2D FRAME AND TRUSS ANALYSIS

Structural Analysis Calculation Report

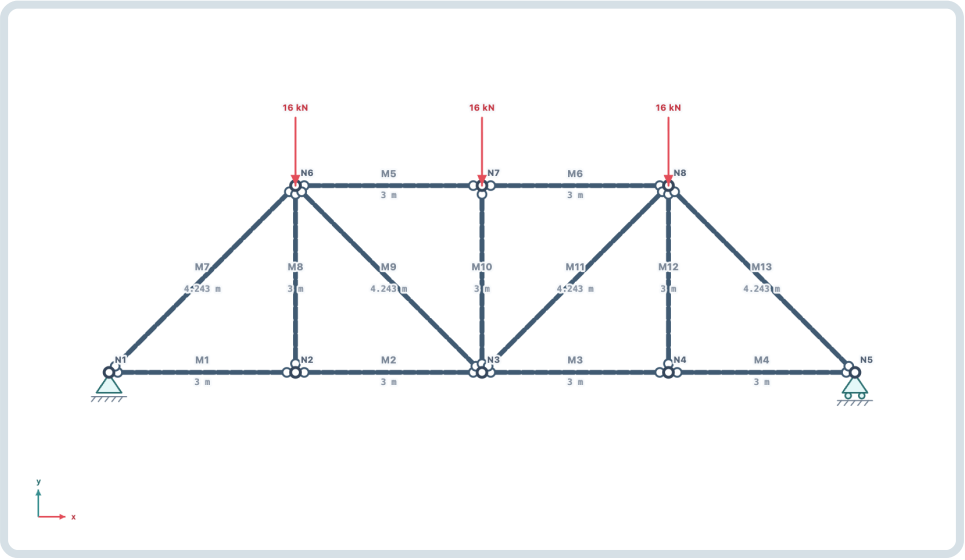
Four-panel Pratt truss

Analyzed scenario: All applied loads

Working units: Metric · Solver: first-order linear elastic direct stiffness

Project field	Report value
Project / model	Four-panel Pratt truss
Generated	7/26/2026, 11:29:47 PM
Analyzed load case / combination	All applied loads · all

Analysis model and defined loads



SECTION 1

Analysis basis and calculation scope

This report records the model and the single load scenario solved immediately before export. Defined load cases and combinations are listed for traceability; result tables apply only to the analyzed scenario named on every sheet.

Item	Basis used in this analysis
Analysis method	Direct stiffness method for two-dimensional frame elements
Response type	First-order, static, linear elastic, small displacement
Degrees of freedom	Global translation UX and UY at connected nodes; RZ where at least one connected end transfers moment
Frame members	Prismatic axial and Euler-Bernoulli flexural stiffness using E, A and I
Pin-ended frame members	Frame elements with both member-end rotations released; joint-loaded models reproduce ideal pin-jointed truss axial response
Member loads	Concentrated and distributed loads converted to consistent equivalent nodal loads; internal stations recover member response
Internal calculation units	Metres, newtons and pascals; values below are converted to the selected working units
Global axes	+X right, +Y up, positive nodal moment counter-clockwise
Member axes and signs	Local x runs from node i to node j. Positive axial force denotes tension. Positive bending moment is sagging; shear and diagrams follow member local +y.
Not included	P-Delta, geometric or material nonlinearity, shear deformation, tension-only behavior, buckling, vibration, code design and connection checks

Model summary	Value
Structural behavior	Pin-ended frame members
Nodes	8
Members	13
Supports	2
Defined loads	3
Load cases	0
Load combinations	0
Analyzed scenario	All applied loads

SECTION 2

Load cases, combinations and analyzed factors

The analyzed-factor column shows the multiplier that each case contributes to the solved scenario. A zero factor means the definition is documented but did not contribute to these results.

Load cases and self-weight

ID	Name	Category	Analyzed factor	Self-weight definition
No named load cases; unassigned loads were analyzed directly.				

Load combinations

ID	Name	Linear expression	Status
No load combinations defined.			

SECTION 3

Nodes, coordinates and restraints

Node coordinates define the analysis geometry. UX, UY and RZ identify restrained global degrees of freedom.

Node	X	Y	Support	Restrained DOFs
N1	0 m	0 m	pin	UX, UY
N2	3 m	0 m	free	Free
N3	6 m	0 m	free	Free
N4	9 m	0 m	free	Free
N5	12 m	0 m	rollerY	UY
N6	3 m	3 m	free	Free
N7	6 m	3 m	free	Free
N8	9 m	3 m	free	Free

SECTION 4

Materials and section properties

Elastic modulus, area and second moment of area provide the stiffness used by the solver. Material density contributes only where structural self-weight is enabled.

Material library

ID	Material	E	Density	Source
MAT1	Structural steel	200 GPa	7,850 kg/m^3	Typical carbon steel

Section library

ID	Section	Area A	Inertia I	Source
S1	Uniform truss member	5,000 mm^2	2.00000e+8 mm^4	User defined

SECTION 5

Member geometry, behavior and stiffness assignments

Member i and j ends follow the connectivity order below. End release descriptions and assigned stiffness properties are part of the solved analytical model.

Connectivity and releases

Member	Node i	Node j	Length	Angle	Behavior	End releases
M1	N1	N2	3 m	0°	Pin-ended frame	i and j rotation released
M2	N2	N3	3 m	0°	Pin-ended frame	i and j rotation released
M3	N3	N4	3 m	0°	Pin-ended frame	i and j rotation released
M4	N4	N5	3 m	0°	Pin-ended frame	i and j rotation released
M5	N6	N7	3 m	0°	Pin-ended frame	i and j rotation released
M6	N7	N8	3 m	0°	Pin-ended frame	i and j rotation released
M7	N1	N6	4.24264 m	45°	Pin-ended frame	i and j rotation released
M8	N6	N2	3 m	-90°	Pin-ended frame	i and j rotation released
M9	N6	N3	4.24264 m	-45°	Pin-ended frame	i and j rotation released
M10	N7	N3	3 m	-90°	Pin-ended frame	i and j rotation released
M11	N8	N3	4.24264 m	-135°	Pin-ended frame	i and j rotation released
M12	N8	N4	3 m	-90°	Pin-ended frame	i and j rotation released
M13	N8	N5	4.24264 m	-45°	Pin-ended frame	i and j rotation released

Assigned member properties

Member	Material	Section	E	A	I
M1	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M2	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M3	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M4	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M5	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M6	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M7	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M8	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M9	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M10	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M11	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M12	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4
M13	Structural steel	Uniform truss member	200 GPa	5,000 mm^2	2.00000e+8 mm^4

SECTION 6

Applied loads and scenario participation

Every defined load is listed. The final column is the factor applied in the analyzed scenario; self-weight rows are derived from material density, section area, gravity direction and the listed factor.

Load	Assignment	Type	Target / position	Unfactored definition	Analyzed factor
L1	Unassigned	nodal	Node N6	Fx = 0 kN Fy = -16 kN Mz = 0 kN·m	1
L2	Unassigned	nodal	Node N7	Fx = 0 kN Fy = -16 kN Mz = 0 kN·m	1
L3	Unassigned	nodal	Node N8	Fx = 0 kN Fy = -16 kN Mz = 0 kN·m	1

SECTION 7

Results summary, diagnostics and equilibrium

The solver checks the reduced stiffness system and verifies numerical equilibrium before returning results. Small residuals are expected from floating-point arithmetic.

