

Our Ref: 25-009_C1
22nd December 2025



FAO Mr. Nick Barnes

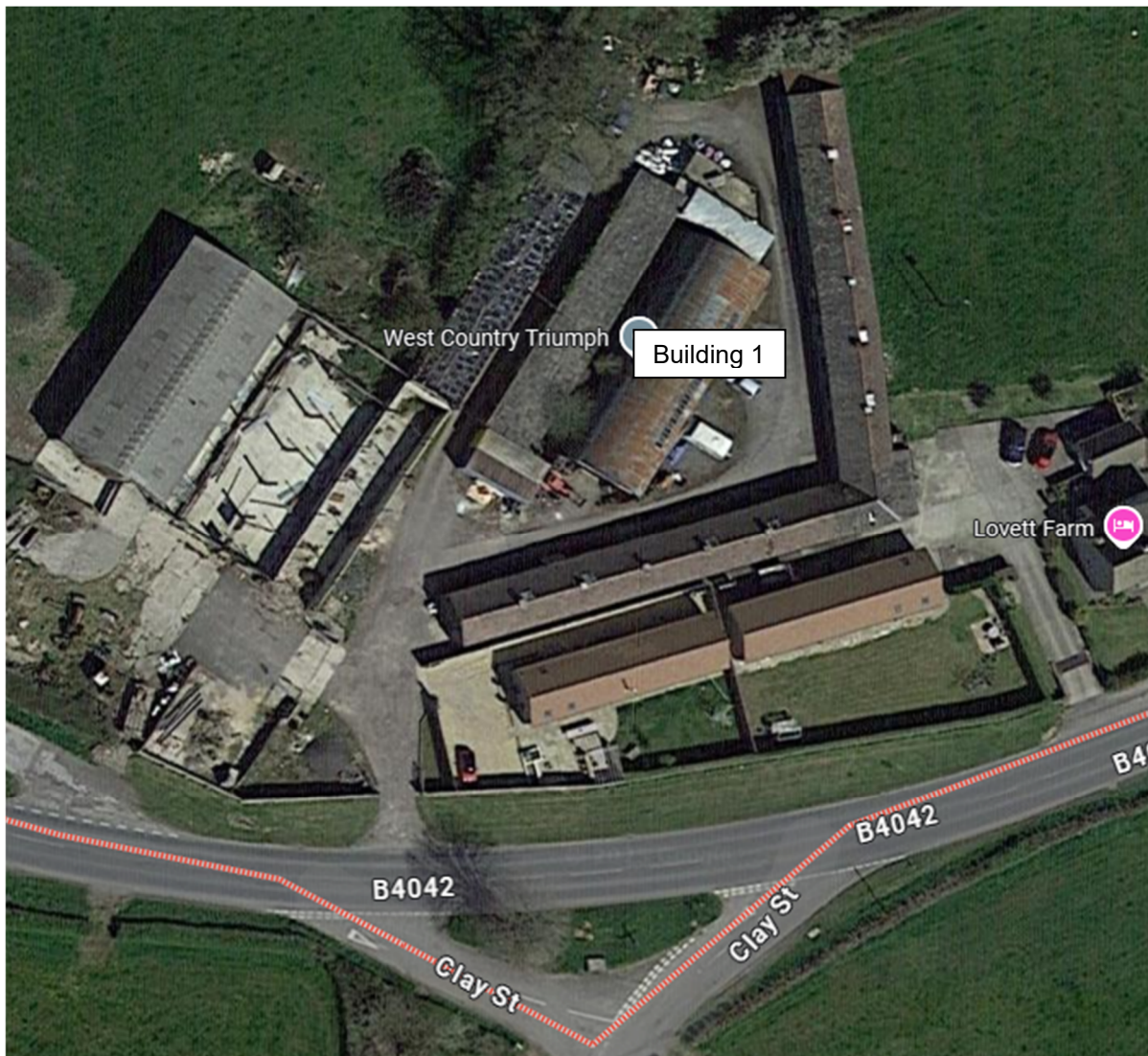
Lovetts Farm

Little Somerford, Chippenham, Wiltshire SN15 5BP

Structural inspection and assessment - Building 1

Introduction

This report summarises the structural condition of the arched structure known as building 1 at the above site. It was commissioned to review the general suitability for conversion from agricultural use into residential use under planning Class Q of the 2015 Town and Country Planning (General Permitted Development) (England) Order 2015.



Description

Building 1 is an impressive slender steel semi-circular arch structure that was formerly located in Warminster as Frisby Shoes factory. The original date of construction is not known but it is believed that the structure was relocated to its current site in the mid-1960's.

- The structure consists of 12 arched bays spanning approximately 10.3m with 89mm diameter steel tube arches at 2.4m centres.
- The arched members are butt-spliced at $\frac{1}{4}$ points with a bolted flange type connection.
- There are no signs of in-plane or out-of-plane buckling of the arches.
- Steel angles span the 2.4m between arches acting as purlins to the corrugated metal sheeting.
- The end gable walls have additional steel and timber restraints providing additional stiffness to the external cladding and trimming across the main entrance roller-shutter door.
- There is no diagonal bracing providing stability perpendicular to the arches. It is assumed that said stability is provided by diaphragm action of the corrugated cladding and its fixing to the angle purlins.
- A 550mm high hollow block wall supports the arches with concrete fill in the blocks directly supporting the arches.
- There is no sign of settlement or ground movement, and it is reasonable to assume that substantial foundations exist beneath the block wall.
- A concrete ground-floor slab extends for the full extent of the building.
- The arch structure has moderate surface corrosion that will necessitate grit blasting and re-coating with a suitable paint protection system within the next few years.



Figure 1. Typical internal view of Building 1.



Figure 2. Typical arch support detail.



Figure 3. Typical arch splice detail and typical purlin connection to primary arch member.



Figure 4. View looking towards main entrance roller shutter door.

Structural assessment with regards to the proposed conversion

The proposed single storey layout shown in Appendix A enables the existing steel arches to be retained in their entirety. The asbestos cladding will need to be changed to a modern insulated panel circa 100mm deep in-order to provide the necessary insulated shell to the converted building.

The overall loading will reduce slightly since modern day trapezoidal insulated cladding panels are lighter than the current asbestos cement corrugated panels. Appendix A includes the analysis and structural checking of the arches for the proposed loading conditions and are shown to be satisfactory.

The new single storey interventions will be constructed from timber cassette wall panels supported off the existing ground-floor slab. There would be no requirement for additional structural elements, foundations, bracing, or other load-bearing components to support the proposed residential loading.

