1	39.6	53.7	18	LC7	5.0	66.8	8	LC8	0.0	16.5	1
20	C089115	1.268	LC7	-5.4	34.7	29.2	53.7	19	LC8	7.3	66.8	11	LC8	0.0	16.5	1
21	C089115	0.049	LC8	-6.7	55.1	39.6	53.7	17	LC7	5.0	66.8	8	LC8	0.0	16.5	1
22	C089115	1.858	LC7	-2.0	18.1	18.1	53.7	12	LC8	2.3	66.8	4	LC8	0.0	16.5	1
23	C089115	0.057	LC7	-6.1	55.1	39.6	53.7	16	LC8	8.0	66.8	12	LC8	0.0	16.5	1
24	C089115	1.357	LC8	-8.2	29.9	26.4	53.7	32	LC7	6.4	66.8	10	LC8	0.0	16.5	1
25	C089115	1.384	LC8	-2.8	29.9	26.4	53.7	11	LC7	1.8	66.8	3	LC8	0.0	16.5	1
26	C089115	1.270	LC7	-6.9	34.7	29.2	53.7	24	LC8	9.2	66.8	14	LC8	0.0	16.5	1

27	C089115	0.061	LC8	-9.3	55.1	39.6	53.7	24	LC7	6.9	66.8	11	LC8	0.0	16.5	1
28	C089115	1.362	LC7	-1.2	29.9	26.4	53.7	5	LC8	1.2	66.8	2	LC4	0.0	16.5	1
29	C089115	1.369	LC8	-10.2	29.9	26.4	53.7	39	LC7	7.9	66.8	12	LC8	0.0	16.5	1
30	C089115	0.054	LC7	-7.4	55.1	39.6	53.7	19	LC8	9.8	66.8	15	LC8	0.0	16.5	1
31	C089115	0.922	LC8	-1.5	53.5	38.9	53.7	4	LC7	0.8	66.8	2	LC8	0.0	16.5	1
32	C089115	1.275	LC7	-7.9	34.7	29.2	53.7	28	LC8	10.8	66.8	17	LC4	0.0	16.5	1
33	C089115	0.080	LC8	-11.6	55.1	39.6	53.7	30	LC7	8.6	66.8	13	LC8	0.0	16.5	1
34	C089115	0.893	LC8	-3.4	53.5	38.9	53.7	9	LC7	2.0	66.8	4	LC8	0.0	16.5	1
35	C089115	1.314	LC8	-8.6	32.2	27.7	53.7	31	LC7	6.8	66.8	11	LC8	0.0	16.5	1
36	C089115	0.639	LC7	-6.6	55.1	39.6	53.7	17	LC8	8.6	66.8	13	LC8	0.0	16.5	1
37	C089115	0.697	LC7	-0.2	55.1	39.6	53.7	1	LC8	0.2	66.8	1	LC4	0.0	16.5	1
38	C089115	0.086	LC8	-2.5	55.1	39.6	53.7	7	LC7	1.9	66.8	3	LC8	0.0	16.5	1
39	C089115	0.130	LC8	-6.3	55.1	39.6	53.7	16	LC7	4.6	66.8	7	LC8	0.0	16.5	1

MEMBER DESIGN CONTINUED

	Bending (kNm) - cl 7.2.2:						Combined +N,M:		Combined -N,M:		Combined Overall:
Part:	Case:	M*:	phiMbe:	phiMbl:	phiMbd:	(%):	Case:	(%):	Case:	(%):	(%):
0	LC8	-	1.69	1.17	1.69	1	LC7	7	LC8	16	17
1	LC8	0.46	1.69	1.17	1.69	40	LC8	39	LC8	46	46
2	LC8	0.04	1.69	1.17	1.69	4	LC8	4	LC8	4	4
3	LC8	0.02	1.69	1.17	1.69	3	LC8	15	LC7	18	18
4	LC8	0.13	1.69	1.17	1.69	11	LC8	23	LC7	21	23
5	LC8	0.43	1.69	1.17	1.69	38	LC7	38	LC8	71	71
6	LC8	0.01	1.69	1.17	1.69	1	LC7	3	LC8	10	10
7	LC8	0.37	1.69	1.17	1.69	32	LC8	31	LC8	61	61
8	LC8	0.20	1.69	1.17	1.69	17	LC8	33	LC7	34	34
9	LC7	-	1.69	1.17	1.69	1	LC7	1	LC8	4	4
10	LC7	0.08	1.69	1.17	1.69	7	LC8	18	LC7	26	26
11	LC8	0.36	1.69	1.17	1.69	32	LC8	31	LC8	73	73
12	LC8	-	1.69	1.17	1.69	1	LC8	2	LC7	5	5
13	LC8	0.24	1.69	1.17	1.69	21	LC7	22	LC8	44	44
14	LC8	0.19	1.69	1.17	1.69	16	LC8	30	LC7	29	30
15	LC8	-	1.69	1.17	1.69	1	LC7	3	LC8	11	11
16	LC8	0.24	1.69	1.17	1.69	21	LC7	21	LC8	55	55
17	LC8	0.12	1.69	1.17	1.69	10	LC8	22	LC7	20	22
18	LC7	-	1.69	1.17	1.69	1	LC8	4	LC7	11	11
19	LC8	0.34	1.69	1.17	1.69	29	LC8	29	LC8	46	46
20	LC8	0.06	1.69	1.17	1.69	6	LC8	16	LC7	21	21
21	LC8	0.34	1.69	1.17	1.69	29	LC8	29	LC8	46	46
22	LC7	-	1.69	1.17	1.69	1	LC8	4	LC7	12	12
23	LC8	0.11	1.69	1.17	1.69	10	LC8	22	LC7	21	22
24	LC8	0.24	1.69	1.17	1.69	21	LC8	21	LC8	52	52
25	LC8	-	1.69	1.17	1.69	1	LC7	3	LC8	11	11
26	LC8	0.18	1.69	1.17	1.69	16	LC8	29	LC7	29	29
27	LC8	0.24	1.69	1.17	1.69	21	LC7	22	LC8	44	44
28	LC8	-	1.69	1.17	1.69	1	LC8	2	LC7	5	5
29	LC8	0.36	1.69	1.17	1.69	32	LC8	31	LC8	70	70
30	LC7	0.07	1.69	1.17	1.69	7	LC8	17	LC7	25	25
31	LC7	-	1.69	1.17	1.69	1	LC7	2	LC8	4	4
32	LC8	0.16	1.69	1.17	1.69	14	LC8	30	LC7	32	32
33	LC8	0.37	1.69	1.17	1.69	32	LC8	32	LC8	61	61
34	LC8	0.01	1.69	1.17	1.69	1	LC7	3	LC8	9	9
35	LC8	0.43	1.69	1.17	1.69	37	LC7	37	LC8	68	68
36	LC8	0.02	1.69	1.17	1.69	3	LC8	15	LC7	18	18
37	LC8	0.11	1.69	1.17	1.69	10	LC8	10	LC8	10	10
38	LC8	0.45	1.69	1.17	1.69	39	LC8	39	LC8	45	45
39	LC8	-	1.69	1.17	1.69	1	LC7	7	LC8	16	16