Governing response

Result	Signed value	Governing location
Maximum displacement	0.67116 mm	N7
Maximum signed reaction component	24 kN	N1 · Ry
Peak signed axial force	-33.94113 kN	M7 at x = 0 m
Peak signed shear force	0 kN	M5 at x = 0 m
Peak signed bending moment	0 kN·m	M5 at x = 3 m

Solver diagnostics

Diagnostic	Value
Stability classification	stable
Active DOFs	16
Free DOFs solved	13
Constrained DOFs	3
Condition estimate	6.608757
Pivot ratio	0.151314
Maximum stiffness residual	0 N
Relative equilibrium residual	0
Warnings	None reported

Global equilibrium about the model origin

Equation	Applied action	Support reaction	Residual
Sum Fx	0 kN	0 kN	0 kN
Sum Fy	-48 kN	48 kN	0 kN
Sum M about global origin	-288 kN·m	288 kN·m	0 kN·m

SECTION 8

Support reactions and nodal displacements

Reaction components use global axes. Nodal rotation is reported in milliradians; translations use the selected displacement unit.

Support reactions

Node	Support	Rx	Ry	|R|	Mz
N1	pin	0 kN	24 kN	24 kN	0 kN·m
N5	rollerY	0 kN	24 kN	24 kN	0 kN·m

Nodal translations and rotations

Node	ux	uy	|u|	Rz
N1	0 mm	0 mm	0 mm	0 mrad
N2	0.072 mm	-0.443647 mm	0.449451 mm	0 mrad
N3	0.144 mm	-0.607529 mm	0.624362 mm	0 mrad
N4	0.216 mm	-0.443647 mm	0.493435 mm	0 mrad
N5	0.288 mm	0 mm	0.288 mm	0 mrad
N6	0.24 mm	-0.443647 mm	0.504403 mm	0 mrad
N7	0.144 mm	-0.655529 mm	0.671159 mm	0 mrad
N8	0.048 mm	-0.443647 mm	0.446236 mm	0 mrad

SECTION 9

Member actions and governing stations

Signed governing values are selected by absolute magnitude from the computed member stations. Local end-force components follow each member from node i to node j.

Governing station values

Member	Peak N	Peak V	Peak M	Max displacement
M1	24 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.449451 mm x = 3 m
M2	24 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.624362 mm x = 3 m
M3	24 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.624362 mm x = 0 m
M4	24 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.493435 mm x = 0 m
M5	-32 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.671159 mm x = 3 m
M6	-32 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.671159 mm x = 0 m
M7	-33.94113 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 0 m	0.504403 mm x = 4.2426 m
M8	0 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.504403 mm x = 0 m
M9	11.31371 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 4.2426 m	0.624362 mm x = 4.2426 m
M10	-16 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.671159 mm x = 0 m
M11	11.31371 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 4.2426 m	0.624362 mm x = 4.2426 m
M12	0 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 3 m	0.493435 mm x = 3 m
M13	-33.94113 kN x = 0 m	0 kN x = 0 m	0 kN·m x = 4.2426 m	0.446236 mm x = 0 m

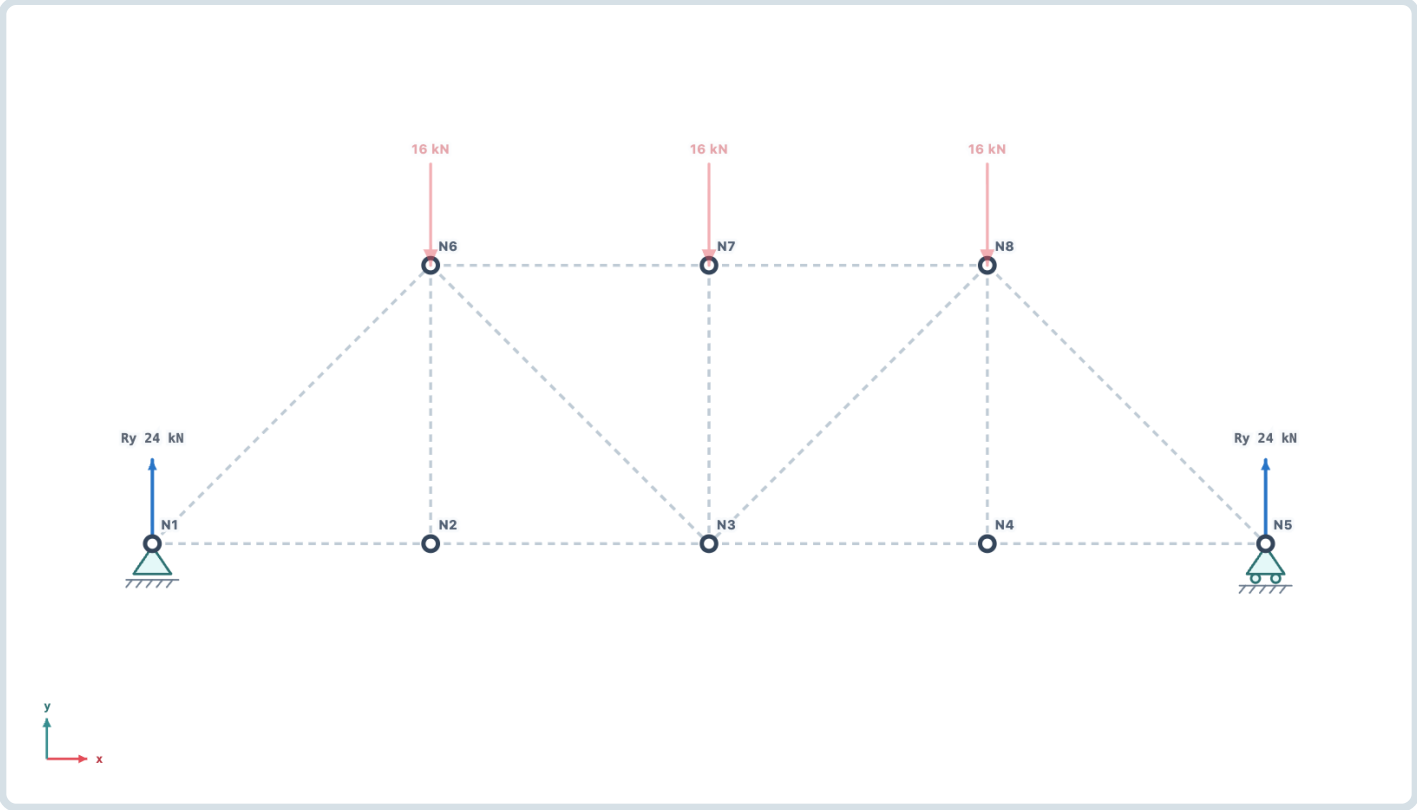
Local member end actions

Member	Ni	Vi	Mi	Nj	Vj	Mj
M1	-24 kN	0 kN	0 kN·m	24 kN	0 kN	0 kN·m
M2	-24 kN	0 kN	0 kN·m	24 kN	0 kN	0 kN·m
M3	-24 kN	0 kN	0 kN·m	24 kN	0 kN	0 kN·m
M4	-24 kN	0 kN	0 kN·m	24 kN	0 kN	0 kN·m
M5	32 kN	0 kN	0 kN·m	-32 kN	0 kN	0 kN·m
M6	32 kN	0 kN	0 kN·m	-32 kN	0 kN	0 kN·m
M7	33.94113 kN	0 kN	0 kN·m	-33.94113 kN	0 kN	0 kN·m
M8	0 kN	0 kN	0 kN·m	0 kN	0 kN	0 kN·m
M9	-11.31371 kN	0 kN	0 kN·m	11.31371 kN	0 kN	0 kN·m
M10	16 kN	0 kN	0 kN·m	-16 kN	0 kN	0 kN·m
M11	-11.31371 kN	0 kN	0 kN·m	11.31371 kN	0 kN	0 kN·m
M12	0 kN	0 kN	0 kN·m	0 kN	0 kN	0 kN·m
M13	33.94113 kN	0 kN	0 kN·m	-33.94113 kN	0 kN	0 kN·m

SECTION 10

Support reaction diagram

Signed reactions are shown in global X and Y directions.