Conclusions

The structure is in a reasonable condition for its age and has been adequately maintained to ensure its overall structural integrity for general storage use. With the addition of a suitably detailed insulated outer shell (spanning between the internal arches), the structure would be suitable for conversion in accordance with the residential proposals shown on LPC drawing 884 SK01. The proposed residential layout can therefore be accommodated without necessitating significant reconstruction more than the operational works understood to be permitted under Class Q1.

Yours sincerely,

Jerry King

Chartered Engineer

BEng (Hons) MIStructE

Director

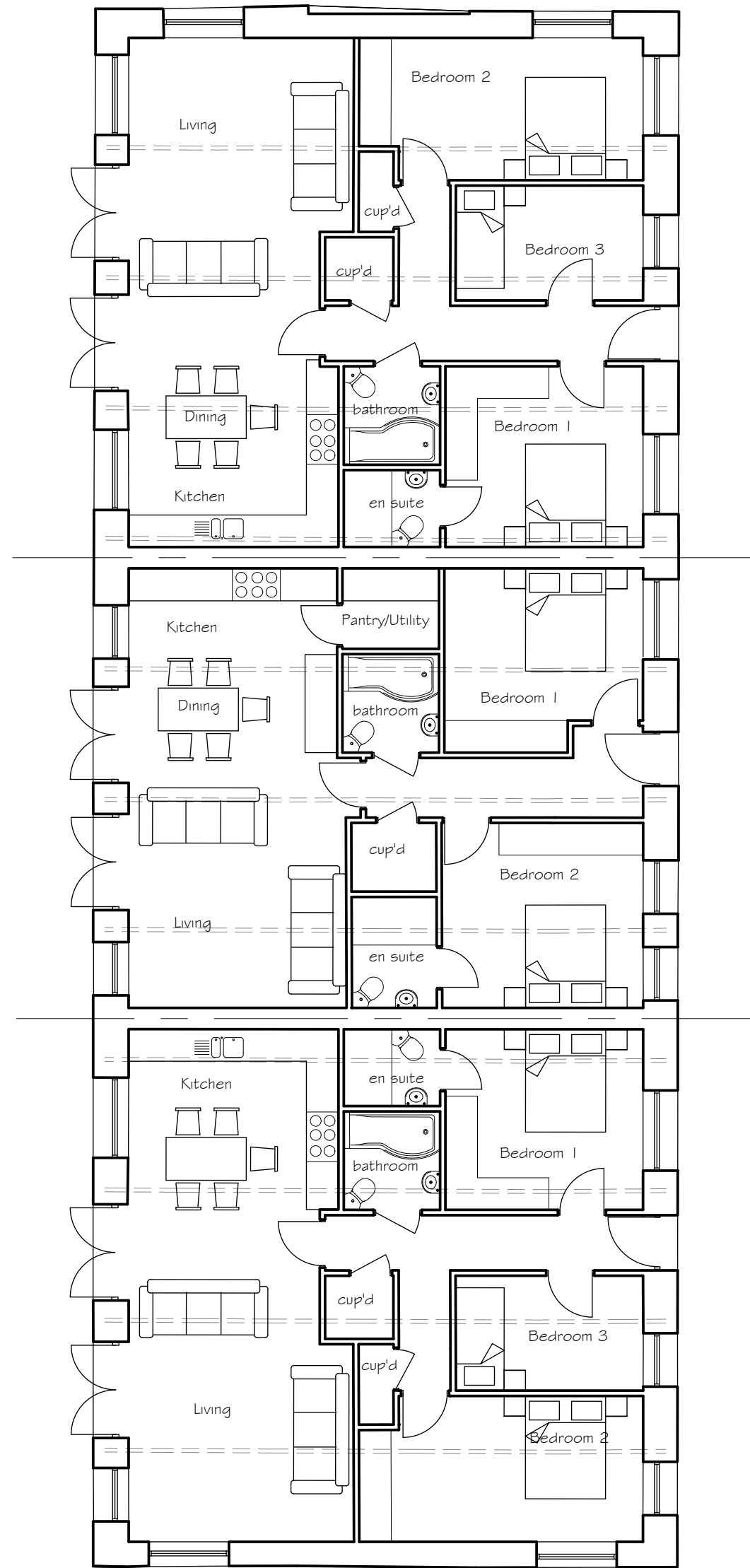
Structures2 Ltd.

Appendix A. Proposed residential layout.

UNIT 1

UNIT 2

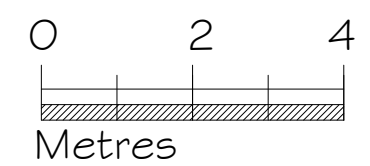
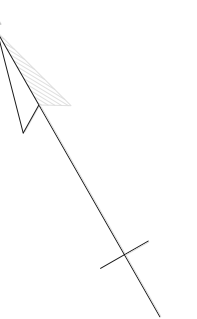
UNIT 3



GROUND FLOOR PLAN 1:100

Gross Internal Areas:

Units 1	91.7m ²
Unit 2	79.1m ²
Unit 3	92.3m ²



Appendix B. Structural calculations.

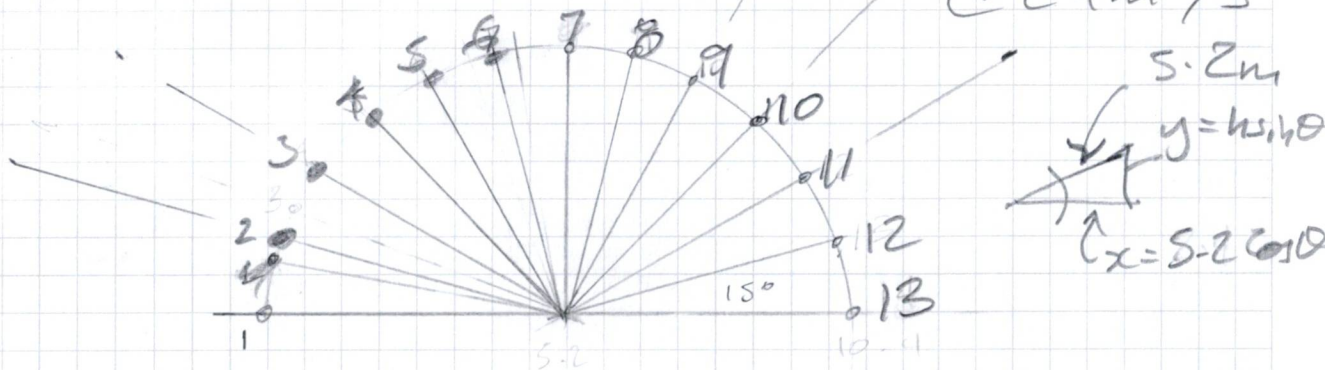


EXISTING STEEL ARCH CHECKS.

