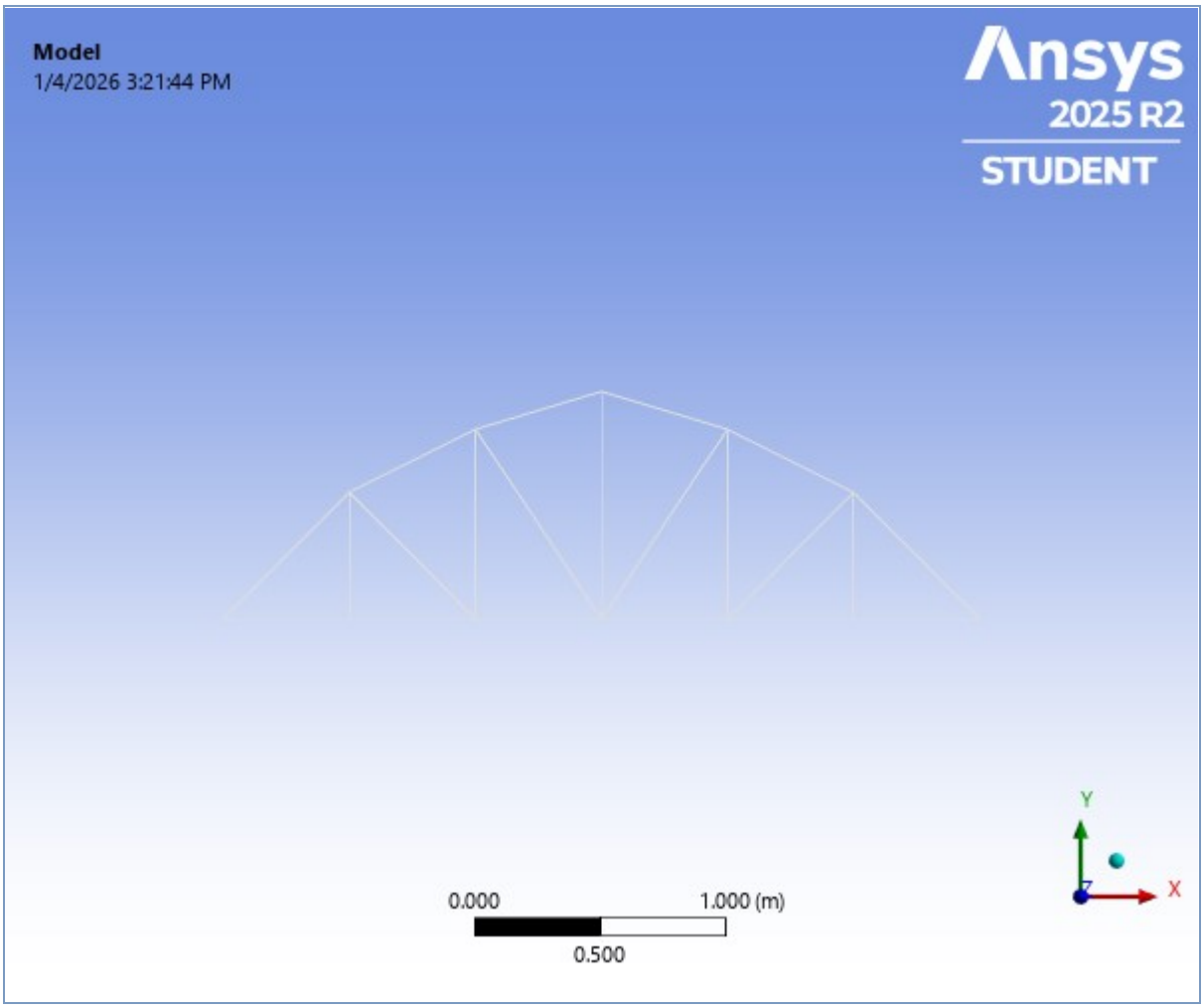
Project*

First Saved	Monday, March 3, 2025
Last Saved	Monday, March 3, 2025
Product Version	2025 R1
Save Project Before Solution	No
Save Project After Solution	No



Contents

Units

TABLE 1

Unit System	Metric (m, kg, N, s, V, A) Degrees rad/s Celsius
Angle	Degrees
Rotational Velocity	rad/s
Temperature	Celsius

Model (A4)

FIGURE 1
Model (A4) > Figure

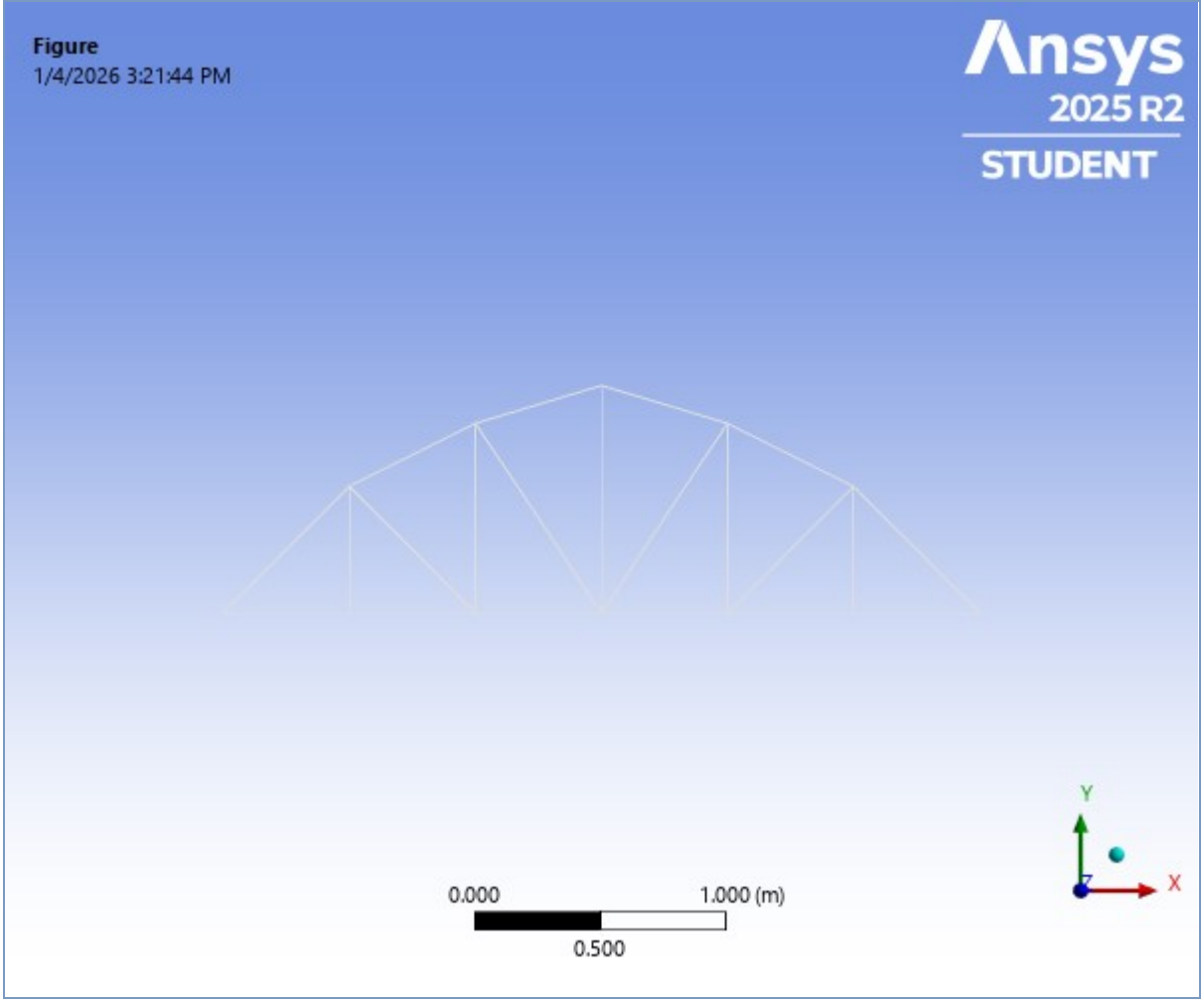


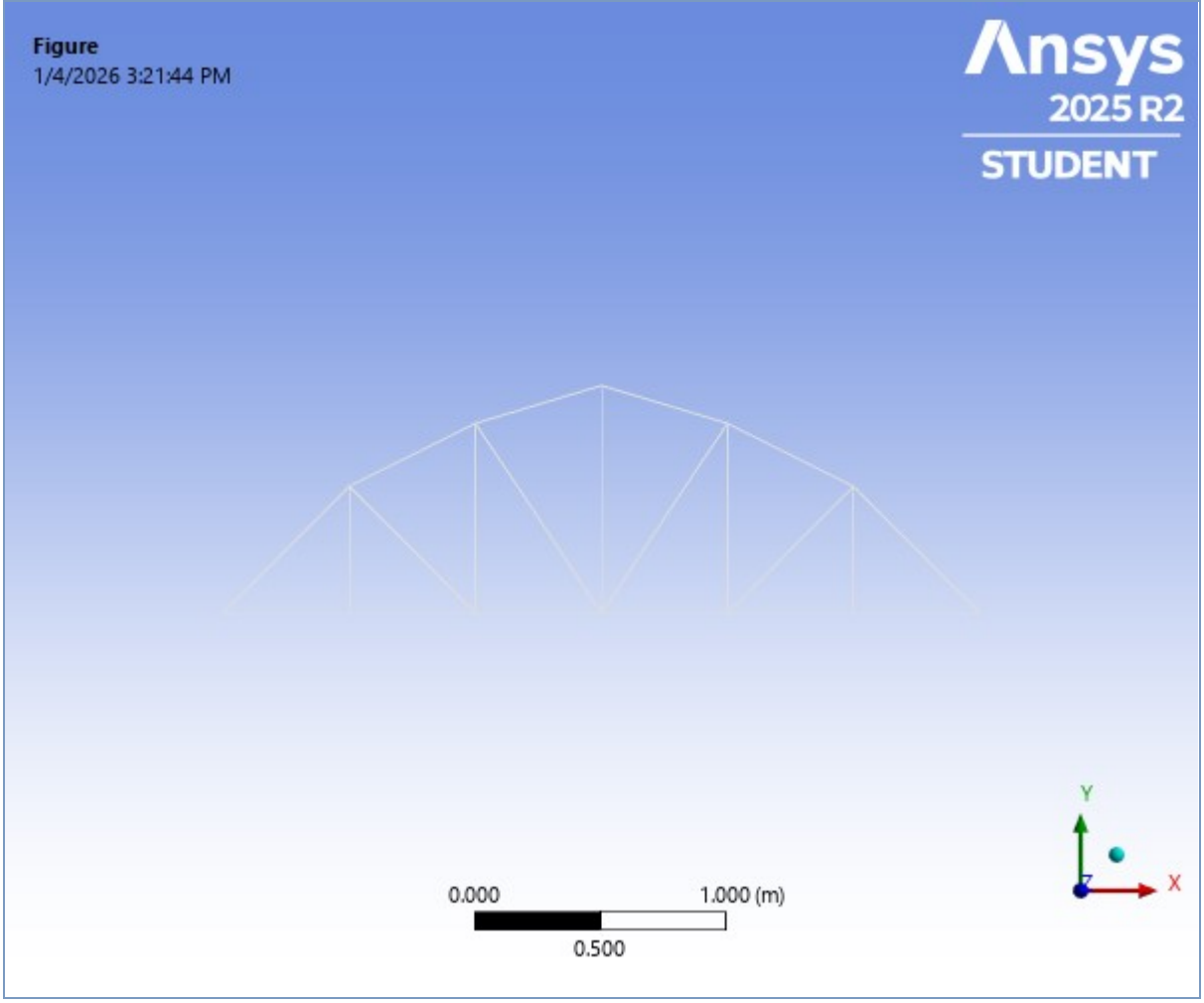
TABLE 2
Model (A4) > Geometry Imports

Object Name	*Geometry Imports*
State	Solved

TABLE 3
Model (A4) > Geometry Imports > Geometry Import (A3)

Object Name	*Geometry Import (A3)*
State	Solved
Definition	
Source	E:\شغلي كامل\ANSYS\Truss\truss(14)2D\14 TRUSS 2D_files\dp0\SYS\DM\SYS.agdb
Type	DesignModeler
Basic Geometry Options	
Parameters	Independent
Parameter Key	
Advanced Geometry Options	
Compare Parts On Update	No
Analysis Type	3-D

FIGURE 2
Model (A4) > Geometry Imports > Figure



Geometry

TABLE 4
Model (A4) > Geometry

Object Name	*Geometry*
State	Fully Defined
Definition	
Source	E:\شغلي كامل\ANSYS\Truss\truss(14)2D\14 TRUSS 2D_files\dp0\SYS\DM\SYS.agdb
Type	DesignModeler
Length Unit	Meters
Element Control	Program Controlled
Display Style	Body Color
Bounding Box	
Length X	3. m
Length Y	0.9 m
Length Z	0. m
Properties	
Volume	2.1109e-004 m³
Mass	1.6571 kg
Scale Factor Value	1.
Statistics	
Bodies	1
Active Bodies	1
Nodes	183
Elements	96
Mesh Metric	None
Update Options	
Assign Default Material	No
Basic Geometry Options	
Parameters	Independent
Parameter Key	
Attributes	Yes
Attribute Key	
Named Selections	Yes

