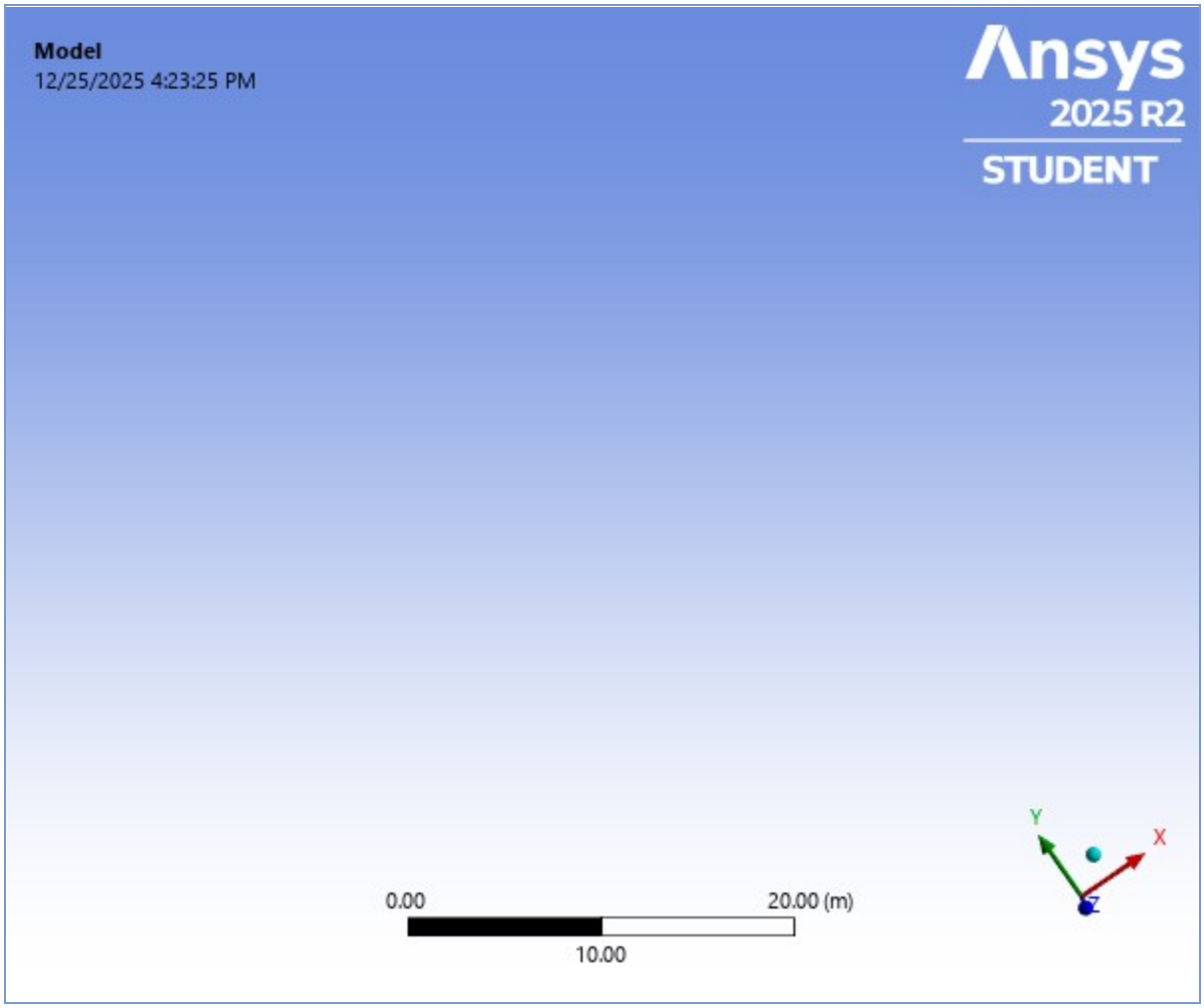
Project*

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)