CONNECTIONS Capacities for 1 No. Primary Screw + Extra Secondary Screws EACH SIDE (ie/ 2 extra screws = 3 screws Total EACH SIDE)

	Screw Capacities (kN) - cl 7.3:					
Section Size:	Type:	Dia:	pfiVb:	pfiVfv:	Comp:	Tens:
C089115	Primary	6.15	6.68	6.62	6.68	6.62
	Secondary	6.15	6.68	6.62	6.68	6.62

Part:	-N* (kN):	+N* (kN):	Extra Screws:	Comp (%):	Tens (%):	Overall (%):	Part:	-N* (kN):	+N* (kN):	Extra Screws:	Comp (%):	Tens (%):	Overall (%):
0	-6.3	4.7	-	95	71	95	22	-2.0	2.3	-	31	35	35
3	-6.6	8.5	1	99	65	99	25	-2.8	1.8	-	42	28	42
6	-3.5	2.1	-	52	32	52	28	-1.2	1.2	-	18	18	18
9	-1.5	0.8	-	23	12	23	31	-1.5	0.8	-	23	13	23
12	-1.2	1.2	-	18	19	19	34	-3.4	2.0	-	51	31	51
15	-2.8	1.8	-	43	28	43	36	-6.6	8.6	1	99	66	99
18	-2.0	2.3	-	30	35	35	39	-6.3	4.6	-	94	70	94

DEFLECTION

Case:	Max (mm):	Span/Limit:	Hard Limit:	(%):
LC1	3.0	150 (53mm)	-	5
LC2	-1.4	300 (27mm)	12mm	11
LC3	-0.3	250 (32mm)	-	0

REACTIONS

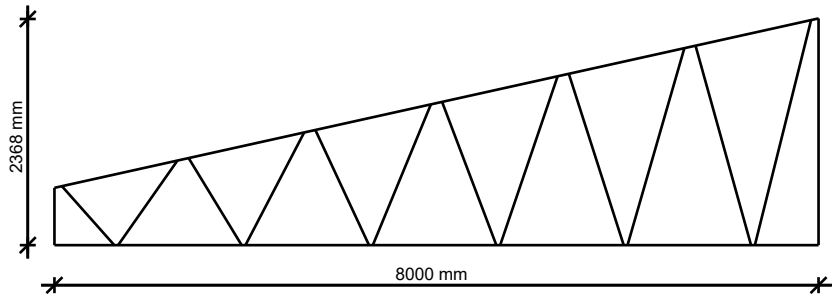
Location:	Max Down (kN):	Max Up (kN):
End A	6.9	-7.2
End B	6.9	-7.2

MEMBER INFORMATION *** PRELIMINARY, NOT FOR DISTRIBUTION ***

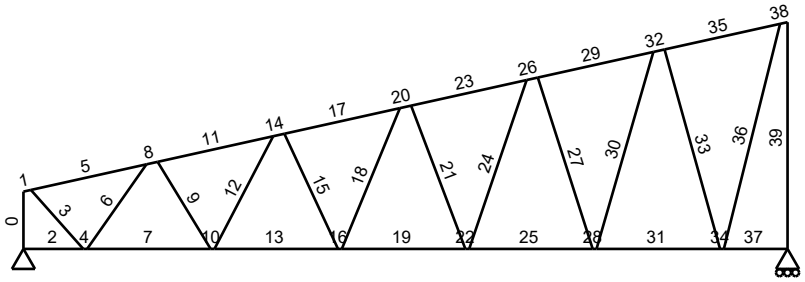
Job ID:	Demo		Roof Load Type:	Metal	Date:	19/10/23	Member: mem2
Wind Rating:	N3	Spacing (mm): 1200	Ceiling Type:	Plaster			Page: 1/2