Named Selection Key	
Material Properties	Yes
Advanced Geometry Options	
Use Associativity	Yes
Coordinate Systems	Yes
Coordinate System Key	
Reader Mode Saves Updated File	No
Use Instances	Yes
Smart CAD Update	Yes
Compare Parts On Update	No
Analysis Type	3-D
Import Facet Quality	Source
Clean Bodies On Import	No
Stitch Surfaces On Import	None
Decompose Disjoint Geometry	Yes
ID_GeometryPrefProcessPhysicsDefinition	No
Enclosure and Symmetry Processing	Yes

TABLE 5
Model (A4) > Geometry > Parts

Object Name	*Line Body*
State	Meshed
Graphics Properties	
Visible	Yes
Transparency	1
Definition	
Suppressed	No
Model Type	Beam
Stiffness Behavior	Flexible
Coordinate System	Default Coordinate System
Reference Temperature	By Environment
Cross Section	Rect1
Offset Mode	Refresh on Update
Offset Type	Centroid
Treatment	None
Material	
Assignment	Structural Steel
Nonlinear Effects	Yes
Thermal Strain Effects	Yes
Bounding Box	
Length X	3. m
Length Y	0.9 m
Length Z	0. m
Properties	
Volume	2.1109e-004 m³
Mass	1.6571 kg
Length	13.193 m
Cross Section Area	1.6e-005 m²
Cross Section IYY	2.1333e-011 m²·m²
Cross Section IZZ	2.1333e-011 m²·m²
Statistics	
Nodes	183
Elements	96
Mesh Metric	None

TABLE 6
Model (A4) > Materials

Object Name	*Materials*
State	Fully Defined
Statistics	
Materials	1
Material Assignments	0

FIGURE 3
Model (A4) > Materials > Structural Steel > Figure

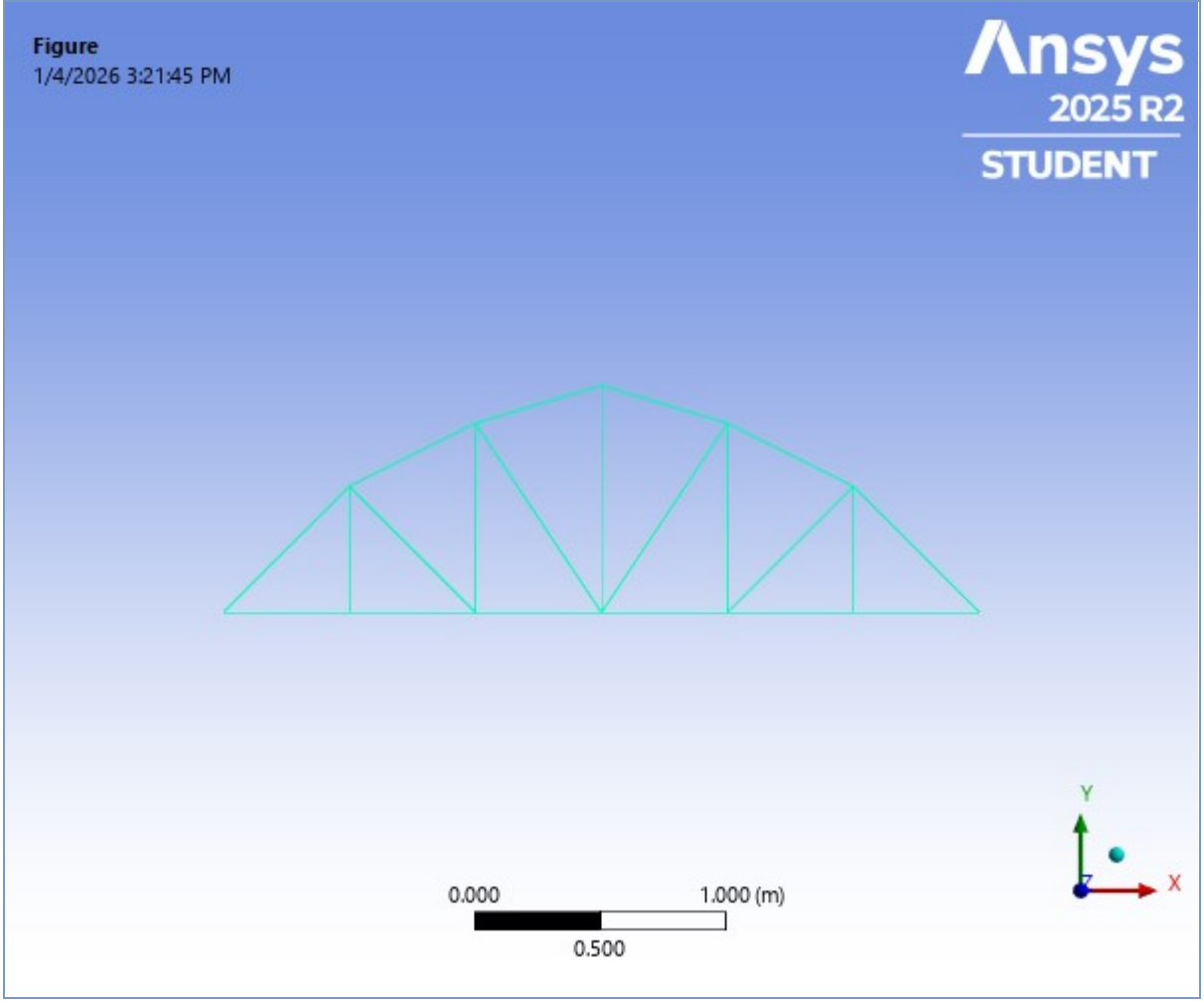


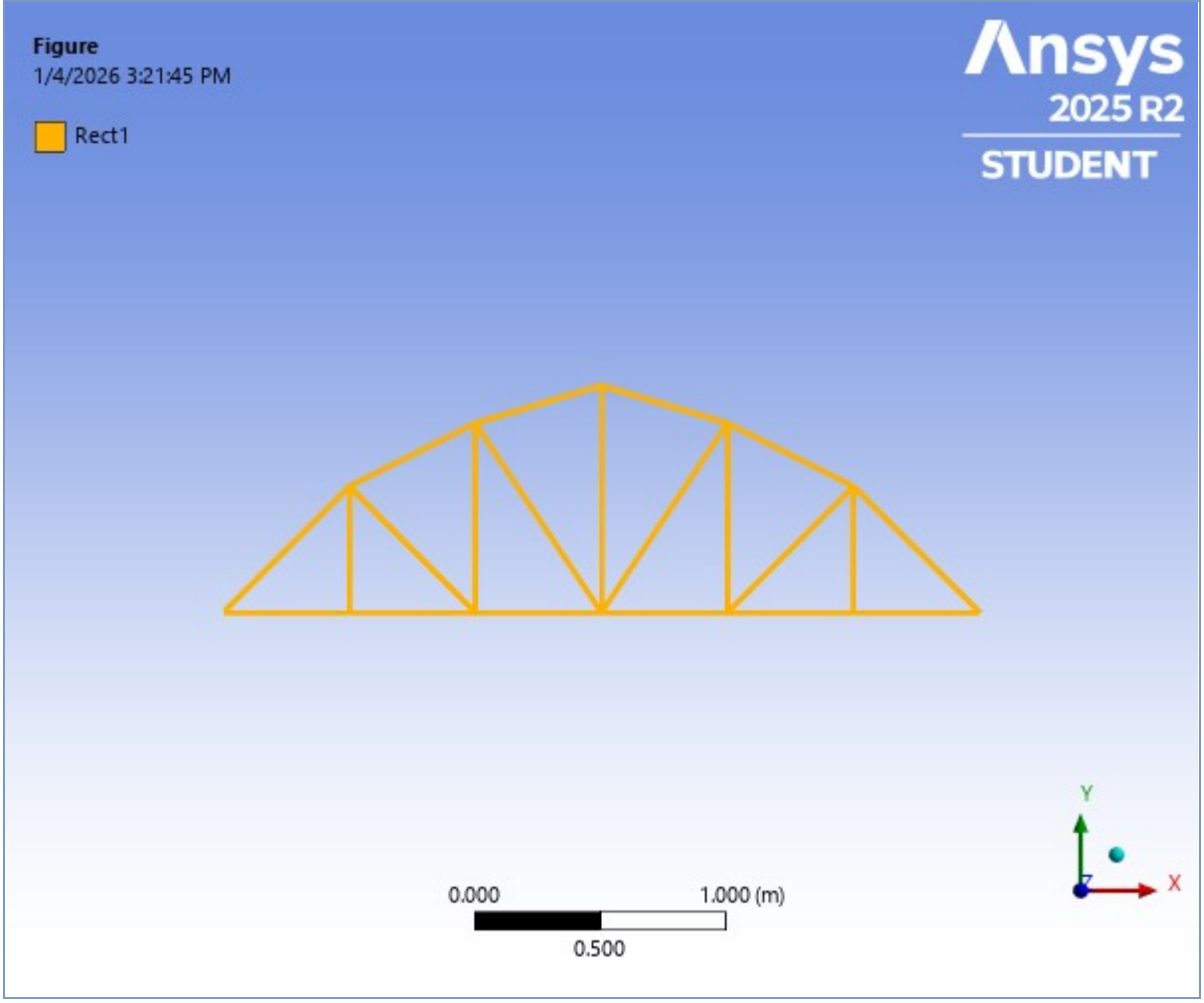
TABLE 7
Model (A4) > Cross Sections

Object Name	*Cross Sections*
State	Fully Defined
Statistics	
Cross Sections	1

TABLE 8
Model (A4) > Cross Sections > Rect1

Object Name	*Rect1*
State	Fully Defined
Definition	
Type	RECT
Import Type	Imported
Dimensions	
B	4.e-003 m
H	4.e-003 m
Physical Properties	
Beam Section	Rect1
A	1.6e-005 m²
Iyy	2.1333e-011 m²·m²
Izz	2.1333e-011 m²·m²

FIGURE 4
Model (A4) > Cross Sections > Rect1 > Figure



Coordinate Systems

TABLE 9
Model (A4) > Coordinate Systems > Coordinate System

Object Name	*Global Coordinate System*
State	Fully Defined
Definition	
Type	Cartesian
Coordinate System ID	0.
Origin	
Origin X	0. m
Origin Y	0. m
Origin Z	0. m
Directional Vectors	
X Axis Data	[1. 0. 0.]
Y Axis Data	[0. 1. 0.]
Z Axis Data	[0. 0. 1.]
Transfer Properties	
Source	
Read Only	No

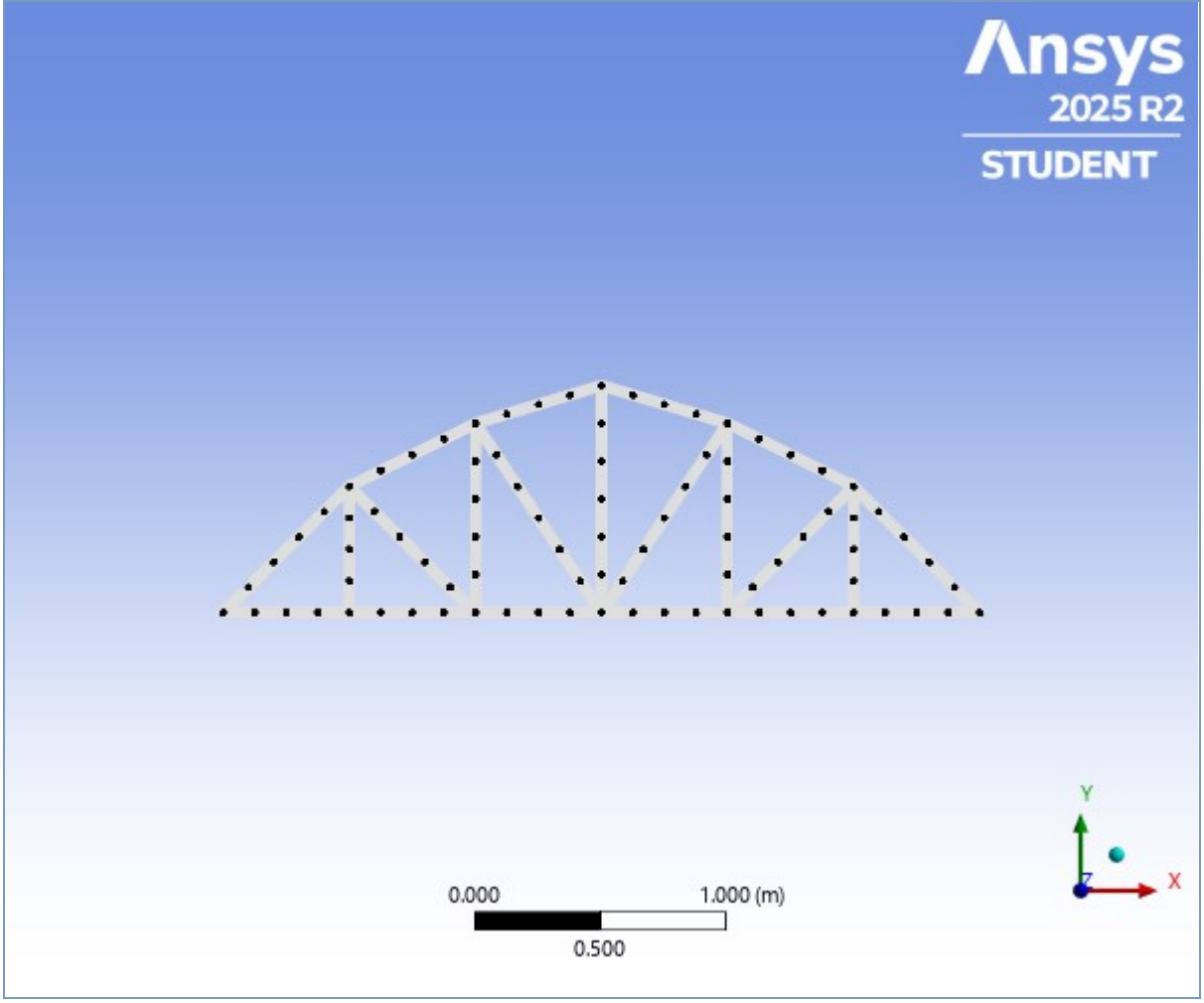
Mesh

TABLE 10
Model (A4) > Mesh

Object Name	*Mesh*
State	Solved
Display	
Display Style	Use Geometry Setting
Defaults	
Physics Preference	Mechanical
Element Order	Program Controlled
Element Size	Default
Sizing	