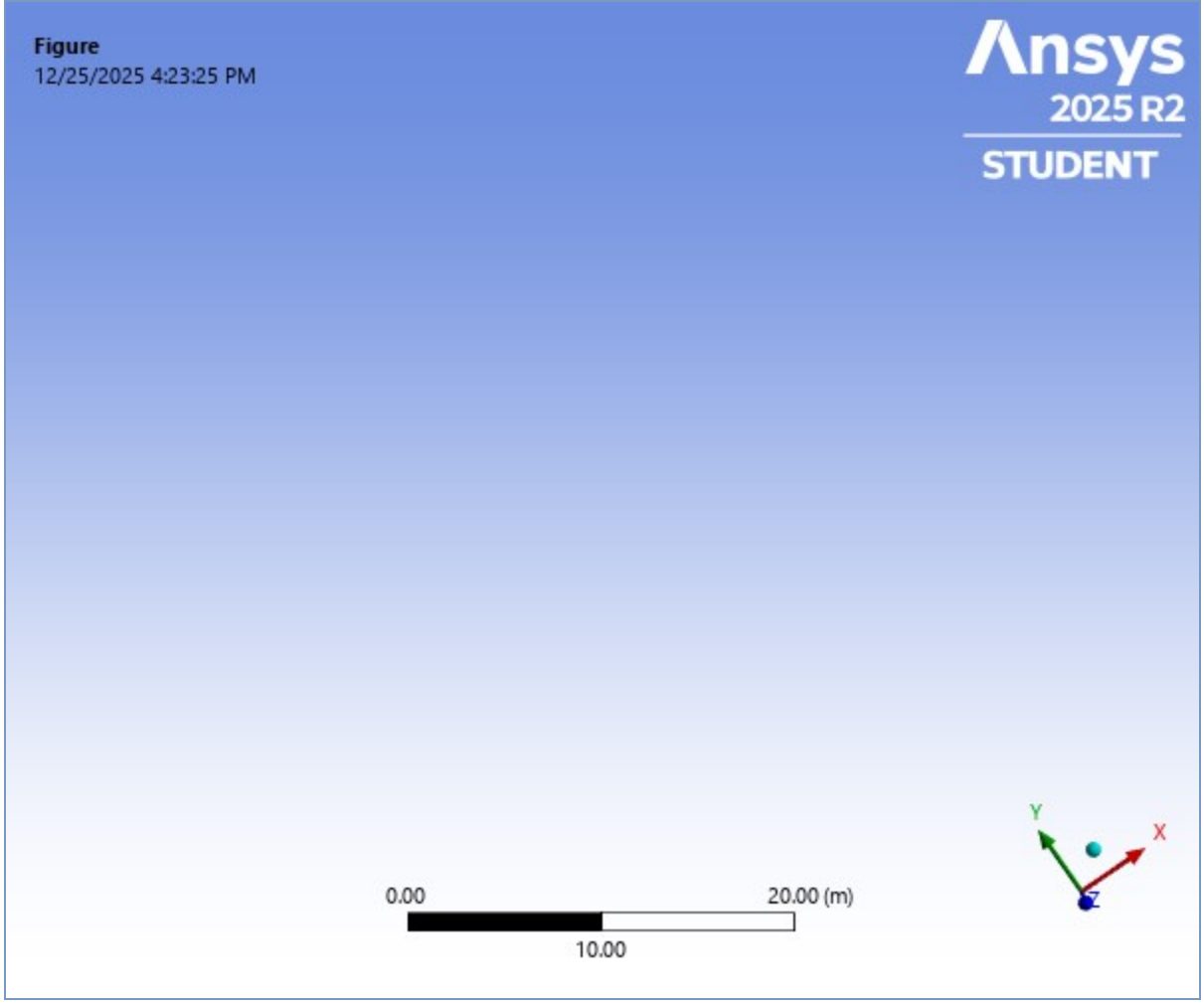
TABLE 2
Model (A4) > Geometry Imports

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:\from mhmd LAB\ANSYS\2D Frame distrbuted load\2D Fram_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 1
Model (A4) > Geometry Imports > Figure



