

15 October 2025
Our Ref: 21112

Nicholas D Leggett
Elvey Farm
Elvey Lane
Kent
TN27 0SU

Dear Nicholas,

Elvey Farm, Elvey Lane, Kent, TN27 0SU
Proposed Conversion of Agricultural Building to Residential Use

Further to my visit to the above property on 13 April 2021 to inspect the existing agricultural barn, I am writing to confirm my findings with regard to the proposed conversion of this structure to residential use.

1. Scope of Report

- 1.1. Braemar Structural Design Ltd were asked to carry out a visual appraisal and to prepare an Engineers Structural Report for planning.
- 1.2. The purpose of the report is to establish if the existing structure can be re-used as part of the proposed conversion without substantial reconstruction. We shall report upon any structural defects that may materially affect the stability of the property, provided that these defects are reasonably detectable at the time of our visit. Whilst we use all reasonable skill and care in preparing this report, it should be appreciated that we cannot offer any guarantee that the property will be free from future defects or that existing ones will not suffer from further deterioration.

2. Existing Structure

- 2.1. The existing and proposed architects drawings for the Barn along with photographs taken at the time of our visit are included within Appendix A at the end of this report.
- 2.2. The barn is of steel frame construction measuring approximately 29m x 12m with primary steel frames at approximately 4m centres.. The perimeter walls are of blockwork infill construction and the internal floor slab is a 100mm thick unreinforced concrete.
- 2.3. The frame is formed by 178x102 UB columns and a steel angle roof. The bottom chord of the trusses and the internal braces subject to tension only are 75 x 8mm steel flats.
- 2.4. The front gable has a large roller shutter door opening with steel PFC windposts either side which are assumed to be providing vertical and lateral support to the door and gable wall.
- 2.5. The rear gable is of solid blockwork construction and appears to be an extension to the steel framed structure as no steel columns or roof trusses are present within the wall. The

blockwork wall appeared to be 215mm thick from floor level to eaves, and then reducing to 100 or 140mm thick with timber weatherboarding above eaves level. No windposts were noted within the wall construction.

- 2.6. A trial pit had been carried out and showed that the main steel columns had 800mm deep assumed mass concrete pad foundations. The extent of the pads was not proved however a second trial pit between the main frames showed a 500mm deep strip foundation which is believed to be typical around the perimeter between the main pad foundations.
- 2.7. The ground conditions were a thin layer of topsoil overlying a firm to stiff clay. Water was present in the bottom of the excavations at approximately 800mm below ground level.
- 2.8. There is an existing pole barn to the north elevation of the main barn which is to be demolished and does not form part of this report.
- 2.9. The existing site block plan is shown below with the barn indicated in red.



Existing Block Plan

3. Condition & Works required

- 3.1. The steel frame was considered to be in good condition with no signs of significant deterioration or deflection to the main structural members. There were some minor areas of rust forming, mainly to the base of the columns where they have been exposed to the elements. These areas should be thoroughly cleaned with a stiff wire brush and protected with a suitable steel epoxy paint to prevent any further deterioration.
- 3.2. The corrugated fibre cement board sheeting to the roof was in generally good condition but is assumed to be nearing the end of its serviceable life and is proposed to be replaced as part of the renovation works. It is proposed that a lightweight insulated metal panel roof be installed and the calculations in appendix B shows that the existing structure is

capable of supporting a new lightweight roof of approximately 0.25 kN/m². This is considered to be similar to the existing loading of the fibre cement panels.

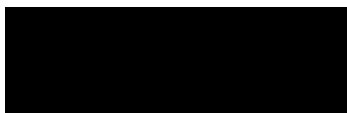
- 3.3. The external infill masonry walls were in generally good condition although some panels had vertical cracks at mid-span for their full height. These were generally at location where full width windows were located between the main steel frames. The cracking is believed to be due to a lack of windposts or restraint to the blockwork panels. Where required the blockwork panels will be removed and re-constructed with sufficient restraint as part of the proposed replacement of the external cladding.
- 3.4. The existing foundations are considered to be sufficient for the proposed building use and no additional strengthening or underpinning is believed to be required. The internal ground floor slab however is showing signs of movement due to clay heave and is proposed to be broken out and replaced with a suitable reinforced ground bearing slab. New foundations for the internal dividing walls between the units can also be incorporated as part of the new ground floor slab.