Use Adaptive Sizing	Yes
Resolution	Default (2)
Mesh Defeaturing	Yes
Defeature Size	Default
Transition	Fast
Span Angle Center	Coarse
Initial Size Seed	Assembly
Bounding Box Diagonal	3.1321 m
Average Surface Area	0.0 m²
Minimum Edge Length	0.5 m
Quality	
Check Mesh Quality	Yes, Errors
Error Limits	Aggressive Mechanical
Target Element Quality	Default (5.e-002)
Smoothing	Medium
Mesh Metric	None
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	5
Growth Rate	1.2
Inflation Algorithm	Pre
Inflation Element Type	Wedges
View Advanced Options	No
Advanced	
Number of CPUs for Parallel Part Meshing	Program Controlled
Straight Sided Elements	No
Rigid Body Behavior	Dimensionally Reduced
Triangle Surface Mesher	Program Controlled
Topology Checking	Yes
Pinch Tolerance	Please Define
Generate Pinch on Refresh	No
Auto-Map Fillets	No
Automatic Methods	
Sheet Body Method	Quad Dominant
Sweepable Body Method	Sweep
Statistics	
Nodes	183
Elements	96
Show Detailed Statistics	No

FIGURE 5
Model (A4) > Mesh > Figure



Static Structural (A5)

TABLE 11
Model (A4) > Analysis

Object Name	*Static Structural (A5)*
State	Solved
Definition	
Physics Type	Structural
Analysis Type	Static Structural
Solver Target	Mechanical APDL
Options	
Environment Temperature	22. °C
Generate Input Only	No

TABLE 12
Model (A4) > Static Structural (A5) > Analysis Settings

Object Name	*Analysis Settings*
State	Fully Defined
Step Controls	
Number Of Steps	1.
Current Step Number	1.
Step End Time	1. s
Auto Time Stepping	Program Controlled
Solver Controls	
Solver Type	Program Controlled
Weak Springs	Off
Solver Pivot Checking	Program Controlled
Large Deflection	Off
Inertia Relief	Off
Quasi-Static Solution	Off
Rotordynamics Controls	
Coriolis Effect	Off
Restart Controls	
Generate Restart Points	Program Controlled

Retain Files After Full Solve	No
Combine Restart Files	Program Controlled
Nonlinear Controls	
Newton-Raphson Option	Program Controlled
Force Convergence	Program Controlled
Moment Convergence	Program Controlled
Displacement Convergence	Program Controlled
Rotation Convergence	Program Controlled
Line Search	Program Controlled
Stabilization	Program Controlled
Advanced	
Inverse Option	No
Contact Split (DMP)	Program Controlled
Output Controls	
Output Selection	None
Stress	Yes
Back Stress	No
Strain	Yes
Contact Data	Yes
Nonlinear Data	No
Nodal Forces	No
Volume and Energy	Yes
Euler Angles	Yes
General Miscellaneous	No
Contact Miscellaneous	No
Store Results At	All Time Points
Result File Compression	Program Controlled
Analysis Data Management	
Solver Files Directory	E:\شغلي كامل\ANSYS\Truss\truss(14)2D\14 TRUSS 2D_files\dp0\SYS\MECH\
Future Analysis	None
Scratch Solver Files Directory	
Save MAPDL db	No
Contact Summary	Program Controlled
Delete Unneeded Files	Yes
Nonlinear Solution	No
Solver Units	Active System
Solver Unit System	mks

TABLE 13
Model (A4) > Static Structural (A5) > Loads

Object Name	*Force*	*Force 2*	*Force 3*	*Force 4*	*Force 5*	*Fixed Support*	*Fixed Support 2*
State	Fully Defined						
Scope							
Scoping Method	Geometry Selection						
Geometry	1 Vertex						
Definition							
Type	Force					Fixed Support	
Define By	Components						
Coordinate System	Global Coordinate System						
X Component	0. N (ramped)						
Y Component	-1500. N (ramped)						
Z Component	0. N (ramped)						
Suppressed	No						