OVERALL ASSESEMENT: Strength PASS, Deflection PASS, Connections PASS

MEMBER GEOMETRY



ENGINEERING MODEL (FOR NON-LINEAR ANALYSIS)



LOAD CASES

Case:	Type:
G	Dead
Q1	Live
Q2	Concentrated
Fsn	Snow
Wu	Wind Up
Wd	Wind Down

DESIGN LOADS

Case:	Load:
G	0.12 TOP, 0.14 BTM kPa
Q1	0.25 kPa
Q2	1.1 kN
Fsn	0 kPa
Wu	-1.5 kPa
Wd	0.54 kPa

LOAD COMBINATIONS

Case:	Combination:	Case:	Combination:
LC1	0.44Wu	LC7	1.2G + Wd
LC2	G	LC8	0.9G + Wu
LC3	Q2	LC9	1.2G + Fsn
LC4	1.35G		
LC5	1.2G + 1.5Q1		
LC6	1.2G + 1.5ksQ2		

SECTIONS

Size:	Grade:	fy nom. (MPa):	fy adopted (MPa):	Depth (mm):	Width (mm):	Lip (mm):	Thickness (mm):
C089115	AS 1397: G550	550	500	89.00	41.00	11.00	1.15

SECTION PROPERTIES

Size:	Nt (kN):	Nt.lc (kN):	Ny (kN):	Ny.lc (kN):	My (kNm):	My.lc (kNm):	Vv (kN):
C089115 - YY	108.00	99.65	108.00	99.65	1.90	1.88	18.37

Note: The axis for Moment capacities is indicated by YY (weak) or XX (strong). Properties where lips are cut at nodes is denoted as lc.

ELASTIC BUCKLING PROPERTIES

Size:	Noc* (kN):	Nol (kN):	Nod (kN):	Mo* (kNm):	Mol (kNm):	Mod (kNm):
C089115 - YY	14.31	39.47	61.36	15.33	1.53	20.17

Note: The axis for Moment capacities is indicated by YY (weak) or XX (strong). *Noc, Mo depend on length with MIN values shown.

MEMBER DESIGN

			Compression (kN) - cl 7.2.1:						Tension (kN) - cl 3.2.1:				Shear (kN) - cl x:			
Part:	Size:	Length:	Case:	-N*:	phiNce:	phiNcl:	phiNcd:	(%):	Case:	+N*:	phiNt:	(%):	Case:	V*:	phiVv:	(%):
0	C089115	0.600	LC8	-6.0	55.1	39.6	53.7	16	LC7	4.6	66.8	7	LC8	0.0	16.5	1
1	C089115	0.080	LC8	-1.3	55.1	39.6	53.7	4	LC7	1.0	66.8	2	LC8	0.0	16.5	1
2	C089115	0.627	LC5	0.0	55.1	39.6	53.7	1	LC8	0.0	66.8	1	LC8	0.0	16.5	1
3	C089115	0.826	LC7	-5.0	56.4	40.2	53.7	13	LC8	6.3	66.8	10	LC8	0.0	16.5	1
4	C089115	0.040	LC7	-3.4	55.1	39.6	53.7	9	LC8	4.2	66.8	7	LC4	0.0	16.5	1
5	C089115	1.239	LC8	-4.4	37.2	30.6	53.7	15	LC7	3.5	66.8	6	LC8	0.0	16.5	1
6	C089115	1.082	LC8	-6.0	45.2	34.8	53.7	18	LC7	4.3	66.8	7	LC8	0.0	16.5	1
7	C089115	1.293	LC7	-5.8	34.7	29.2	53.7	21	LC8	7.7	66.8	12	LC4	0.0	16.5	1
8	C089115	0.120	LC8	-8.4	55.1	39.6	53.7	22	LC7	6.4	66.8	10	LC8	0.0	16.5	1
9	C089115	1.067	LC7	-1.4	45.2	34.8	53.7	4	LC8	1.3	66.8	2	LC8	0.0	16.5	1
10	C089115	0.040	LC7	-6.6	55.1	39.6	53.7	17	LC8	8.4	66.8	13	LC6	0.0	16.5	1
11	C089115	1.239	LC8	-8.8	37.2	30.6	53.7	29	LC7	6.8	66.8	11	LC8	0.0	16.5	1
12	C089115	1.330	LC8	-1.3	32.2	27.7	53.7	5	LC7	0.8	66.8	2	LC8	0.0	16.5	1
13	C089115	1.293	LC7	-6.9	34.7	29.2	53.7	24	LC8	9.0	66.8	14	LC6	0.0	16.5	1
14	C089115	0.120	LC8	-9.2	55.1	39.6	53.7	24	LC7	7.1	66.8	11	LC8	0.0	16.5	1
15	C089115	1.330	LC8	-1.3	32.2	27.7	53.7	5	LC7	0.6	66.8	1	LC8	0.0	16.5	1
16	C089115	0.040	LC7	-6.6	55.1	39.6	53.7	17	LC8	8.5	66.8	13	LC8	0.0	16.5	1
17	C089115	1.239	LC8	-8.9	37.2	30.6	53.7	30	LC7	6.9	66.8	11	LC8	0.0	16.5	1
18	C089115	1.594	LC7	-1.0	22.8	21.9	53.7	5	LC8	1.0	66.8	2	LC8	0.0	16.5	1
19	C089115	1.293	LC7	-6.2	34.7	29.2	53.7	22	LC8	8.1	66.8	13	LC8	0.0	16.5	1
20	C089115	0.120	LC8	-7.9	55.1	39.6	53.7	20	LC7	6.1	66.8	10	LC8	0.0	16.5	1
21	C089115	1.604	LC8	-3.2	21.4	21.0	53.7	16	LC7	2.2	66.8	4	LC8	0.0	16.5	1
22	C089115	0.040	LC7	-5.5	55.1	39.6	53.7	14	LC8	7.0	66.8	11	LC8	0.0	16.5	1
23	C089115	1.239	LC8	-7.4	37.2	30.6	53.7	25	LC7	5.8	66.8	9	LC8	0.0	16.5	1
24	C089115	1.867	LC7	-2.5	18.1	18.1	53.7	14	LC8	2.9	66.8	5	LC8	0.0	16.5	1
25	C089115	1.293	LC7	-4.7	34.7	29.2	53.7	16	LC8	6.0	66.8	9	LC8	0.0	16.5	1
26	C089115	0.120	LC8	-5.4	55.1	39.6	53.7	14	LC7	4.2	66.8	7	LC8	0.0	16.5	1