Geometry

TABLE 4
Model (A4) > Geometry

Object Name	*Geometry*
State	Fully Defined
Definition	
Source	E:\from mhmd LAB\ANSYS\2D Frame distrbuted load\2D Fram_files\dp0 \SYS\DM\SYS.agdb
Type	DesignModeler
Length Unit	Meters
Element Control	Program Controlled
Display Style	Body Color
Bounding Box	
Length X	21. m
Length Y	9. m
Length Z	0. m
Properties	
Volume	1.5952 m³
Mass	12522 kg
Scale Factor Value	1.
Statistics	
Bodies	1
Active Bodies	1
Nodes	47
Elements	23
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	Circular1
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	21. m
Length Y	9. m
Length Z	0. m
Properties	
Volume	1.5952 m³
Mass	12522 kg
Length	24.728 m
Cross Section Area	6.4509e-002 m²
Cross Section IYY	3.3114e-004 m²·m²
Cross Section IZZ	3.3114e-004 m²·m²
Statistics	
Nodes	47
Elements	23
Mesh Metric	None

FIGURE 2
Model (A4) > Geometry > Figure

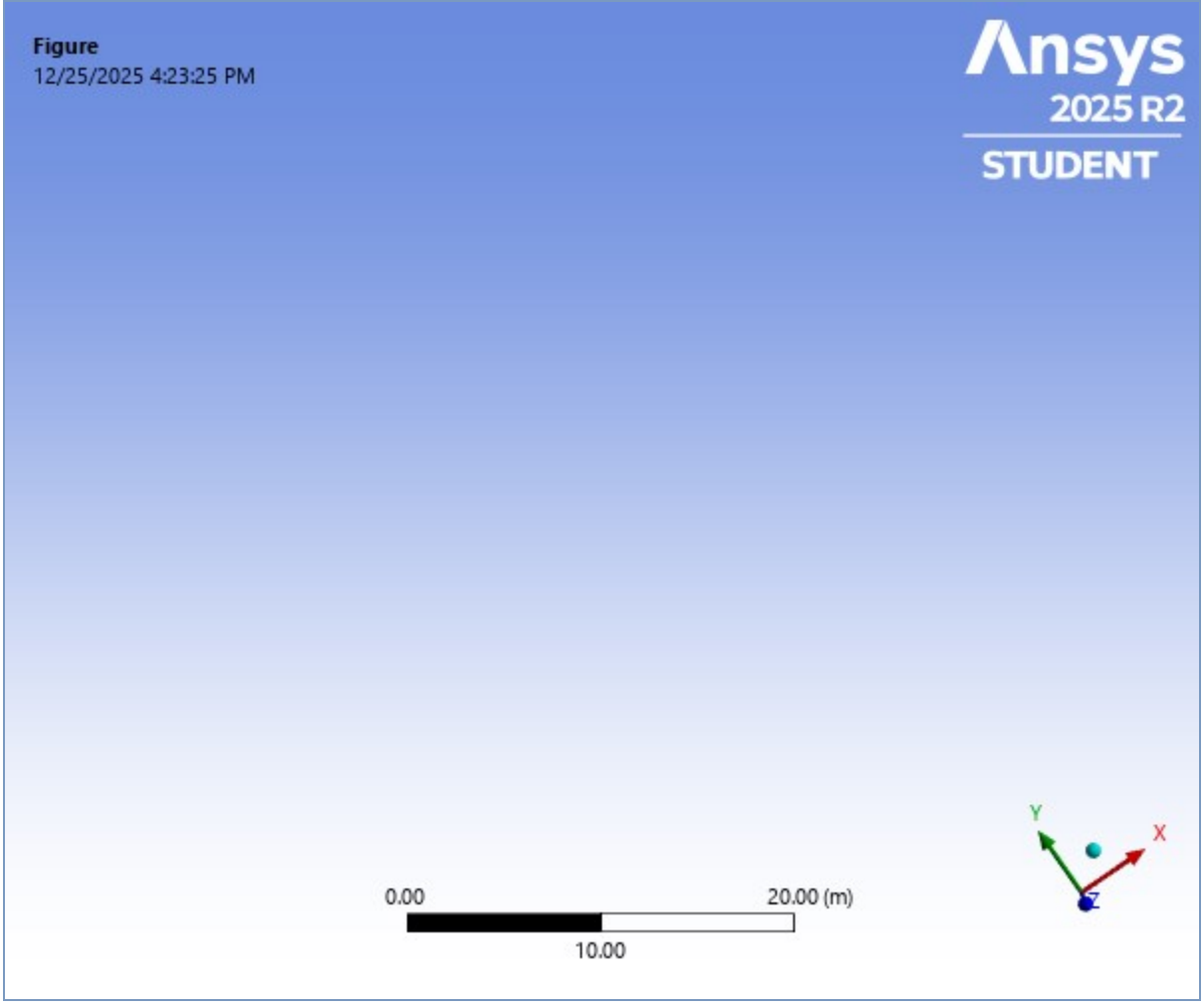


TABLE 6
Model (A4) > Materials

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

TABLE 7
Model (A4) > Cross Sections

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

TABLE 8
Model (A4) > Cross Sections > Circular1

Object Name	*Circular1*
State	Fully Defined
Definition	
Type	CSOLID
Import Type	Imported
Dimensions	
R	0.1433 m
Physical Properties	
Beam Section	Circular1
A	6.4509e-002 m²
Iyy	3.3114e-004 m²·m²
Izz	3.3114e-004 m²·m²