4. Conclusion

- 4.1. Based on my initial inspection of the barn structure to be converted, there did not appear to be any significant structural issues or defects. I can therefore confirm that in my opinion the existing steel framed structure is sound and that the building is capable of conversion to residential use without any significant structural alterations.
- 4.2. Some cosmetic repair and refurbishment of the existing steel frame will be required to ensure the integrity of the frame for the life of the proposed structure.

If there is anything further you require then please do not hesitate to contact me.

Yours sincerely,



Chris Baxter | Chartered Structural Engineer

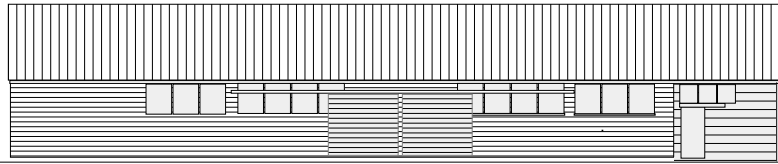
BEng (Hons) MSc CEng MIStructE

Braemar [Structural Design Ltd](#) | chris@braemarstructuraldesign.com | Mobile: 07824 467460

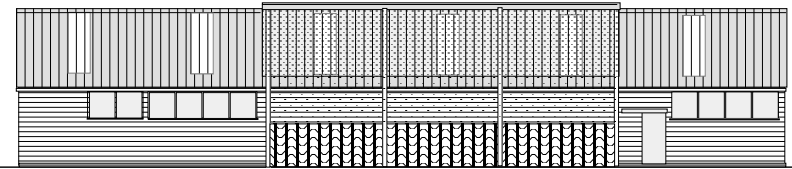
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Appendix A – Site Photographs & Architectural Drawings