27	C089115	1.884	LC8	-4.8	18.1	18.1	53.7	27	LC7	3.4	66.8	6	LC8	0.0	16.5	1
28	C089115	0.040	LC7	-3.6	55.1	39.6	53.7	10	LC8	4.6	66.8	7	LC8	0.0	16.5	1
29	C089115	1.239	LC8	-5.0	37.2	30.6	53.7	17	LC7	3.9	66.8	6	LC8	0.0	16.5	1
30	C089115	2.146	LC7	-3.8	13.5	13.5	53.7	29	LC8	4.6	66.8	7	LC8	0.0	16.5	1
31	C089115	1.293	LC7	-2.5	34.7	29.2	53.7	9	LC8	3.3	66.8	5	LC4	0.0	16.5	1
32	C089115	0.120	LC8	-2.3	55.1	39.6	53.7	6	LC7	1.8	66.8	3	LC8	0.0	16.5	1
33	C089115	2.167	LC8	-6.6	13.5	13.5	53.7	49	LC7	4.8	66.8	8	LC8	0.0	16.5	1
34	C089115	0.040	LC7	-1.2	55.1	39.6	53.7	4	LC8	1.5	66.8	3	LC8	0.0	16.5	1
35	C089115	1.239	LC8	-2.0	37.2	30.6	53.7	7	LC7	1.5	66.8	3	LC8	0.0	16.5	1
36	C089115	2.429	LC7	-5.0	10.7	10.7	53.7	48	LC8	6.3	66.8	10	LC8	0.0	16.5	1
37	C089115	0.667	LC5	0.0	55.1	39.6	53.7	1	LC8	0.0	66.8	0	LC4	0.0	16.5	1
38	C089115	0.080	LC7	-1.0	55.1	39.6	53.7	3	LC8	1.3	66.8	2	LC8	0.0	16.5	1
39	C089115	2.374	LC8	-6.0	10.7	10.7	53.7	57	LC7	4.7	66.8	8	LC8	0.0	16.5	1