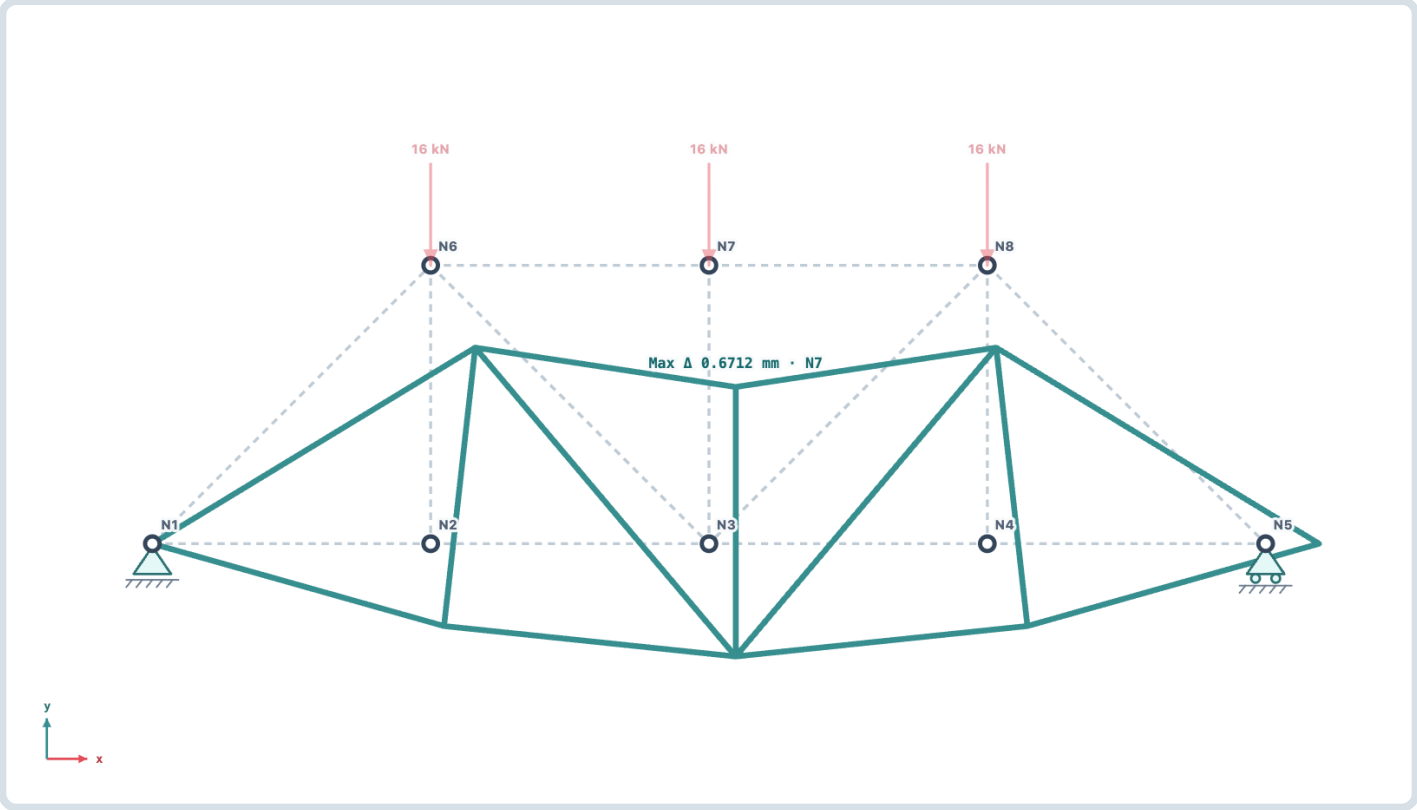
Support reactions · All applied loads · global X/Y · kN · Arrow direction follows the signed reaction

Scenario: All applied loads. Diagram scale affects visualization only and does not change the tabulated analysis results.

SECTION 10

Deflected shape

The displaced shape is automatically amplified for visibility; numeric displacement tables remain unamplified.



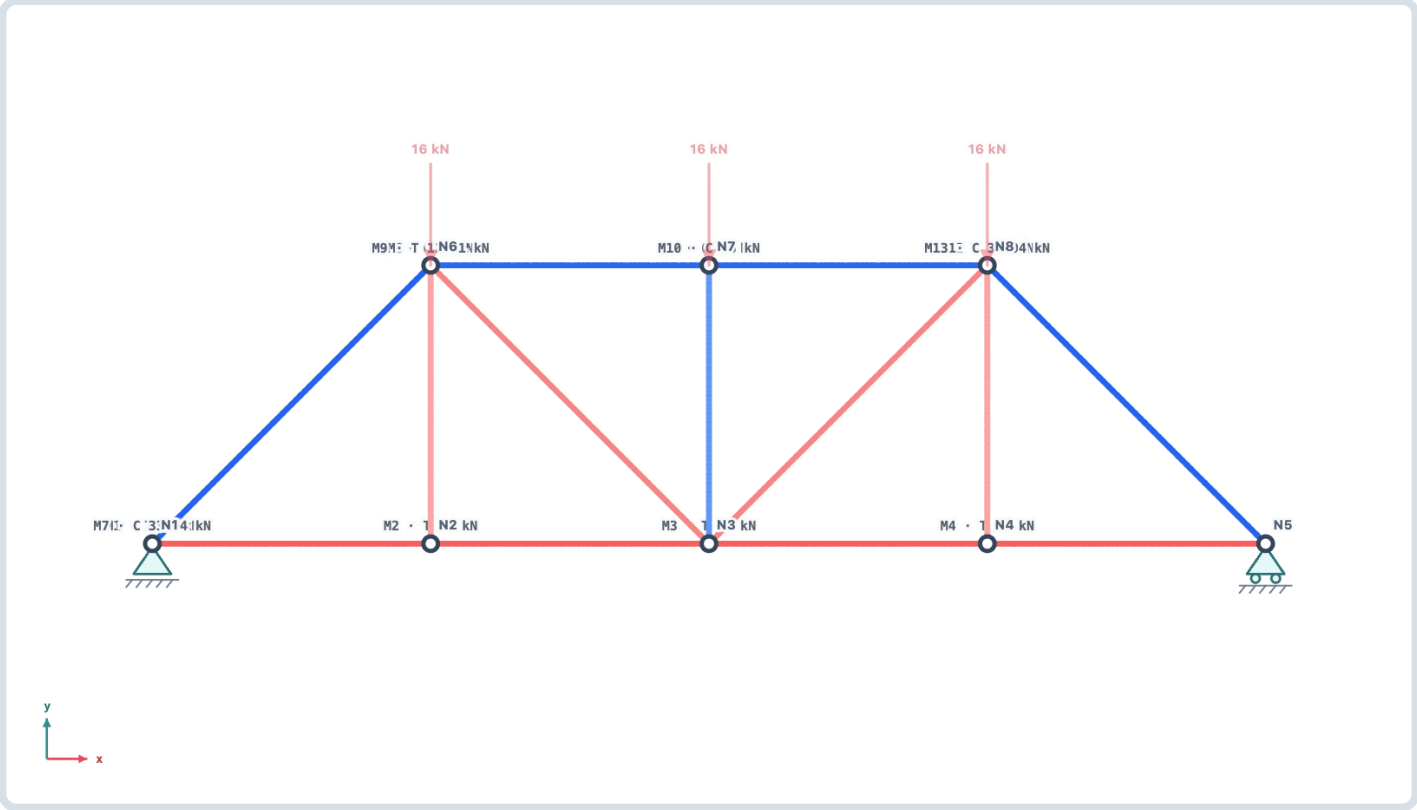
Deflected shape · All applied loads · amplified ×2,000 · Original geometry shown dashed

Scenario: All applied loads. Diagram scale affects visualization only and does not change the tabulated analysis results.