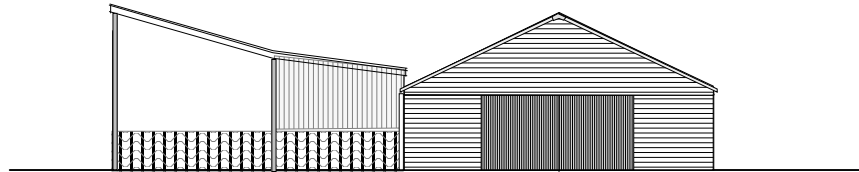




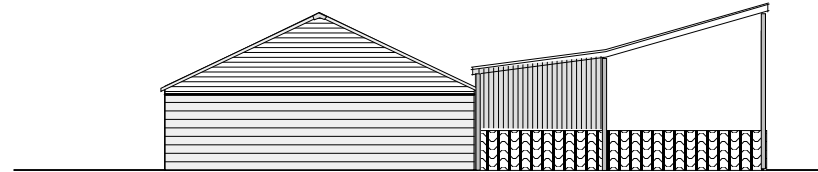
SOUTH ELEVATION



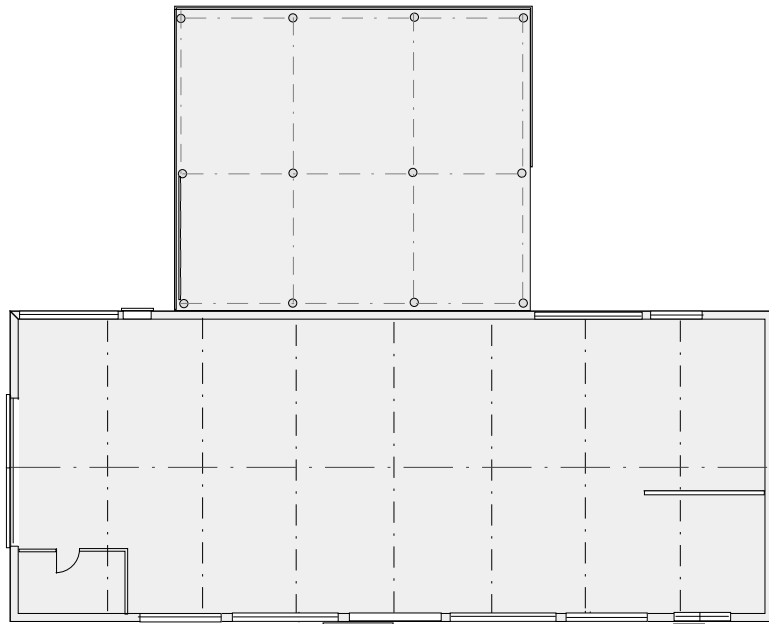
NORTH ELEVATION



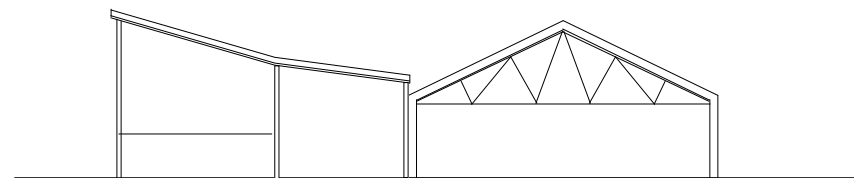
WEST ELEVATION



EAST ELEVATION



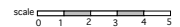
FLOOR PLAN



SECTION

Notes

1. No Dimension to be scaled from this drawing except for planning purposes.
2. All setting out dimensions and levels to be set out on site by contractor and agreed prior to commencement of building works.
3. All work to conform with the current editions of the Building Regulations, British Standards and Codes of Practice, the EE Regulations and OFTEC Regulations.
4. All materials and components are to be installed in accordance with the relevant manufacturers instructions and recommendations.



Project : ELVEY FARM
 ELVEY LANE
 PLUCKLEY
 KENT
 TN27 0SU

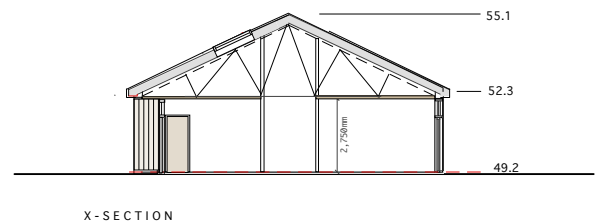
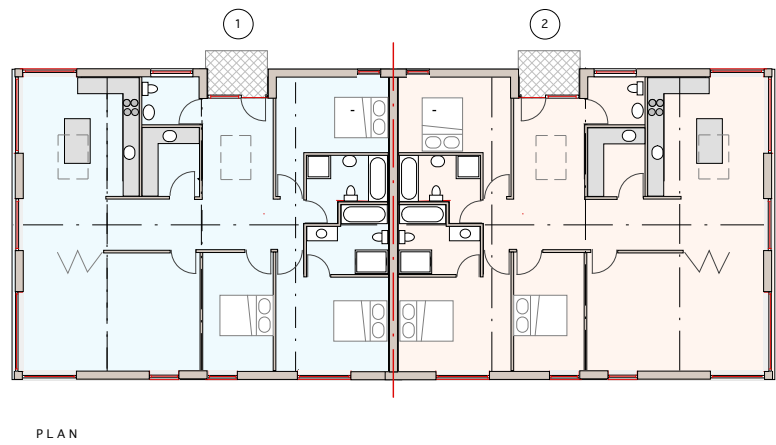
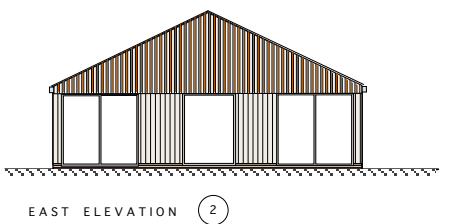
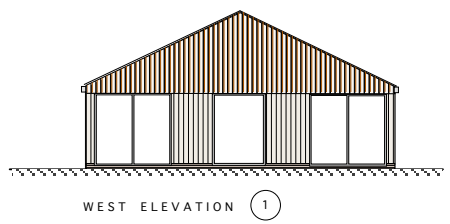
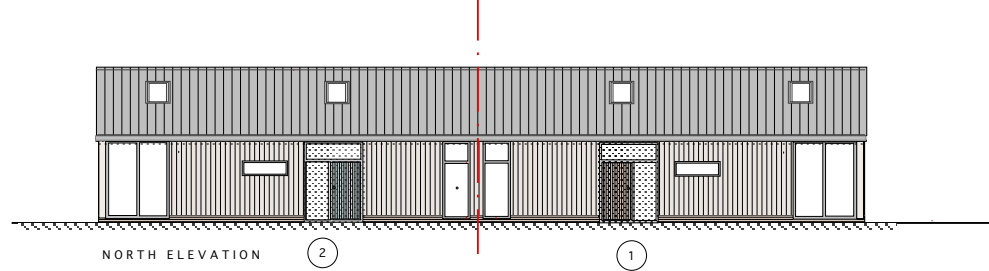
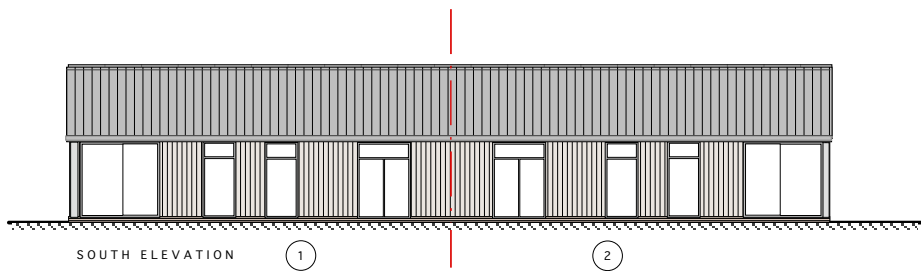
Client : NICK LEGGETT
 & SONJA JOHNSON