MEMBER DESIGN CONTINUED

	Bending (kNm) - cl 7.2.2:						Combined +N,M:		Combined -N,M:		Combined Overall:
Part:	Case:	M*:	phiMbe:	phiMbl:	phiMbd:	(%):	Case:	(%):	Case:	(%):	(%):
0	LC8	-	1.69	1.17	1.69	1	LC7	7	LC8	15	16
1	LC8	0.45	1.69	1.17	1.69	39	LC8	38	LC8	42	42
2	LC7	0.06	1.69	1.17	1.69	6	LC7	5	LC7	5	6
3	LC8	0.02	1.69	1.17	1.69	2	LC8	11	LC7	14	14
4	LC8	0.22	1.69	1.17	1.69	19	LC8	25	LC8	18	25
5	LC8	0.45	1.69	1.17	1.69	39	LC8	39	LC8	53	53
6	LC8	-	1.69	1.17	1.69	1	LC7	6	LC8	18	18
7	LC8	0.21	1.69	1.17	1.69	19	LC8	30	LC7	28	30
8	LC8	0.45	1.69	1.17	1.69	39	LC8	38	LC8	59	59
9	LC8	-	1.69	1.17	1.69	1	LC8	2	LC7	4	4
10	LC8	0.09	1.69	1.17	1.69	8	LC8	20	LC7	20	20
11	LC8	0.20	1.69	1.17	1.69	17	LC7	20	LC8	46	46
12	LC8	-	1.69	1.17	1.69	1	LC7	1	LC8	5	5
13	LC8	0.11	1.69	1.17	1.69	10	LC8	23	LC7	24	24
14	LC8	0.20	1.69	1.17	1.69	18	LC7	20	LC8	41	41
15	LC8	-	1.69	1.17	1.69	1	LC7	1	LC8	5	5
16	LC8	0.11	1.69	1.17	1.69	10	LC8	22	LC7	19	22
17	LC8	0.21	1.69	1.17	1.69	18	LC7	20	LC8	47	47
18	LC8	0.01	1.69	1.17	1.69	1	LC8	2	LC7	5	5
19	LC8	0.15	1.69	1.17	1.69	13	LC8	25	LC7	24	25
20	LC8	0.32	1.69	1.17	1.69	28	LC8	28	LC8	48	48
21	LC5	-	1.69	1.17	1.69	1	LC7	3	LC8	15	16
22	LC8	0.15	1.69	1.17	1.69	13	LC8	23	LC7	18	23
23	LC8	0.33	1.69	1.17	1.69	28	LC8	28	LC8	52	52
24	LC8	0.01	1.69	1.17	1.69	1	LC8	5	LC7	14	14
25	LC8	0.16	1.69	1.17	1.69	14	LC8	23	LC7	20	23
26	LC8	0.39	1.69	1.17	1.69	34	LC8	34	LC8	47	47
27	LC5	-	1.69	1.17	1.69	1	LC7	5	LC8	26	27
28	LC8	0.16	1.69	1.17	1.69	14	LC8	21	LC7	17	21
29	LC8	0.39	1.69	1.17	1.69	34	LC8	33	LC8	50	50
30	LC8	0.01	1.69	1.17	1.69	1	LC8	7	LC7	29	29
31	LC8	0.24	1.69	1.17	1.69	21	LC8	26	LC8	21	26
32	LC8	0.55	1.69	1.17	1.69	48	LC8	47	LC8	53	53
33	LC5	-	1.69	1.17	1.69	1	LC7	8	LC8	49	49
34	LC8	0.25	1.69	1.17	1.69	22	LC8	24	LC8	21	24
35	LC8	0.55	1.69	1.17	1.69	48	LC8	48	LC8	54	54
36	LC8	0.02	1.69	1.17	1.69	2	LC8	11	LC7	48	48
37	LC7	0.08	1.69	1.17	1.69	7	LC7	7	LC7	7	7
38	LC8	0.45	1.69	1.17	1.69	39	LC8	40	LC8	39	40
39	LC4	-	1.69	1.17	1.69	1	LC7	7	LC8	56	57

CONNECTIONS Capacities for 1 No. Primary Screw + Extra Secondary Screws EACH SIDE (ie/ 2 extra screws = 3 screws Total EACH SIDE)

	Screw Capacities (kN) - cl 7.3:					
Section Size:	Type:	Dia:	pfiVb:	pfiVfv:	Comp:	Tens:
C089115	Primary	6.15	6.68	6.62	6.68	6.62
	Secondary	6.15	6.68	6.62	6.68	6.62

Part:	-N* (kN):	+N* (kN):	Extra Screws:	Comp (%):	Tens (%):	Overall (%):	Part:	-N* (kN):	+N* (kN):	Extra Screws:	Comp (%):	Tens (%):	Overall (%):
0	-6.0	4.6	-	91	70	91	18	-1.0	1.0	-	16	16	16
39	-6.0	4.7	-	90	72	90	21	-3.2	2.2	-	49	33	49
3	-5.0	6.3	-	76	96	96	24	-2.5	2.9	-	38	45	45
6	-6.0	4.3	-	91	65	91	27	-4.8	3.4	-	72	52	72
9	-1.4	1.3	-	21	20	21	30	-3.8	4.6	-	58	69	69
12	-1.3	0.8	-	21	13	21	33	-6.6	4.8	-	100	74	100
15	-1.3	0.6	-	19	10	19	36	-5.0	6.3	-	76	95	95

DEFLECTION

Case:	Max (mm):	Span/Limit:	Hard Limit:	(%):
LC1	3.1	150 (53mm)	-	5
LC2	-1.5	300 (27mm)	12mm	12
LC3	-0.4	250 (32mm)	-	1

REACTIONS

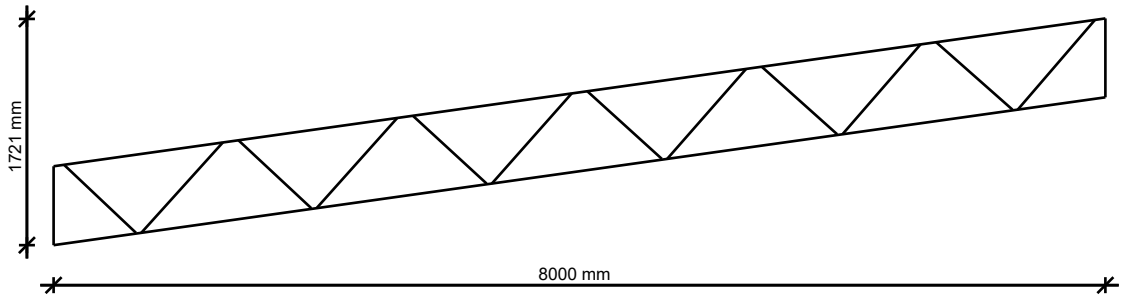
Location:	Max Down (kN):	Max Up (kN):
End A	7.0	-7.1
End B	7.0	-7.1