SECTION 10

Axial-force diagram

Tension and compression are differentiated by color, with signed peak labels at governing member stations.



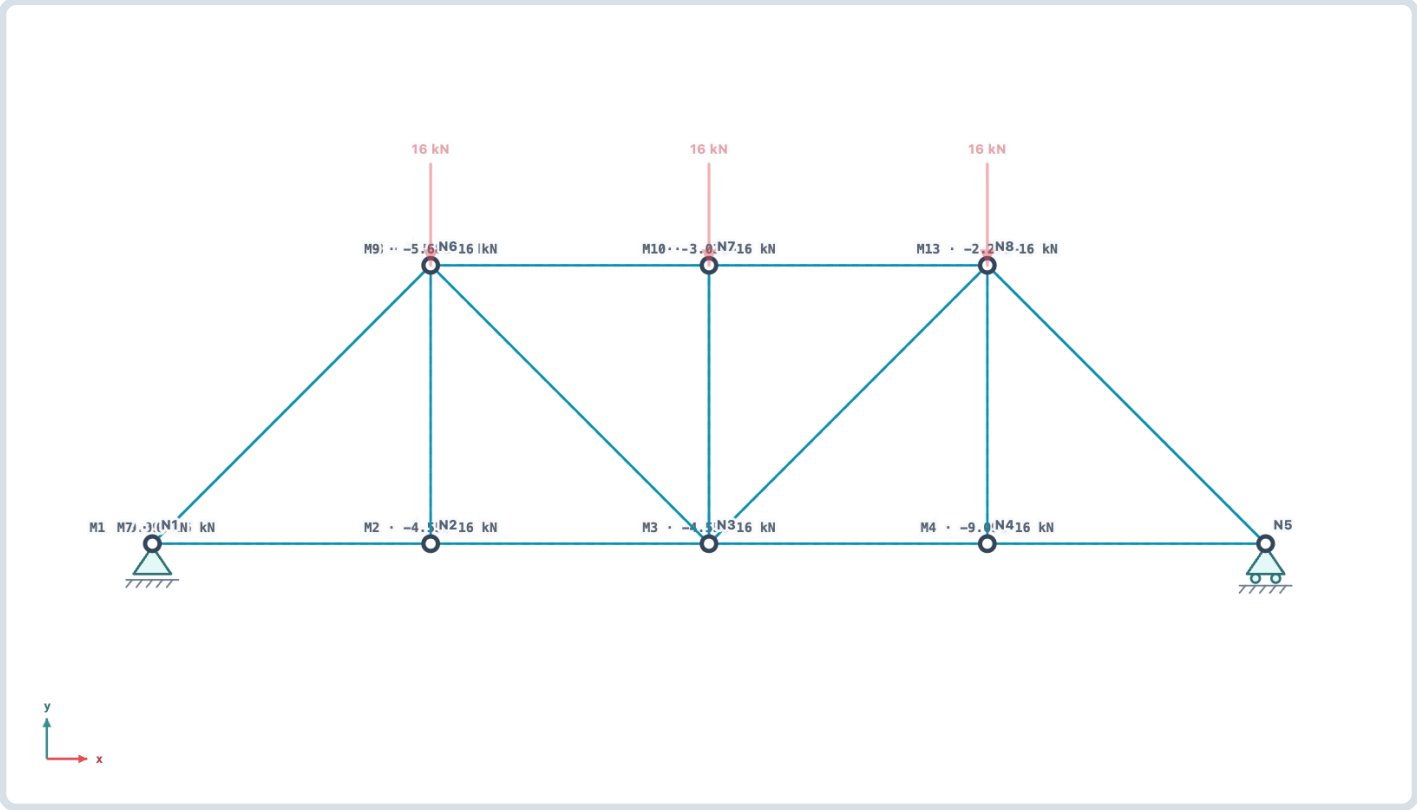
Axial force · All applied loads · Compression to Tension

Scenario: All applied loads. Diagram scale affects visualization only and does not change the tabulated analysis results.

SECTION 10

Shear-force diagram

Shear is plotted on member local +y for frame members and directly loaded released spans.



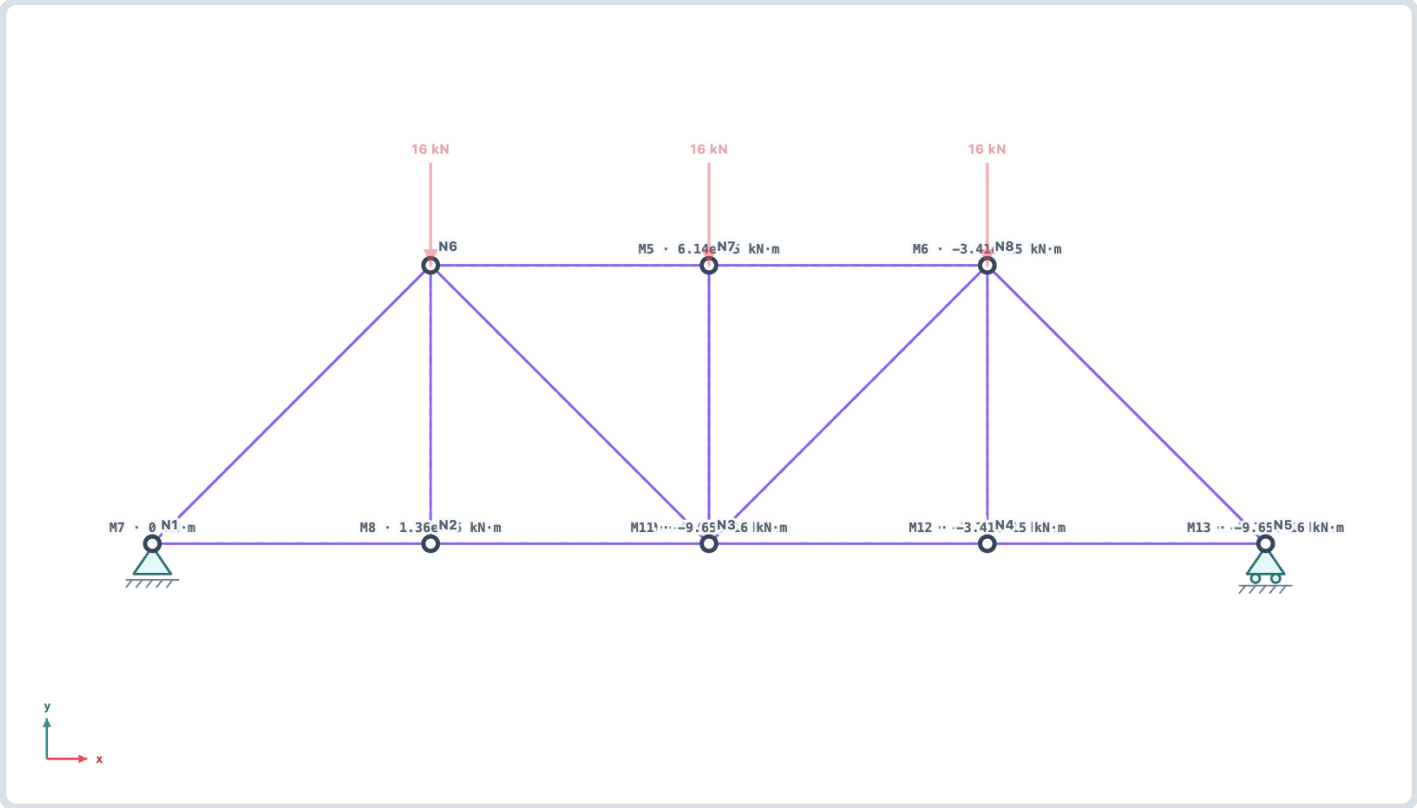
Shear force · All applied loads · kN · +V plotted on member local +y

Scenario: All applied loads. Diagram scale affects visualization only and does not change the tabulated analysis results.