Drawing Title: EXISTING ATCOST BARN

Date	SEPT 2025	Checked	
Drawing No.	20/164102	Revision	
Revisions			
Scale:	1:100		

COLIN SHARP ARCHITECTURE.

SAYNDEN BARN
 FIVE OAK LANE
 STABLEHURST
 KENT TN12 0HX
 TEL: 01580892515
 E: colinsharp236@gmail.com



- MATERIALS:**
- Profiled grey metal roof
 - Vertical larch cladding to external walls
 - Brick plinth to DPC level.
 - Dark grey aluminium framed external glazing
 - Painted timber entrance doors

It is the responsibility of the approved contractor to identify any special hazards in the carrying out of the construction works and prepare a health and safety plan if necessary.

- Notes**
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 2. All setting out dimensions and levels to be set out on site by contractor and agreed prior to commencement of building works.
 3. All work to conform with the current editions of the Building Regulations, British Standards and Codes of Practice, the IEE Regulations and OFTEC Regulations.
 4. All materials and components are to be installed in accordance with the relevant manufacturers instructions and recommendations.

Project:
 ELVEY FARM
 ELVEY LANE
 PLUCKLEY
 KENT
 TN27 0SU

Client:
 NICK LEGGETT
 & SONJA JOHNSON

Drawing Title:
 PROPOSED BARN
 CONVERSION TO DWELLINGS

Date	SEPT 25	Checked
Drawing No.	25/164/302	Revision
		--
		-
Revisions		
Scale:	1:100	

COLIN SHARP ARCHITECTURE.

SAYNDEN BARN
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 STAPLEHURST
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 TEL 01580992515
 E. colinsharp206@gmail.com

Appendix B – Existing Steel Roof Truss Analysis

Braemar Structural Design

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Cloud 30605

Job Ref :
Sheet : /
Made by :
Date : / Ver. 2020.16
Checked :
Approved :

MasterFrame Data File

Loading Cases and Load Combination

Load Group Labels

Load Group UT	Unity Load Factor (All Cases)
Load Group D1	Dead Load
Load Group L1	Live Load

Load Case 001 : Dead plus Live (Ultimate)

Load Combination + 1.00 UT + 1.35 D1 + 1.50 L1

Load Case 002 : Dead Plus Live (Serviceability)

Load Combination + 1.00 UT + 1.00 D1 + 1.00 L1

Load Case 003 : Dead Only (Serviceability)

Load Combination + 1.00 UT + 1.00 D1

Load Case 004 : Live Only (Serviceability)

Load Combination + 1.00 UT + 1.00 L1

The Nodal Co-ordinates

Node	X (m)	Y (m)	Z (m)	Node	X (m)	Y (m)	Z (m)
1	0.000	0.000	0.000	2	0.000	3.220	0.000
3	11.200	0.000	0.000	4	1.880	4.086	0.000
5	2.250	3.283	0.000	6	11.200	3.220	0.000
7	9.333	4.080	0.000	8	3.760	4.952	0.000
9	8.950	3.283	0.000	10	7.467	4.940	0.000
11	4.500	3.345	0.000	12	6.700	3.345	0.000
13	5.600	5.800	0.000				

Member Properties**Members 1-2**

M	...	178x102 UB 19 [S 275]		
A	24.26E-4	Iy 1357E-8	Iz 137.6E-8	It 4.41E-8
E	210.0E6	G 80.77E6		