MEMBER INFORMATION *** PRELIMINARY, NOT FOR DISTRIBUTION ***

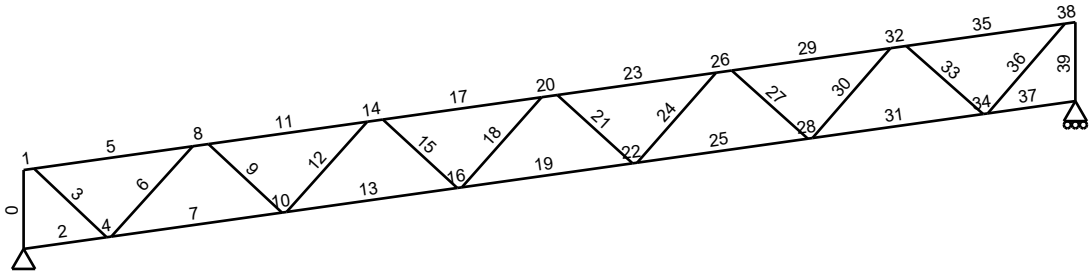
Job ID:	Demo			Roof Load Type:	Metal	Date:	19/10/23	Member:	mem3
Wind Rating:	N3	Spacing (mm):	1200	Ceiling Type:	Plaster			Page:	1/2

OVERALL ASSESEMENT: Strength PASS, Deflection PASS, Connections with extra screws PASS

MEMBER GEOMETRY



ENGINEERING MODEL (FOR NON-LINEAR ANALYSIS)



LOAD CASES

Case:	Type:
G	Dead
Q1	Live
Q2	Concentrated
Fsn	Snow
Wu	Wind Up
Wd	Wind Down

DESIGN LOADS

Case:	Load:
G	0.12 TOP, 0.14 BTM kPa
Q1	0.25 kPa
Q2	1.1 kN
Fsn	0 kPa
Wu	-1.5 kPa
Wd	0.54 kPa

LOAD COMBINATIONS

Case:	Combination:	Case:	Combination:
LC1	0.44Wu	LC7	1.2G + Wd
LC2	G	LC8	0.9G + Wu
LC3	Q2	LC9	1.2G + Fsn
LC4	1.35G		
LC5	1.2G + 1.5Q1		
LC6	1.2G + 1.5ksQ2		

SECTIONS

Size:	Grade:	fy nom. (MPa):	fy adopted (MPa):	Depth (mm):	Width (mm):	Lip (mm):	Thickness (mm):
C089115	AS 1397: G550	550	500	89.00	41.00	11.00	1.15

SECTION PROPERTIES

Size:	Nt (kN):	Nt.lc (kN):	Ny (kN):	Ny.lc (kN):	My (kNm):	My.lc (kNm):	Vv (kN):
C089115 - YY	108.00	99.65	108.00	99.65	1.90	1.88	18.37

Note: The axis for Moment capacities is indicated by YY (weak) or XX (strong). Properties where lips are cut at nodes is denoted as lc.

ELASTIC BUCKLING PROPERTIES

Size:	Noc* (kN):	Nol (kN):	Nod (kN):	Mo* (kNm):	Mol (kNm):	Mod (kNm):
C089115 - YY	43.21	39.47	61.36	19.92	1.53	20.17

Note: The axis for Moment capacities is indicated by YY (weak) or XX (strong). *Noc, Mo depend on length with MIN values shown.