SECTION 10

Bending-moment diagram

Positive sagging moment is plotted using the member local-axis convention.



Bending moment · All applied loads · kN·m · Sagging +M plotted on member local +y

Scenario: All applied loads. Diagram scale affects visualization only and does not change the tabulated analysis results.

SECTION 11 · M1

M1 member result summary

Pin-ended frame · N1 to N2 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
24 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

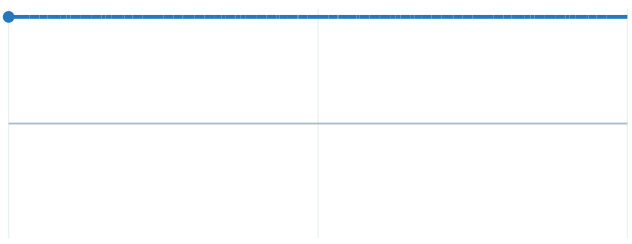
MAXIMUM RESULTANT DISPLACEMENT
0.449451 mm
x = 3 m

Local member end actions

End	Node	Axial N	Shear V	Moment M
i	N1	-24 kN	0 kN	0 kN·m
j	N2	24 kN	0 kN	0 kN·m

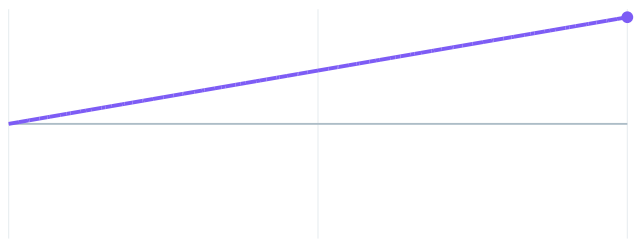
Local response diagrams

Axial force N — Peak 24 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m

Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak -0.44365 mm at x = 3 m

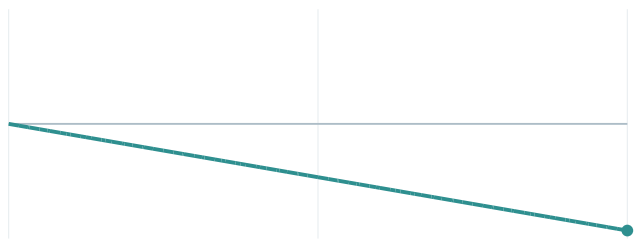


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M2

M2 member result summary

Pin-ended frame · N2 to N3 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
24 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

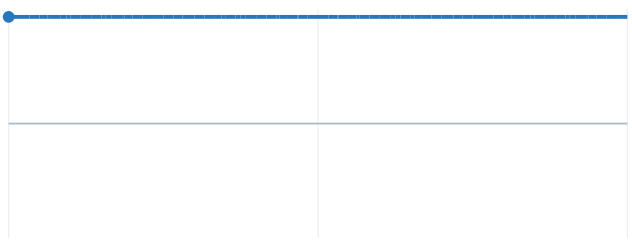
MAXIMUM RESULTANT DISPLACEMENT
0.624362 mm
x = 3 m

Local member end actions

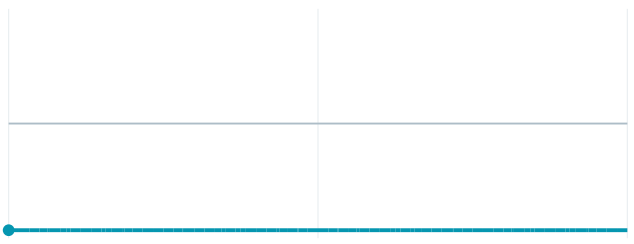
End	Node	Axial N	Shear V	Moment M
i	N2	-24 kN	0 kN	0 kN·m
j	N3	24 kN	0 kN	0 kN·m

Local response diagrams

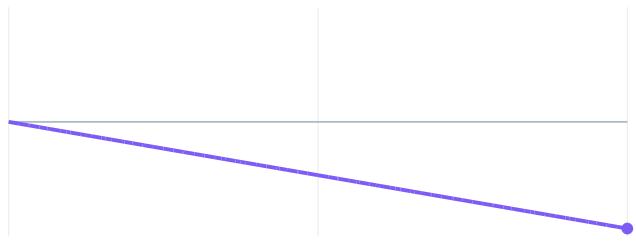
Axial force N — Peak 24 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m



Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak -0.60753 mm at x = 3 m

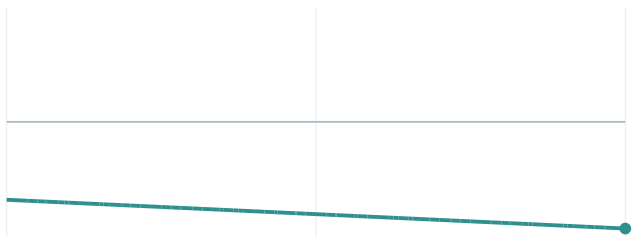


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M3

M3 member result summary

Pin-ended frame · N3 to N4 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
24 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

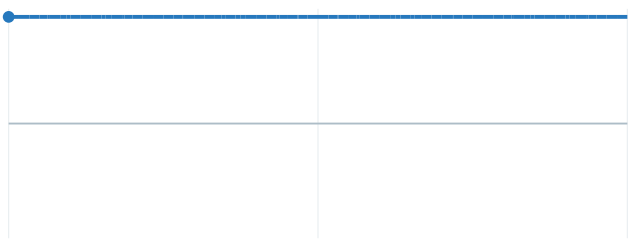
MAXIMUM RESULTANT DISPLACEMENT
0.624362 mm
x = 0 m

Local member end actions

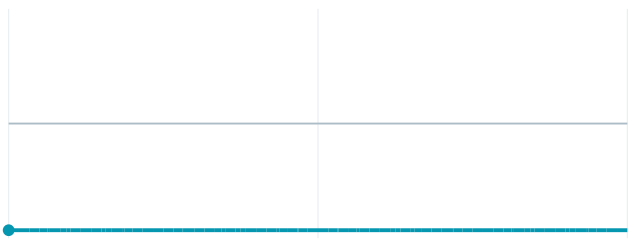
End	Node	Axial N	Shear V	Moment M
i	N3	-24 kN	0 kN	0 kN·m
j	N4	24 kN	0 kN	0 kN·m

Local response diagrams

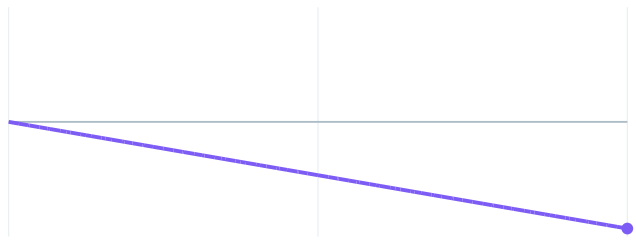
Axial force N — Peak 24 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m



Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak -0.60753 mm at x = 0 m

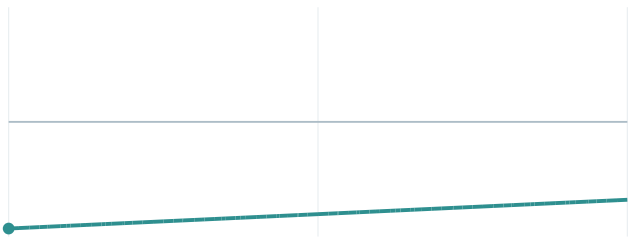


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M4

M4 member result summary

Pin-ended frame · N4 to N5 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
24 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