Members 3-7 & 18-21

M	...	75x8 Flat [S 275]		
A	6.0E-4	Iy 28.12E-8	Iz 0.32E-8	It 1.28E-8
E	210.0E6	G 80.77E6		

Members 8-13

M	...	102x102 T 12 [S 275]		
A	14.69E-4	Iy 120.6E-8	Iz 82.4E-8	It 3.51E-8
E	210.0E6	G 80.77E6		

Members 14-17

M	...	100x100x8 ANG 12.2 [S 275]		
A	15.6E-4	Iy 146.0E-8	Iz 146.0E-8	It 3.68E-8
E	210.0E6	G 80.77E6		

Member Loading

Member Self Weight Density Load Included in Load Group D1, defined by Modulus of Elasticity

E kN/mm ²	Density kN/m ³
>= 200.00	77.01
>= 20.00	24.00
>= 2.00	10.00

Members 1-21 - MasterFrame Pro Loads

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D1 D 077.010 (kN/m³)

Members 3-7 & 18-21
UT Tension-Only (No Compression)

Members 8-13
D1 UDLY -001.000 (kN/m) L1 UDLY -001.200 (kN/m)

Member End Releases

Symbols	End 1 torsion-minor-major	End 2 torsion-minor-major	0 Released @ Fixed
	3 @@@ @@@	6 @@@ @@@	8 @@@ @@@ 11 @@@ @@@

Nodal Loading and Support Conditions

NODES 1 & 3
UT Rs 1 1 1 1 1 1 (Fixed)

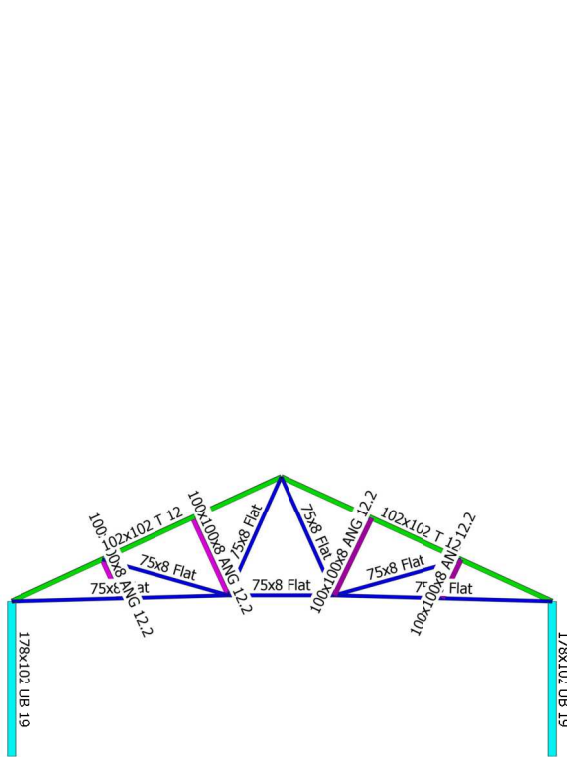


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Section Size
Default Grade S 275
178x102 UB 19
100x100x8 ANG 12.2
102x102 T 12
75x8 Flat

Frame Geometry - (Full Frame) - Front View

Not to Scale

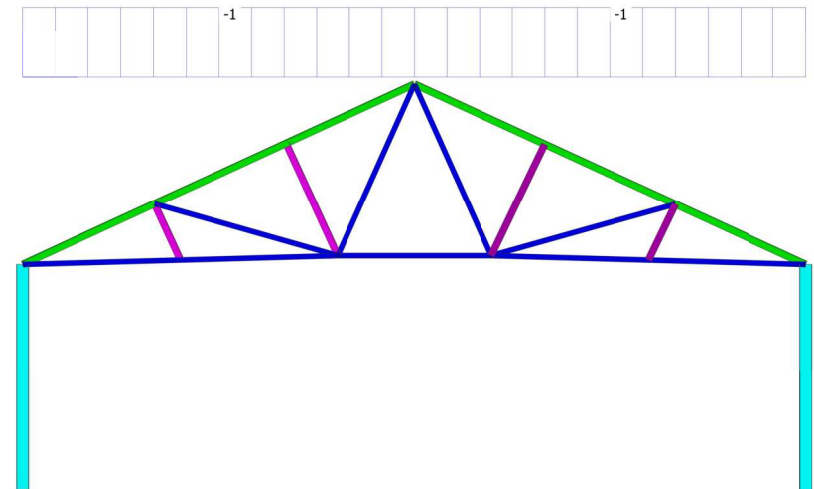


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Load Diagram - Load Case 003 - All Groups
 Frame Geometry - (Full Frame) - Front View