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

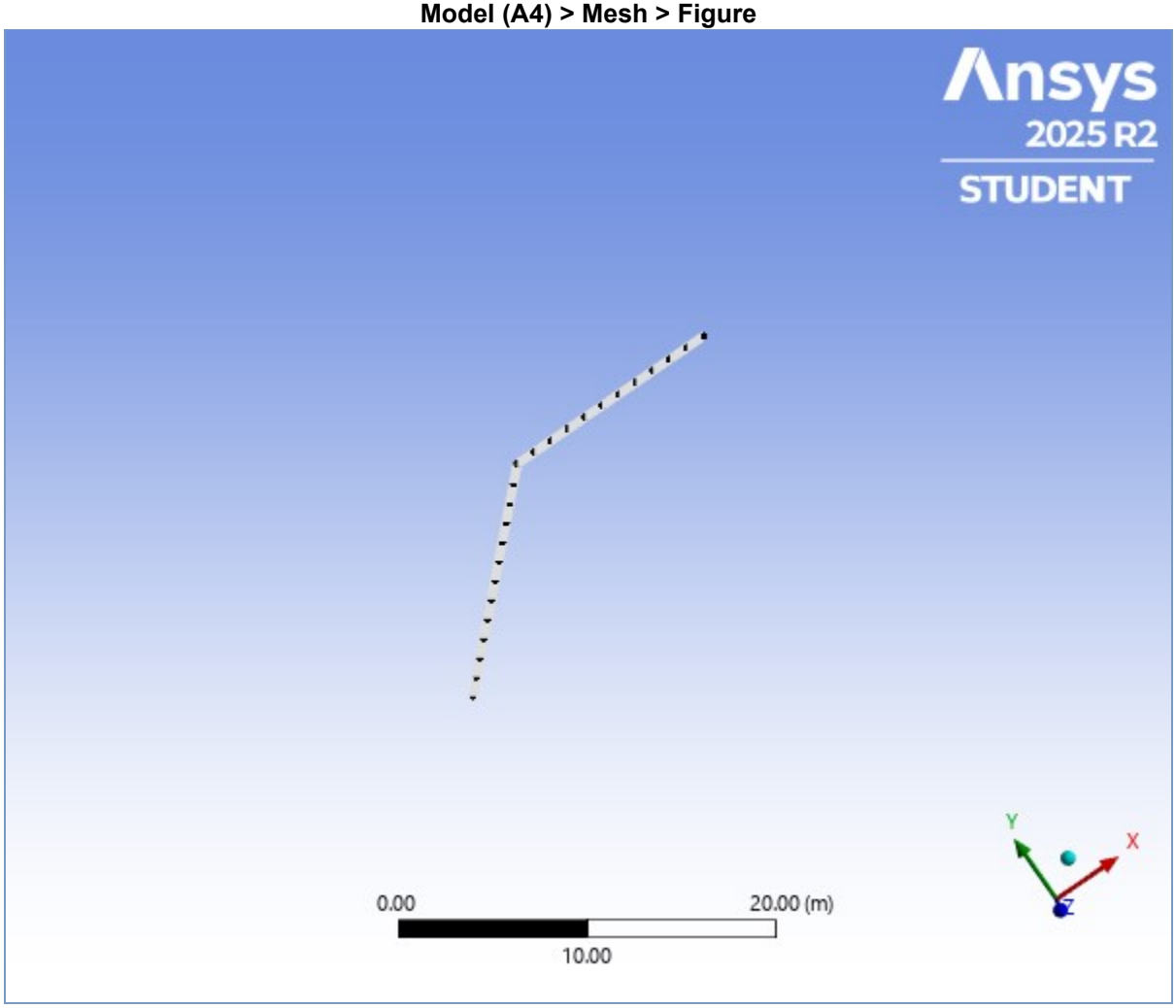
Mesh

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	22.847 m
Average Surface Area	0.0 m²
Minimum Edge Length	12.0 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	47
Elements	23
Show Detailed Statistics	No

FIGURE 3
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:\from mhmd LAB\ANSYS\2D Frame distrbuted load\2D Fram_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	*Fixed Support*	*Fixed Support 2*	*Line Pressure*
State	Fully Defined		

Scope		
Scoping Method	Geometry Selection	
Geometry	1 Vertex	1 Edge
Definition		
Type	Fixed Support	Line Pressure
Suppressed	No	
Define By		Components
Coordinate System		Global Coordinate System
X Component		0. N/m (ramped)
Y Component		-15000 N/m (ramped)
Z Component		0. N/m (ramped)