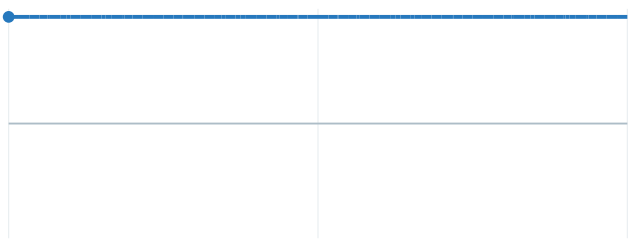
MAXIMUM RESULTANT DISPLACEMENT
0.493435 mm
x = 0 m

Local member end actions

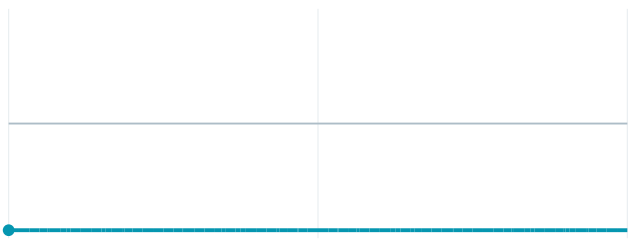
End	Node	Axial N	Shear V	Moment M
i	N4	-24 kN	0 kN	0 kN·m
j	N5	24 kN	0 kN	0 kN·m

Local response diagrams

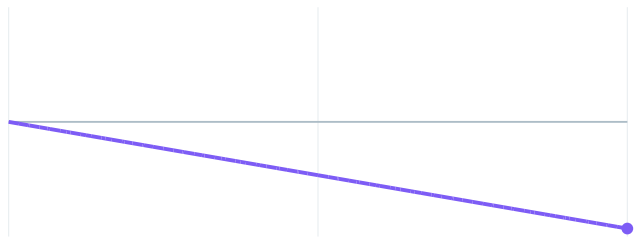
Axial force N — Peak 24 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m



Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak -0.44365 mm at x = 0 m

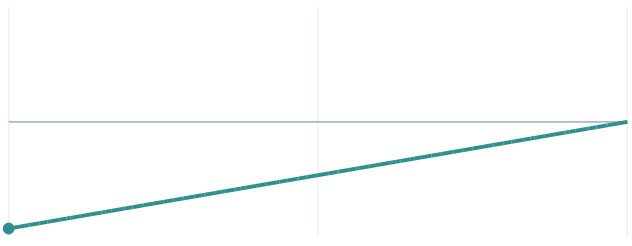


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M5

M5 member result summary

Pin-ended frame · N6 to N7 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
-32 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

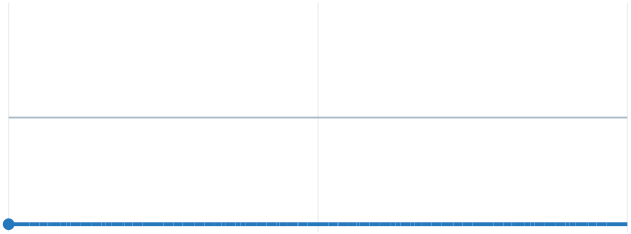
MAXIMUM RESULTANT DISPLACEMENT
0.671159 mm
x = 3 m

Local member end actions

End	Node	Axial N	Shear V	Moment M
i	N6	32 kN	0 kN	0 kN·m
j	N7	-32 kN	0 kN	0 kN·m

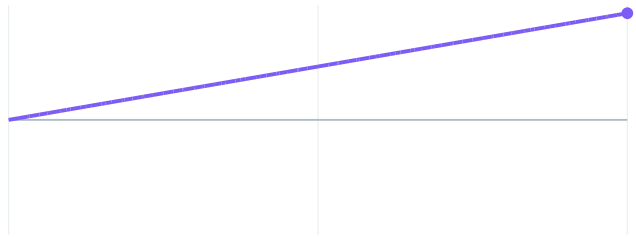
Local response diagrams

Axial force N — Peak -32 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m

Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak -0.65553 mm at x = 3 m

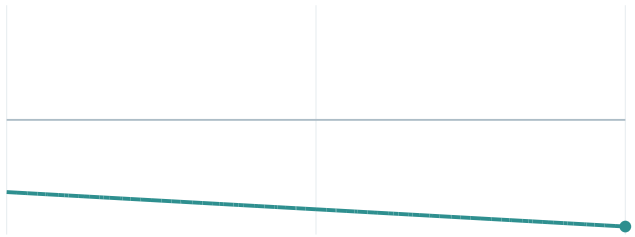


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M6

M6 member result summary

Pin-ended frame · N7 to N8 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
-32 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

MAXIMUM RESULTANT DISPLACEMENT
0.671159 mm
x = 0 m

Local member end actions

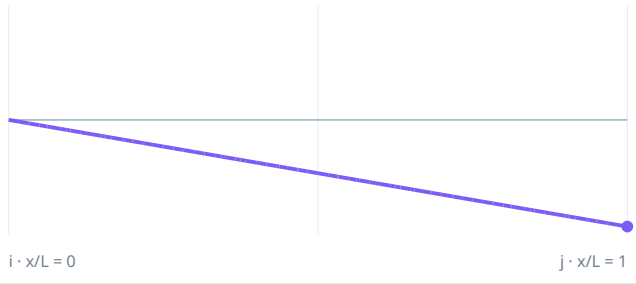
End	Node	Axial N	Shear V	Moment M
i	N7	32 kN	0 kN	0 kN·m
j	N8	-32 kN	0 kN	0 kN·m

Local response diagrams

Axial force N — Peak -32 kN at x = 0 m

Shear force V — Peak 0 kN at x = 0 m

Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak -0.65553 mm at x = 0 m

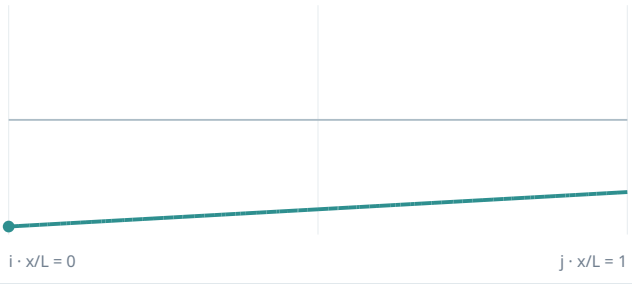


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M7

M7 member result summary

Pin-ended frame · N1 to N6 · length 4.24264 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
-33.94113 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 0 m

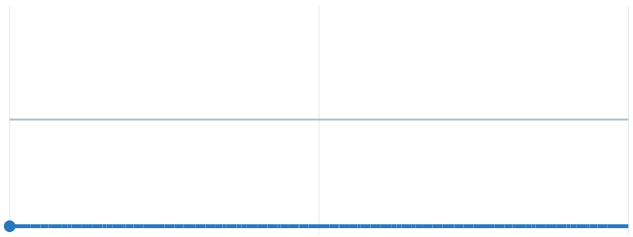
MAXIMUM RESULTANT DISPLACEMENT
0.504403 mm
x = 4.2426 m

Local member end actions

End	Node	Axial N	Shear V	Moment M
i	N1	33.94113 kN	0 kN	0 kN·m
j	N6	-33.94113 kN	0 kN	0 kN·m

Local response diagrams

Axial force N — Peak -33.9411 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m

Bending moment M — Peak 0 kN·m at x = 0 m

Transverse displacement v — Peak -0.48341 mm at x = 4.243 m

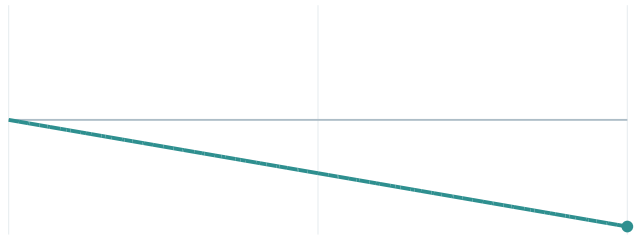


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M8

M8 member result summary

Pin-ended frame · N6 to N2 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
0 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