FIGURE 6
Model (A4) > Static Structural (A5) > Force

FIGURE 7
Model (A4) > Static Structural (A5) > Force > Figure

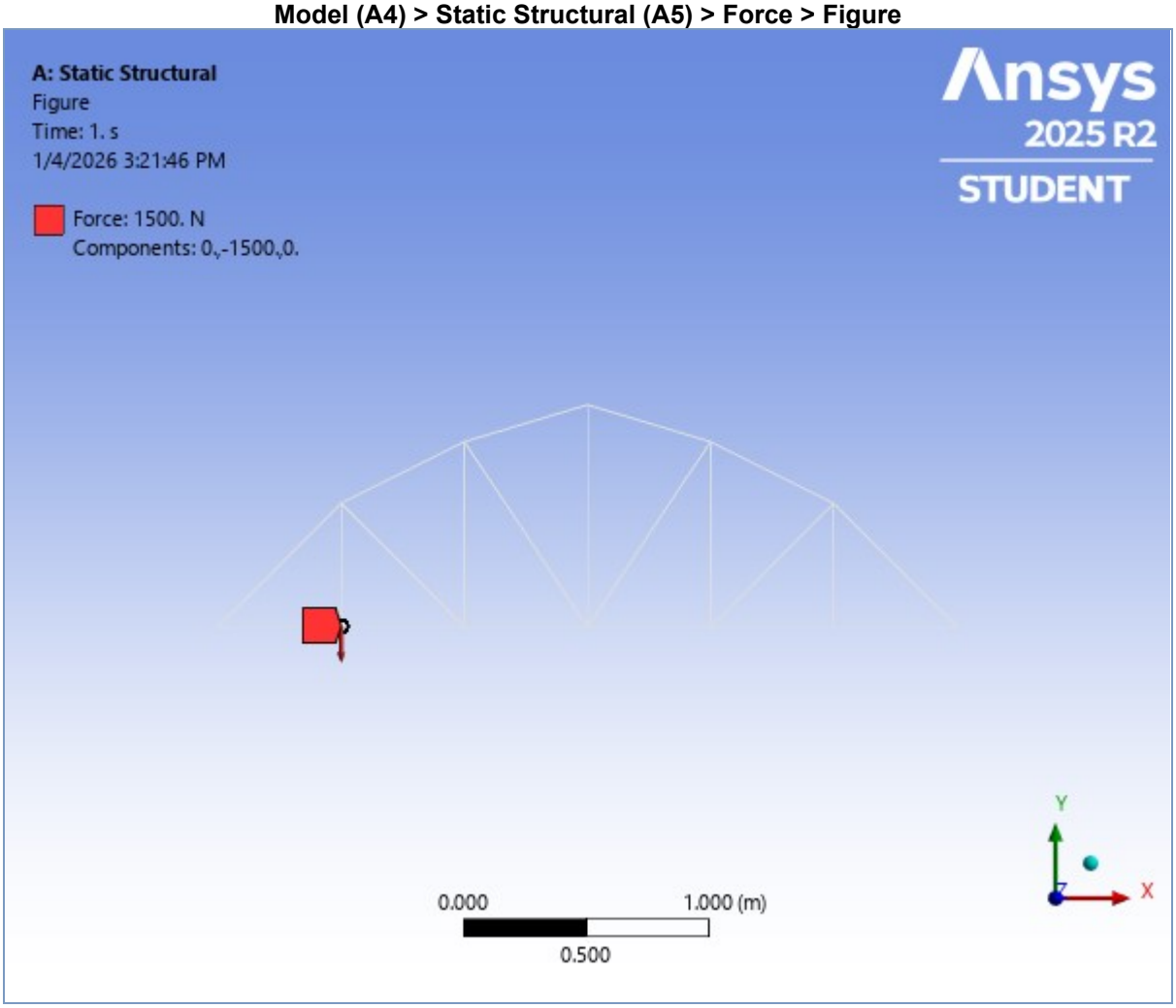


FIGURE 8
Model (A4) > Static Structural (A5) > Force 2

FIGURE 9
Model (A4) > Static Structural (A5) > Force 2 > Figure

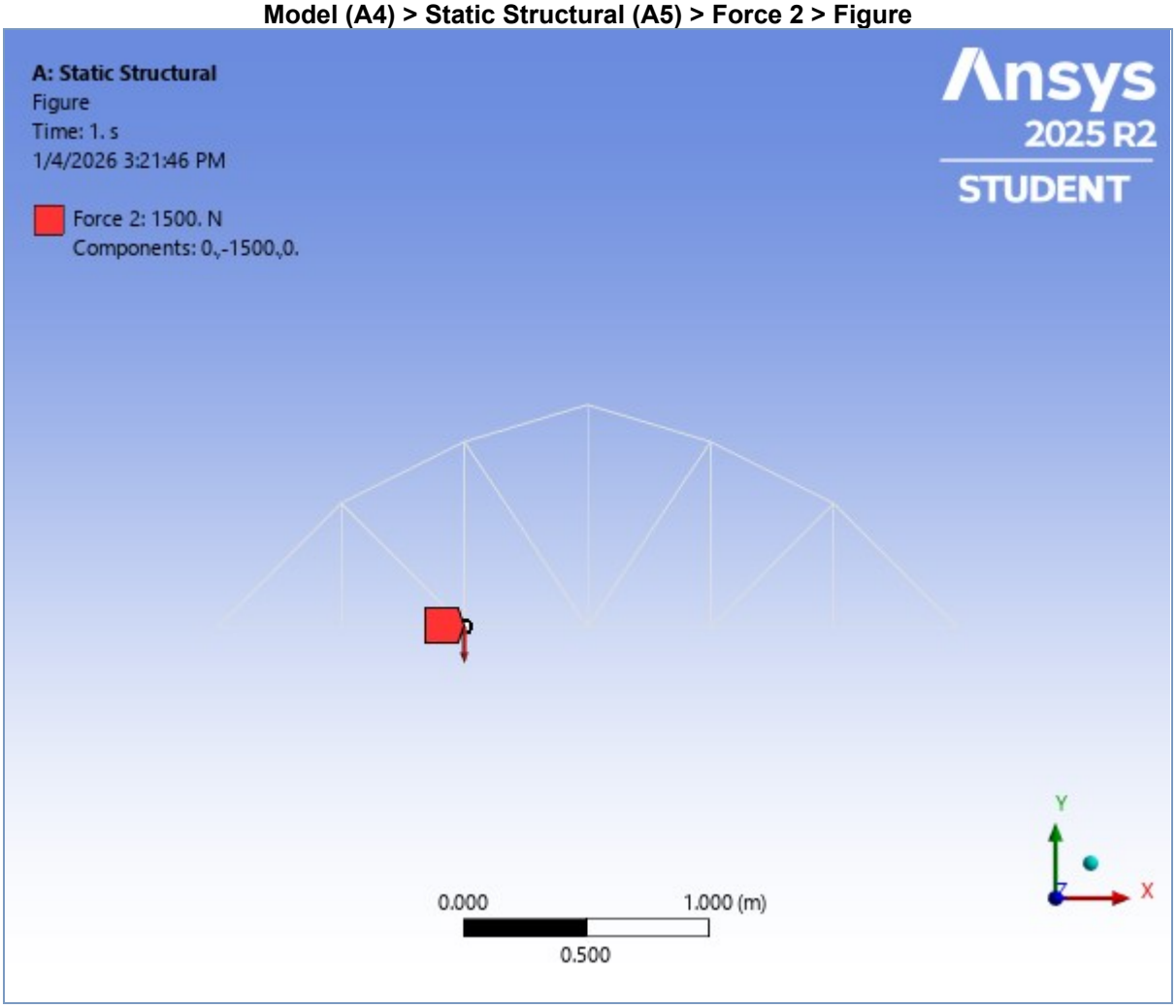


FIGURE 10
Model (A4) > Static Structural (A5) > Force 3

FIGURE 11
Model (A4) > Static Structural (A5) > Force 3 > Figure

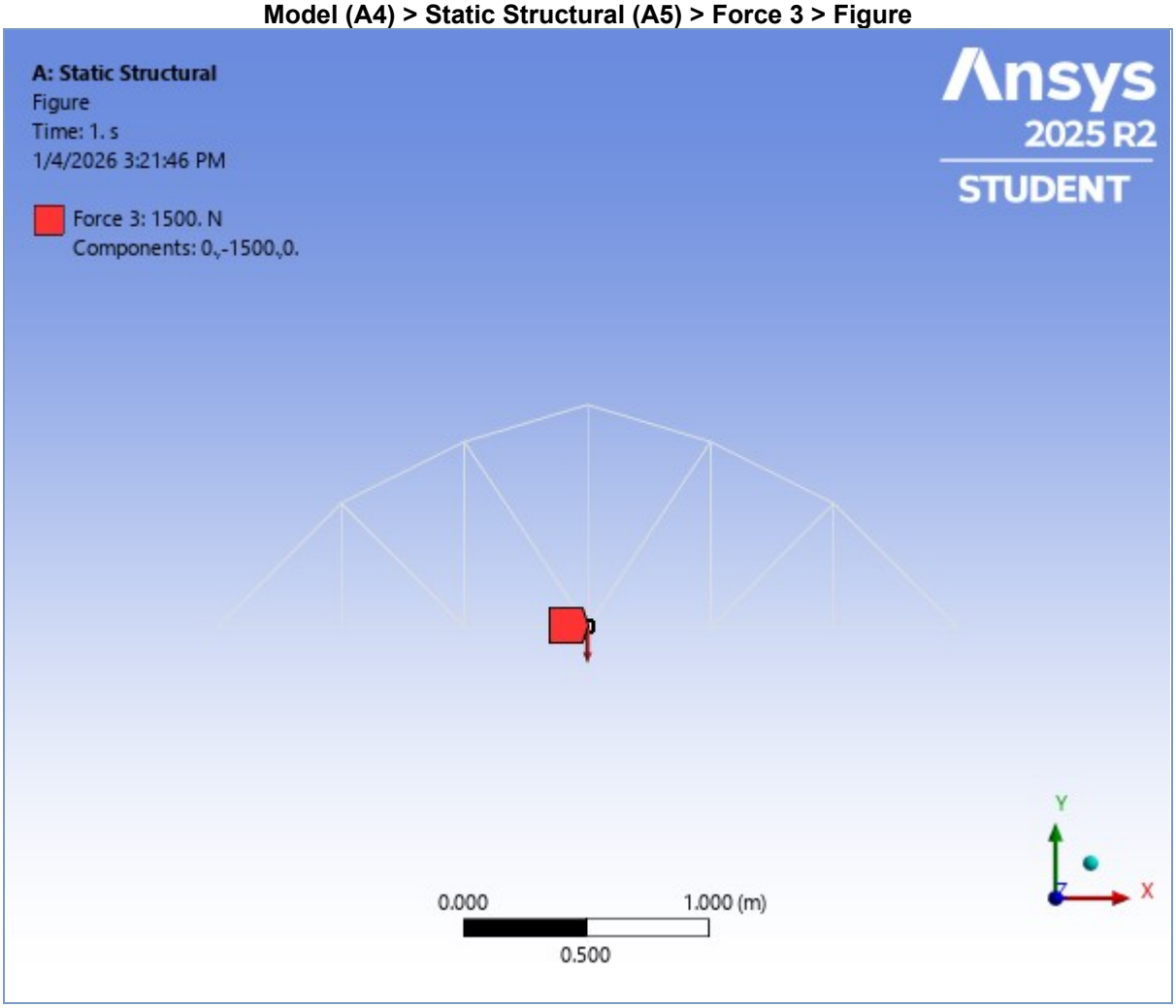


FIGURE 12
Model (A4) > Static Structural (A5) > Force 4

FIGURE 13
Model (A4) > Static Structural (A5) > Force 4 > Figure

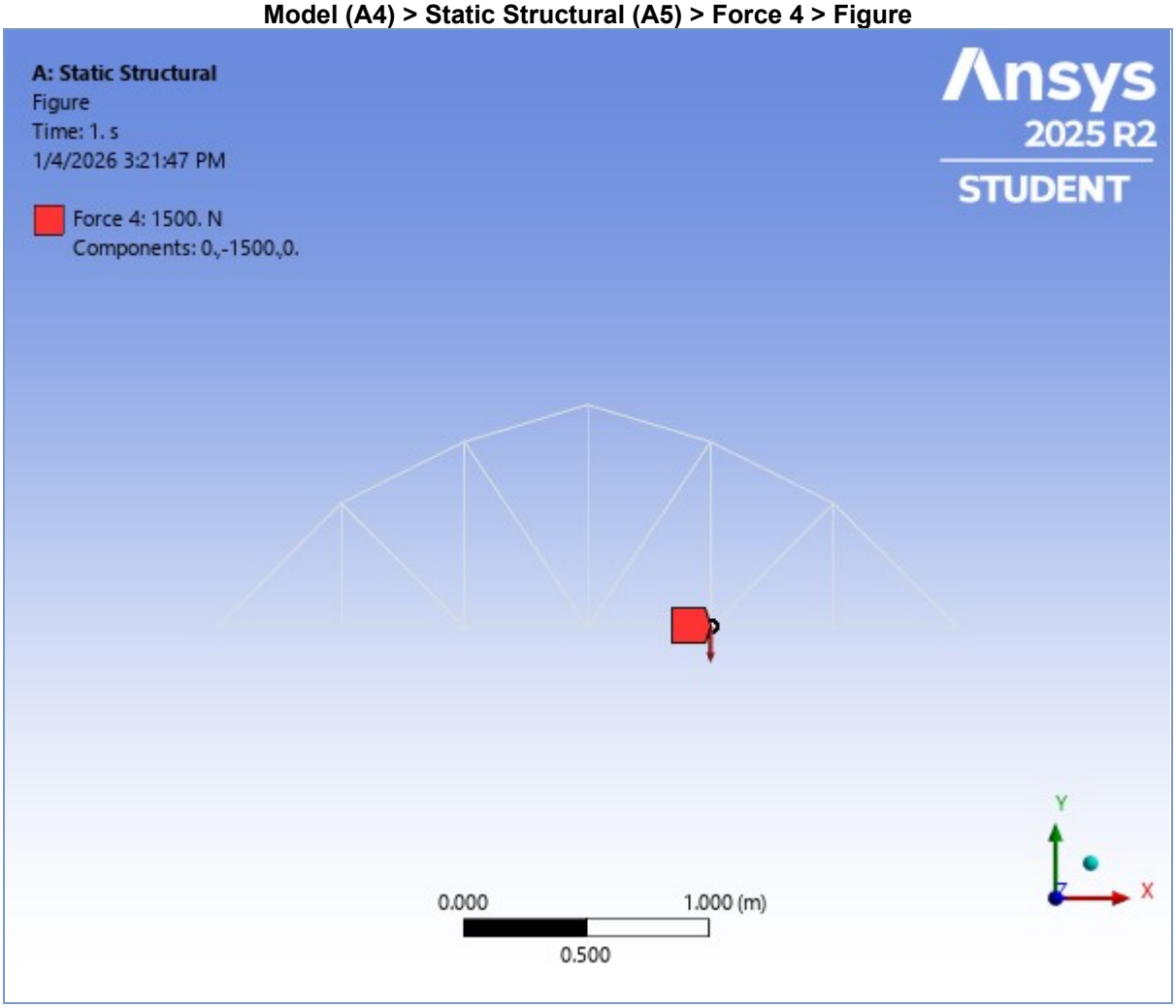


FIGURE 14
Model (A4) > Static Structural (A5) > Force 5

FIGURE 15
Model (A4) > Static Structural (A5) > Force 5 > Figure

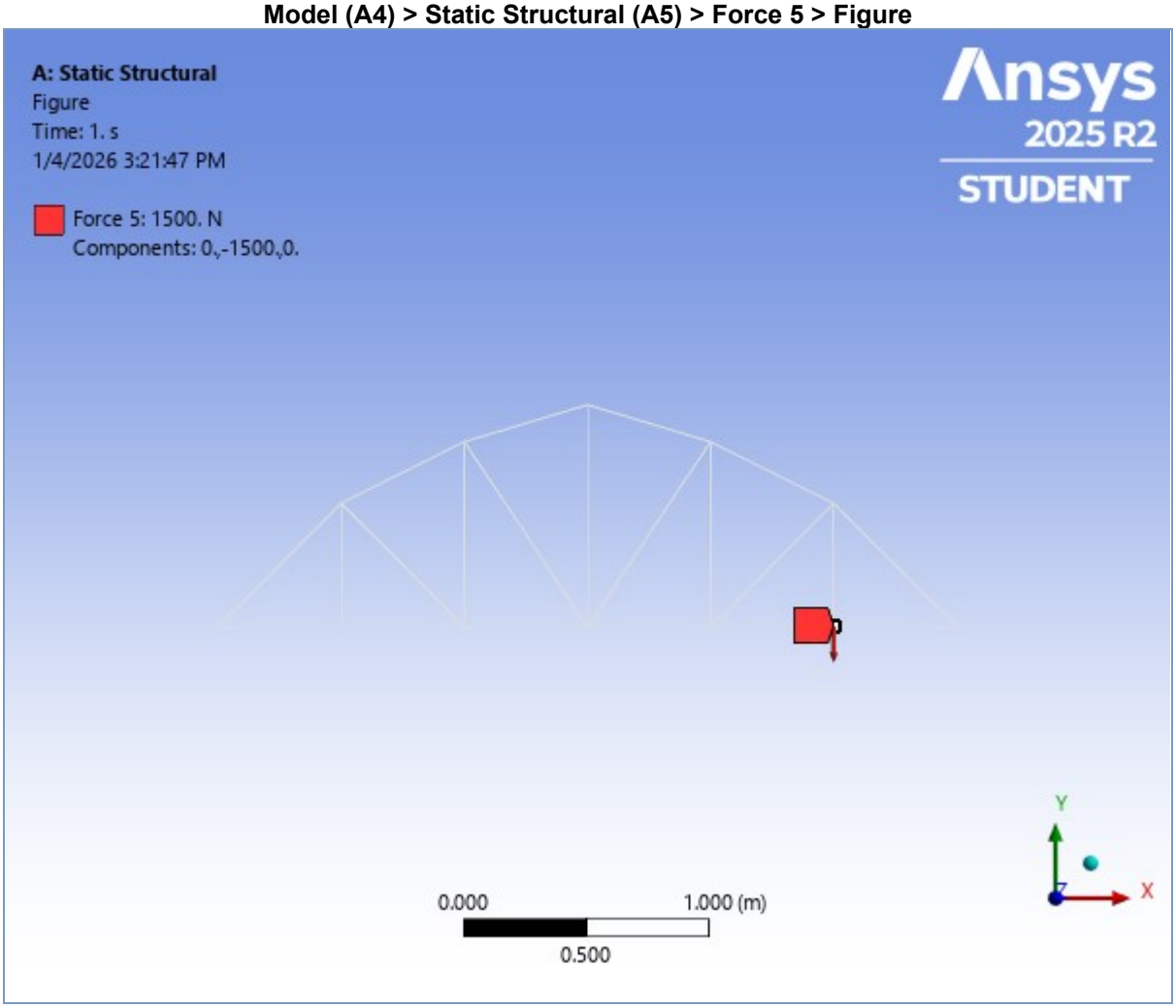


FIGURE 16
Model (A4) > Static Structural (A5) > Fixed Support > Figure

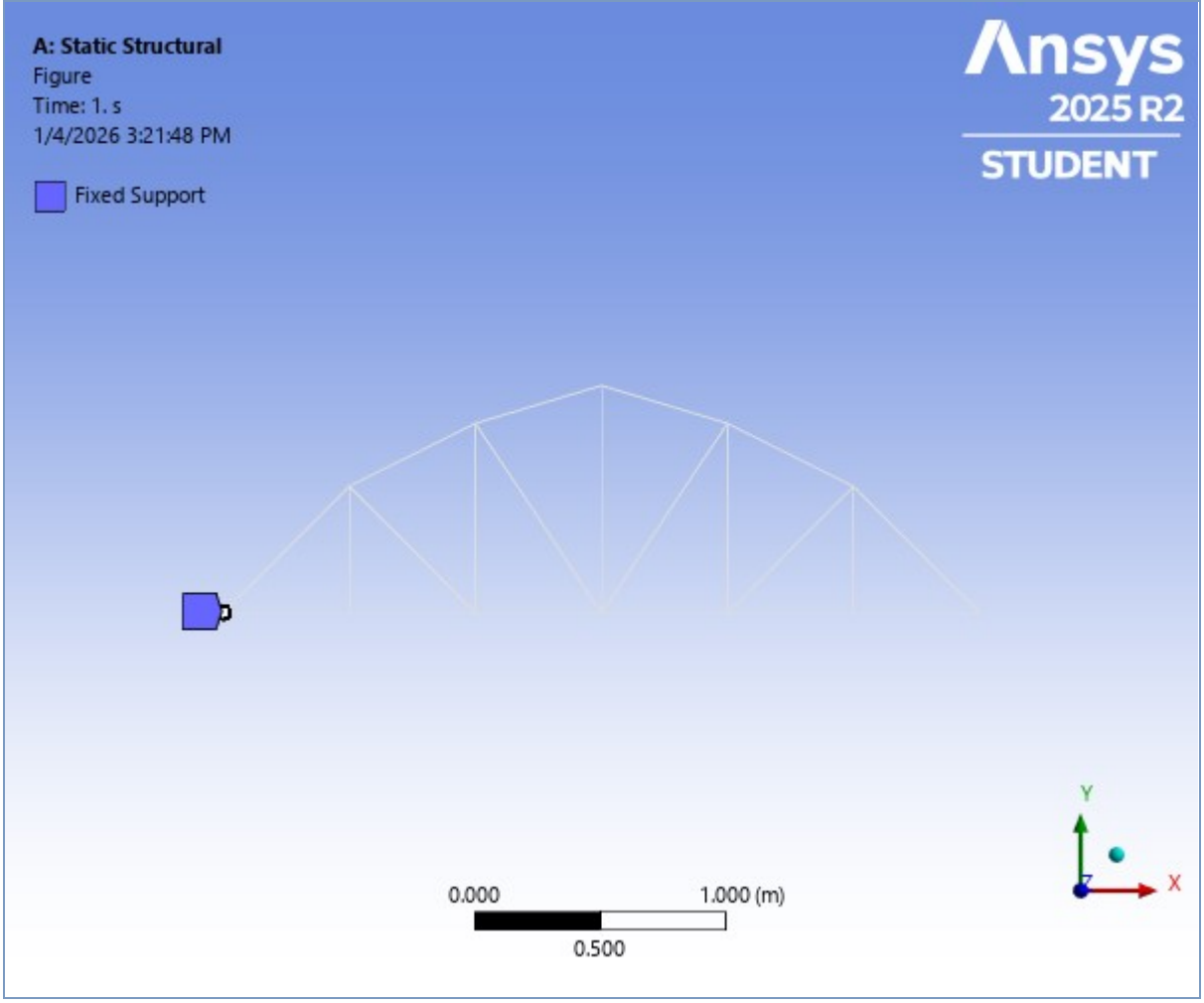
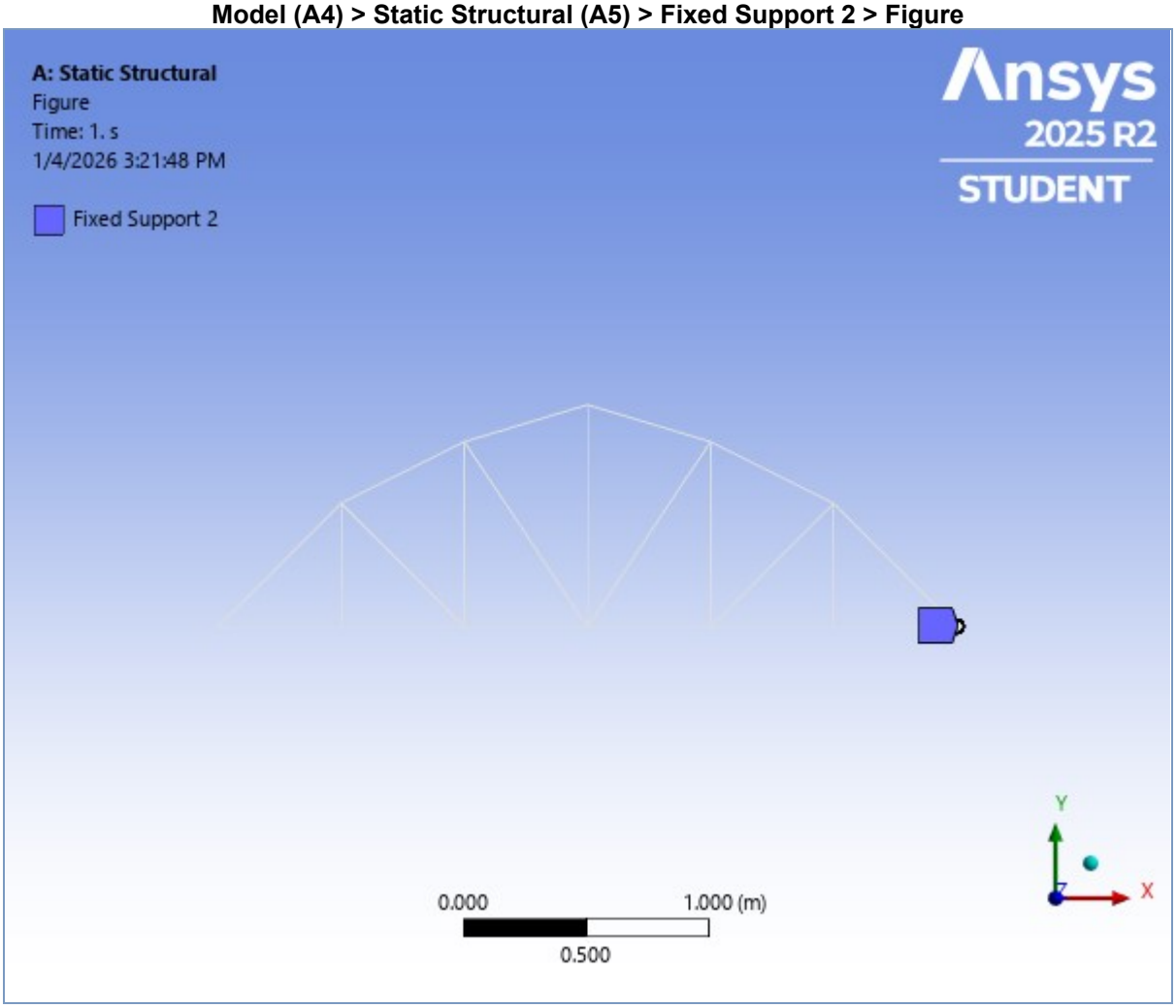


FIGURE 17
Model (A4) > Static Structural (A5) > Fixed Support 2 > Figure



Solution (A6)

TABLE 14
Model (A4) > Static Structural (A5) > Solution

Object Name	*Solution (A6)*
State	Solved
Adaptive Mesh Refinement	
Max Refinement Loops	1.
Refinement Depth	2.
Information	
Status	Done
MAPDL Elapsed Time	8. s
MAPDL Memory Used	188. MB
MAPDL Result File Size	448. KB
Post Processing	
Beam Section Results	No
On Demand Stress/Strain	No

TABLE 15
Model (A4) > Static Structural (A5) > Solution (A6) > Solution Information

Object Name	*Solution Information*
State	Solved
Solution Information	
Solution Output	Solver Output
Newton-Raphson Residuals	0
Identify Element Violations	0
Update Interval	2.5 s
Display Points	All
FE Connection Visibility	
Activate Visibility	Yes
Display	All FE Connectors