FIGURE 4
Model (A4) > Static Structural (A5) > Fixed Support > Figure

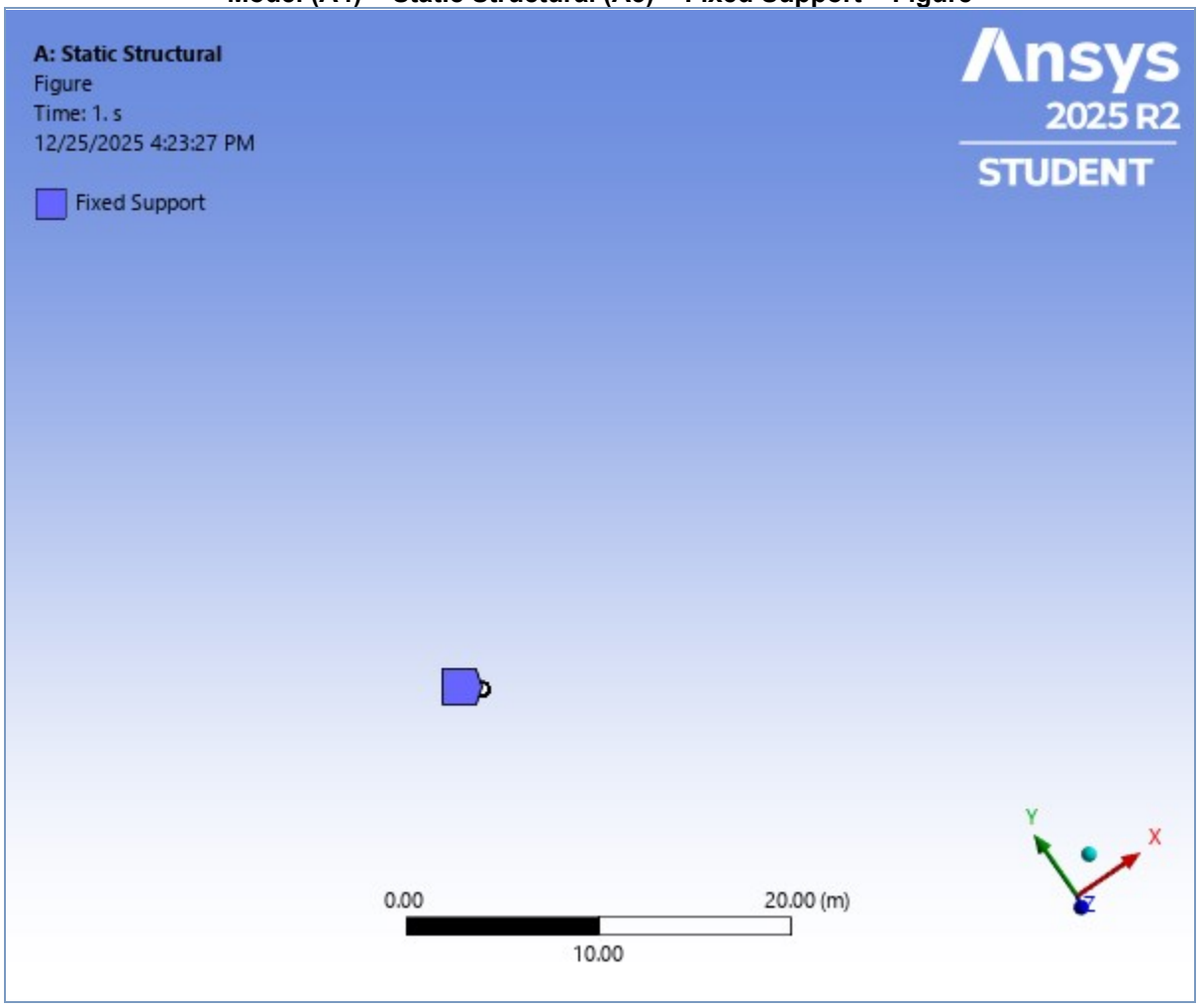