$$L = 10.4 \text{ m}$$

$$R = 5.2 \text{ m}$$

Steel tube $\phi = 88.9 \phi$
 $\times 5 \text{ CMS}$
 $@ 2.4 \text{ m c/s}$



$$Jt. 1 = -5.2, 0$$

$$Jt. 13 = 5.2, 0$$

$$15^\circ Jt. 2 = -5.023, 1.346$$

$$Jt. 12 = 5.023, 1.346$$

$$30^\circ Jt. 3 = -4.503, 2.6$$

$$Jt. 11 = 4.503, 2.6$$

$$45^\circ Jt. 4 = -3.677, 3.677$$

$$Jt. 10 = 3.677, 3.677$$

$$60^\circ Jt. 5 = -2.6, 4.503$$

$$Jt. 9 = 2.6, 4.503$$

$$75^\circ Jt. 6 = -1.346, 5.023$$

$$Jt. 8 = 1.346, 5.023$$

NEW DEAD LOADS = $0.1 \times 1.36 \text{ m} \times 2.4 = 0.33 \text{ kN}$
 (10 kg/m² panels)

EXG. SNOW LOADS = $0.6 \times 2.4 = 1.44 \text{ kN/m}$

$$JTS 1 + 13 = 1.44 \times 1.346 = 1.94 \text{ kN}$$

$$JTS 2 + 12 = 1.44 \times (5.2 - 5.023) / 2 = 0.13 \text{ kN}$$

$$JTS 3 + 11 = 1.44 \times (5.023 - 3.677) / 2 = 1 \text{ kN}$$

$$JTS 4 + 10 = 1.44 \times (4.503 - 2.6) / 2 = 1.37 \text{ kN}$$

$$JTS 5 + 9 = 1.44 \times (3.677 - 1.346) / 2 = 1.68 \text{ kN}$$

$$JTS 6 + 8 = 1.44 \times (2.6 - 0) / 2 = 1.87 \text{ kN}$$

Refer to enclosed Tedds analysis
 for deflection, BM + axial + SF's.



Project: LOVETT'S FARM

Section: ARCH STRUCTURE.

REF. SCI P-281.Cl. 6-2-1 $2\frac{1}{2}\%$ rise = 130mm. $\delta_{max} = 70 \text{ mm} \leq 130 \%$ 1st order analysis is acceptable.

Check in-plane slenderness. (Fig. 6.11)

$$\frac{l_E}{L} = \frac{5200}{10400} = 0.5 \quad \therefore B = 0.57.$$

$$\therefore l_E = 0.57 \times 8.17 \text{ m} = 4.66 \text{ m}.$$

$$\frac{l_E}{r_{yy}} = \frac{4660}{29.7} = 157 \leq 180 \quad \therefore \text{OK.}$$

Check combined BM + axial force.

$$\frac{6.6}{11.2} + \frac{13.2}{105} = 0.74 \leq 1.0.$$

Re-check if CHS wall thickness is minimum 3mm.

$$\frac{6.6}{7.58} + \frac{13.2}{72} = 1.00 \therefore \text{OK.}$$

 $\therefore$ EXG. 88-90 CHS SUFFICIENT.

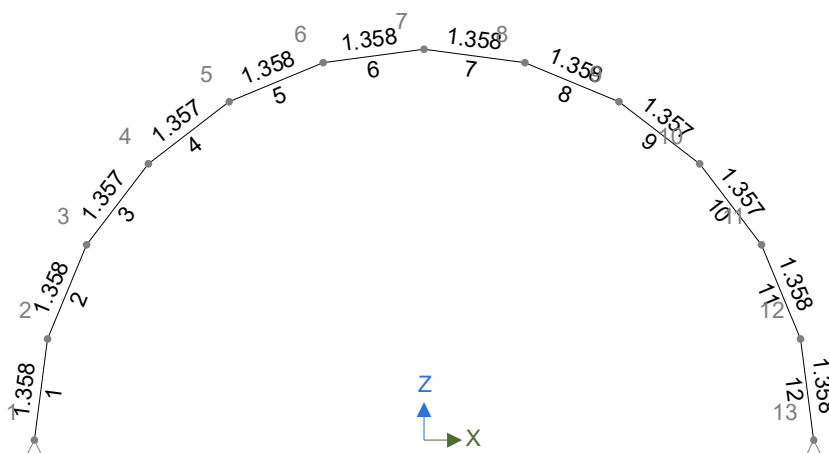
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Lovetts Farm				25-009	
Calcs for				Start page no./Revision	
Arch				1	
Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
JK	22/12/2025				

ANALYSIS

Tedds calculation version 1.0.37

Geometry

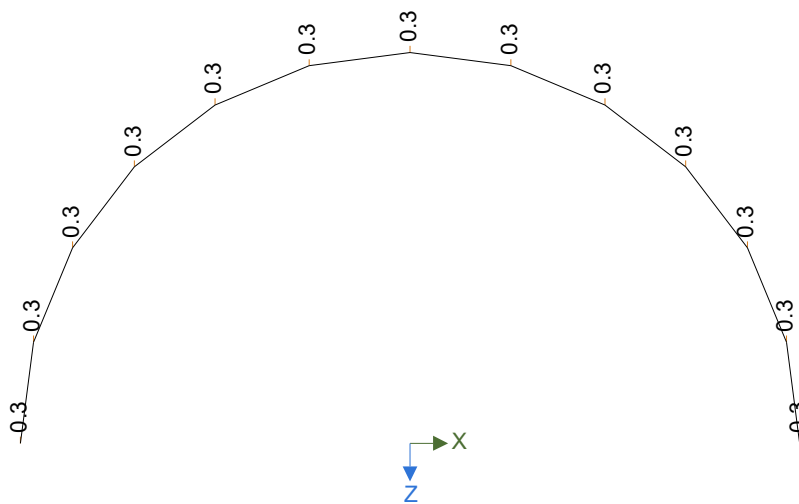
Geometry (m) - Steel (BS5950) - CHS 88.9x5.0