Draw Connections Attached To	All Nodes
Line Color	Connection Type
Visible on Results	No
Line Thickness	Single
Display Type	Lines

TABLE 16
Model (A4) > Static Structural (A5) > Solution (A6) > Results

Object Name	*Total Deformation*
State	Solved
Scope	
Scoping Method	Geometry Selection
Geometry	All Bodies
Definition	
Type	Total Deformation
By	Time
Display Time	Last
Separate Data by Entity	No
Calculate Time History	Yes
Identifier	
Suppressed	No
Results	
Minimum	0. m
Maximum	4.1589e-003 m
Average	3.2329e-003 m
Minimum Occurs On	Line Body
Maximum Occurs On	Line Body
Information	
Time	1. s
Load Step	1
Substep	1
Iteration Number	1

FIGURE 18
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

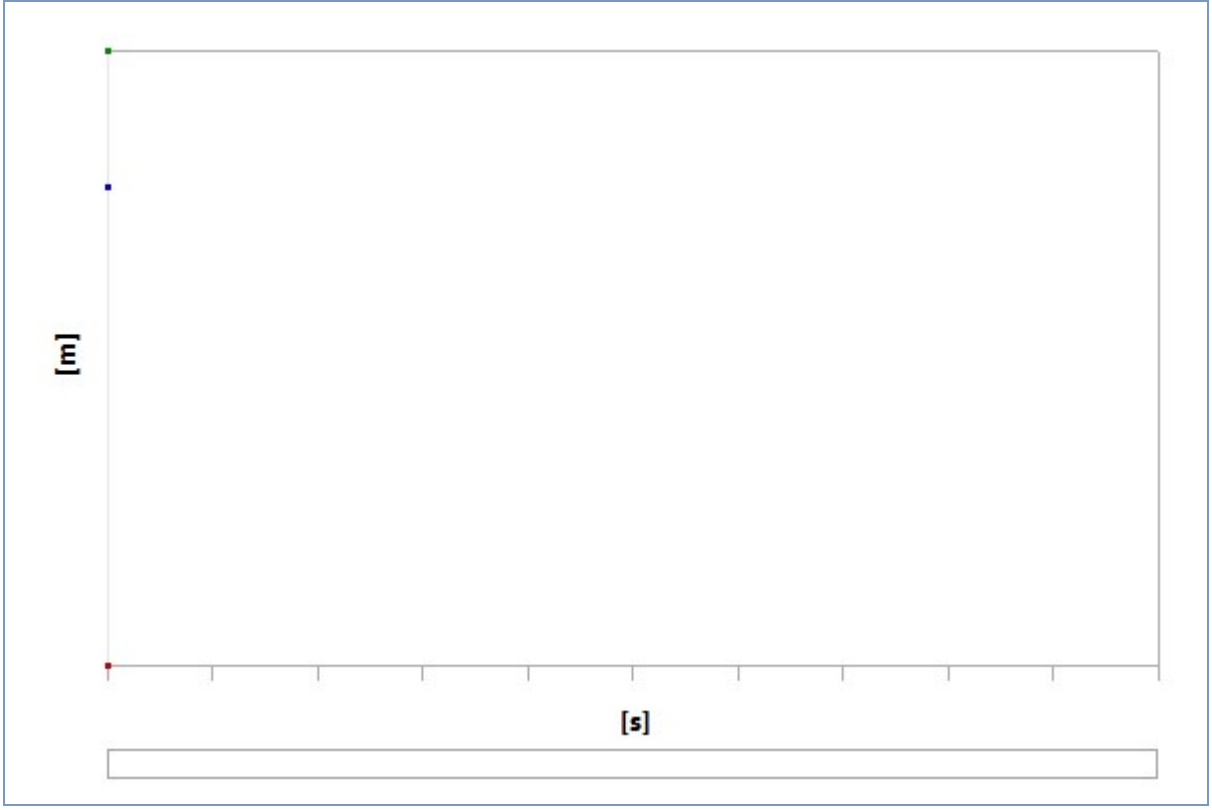


TABLE 17
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.	0.	4.1589e-003	3.2329e-003

FIGURE 19
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation > Figure

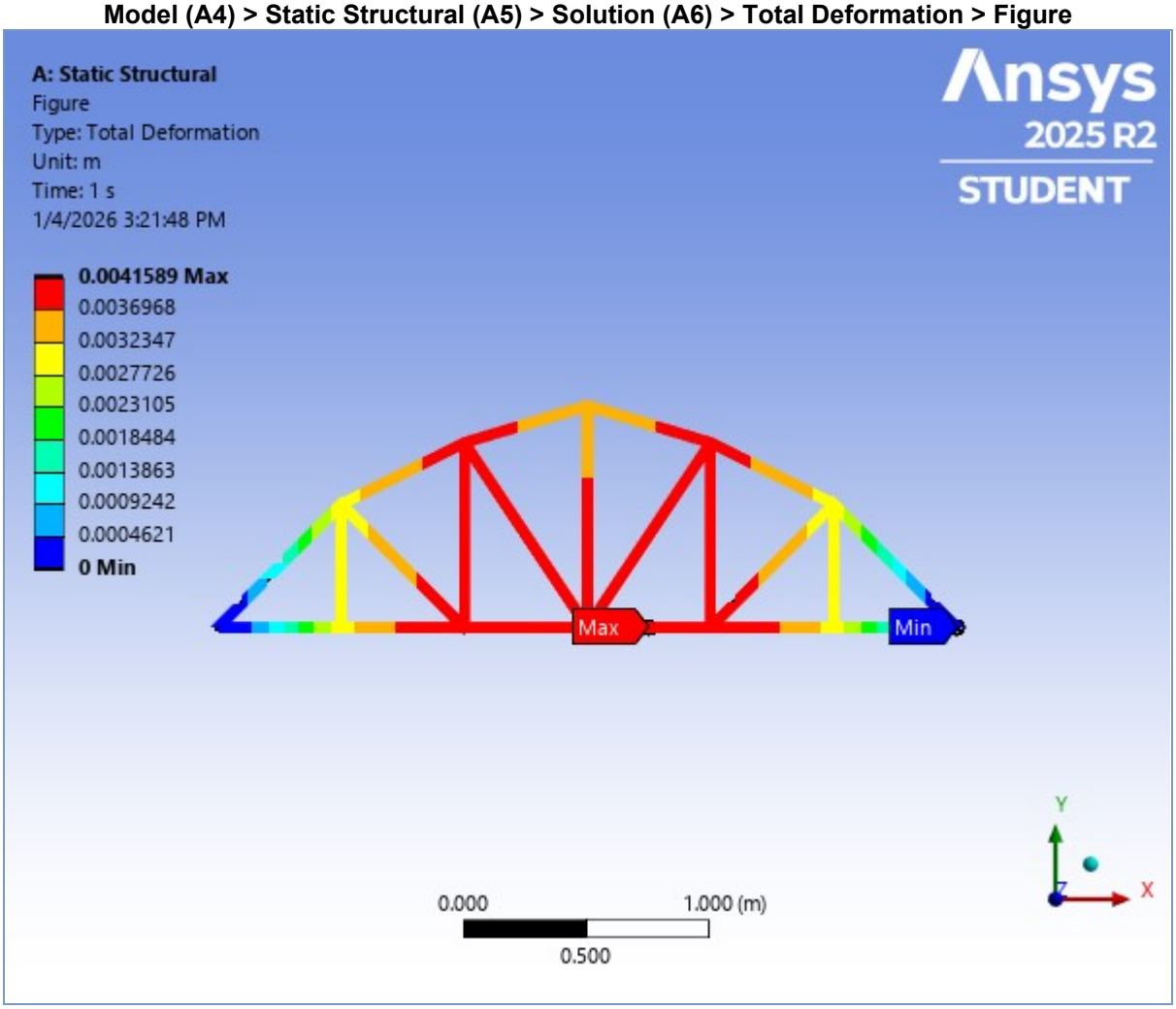


TABLE 18
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool

Object Name	*Beam Tool*
State	Solved

Scope	
Geometry	All Line Bodies

TABLE 19
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Results

Object Name	*Direct Stress*	*Minimum Combined Stress*	*Maximum Combined Stress*
State	Solved		
Definition			
Type	Direct Stress	Minimum Combined Stress	Maximum Combined Stress
By	Time		
Display Time	Last		
Separate Data by Entity	No		
Calculate Time History	Yes		
Identifier			
Suppressed	No		
Integration Point Results			
Display Option	Averaged		
Results			
Minimum	-3.3137e+008 Pa	-3.3812e+008 Pa	-3.3121e+008 Pa
Maximum	1.4059e+008 Pa		
Average	-5.5385e+007 Pa	-5.7965e+007 Pa	-5.2804e+007 Pa
Minimum Occurs On	Line Body		
Maximum Occurs On	Line Body		
Information			
Time	1. s		
Load Step	1		
Substep	1		
Iteration Number	1		