MAXIMUM RESULTANT DISPLACEMENT
0.504403 mm
x = 0 m

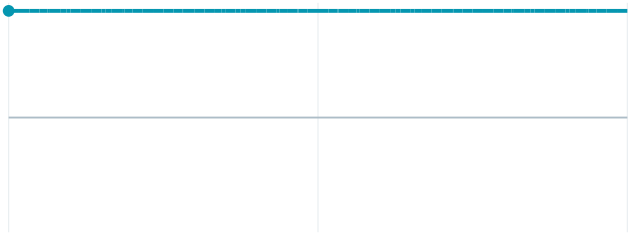
Local member end actions

End	Node	Axial N	Shear V	Moment M
i	N6	0 kN	0 kN	0 kN·m
j	N2	0 kN	0 kN	0 kN·m

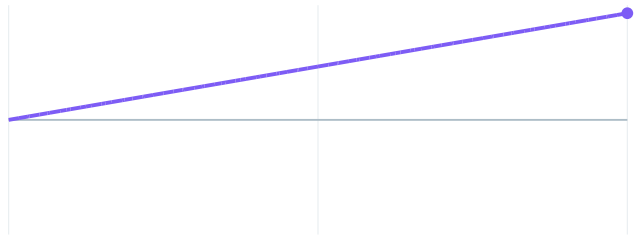
Local response diagrams

Axial force N — Peak 0 kN at x = 0 m

Shear force V — Peak 0 kN at x = 0 m



Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak 0.24 mm at x = 0 m

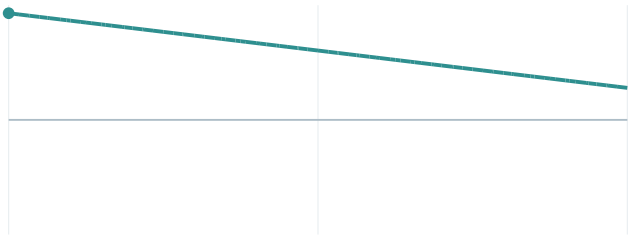


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M9

M9 member result summary

Pin-ended frame · N6 to N3 · length 4.24264 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
11.31371 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 4.2426 m

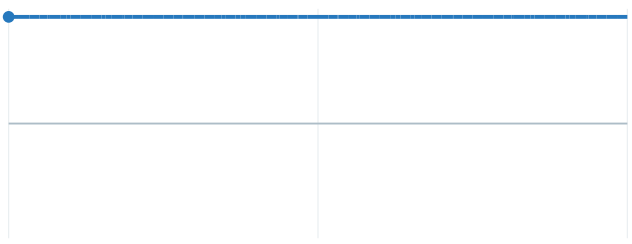
MAXIMUM RESULTANT DISPLACEMENT
0.624362 mm
x = 4.2426 m

Local member end actions

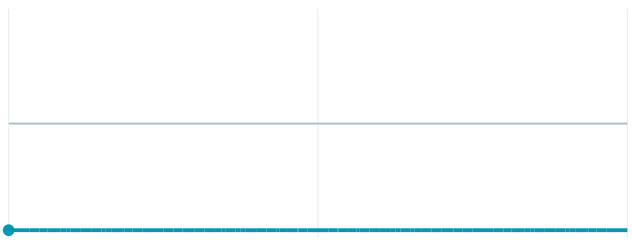
End	Node	Axial N	Shear V	Moment M
i	N6	-11.31371 kN	0 kN	0 kN·m
j	N3	11.31371 kN	0 kN	0 kN·m

Local response diagrams

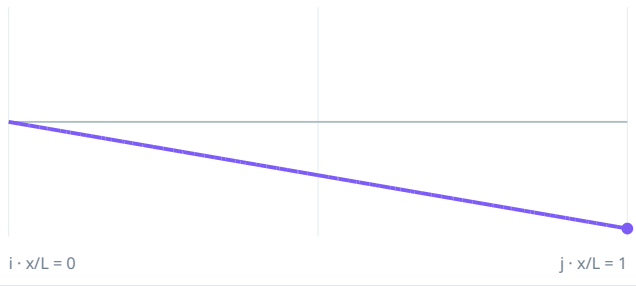
Axial force N — Peak 11.3137 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m



Bending moment M — Peak 0 kN·m at x = 4.243 m



Transverse displacement v — Peak -0.32776 mm at x = 4.243 m

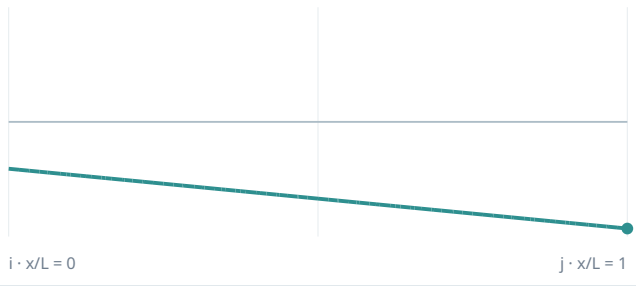


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M10

M10 member result summary

Pin-ended frame · N7 to N3 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
-16 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

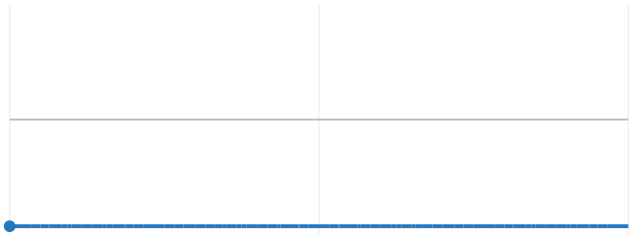
MAXIMUM RESULTANT DISPLACEMENT
0.671159 mm
x = 0 m

Local member end actions

End	Node	Axial N	Shear V	Moment M
i	N7	16 kN	0 kN	0 kN·m
j	N3	-16 kN	0 kN	0 kN·m

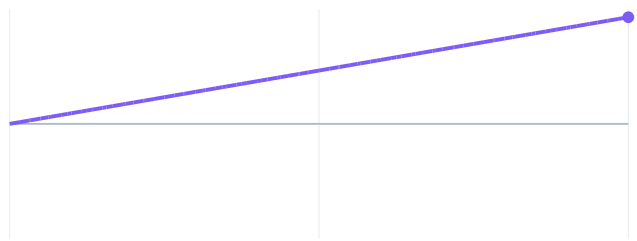
Local response diagrams

Axial force N — Peak -16 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m

Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak 0.144 mm at x = 2.4 m

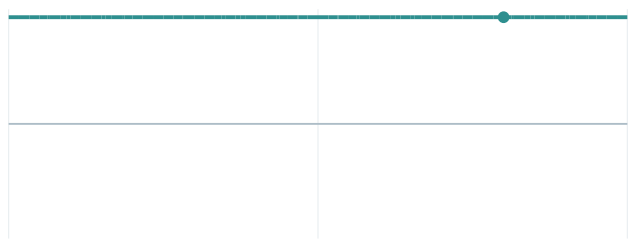


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M11

M11 member result summary

Pin-ended frame · N8 to N3 · length 4.24264 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
11.31371 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 4.2426 m

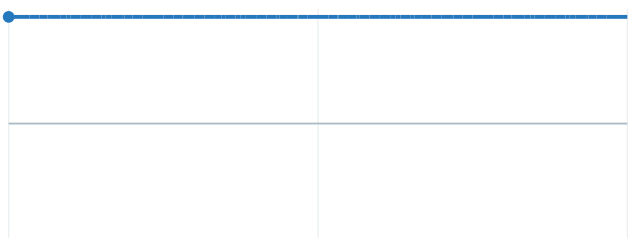
MAXIMUM RESULTANT DISPLACEMENT
0.624362 mm
x = 4.2426 m