FIGURE 5
Model (A4) > Static Structural (A5) > Fixed Support 2 > Figure

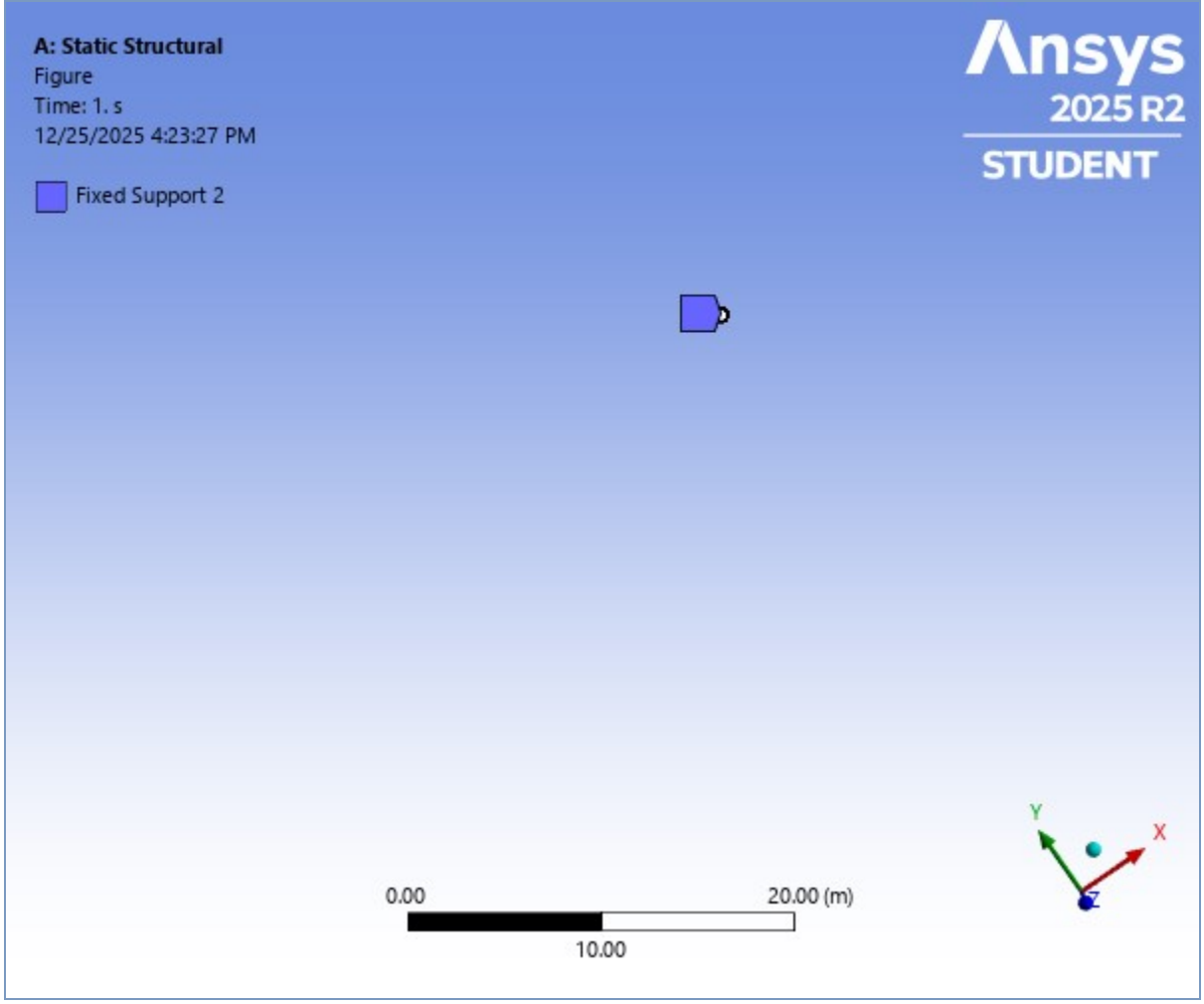