FIGURE 20
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Direct Stress

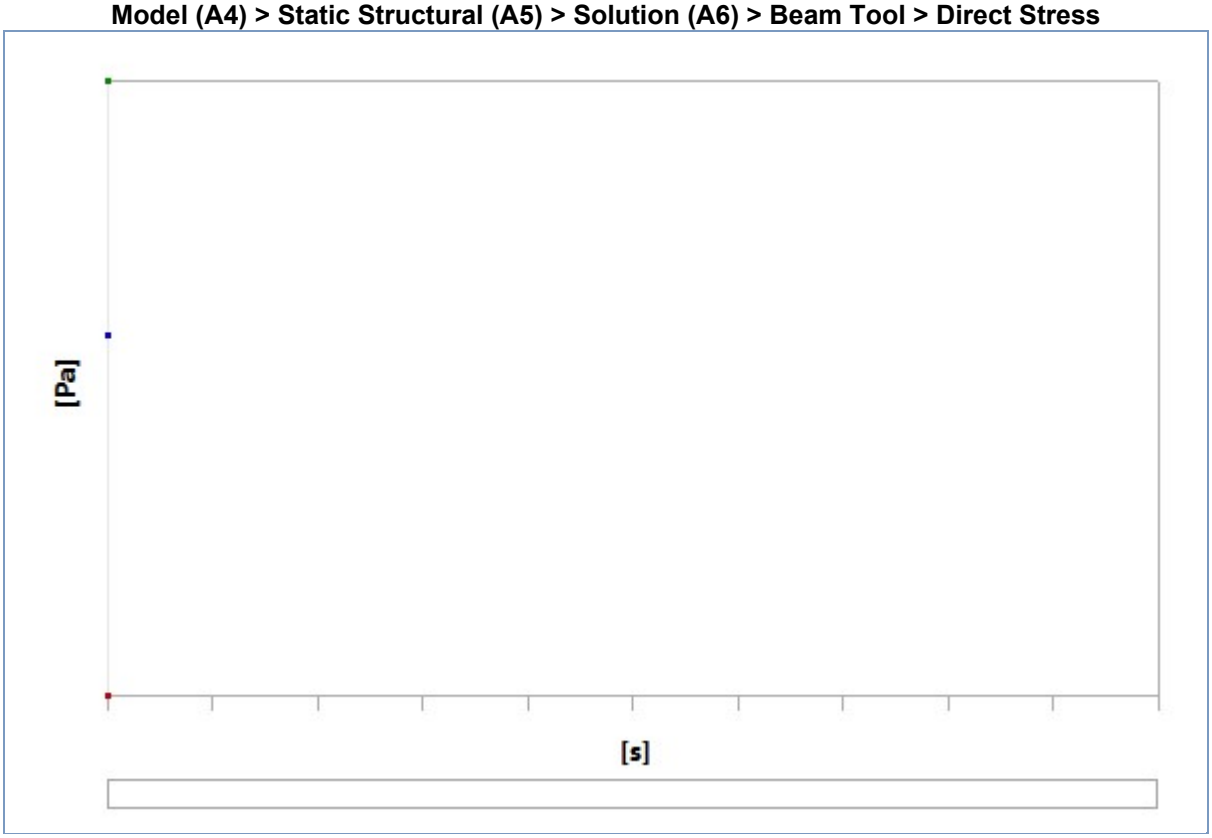


TABLE 20
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Direct Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-3.3137e+008	1.4059e+008	-5.5385e+007

FIGURE 21
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Direct Stress > Figure

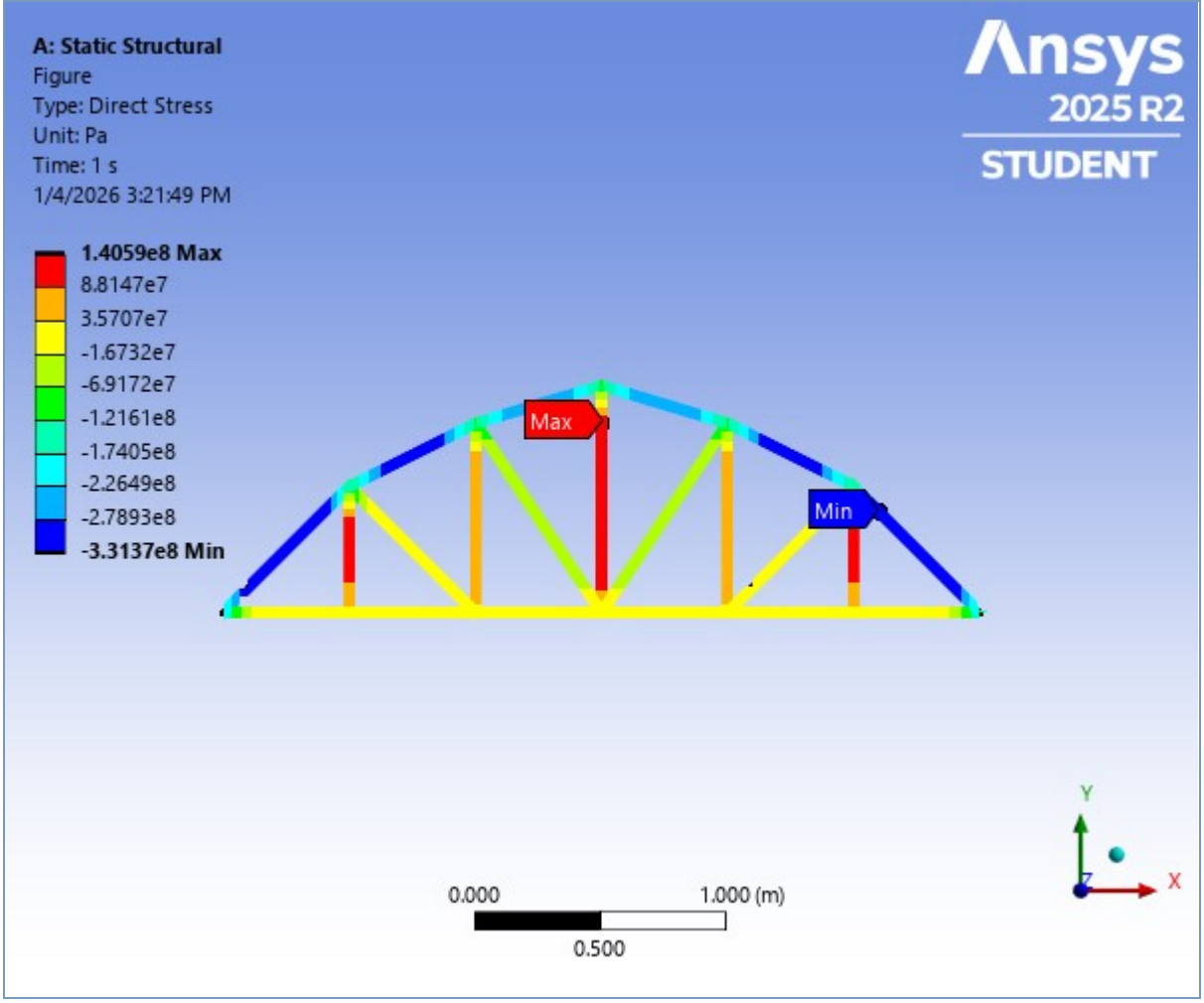


FIGURE 22
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Minimum Combined Stress

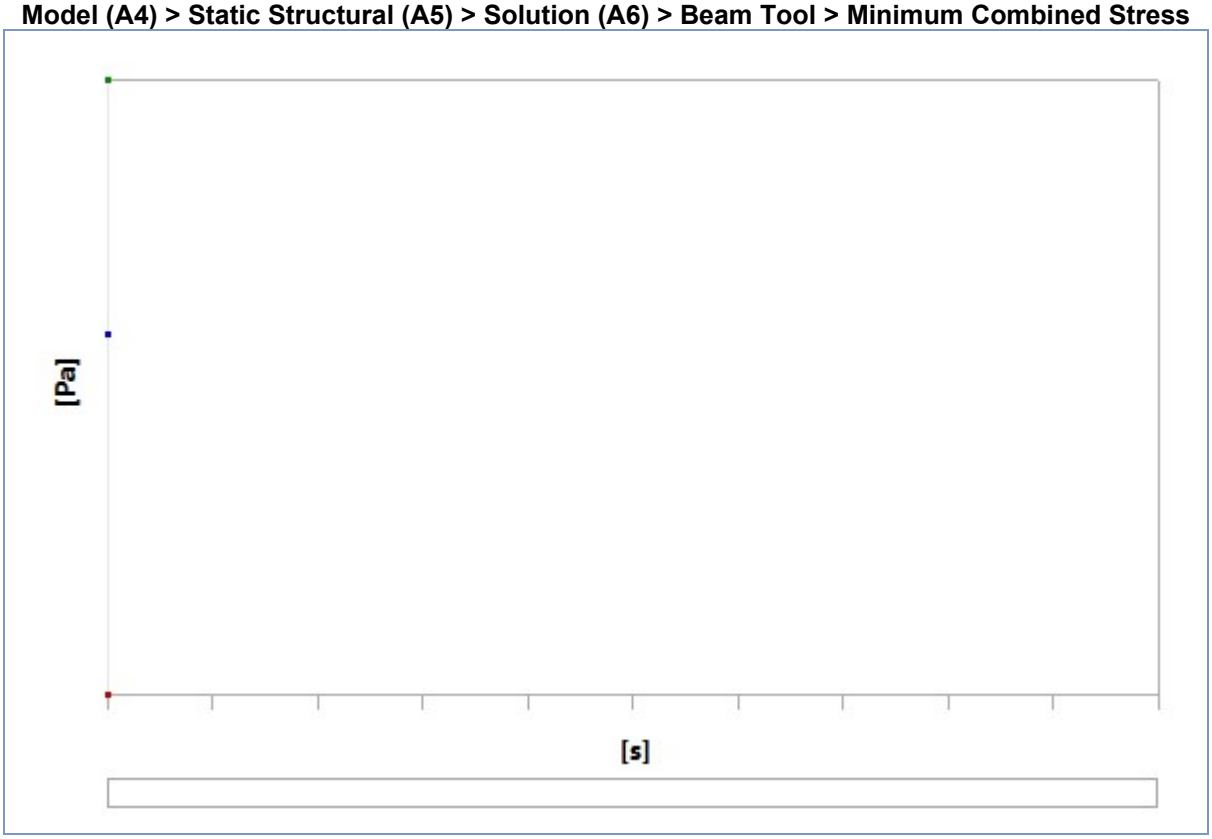


TABLE 21
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Minimum Combined Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-3.3812e+008	1.4059e+008	-5.7965e+007

FIGURE 23
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Minimum Combined Stress > Figure