Loading

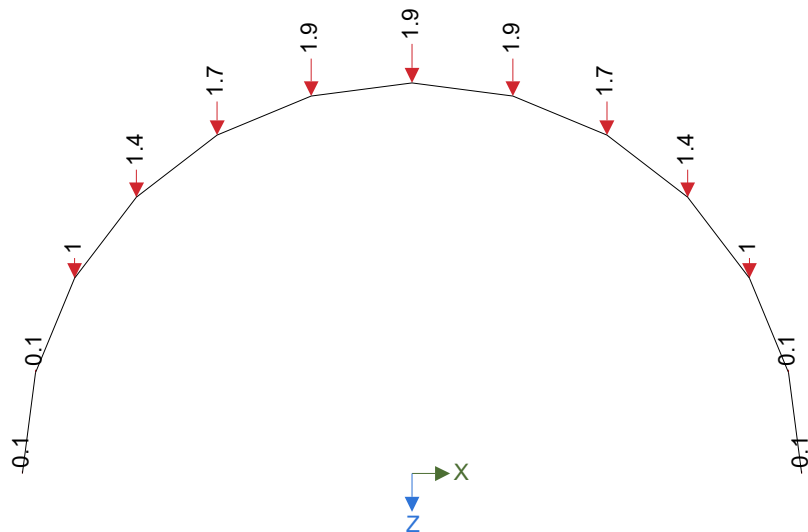
Self weight included

Permanent - Loading (kN)

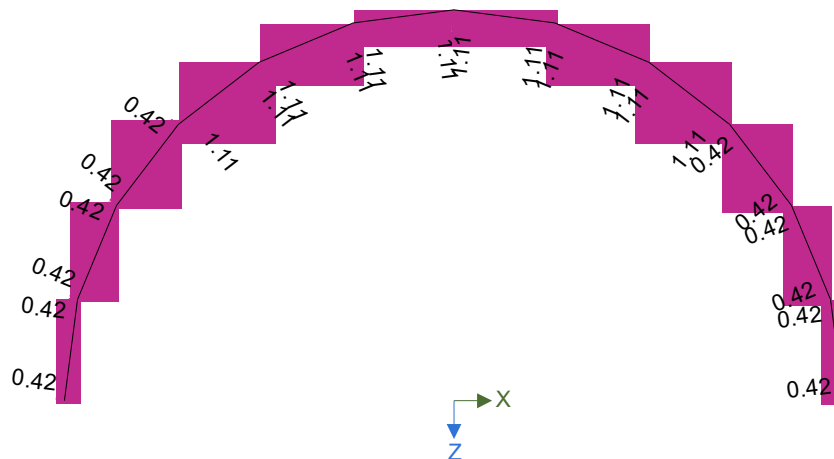


Project				Job no.	
Lovetts Farm				25-009	
Calcs for				Start page no./Revision	
Arch				2	
Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
JK	22/12/2025				

Snow - Loading (kN)



Wind - Loading (kN/m)

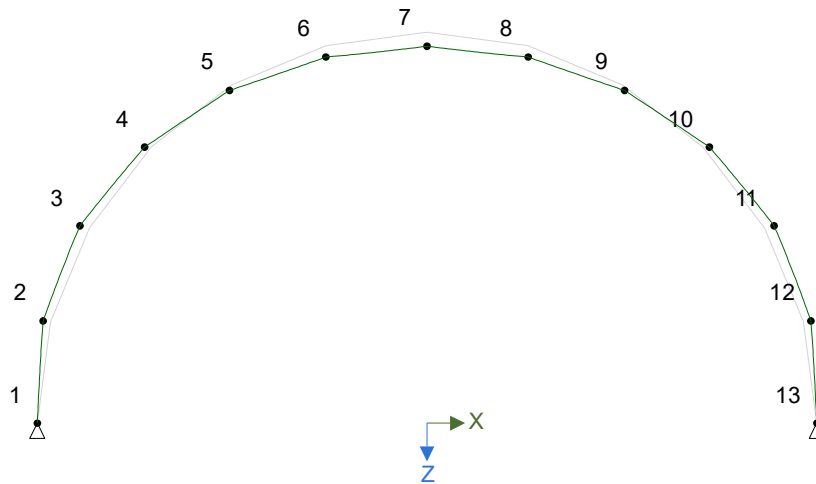


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Calcs by JK	Calcs date 22/12/2025	Checked by	Checked date	Approved by	Approved date