MEMBER DESIGN

			Compression (kN) - cl 7.2.1:						Tension (kN) - cl 3.2.1:				Shear (kN) - cl x:			
Part:	Size:	Length:	Case:	-N*:	phiNce:	phiNcl:	phiNcd:	(%):	Case:	+N*:	phiNt:	(%):	Case:	V*:	phiVv:	(%):
0	C089115	0.600	LC8	-6.0	55.1	39.6	53.7	16	LC7	4.5	66.8	7	LC8	0.0	16.5	1
1	C089115	0.080	LC8	-0.9	55.1	39.6	53.7	3	LC7	0.7	66.8	1	LC8	0.0	16.5	1
2	C089115	0.638	LC7	0.0	55.1	39.6	53.7	1	LC8	0.1	66.8	1	LC4	0.0	16.5	1
3	C089115	0.760	LC7	-5.7	55.1	39.6	53.7	15	LC8	7.2	66.8	11	LC8	0.0	16.5	1
4	C089115	0.035	LC7	-3.6	55.1	39.6	53.7	10	LC8	4.6	66.8	7	LC4	0.0	16.5	1
5	C089115	1.220	LC8	-5.4	37.2	30.6	53.7	18	LC7	4.2	66.8	7	LC8	0.0	16.5	1
6	C089115	0.926	LC8	-9.2	53.5	38.9	53.7	24	LC7	6.5	66.8	10	LC8	0.0	16.5	1
7	C089115	1.311	LC7	-8.6	32.2	27.7	53.7	31	LC8	11.6	66.8	18	LC4	0.0	16.5	1
8	C089115	0.120	LC8	-12.1	55.1	39.6	53.7	31	LC7	9.0	66.8	14	LC8	0.0	16.5	1
9	C089115	0.765	LC7	-3.4	55.1	39.6	53.7	9	LC8	4.0	66.8	7	LC8	0.0	16.5	1
10	C089115	0.035	LC7	-10.8	55.1	39.6	53.7	28	LC8	14.1	66.8	22	LC8	0.0	16.5	1
11	C089115	1.220	LC8	-14.7	37.2	30.6	53.7	48	LC7	11.2	66.8	17	LC8	0.0	16.5	1
12	C089115	0.921	LC8	-5.1	53.5	38.9	53.7	14	LC7	3.5	66.8	6	LC8	0.0	16.5	1
13	C089115	1.311	LC7	-13.4	32.2	27.7	53.7	49	LC8	18.0	66.8	27	LC8	0.0	16.5	1
14	C089115	0.120	LC8	-18.3	55.1	39.6	53.7	47	LC7	13.7	66.8	21	LC8	0.0	16.5	1
15	C089115	0.769	LC7	-1.3	55.1	39.6	53.7	4	LC8	1.3	66.8	2	LC8	0.0	16.5	1
16	C089115	0.035	LC7	-14.3	55.1	39.6	53.7	37	LC8	18.8	66.8	29	LC8	0.0	16.5	1
17	C089115	1.220	LC8	-19.0	37.2	30.6	53.7	63	LC7	14.5	66.8	22	LC8	0.0	16.5	1
18	C089115	0.916	LC8	-1.8	53.5	38.9	53.7	5	LC7	1.0	66.8	2	LC6	0.0	16.5	1
19	C089115	1.311	LC7	-15.1	32.2	27.7	53.7	55	LC8	20.2	66.8	31	LC6	0.0	16.5	1
20	C089115	0.120	LC8	-20.2	55.1	39.6	53.7	51	LC7	15.1	66.8	23	LC6	0.0	16.5	1
21	C089115	0.773	LC8	-1.6	55.1	39.6	53.7	4	LC7	0.8	66.8	2	LC8	0.0	16.5	1
22	C089115	0.035	LC7	-14.6	55.1	39.6	53.7	37	LC8	19.1	66.8	29	LC8	0.0	16.5	1
23	C089115	1.220	LC8	-19.1	37.2	30.6	53.7	63	LC7	14.5	66.8	22	LC8	0.0	16.5	1
24	C089115	0.911	LC7	-1.5	53.5	38.9	53.7	4	LC8	1.5	66.8	3	LC8	0.0	16.5	1
25	C089115	1.312	LC7	-13.4	32.2	27.7	53.7	49	LC8	18.0	66.8	27	LC8	0.0	16.5	1
26	C089115	0.120	LC8	-17.7	55.1	39.6	53.7	45	LC7	13.2	66.8	20	LC8	0.0	16.5	1

27	C089115	0.777	LC8	-4.3	55.1	39.6	53.7	11	LC7	2.9	66.8	5	LC8	0.0	16.5	1
28	C089115	0.035	LC7	-11.6	55.1	39.6	53.7	30	LC8	15.2	66.8	23	LC8	0.0	16.5	1
29	C089115	1.220	LC8	-14.9	37.2	30.6	53.7	49	LC7	11.3	66.8	17	LC8	0.0	16.5	1
30	C089115	0.906	LC7	-4.0	53.5	38.9	53.7	11	LC8	4.8	66.8	8	LC8	0.0	16.5	1
31	C089115	1.312	LC7	-8.6	32.2	27.7	53.7	31	LC8	11.6	66.8	18	LC4	0.0	16.5	1
32	C089115	0.120	LC8	-11.0	55.1	39.6	53.7	28	LC7	8.2	66.8	13	LC8	0.0	16.5	1
33	C089115	0.782	LC8	-7.8	55.1	39.6	53.7	20	LC7	5.5	66.8	9	LC8	0.0	16.5	1
34	C089115	0.035	LC7	-5.0	55.1	39.6	53.7	13	LC8	6.5	66.8	10	LC4	0.0	16.5	1
35	C089115	1.220	LC8	-5.9	37.2	30.6	53.7	20	LC7	4.6	66.8	7	LC8	0.0	16.5	1
36	C089115	0.901	LC7	-6.7	53.5	38.9	53.7	18	LC8	8.5	66.8	13	LC8	0.0	16.5	1
37	C089115	0.673	LC7	0.0	55.1	39.6	53.7	1	LC8	0.1	66.8	1	LC4	0.0	16.5	1
38	C089115	0.080	LC7	-0.6	55.1	39.6	53.7	2	LC8	0.8	66.8	2	LC8	0.0	16.5	1
39	C089115	0.600	LC8	-6.0	55.1	39.6	53.7	16	LC7	4.5	66.8	7	LC8	0.0	16.5	1