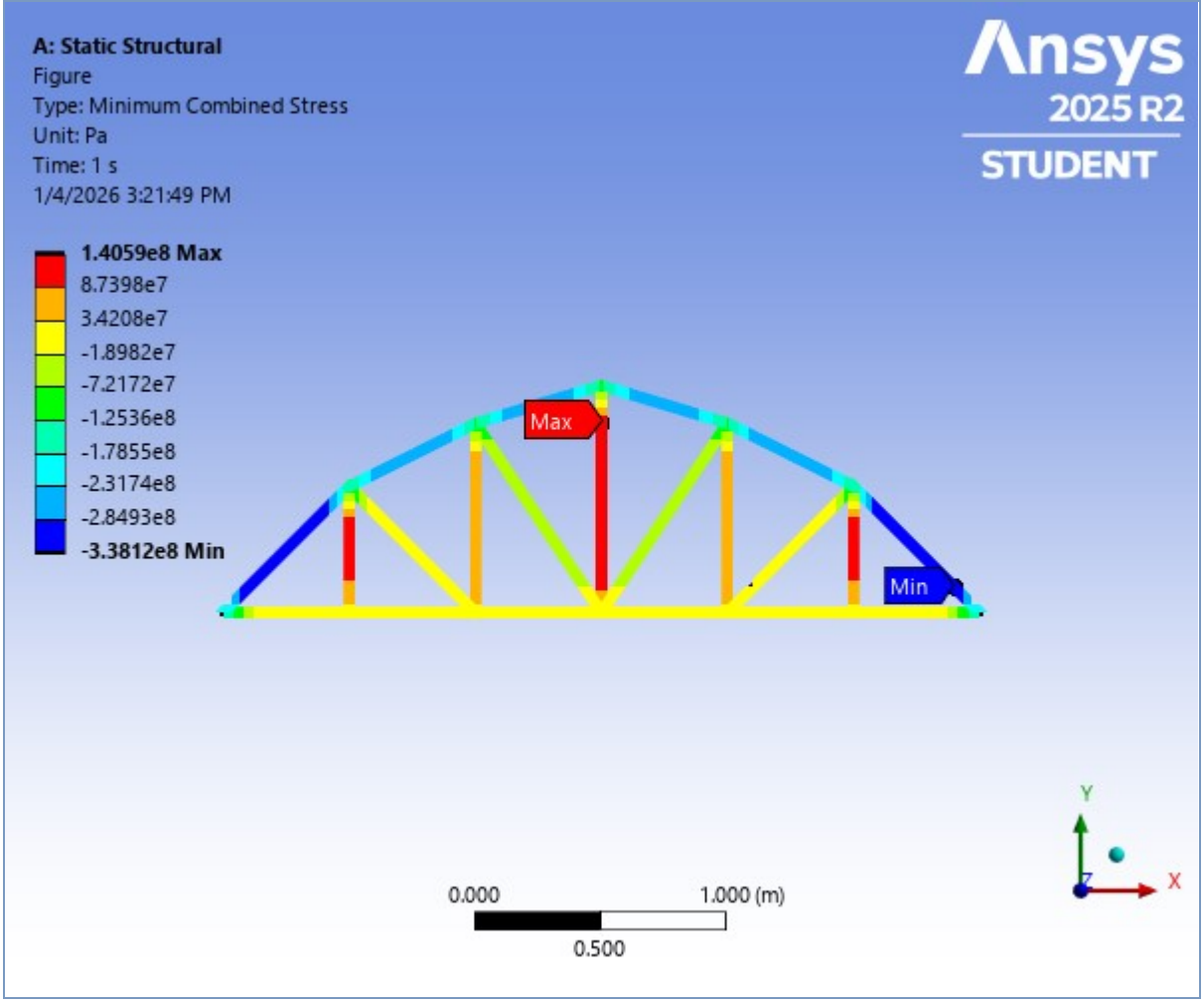


FIGURE 24
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Maximum Combined Stress

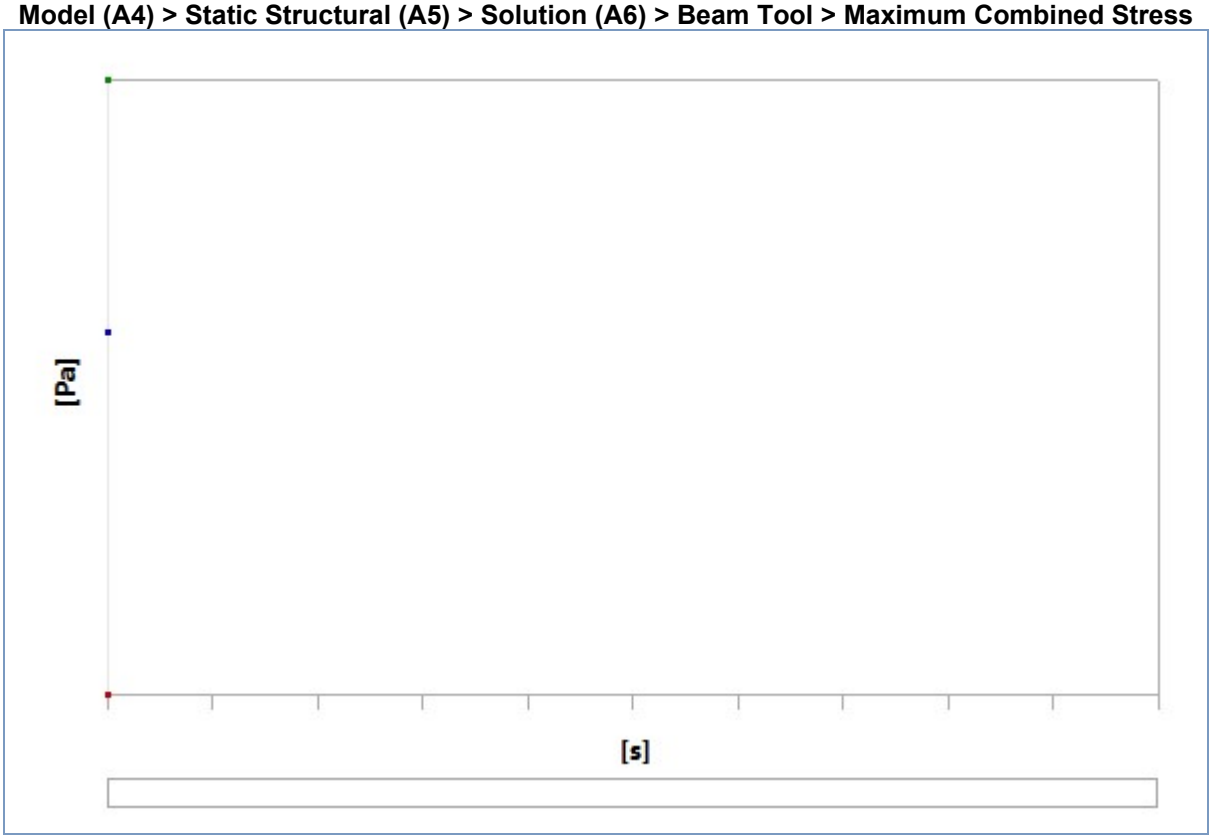


TABLE 22
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Maximum Combined Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-3.3121e+008	1.4059e+008	-5.2804e+007

FIGURE 25
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Maximum Combined Stress > Figure

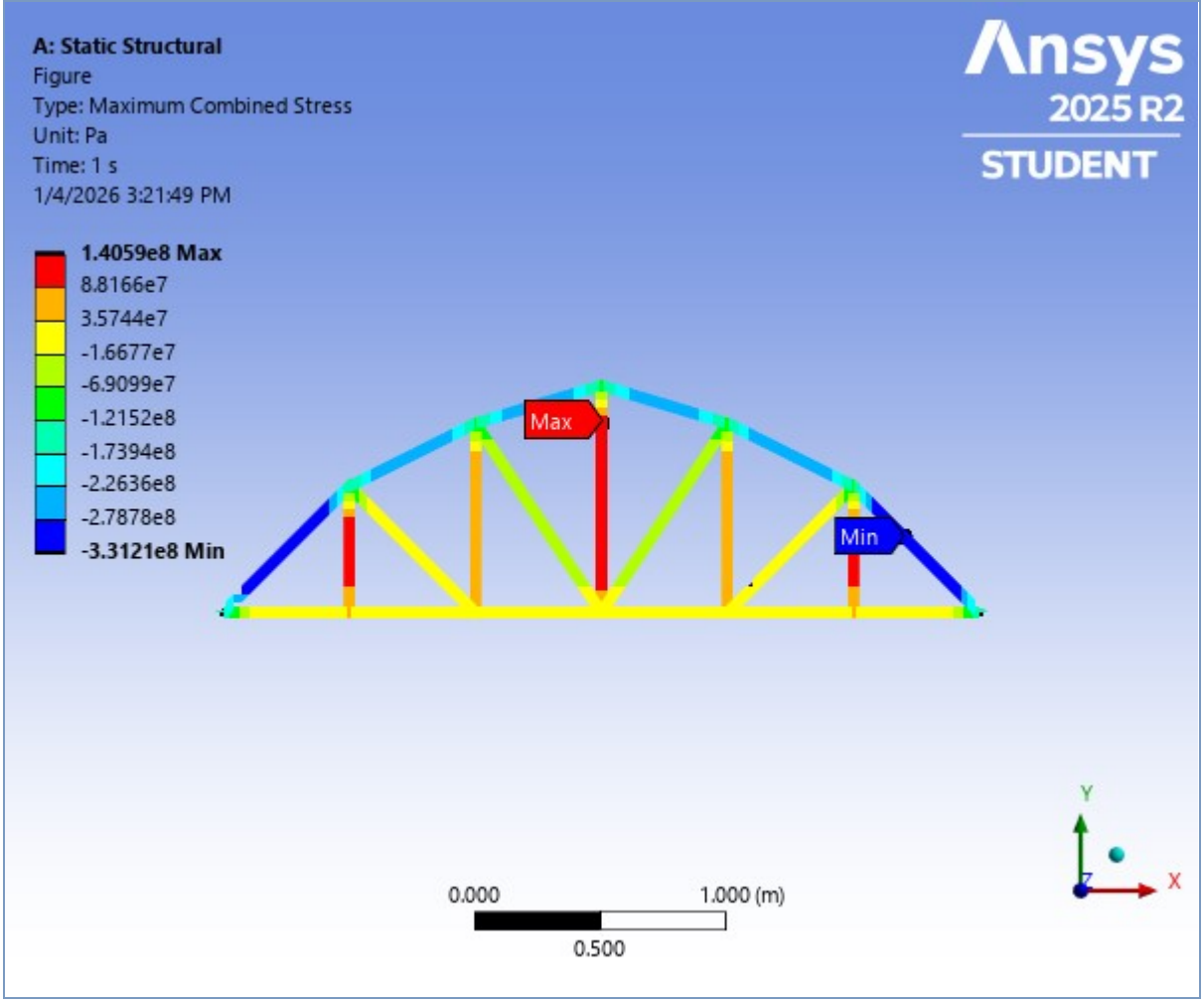


TABLE 23
Model (A4) > Static Structural (A5) > Solution (A6) > Probes

Object Name	*Force Reaction*	*Force Reaction 2*
State	Solved	
Definition		
Type	Force Reaction	
Location Method	Boundary Condition	
Boundary Condition	Fixed Support	Fixed Support 2
Orientation	Global Coordinate System	
Suppressed	No	
Options		
Result Selection	All	
Display Time	End Time	
Results		
X Axis	3832.5 N	-3832.5 N
Y Axis	3750. N	
Z Axis	0. N	
Total	5361.9 N	
Maximum Value Over Time		
X Axis	3832.5 N	-3832.5 N
Y Axis	3750. N	
Z Axis	0. N	
Total	5361.9 N	
Minimum Value Over Time		
X Axis	3832.5 N	-3832.5 N
Y Axis	3750. N	
Z Axis	0. N	
Total	5361.9 N	
Information		
Time	1. s	
Load Step	1	
Substep	1	
Iteration Number	1	

FIGURE 26

Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction

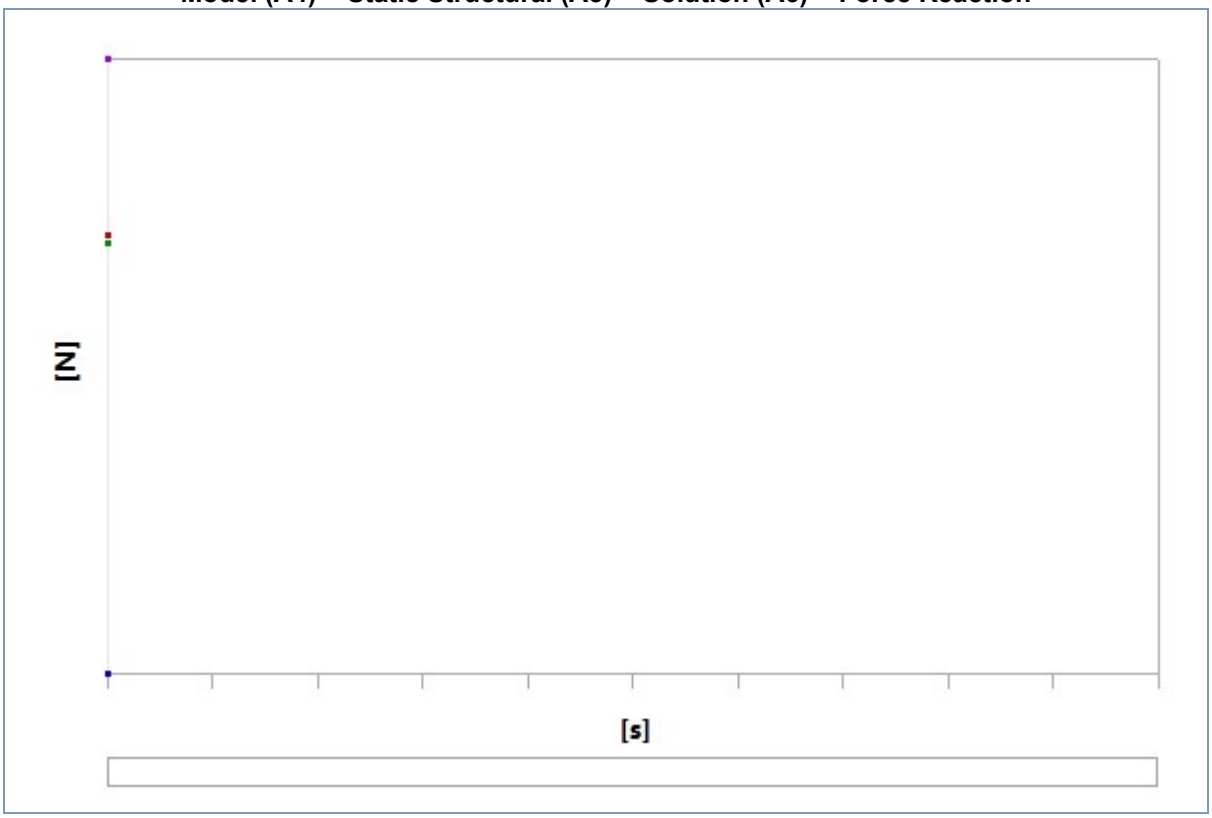


TABLE 24
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction

Time [s]	Force Reaction (X) [N]	Force Reaction (Y) [N]	Force Reaction (Z) [N]	Force Reaction (Total) [N]
1.	3832.5	3750.	0.	5361.9