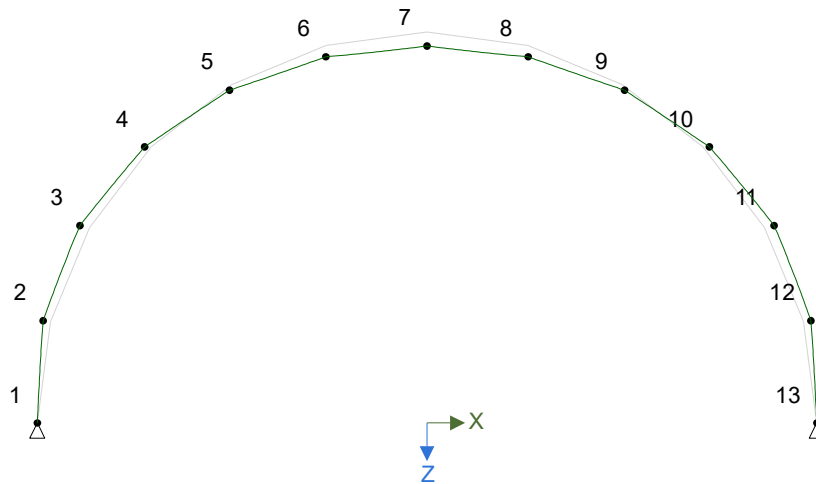
Results

Total deflection

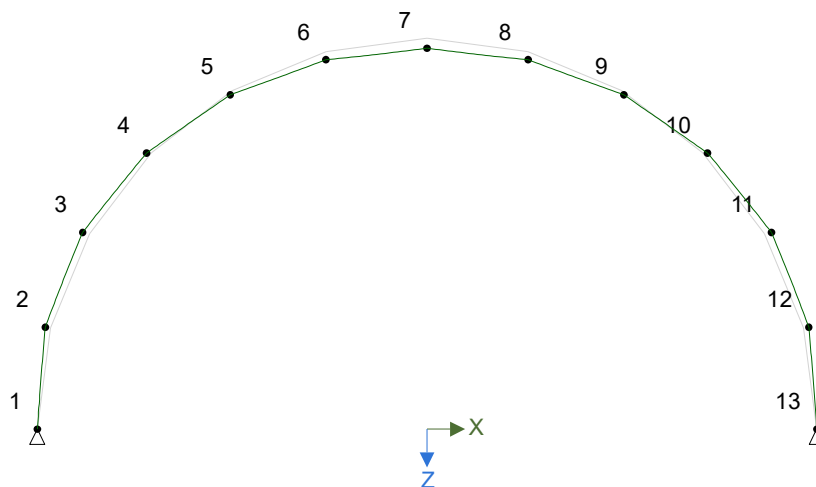
1.4D (Strength) - Total deflection



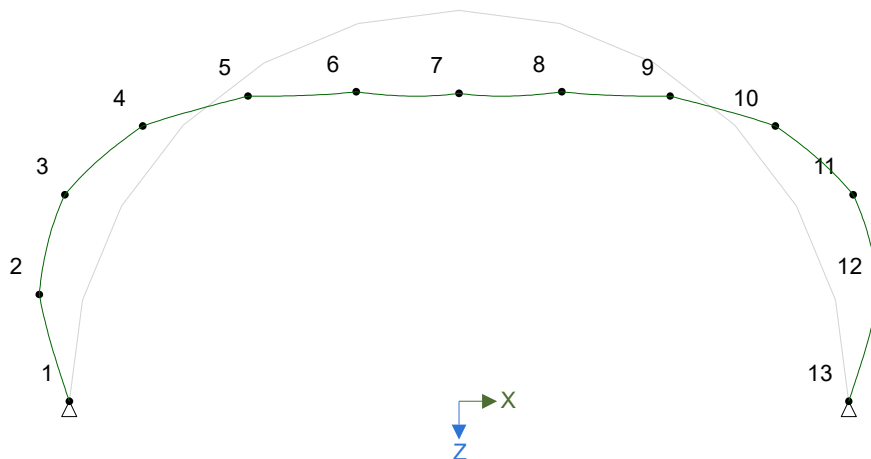
1.4D + 1.6I + 1.6RI (Strength) - Total deflection



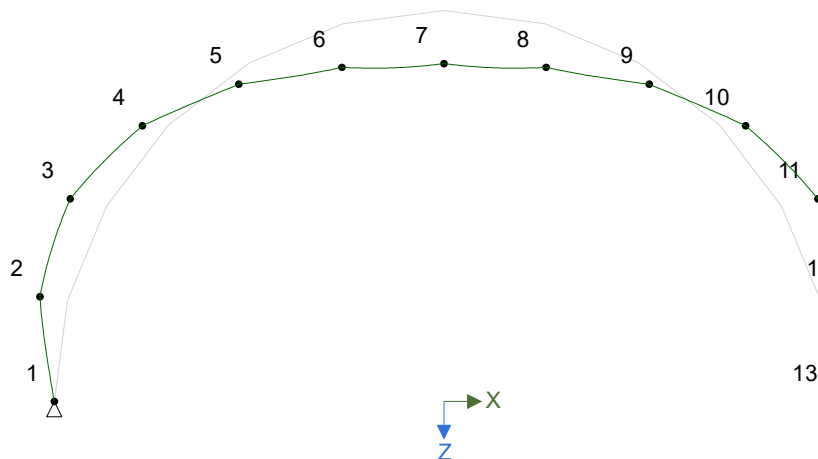
1.0D + 1.0I + 1.0RI (Service) - Total deflection



1.4D + 1.6I + 1.6S (Strength) - Total deflection

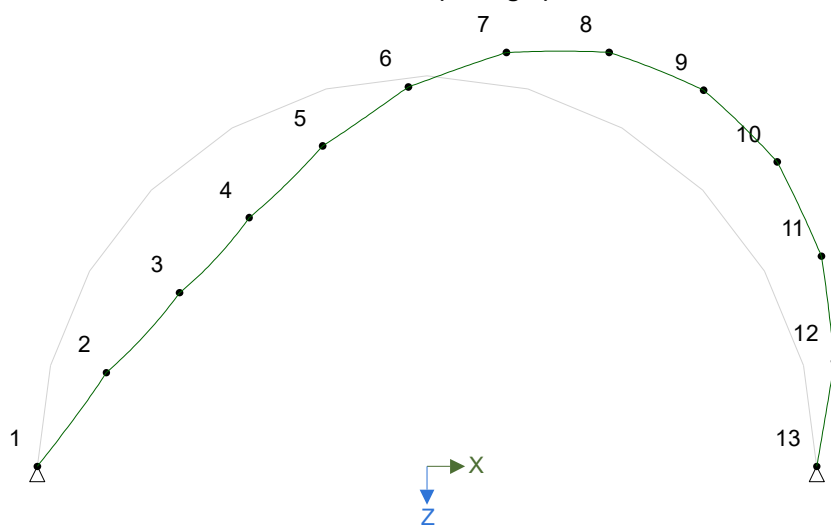


1.0D + 1.0I + 1.0S (Service) - Total deflection

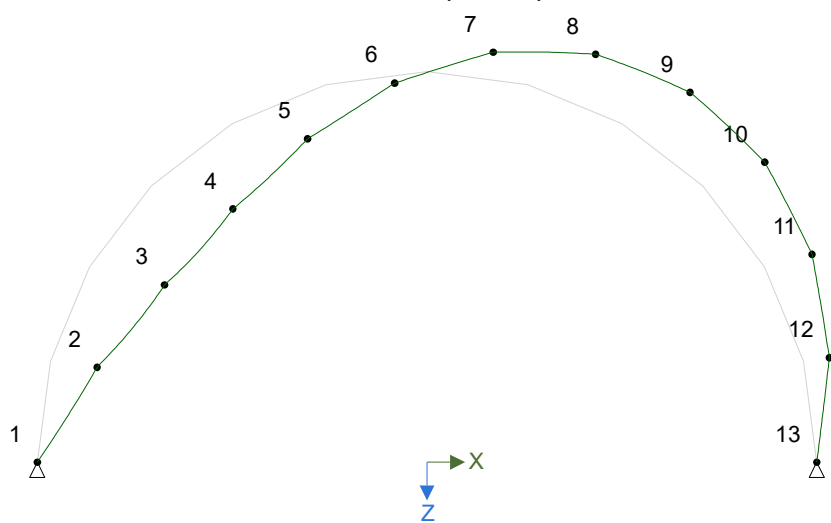


Project Lovetts Farm				Job no. 25-009	
Calcs for Arch				Start page no./Revision 5	
Calcs by JK	Calcs date 22/12/2025	Checked by	Checked date	Approved by	Approved date

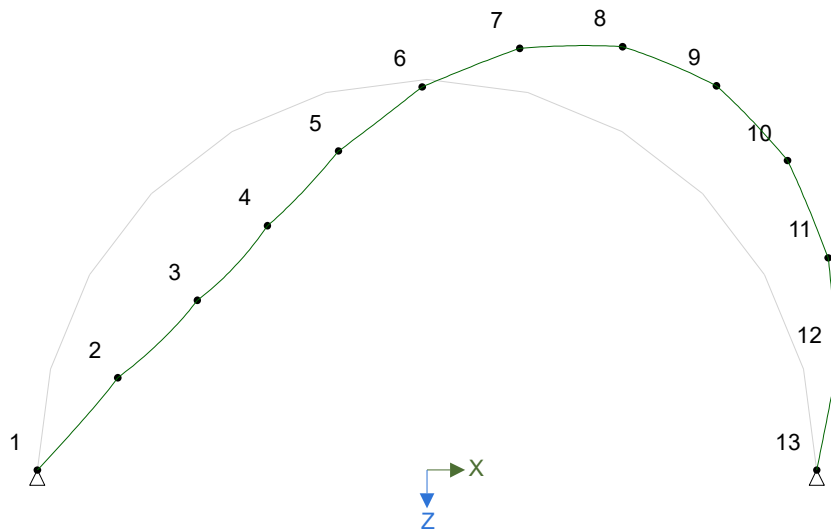
1.2D + 1.2I + 1.2RI + 1.2W (Strength) - Total deflection