MEMBER DESIGN CONTINUED

	Bending (kNm) - cl 7.2.2:						Combined +N,M:		Combined -N,M:		Combined Overall:
Part:	Case:	M*:	phiMbe:	phiMbl:	phiMbd:	(%):	Case:	(%):	Case:	(%):	(%):
0	LC4	-	1.69	1.17	1.69	1	LC7	7	LC8	15	16
1	LC8	0.45	1.69	1.17	1.69	39	LC8	39	LC8	41	41
2	LC7	0.07	1.69	1.17	1.69	6	LC7	6	LC7	6	6
3	LC8	0.02	1.69	1.17	1.69	2	LC8	12	LC7	15	15
4	LC8	0.15	1.69	1.17	1.69	13	LC8	20	LC7	16	20
5	LC8	0.52	1.69	1.17	1.69	45	LC8	44	LC8	62	62
6	LC8	-	1.69	1.17	1.69	1	LC7	10	LC8	24	24
7	LC8	0.22	1.69	1.17	1.69	20	LC8	36	LC7	39	39
8	LC8	0.52	1.69	1.17	1.69	45	LC8	44	LC8	75	75
9	LC8	-	1.69	1.17	1.69	1	LC8	6	LC7	9	9
10	LC7	0.08	1.69	1.17	1.69	8	LC8	27	LC7	34	34
11	LC8	0.31	1.69	1.17	1.69	27	LC7	33	LC8	74	74
12	LC8	-	1.69	1.17	1.69	1	LC7	5	LC8	13	14
13	LC8	0.14	1.69	1.17	1.69	13	LC8	39	LC7	51	51
14	LC8	0.31	1.69	1.17	1.69	27	LC7	37	LC8	72	72
15	LC8	-	1.69	1.17	1.69	1	LC8	2	LC7	3	4
16	LC8	0.05	1.69	1.17	1.69	5	LC8	33	LC7	39	39
17	LC8	0.21	1.69	1.17	1.69	18	LC7	31	LC8	80	80
18	LC8	-	1.69	1.17	1.69	1	LC6	2	LC8	5	5
19	LC8	0.13	1.69	1.17	1.69	12	LC8	41	LC7	56	56
20	LC8	0.21	1.69	1.17	1.69	18	LC7	32	LC8	69	69
21	LC8	-	1.69	1.17	1.69	1	LC7	1	LC8	4	4
22	LC8	0.05	1.69	1.17	1.69	5	LC8	33	LC7	40	40
23	LC8	0.21	1.69	1.17	1.69	18	LC7	31	LC8	80	80
24	LC8	0.01	1.69	1.17	1.69	1	LC8	3	LC7	4	4
25	LC8	0.14	1.69	1.17	1.69	13	LC8	39	LC7	51	51
26	LC8	0.31	1.69	1.17	1.69	27	LC7	36	LC8	71	71
27	LC6	-	1.69	1.17	1.69	1	LC7	5	LC8	11	11
28	LC7	0.08	1.69	1.17	1.69	7	LC8	29	LC7	36	36
29	LC8	0.31	1.69	1.17	1.69	27	LC7	33	LC8	75	75
30	LC8	-	1.69	1.17	1.69	1	LC8	8	LC7	11	11
31	LC8	0.23	1.69	1.17	1.69	20	LC8	37	LC7	39	39
32	LC8	0.52	1.69	1.17	1.69	45	LC8	44	LC8	72	72
33	LC8	-	1.69	1.17	1.69	1	LC7	8	LC8	20	20
34	LC8	0.15	1.69	1.17	1.69	14	LC8	23	LC7	19	23
35	LC8	0.52	1.69	1.17	1.69	45	LC8	44	LC8	64	64
36	LC8	0.02	1.69	1.17	1.69	2	LC8	14	LC7	18	18
37	LC7	0.06	1.69	1.17	1.69	6	LC7	5	LC7	5	6
38	LC8	0.45	1.69	1.17	1.69	39	LC8	40	LC8	39	40
39	LC4	-	1.69	1.17	1.69	1	LC7	7	LC8	15	16

CONNECTIONS Capacities for 1 No. Primary Screw + Extra Secondary Screws EACH SIDE (ie/ 2 extra screws = 3 screws Total EACH SIDE)

	Screw Capacities (kN) - cl 7.3:					
Section Size:	Type:	Dia:	pfiVb:	pfiVfv:	Comp:	Tens:
C089115	Primary	6.15	6.68	6.62	6.68	6.62
	Secondary	6.15	6.68	6.62	6.68	6.62

Part:	-N* (kN):	+N* (kN):	Extra Screws:	Comp (%):	Tens (%):	Overall (%):	Part:	-N* (kN):	+N* (kN):	Extra Screws:	Comp (%):	Tens (%):	Overall (%):
0	-6.0	4.5	-	91	69	91	18	-1.8	1.0	-	28	16	28
39	-6.0	4.5	-	90	68	90	21	-1.6	0.8	-	24	13	24
3	-5.7	7.2	1	85	55	85	24	-1.5	1.5	-	23	24	24
6	-9.2	6.5	1	69	99	99	27	-4.3	2.9	-	65	45	65
9	-3.4	4.0	-	52	61	61	30	-4.0	4.8	-	61	73	73
12	-5.1	3.5	-	76	53	76	33	-7.8	5.5	1	59	83	83
15	-1.3	1.3	-	20	20	20	36	-6.7	8.5	1	100	65	100

DEFLECTION

Case:	Max (mm):	Span/Limit:	Hard Limit:	(%):
LC1	7.2	150 (54mm)	-	13
LC2	-3.4	300 (27mm)	12mm	28
LC3	-1.0	250 (32mm)	-	3

REACTIONS

Location:	Max Down (kN):	Max Up (kN):
End A	7.0	-7.3
End B	7.0	-7.3