FIGURE 27
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction > Figure

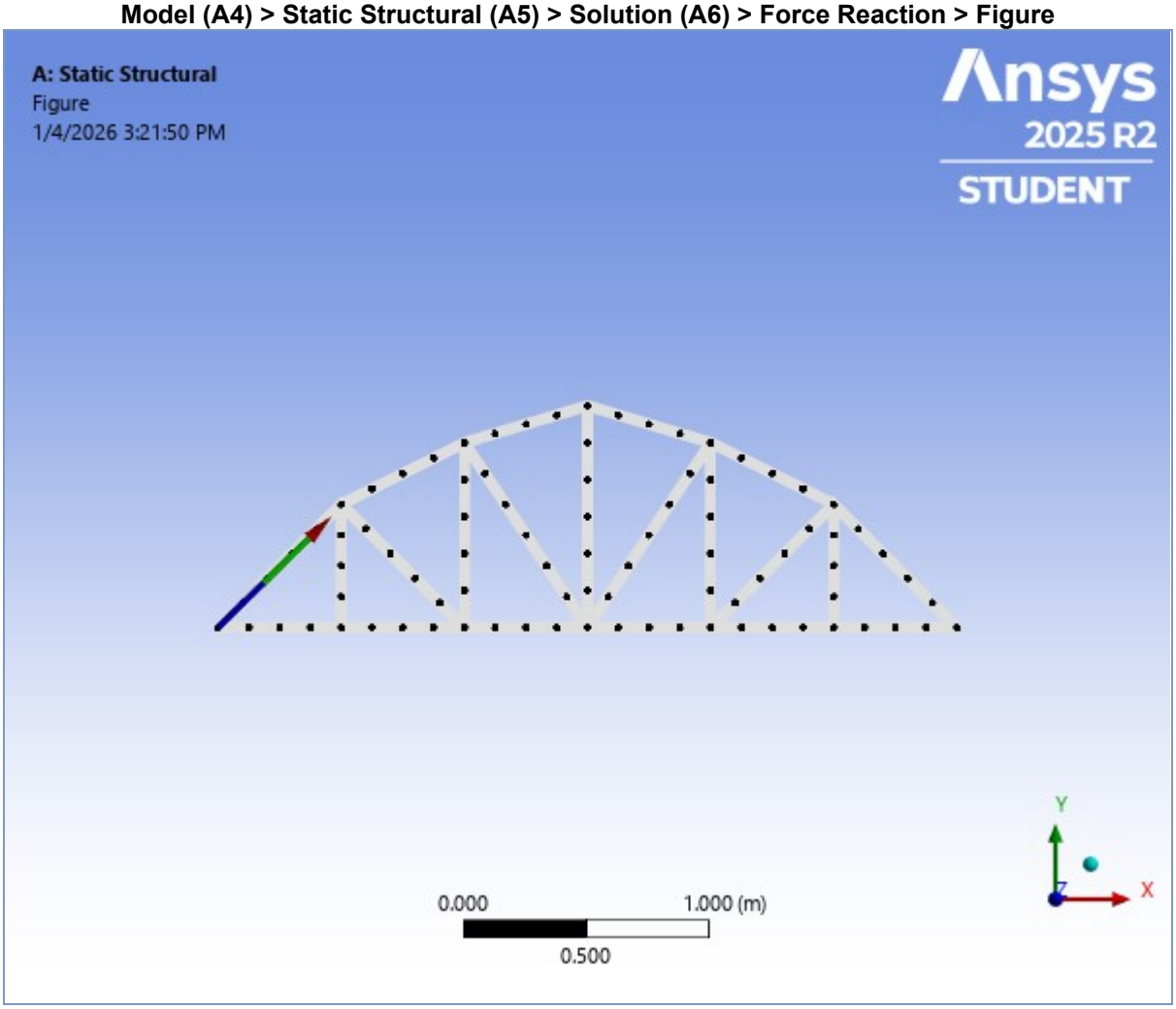


FIGURE 28
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction 2

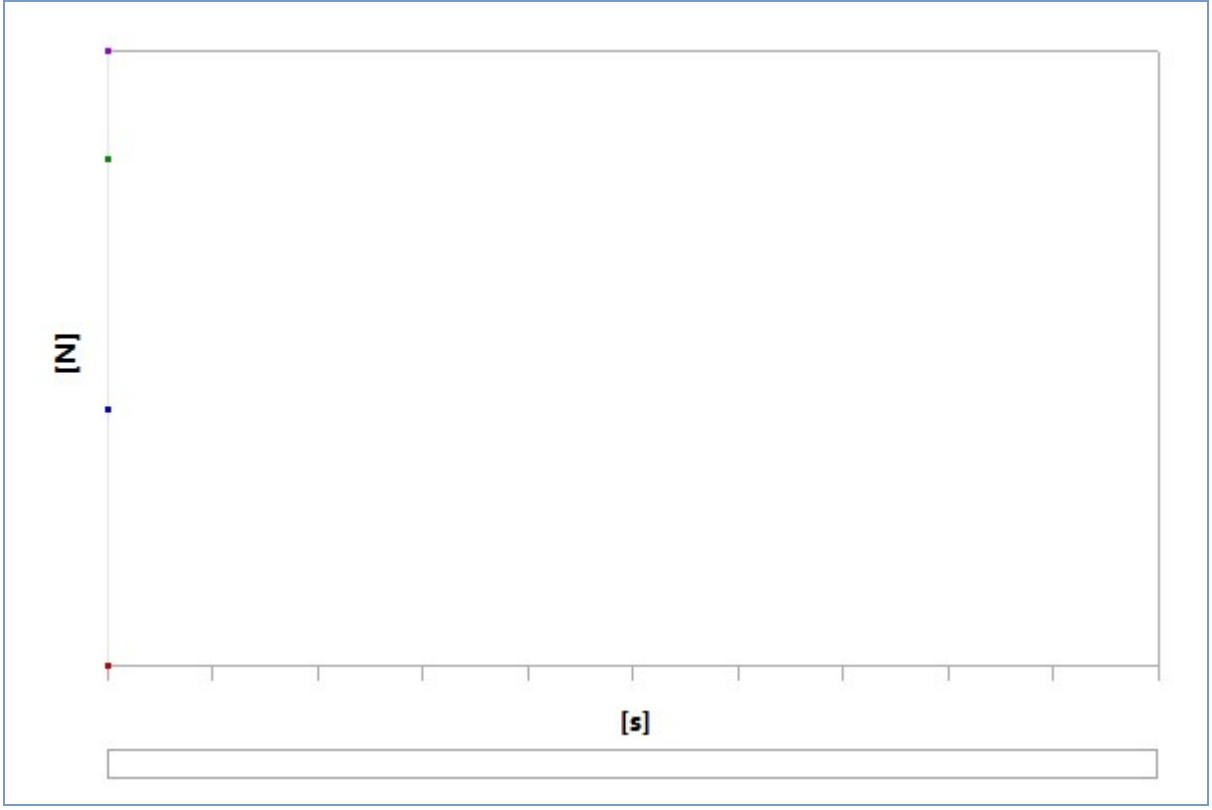
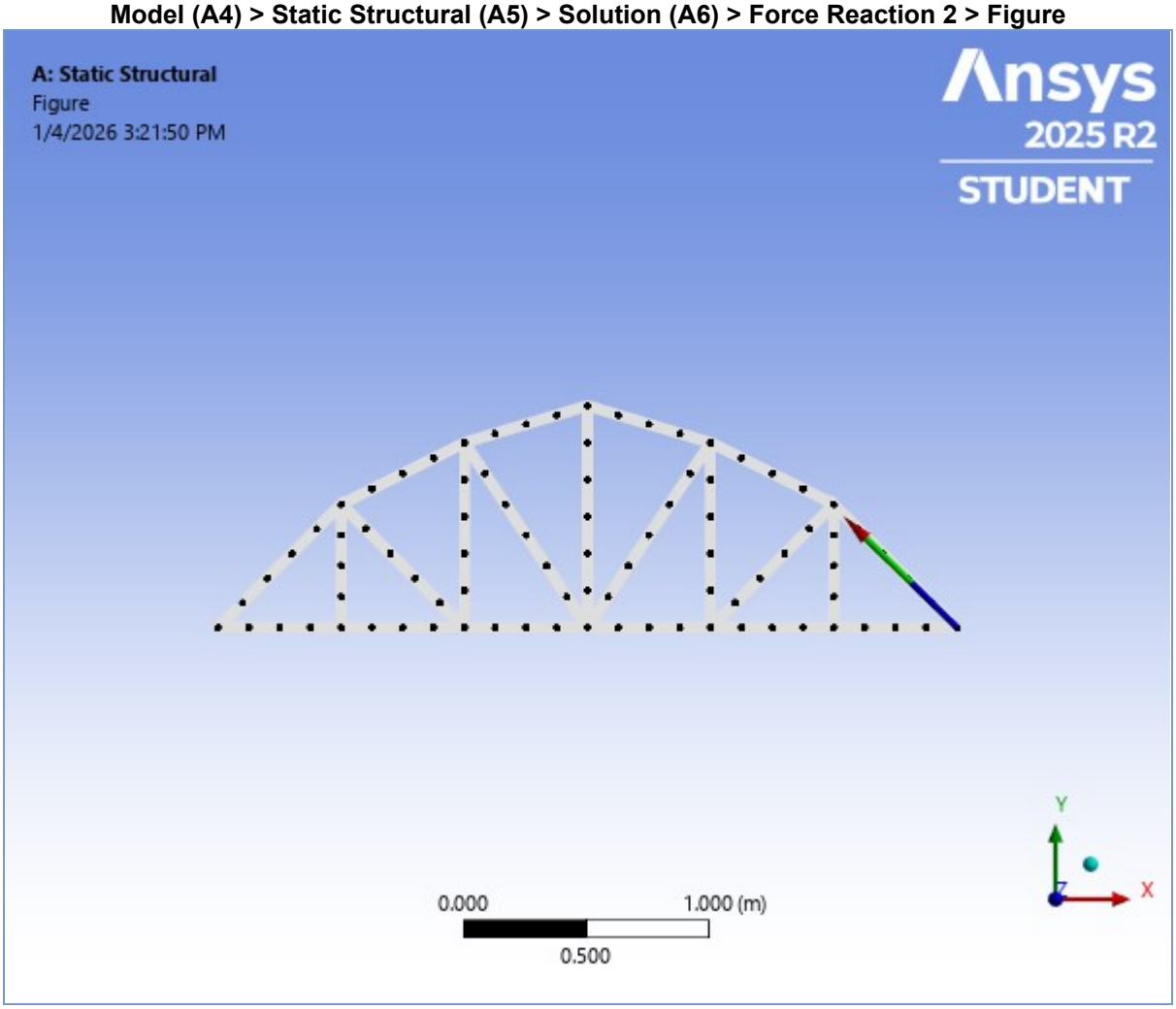


TABLE 25
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction 2

Time [s]	Force Reaction 2 (X) [N]	Force Reaction 2 (Y) [N]	Force Reaction 2 (Z) [N]	Force Reaction 2 (Total) [N]
1.	-3832.5	3750.	0.	5361.9

FIGURE 29
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction 2 > Figure



Material Data

Structural Steel

TABLE 26
Structural Steel > Constants

Density	7850 kg m^-3
Coefficient of Thermal Expansion	1.2e-005 C^-1
Specific Heat	434 J kg^-1 C^-1
Thermal Conductivity	60.5 W m^-1 C^-1
Resistivity	1.7e-007 kg m^3 A^-2 s^-3

TABLE 27
Structural Steel > Color

Red	Green	Blue
132	139	179

TABLE 28
Structural Steel > Compressive Ultimate Strength

Compressive Ultimate Strength Pa
0

TABLE 29
Structural Steel > Compressive Yield Strength

Compressive Yield Strength Pa
2.5e+008

TABLE 30
Structural Steel > Tensile Yield Strength

Tensile Yield Strength Pa
2.5e+008

TABLE 31
Structural Steel > Tensile Ultimate Strength

Tensile Ultimate Strength Pa
4.6e+008

TABLE 32
Structural Steel > Isotropic Secant Coefficient of Thermal Expansion

Zero-Thermal-Strain Reference Temperature C
22

TABLE 33
Structural Steel > S-N Curve

Alternating Stress Pa	Cycles	Mean Stress Pa
3.999e+009	10	0
2.827e+009	20	0
1.896e+009	50	0
1.413e+009	100	0
1.069e+009	200	0
4.41e+008	2000	0
2.62e+008	10000	0
2.14e+008	20000	0
1.38e+008	1.e+005	0
1.14e+008	2.e+005	0
8.62e+007	1.e+006	0

TABLE 34
Structural Steel > Strain-Life Parameters

Strength Coefficient Pa	Strength Exponent	Ductility Coefficient	Ductility Exponent	Cyclic Strength Coefficient Pa	Cyclic Strain Hardening Exponent
9.2e+008	-0.106	0.213	-0.47	1.e+009	0.2

TABLE 35
Structural Steel > Isotropic Elasticity

Young's Modulus Pa	Poisson's Ratio	Bulk Modulus Pa	Shear Modulus Pa	Temperature C
2.e+011	0.3	1.6667e+011	7.6923e+010	

TABLE 36
Structural Steel > Isotropic Relative Permeability

Relative Permeability
10000