1.0D + 1.0I + 1.0RI + 1.0W (Service) - Total deflection



1.0D + 1.4W (Strength) - Total deflection



Node deflections

Load combination: 1.4D (Strength)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	-0.48193	
2	-10	-1.3	-0.30829	
3	-12.9	-2.5	0.04777	
4	-9.1	0.4	0.32606	
5	-3.6	7.7	0.40078	
6	-0.4	15.3	0.26485	
7	0	18.5	0	
8	0.4	15.3	-0.26485	
9	3.6	7.7	-0.40078	
10	9.1	0.4	-0.32606	
11	12.9	-2.5	-0.04777	
12	10	-1.3	0.30829	
13	0	0	0.48193	

Load combination: 1.4D + 1.6I + 1.6RI (Strength)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	-0.48193	
2	-10	-1.3	-0.30829	
3	-12.9	-2.5	0.04777	
4	-9.1	0.4	0.32606	
5	-3.6	7.7	0.40078	
6	-0.4	15.3	0.26485	

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
7	0	18.5	0	
8	0.4	15.3	-0.26485	
9	3.6	7.7	-0.40078	
10	9.1	0.4	-0.32606	
11	12.9	-2.5	-0.04777	
12	10	-1.3	0.30829	
13	0	0	0.48193	

Load combination: 1.0D + 1.0I + 1.0RI (Service)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	-0.34424	
2	-7.1	-0.9	-0.22021	
3	-9.2	-1.8	0.03412	
4	-6.5	0.3	0.2329	
5	-2.6	5.5	0.28627	
6	-0.3	10.9	0.18918	
7	0	13.2	0	
8	0.3	10.9	-0.18918	
9	2.6	5.5	-0.28627	
10	6.5	0.3	-0.2329	
11	9.2	-1.8	-0.03412	
12	7.1	-0.9	0.22021	
13	0	0	0.34424	

Load combination: 1.4D + 1.6I + 1.6S (Strength)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	-2.77578	
2	-57.8	-7.5	-1.8143	
3	-75.7	-14.9	0.21878	
4	-54.4	1.6	1.89594	
5	-21.7	44.3	2.40304	
6	-2.6	90.5	1.61284	
7	0	110.4	0	
8	2.6	90.5	-1.61284	
9	21.7	44.3	-2.40304	
10	54.4	1.6	-1.89594	
11	75.7	-14.9	-0.21878	
12	57.8	-7.5	1.8143	
13	0	0	2.77578	

Load combination: 1.0D + 1.0I + 1.0S (Service)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	-1.77789	
2	-37	-4.8	-1.16146	
3	-48.5	-9.5	0.141	
4	-34.8	1	1.21407	
5	-13.9	28.4	1.53768	
6	-1.7	57.9	1.03167	
7	0	70.6	0	
8	1.7	57.9	-1.03167	
9	13.9	28.4	-1.53768	
10	34.8	1	-1.21407	
11	48.5	-9.5	-0.141	
12	37	-4.8	1.16146	
13	0	0	1.77789	

Load combination: 1.2D + 1.2I + 1.2RI + 1.2W (Strength)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	3.37269	
2	74.4	9.8	2.763	
3	120.1	28.7	1.3272	
4	130.4	36.6	-0.17394	
5	120.7	23.9	-1.0489	
6	109.7	-2.7	-1.2854	
7	106	-30.8	-1.03411	
8	108.4	-48.7	-0.44593	
9	109.1	-50.4	0.30515	
10	99.5	-37.8	1.00085	
11	76.1	-19.8	1.44566	
12	41.4	-5.5	1.6978	
13	0	0	1.80045	

Load combination: 1.0D + 1.0I + 1.0RI + 1.0W (Service)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	2.81058	
2	62	8.1	2.3025	
3	100.1	23.9	1.106	
4	108.6	30.5	-0.14495	
5	100.6	19.9	-0.87409	
6	91.4	-2.3	-1.07116	
7	88.3	-25.7	-0.86175	

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
8	90.3	-40.6	-0.37161	
9	90.9	-42	0.25429	
10	82.9	-31.5	0.83405	
11	63.4	-16.5	1.20472	
12	34.5	-4.5	1.41484	
13	0	0	1.50038	

Load combination: 1.0D + 1.4W (Strength)

Node	Deflection		Rotation (°)	Co-ordinate system
	X (mm)	Z (mm)		
1	0	0	4.0725	
2	89.7	11.8	3.31158	
3	143.8	34.2	1.53475	
4	154.7	42.5	-0.2961	
5	141.8	25.7	-1.33823	
6	128.1	-7.5	-1.5753	
7	123.7	-41.2	-1.20646	
8	126.3	-61.2	-0.44458	
9	126.2	-60.9	0.47052	
10	113.4	-44.2	1.26082	
11	85.1	-22.4	1.70026	
12	45.5	-6	1.89269	
13	0	0	1.96284	

Total base reactions

Load case/combination	Force	
	FX (kN)	FZ (kN)
1.4D (Strength)	0	8.3
1.4D + 1.6I + 1.6RI (Strength)	0	8.3
1.0D + 1.0I + 1.0RI (Service)	0	5.9
1.4D + 1.6I + 1.6S (Strength)	0	31.2
1.0D + 1.0I + 1.0S (Service)	0	20.2
1.2D + 1.2I + 1.2RI + 1.2W (Strength)	-3.7	-2.6
1.0D + 1.0I + 1.0RI + 1.0W (Service)	-3.1	-2.2
1.0D + 1.4W (Strength)	-4.3	-5.4

Reactions
Load combination: 1.4D (Strength)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	1.3	4.2	0

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
13	-1.3	4.2	0

Load combination: 1.4D + 1.6I + 1.6RI (Strength)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	1.3	4.2	0
13	-1.3	4.2	0

Load combination: 1.0D + 1.0I + 1.0RI (Service)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	0.9	3	0
13	-0.9	3	0

Load combination: 1.4D + 1.6I + 1.6S (Strength)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	6.3	15.6	0
13	-6.3	15.6	0