Local member end actions

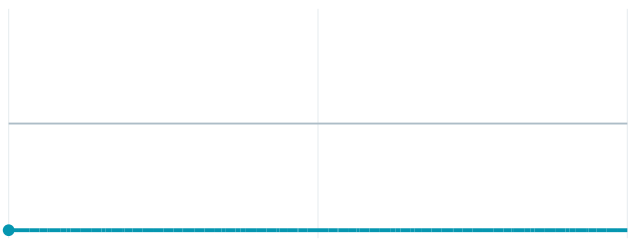
End	Node	Axial N	Shear V	Moment M
i	N8	-11.31371 kN	0 kN	0 kN·m
j	N3	11.31371 kN	0 kN	0 kN·m

Local response diagrams

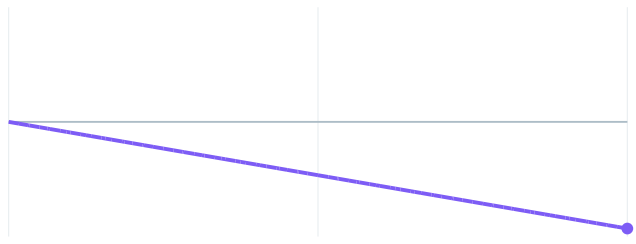
Axial force N — Peak 11.3137 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m



Bending moment M — Peak 0 kN·m at x = 4.243 m



Transverse displacement v — Peak 0.53141 mm at x = 4.243 m

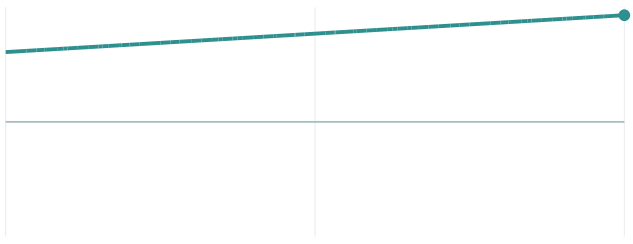


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M12

M12 member result summary

Pin-ended frame · N8 to N4 · length 3 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
0 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 3 m

MAXIMUM RESULTANT DISPLACEMENT
0.493435 mm
x = 3 m

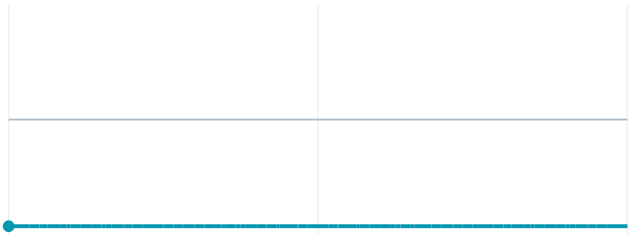
Local member end actions

End	Node	Axial N	Shear V	Moment M
i	N8	0 kN	0 kN	0 kN·m
j	N4	0 kN	0 kN	0 kN·m

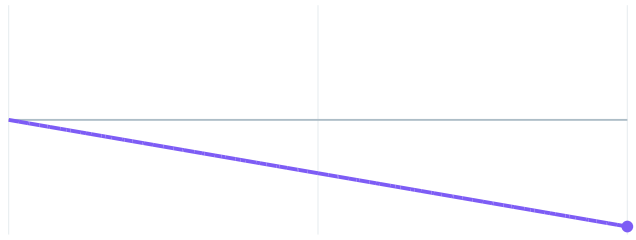
Local response diagrams

Axial force N — Peak 0 kN at x = 0 m

Shear force V — Peak 0 kN at x = 0 m



Bending moment M — Peak 0 kN·m at x = 3 m



Transverse displacement v — Peak 0.216 mm at x = 3 m

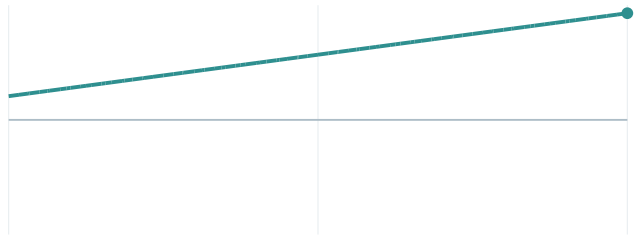


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

SECTION 11 · M13

M13 member result summary

Pin-ended frame · N8 to N5 · length 4.24264 m · Structural steel · Uniform truss member. Local x runs from end i to end j.

PEAK AXIAL FORCE N
-33.94113 kN
x = 0 m

PEAK SHEAR FORCE V
0 kN
x = 0 m

PEAK BENDING MOMENT M
0 kN·m
x = 4.2426 m

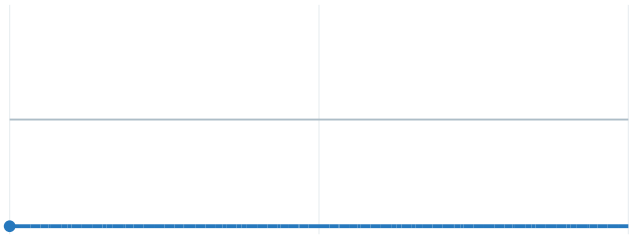
MAXIMUM RESULTANT DISPLACEMENT
0.446236 mm
x = 0 m

Local member end actions

End	Node	Axial N	Shear V	Moment M
i	N8	33.94113 kN	0 kN	0 kN·m
j	N5	-33.94113 kN	0 kN	0 kN·m

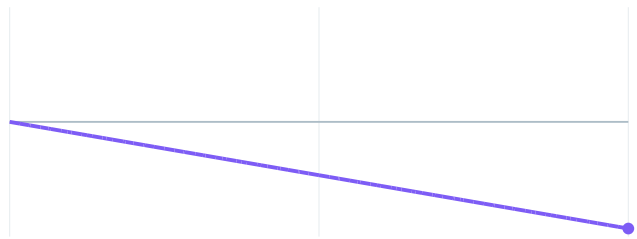
Local response diagrams

Axial force N — Peak -33.9411 kN at x = 0 m



Shear force V — Peak 0 kN at x = 0 m

Bending moment M — Peak 0 kN·m at x = 4.243 m



Transverse displacement v — Peak -0.27976 mm at x = 0 m

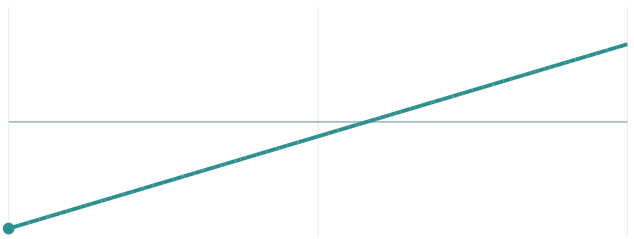


Diagram ordinates are plotted from the computed solver stations. Values and signs use the member local-axis convention stated in Section 1.

FINAL NOTES

Review responsibility and use of results

This report is a reproducible record of the browser model and its most recent solved scenario, not a sealed design document or a substitute for engineering judgment.

Review item	Engineer check
Geometry and connectivity	Confirm every analytical node, member intersection, orientation and end release matches the intended structural idealization.
Supports	Confirm translation and rotation restraints represent the real boundary conditions without unintended instability or over-restraint.
Stiffness	Confirm E, A, I, density, section orientation and member behavior are appropriate for the intended analysis.
Loading	Confirm load magnitudes, signs, axes, positions, cases, self-weight and combination factors against the governing project criteria.
Analysis scope	Evaluate second-order response, nonlinear behavior, stability, buckling, dynamics, connection behavior and code requirements separately where applicable.
Results	Independently review equilibrium, deflected shape, governing actions and sensitivity to modeling assumptions before design use.