Not to Scale

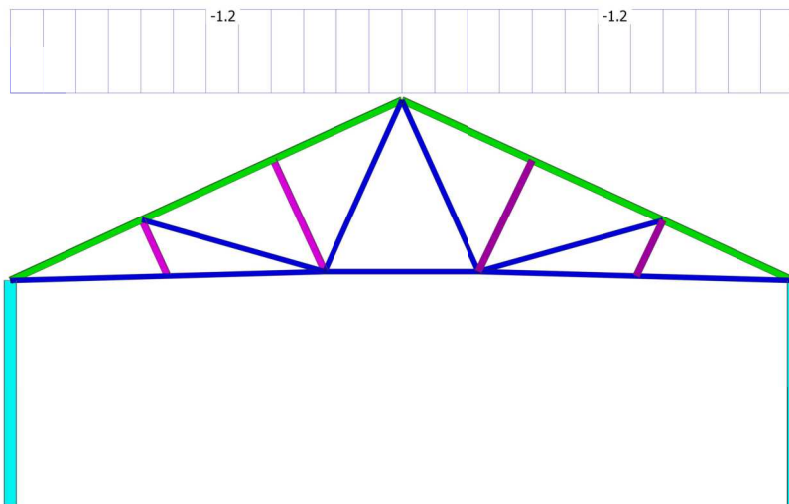


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Load Diagram - Load Case 004 - All Groups
 Frame Geometry - (Full Frame) - Front View

Not to Scale

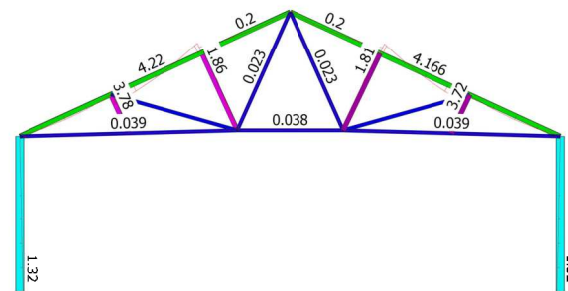


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Load Case 001 : Dead plus Live (Ultimate)
 Bending Moment Diagram (Major Axis) - (Full Frame) - Front View
 Bending Moment Values (kN.m)

Not to Scale

20 kN.m = 1m

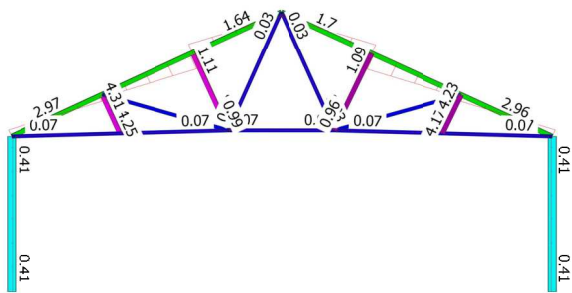


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 Approved :



Load Case 001 : Dead plus Live (Ultimate)
 Shear Force Diagram (Major Axis) - (Full Frame) - Front View
 Shear Force Values (kN)

Not to Scale

20 kN = 1m

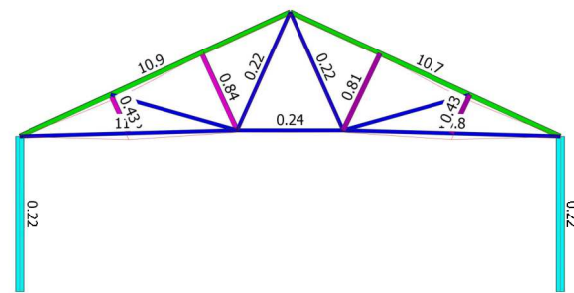


Braemar Structural Design

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Job Ref :
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 Checked :
 Approved :



Load Case 002 : Dead Plus Live (Serviceability)
 Deflected Shape - (Full Frame) - Front View
 Member Deflection (mm)

Not to Scale

10 Magnification