Load combination: 1.0D + 1.0I + 1.0S (Service)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	4.1	10.1	0
13	-4.1	10.1	0

Load combination: 1.2D + 1.2I + 1.2RI + 1.2W (Strength)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	-3.2	-1.3	0
13	-0.5	-1.3	0

Load combination: 1.0D + 1.0I + 1.0RI + 1.0W (Service)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	-2.7	-1.1	0
13	-0.4	-1.1	0

Load combination: 1.0D + 1.4W (Strength)

Node	Force		Moment My (kNm)
	Fx (kN)	Fz (kN)	
1	-4.1	-2.7	0
13	-0.2	-2.7	0

Element end forces

Load combination: 1.4D (Strength)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	-3.8	0.8	0
		2	3.6	-0.8	-1.1
2	1.358	2	-3.3	0	1.1
		3	3.1	-0.1	-1.1
3	1.357	3	-2.7	-0.4	1.1
		4	2.5	0.3	-0.6
4	1.357	4	-2.1	-0.6	0.6
		5	1.9	0.5	0.1
5	1.358	5	-1.6	-0.5	-0.1
		6	1.5	0.3	0.7
6	1.358	6	-1.3	-0.3	-0.7
		7	1.3	0.1	0.9
7	1.358	7	-1.3	0.1	-0.9
		8	1.3	-0.3	0.7
8	1.358	8	-1.5	0.3	-0.7
		9	1.6	-0.5	0.1
9	1.357	9	-1.9	0.5	-0.1
		10	2.1	-0.6	-0.6
10	1.357	10	-2.5	0.3	0.6
		11	2.7	-0.4	-1.1
11	1.358	11	-3.1	-0.1	1.1
		12	3.3	0	-1.1
12	1.358	12	-3.6	-0.8	1.1
		13	3.8	0.8	0

Load combination: 1.4D + 1.6I + 1.6RI (Strength)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	-3.8	0.8	0
		2	3.6	-0.8	-1.1
2	1.358	2	-3.3	0	1.1
		3	3.1	-0.1	-1.1
3	1.357	3	-2.7	-0.4	1.1
		4	2.5	0.3	-0.6
4	1.357	4	-2.1	-0.6	0.6
		5	1.9	0.5	0.1
5	1.358	5	-1.6	-0.5	-0.1
		6	1.5	0.3	0.7
6	1.358	6	-1.3	-0.3	-0.7
		7	1.3	0.1	0.9
7	1.358	7	-1.3	0.1	-0.9
		8	1.3	-0.3	0.7
8	1.358	8	-1.5	0.3	-0.7
		9	1.6	-0.5	0.1
9	1.357	9	-1.9	0.5	-0.1

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
		10	2.1	-0.6	-0.6
10	1.357	10	-2.5	0.3	0.6
		11	2.7	-0.4	-1.1
11	1.358	11	-3.1	-0.1	1.1
		12	3.3	0	-1.1
12	1.358	12	-3.6	-0.8	1.1
		13	3.8	0.8	0

Load combination: 1.0D + 1.0I + 1.0RI (Service)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	-2.7	0.6	0
		2	2.6	-0.6	-0.8
2	1.358	2	-2.4	0	0.8
		3	2.2	-0.1	-0.8
3	1.357	3	-1.9	-0.3	0.8
		4	1.8	0.2	-0.4
4	1.357	4	-1.5	-0.4	0.4
		5	1.4	0.3	0.1
5	1.358	5	-1.1	-0.4	-0.1
		6	1.1	0.2	0.5
6	1.358	6	-0.9	-0.2	-0.5
		7	0.9	0	0.6
7	1.358	7	-0.9	0	-0.6
		8	0.9	-0.2	0.5
8	1.358	8	-1.1	0.2	-0.5
		9	1.1	-0.4	0.1
9	1.357	9	-1.4	0.3	-0.1
		10	1.5	-0.4	-0.4
10	1.357	10	-1.8	0.2	0.4
		11	1.9	-0.3	-0.8
11	1.358	11	-2.2	-0.1	0.8
		12	2.4	0	-0.8
12	1.358	12	-2.6	-0.6	0.8
		13	2.7	0.6	0

Load combination: 1.4D + 1.6I + 1.6S (Strength)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	-15.6	4.3	0
		2	15.4	-4.4	-5.9
2	1.358	2	-15.4	0.5	5.9
		3	15.2	-0.5	-6.6
3	1.357	3	-13.2	-2.2	6.6
		4	13.1	2	-3.7
4	1.357	4	-10.5	-3.3	3.7
		5	10.4	3.1	0.6
5	1.358	5	-8	-2.8	-0.6

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
		6	7.9	2.6	4.2
6	1.358	6	-6.5	-1.1	-4.2
		7	6.5	0.9	5.6
7	1.358	7	-6.5	0.9	-5.6
		8	6.5	-1.1	4.2
8	1.358	8	-7.9	2.6	-4.2
		9	8	-2.8	0.6
9	1.357	9	-10.4	3.1	-0.6
		10	10.5	-3.3	-3.7
10	1.357	10	-13.1	2	3.7
		11	13.2	-2.2	-6.6
11	1.358	11	-15.2	-0.5	6.6
		12	15.4	0.5	-5.9
12	1.358	12	-15.4	-4.4	5.9
		13	15.6	4.3	0

Load combination: 1.0D + 1.0I + 1.0S (Service)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	-10.1	2.8	0
		2	10	-2.8	-3.8
2	1.358	2	-9.9	0.3	3.8
		3	9.8	-0.3	-4.2
3	1.357	3	-8.5	-1.4	4.2
		4	8.4	1.3	-2.4
4	1.357	4	-6.7	-2.1	2.4
		5	6.7	2	0.4
5	1.358	5	-5.1	-1.8	-0.4
		6	5.1	1.6	2.7
6	1.358	6	-4.2	-0.7	-2.7
		7	4.2	0.6	3.6
7	1.358	7	-4.2	0.6	-3.6
		8	4.2	-0.7	2.7
8	1.358	8	-5.1	1.6	-2.7
		9	5.1	-1.8	0.4
9	1.357	9	-6.7	2	-0.4
		10	6.7	-2.1	-2.4
10	1.357	10	-8.4	1.3	2.4
		11	8.5	-1.4	-4.2
11	1.358	11	-9.8	-0.3	4.2
		12	9.9	0.3	-3.8
12	1.358	12	-10	-2.8	3.8
		13	10.1	2.8	0

Load combination: 1.2D + 1.2I + 1.2RI + 1.2W (Strength)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	2.1	-3	0

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
		2	-2.3	2.3	3.6
2	1.358	2	3.2	-1.5	-3.6
		3	-3.3	0.7	5.1
3	1.357	3	3.7	0.4	-5.1
		4	-3.8	-1.2	4
4	1.357	4	3.6	2.5	-4
		5	-3.7	-0.8	1.8
5	1.358	5	3.6	2.1	-1.8
		6	-3.6	-0.4	0.1
6	1.358	6	3.4	1.8	-0.1
		7	-3.5	-0.1	-1.2
7	1.358	7	3.3	1.4	1.2
		8	-3.2	0.2	-2
8	1.358	8	3	1	2
		9	-3	0.7	-2.2
9	1.357	9	2.8	0.4	2.2
		10	-2.7	1.2	-1.7
10	1.357	10	2.6	-0.3	1.7
		11	-2.5	0.8	-0.9
11	1.358	11	2.3	0	0.9
		12	-2.1	0.6	-0.5
12	1.358	12	1.8	0	0.5
		13	-1.6	0.7	0

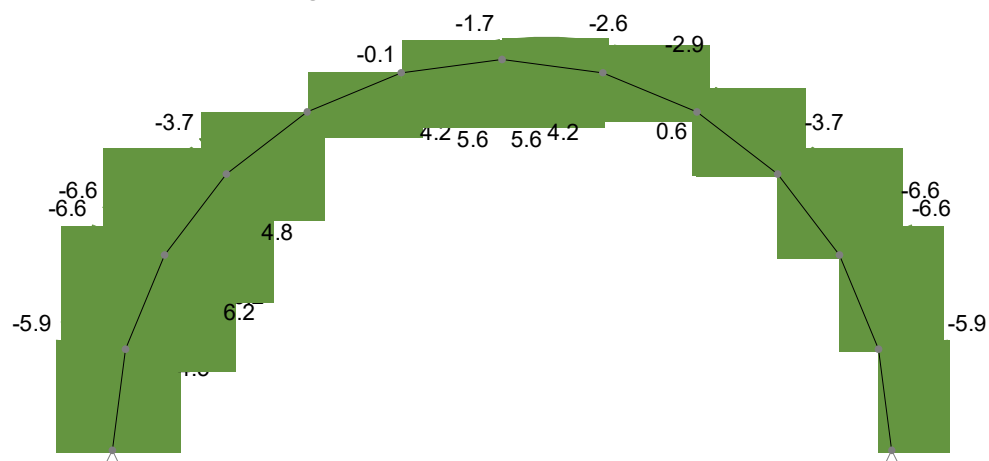
Load combination: 1.0D + 1.0I + 1.0RI + 1.0W (Service)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	1.8	-2.5	0
		2	-1.9	1.9	3
2	1.358	2	2.6	-1.2	-3
		3	-2.8	0.6	4.2
3	1.357	3	3.1	0.3	-4.2
		4	-3.2	-1	3.3
4	1.357	4	3	2	-3.3
		5	-3.1	-0.7	1.5
5	1.358	5	3	1.7	-1.5
		6	-3	-0.4	0
6	1.358	6	2.9	1.5	0
		7	-2.9	-0.1	-1
7	1.358	7	2.7	1.2	1
		8	-2.7	0.2	-1.7
8	1.358	8	2.5	0.8	1.7
		9	-2.5	0.6	-1.8
9	1.357	9	2.3	0.4	1.8
		10	-2.2	1	-1.4
10	1.357	10	2.2	-0.2	1.4
		11	-2.1	0.7	-0.8

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
11	1.358	11	1.9	0	0.8
		12	-1.7	0.5	-0.4
12	1.358	12	1.5	0	0.4
		13	-1.4	0.6	0

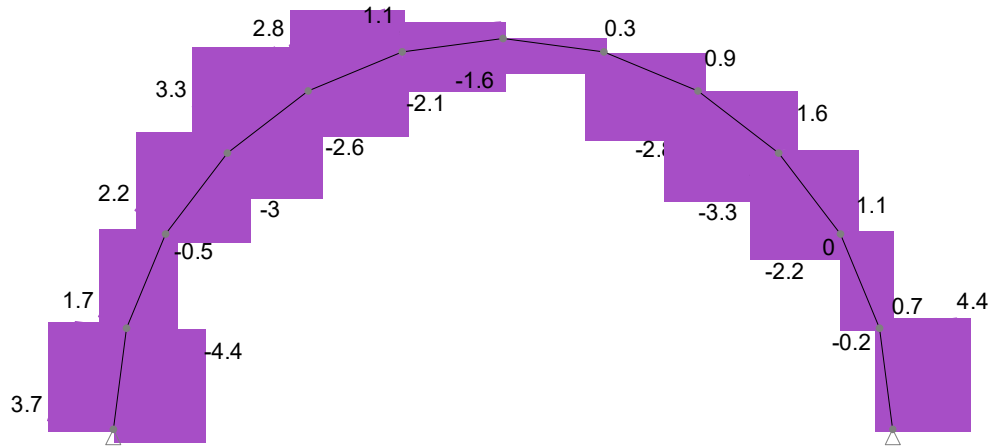
Load combination: 1.0D + 1.4W (Strength)

Element	Length (m)	Nodes Start/End	Axial force (kN)	Shear force (kN)	Moment (kNm)
1	1.358	1	3.6	-3.7	0
		2	-3.7	2.9	4.5
2	1.358	2	4.6	-1.7	-4.5
		3	-4.8	0.9	6.2
3	1.357	3	5.1	0.6	-6.2
		4	-5.2	-1.5	4.8
4	1.357	4	4.8	3	-4.8
		5	-4.9	-1	2
5	1.358	5	4.6	2.6	-2
		6	-4.7	-0.6	-0.1
6	1.358	6	4.4	2.1	0.1
		7	-4.4	-0.2	-1.7
7	1.358	7	4.2	1.6	1.7
		8	-4.1	0.3	-2.5
8	1.358	8	4	1	2.5
		9	-3.9	0.9	-2.6
9	1.357	9	3.8	0.4	2.6
		10	-3.7	1.6	-1.8
10	1.357	10	3.8	-0.4	1.8
		11	-3.7	1.1	-0.8
11	1.358	11	3.5	0	0.8
		12	-3.4	0.7	-0.3
12	1.358	12	3.1	0.2	0.3
		13	-3	0.6	0

Forces
Strength combinations - Moment envelope (kNm)


Project Lovetts Farm				Job no. 25-009	
Calcs for Arch				Start page no./Revision 16	
Calcs by JK	Calcs date 22/12/2025	Checked by	Checked date	Approved by	Approved date

Strength combinations - Shear envelope (kN)



All combinations - Axial force envelope (kN)