FIGURE 6
Model (A4) > Static Structural (A5) > Line Pressure

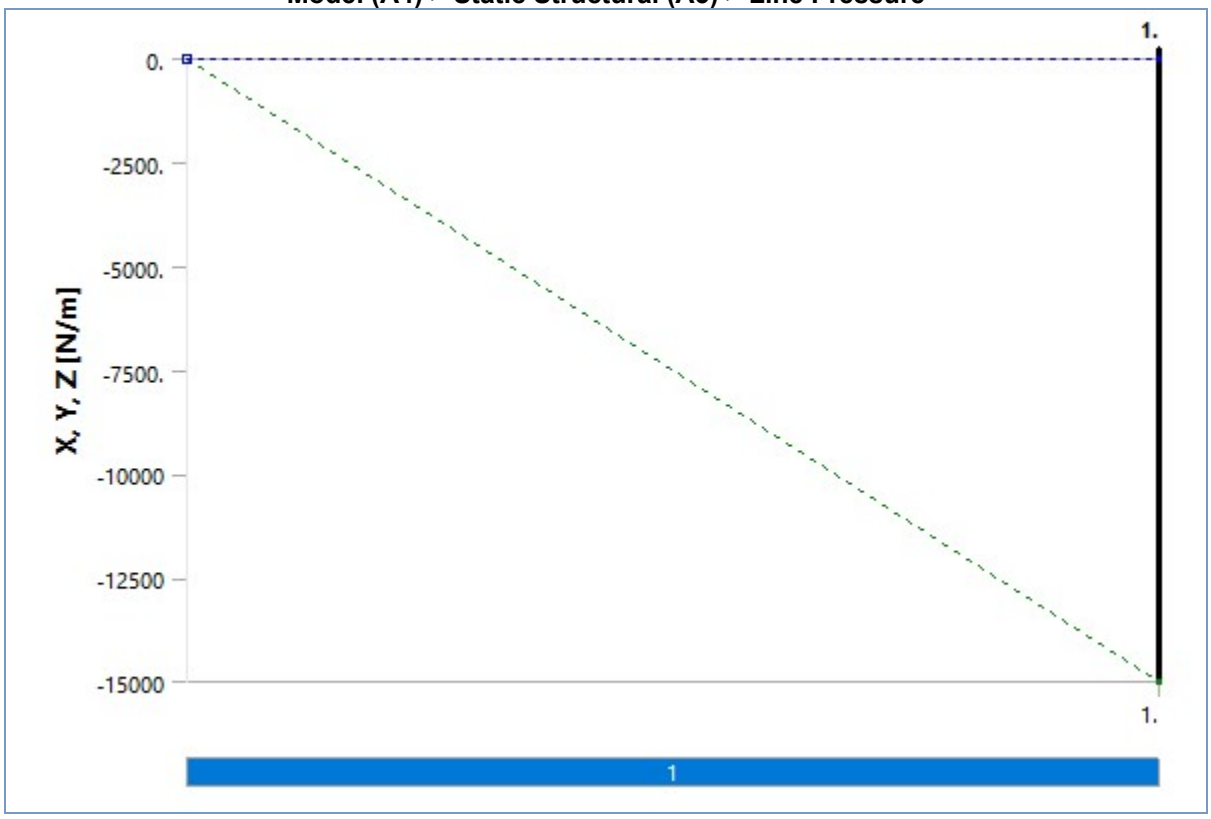
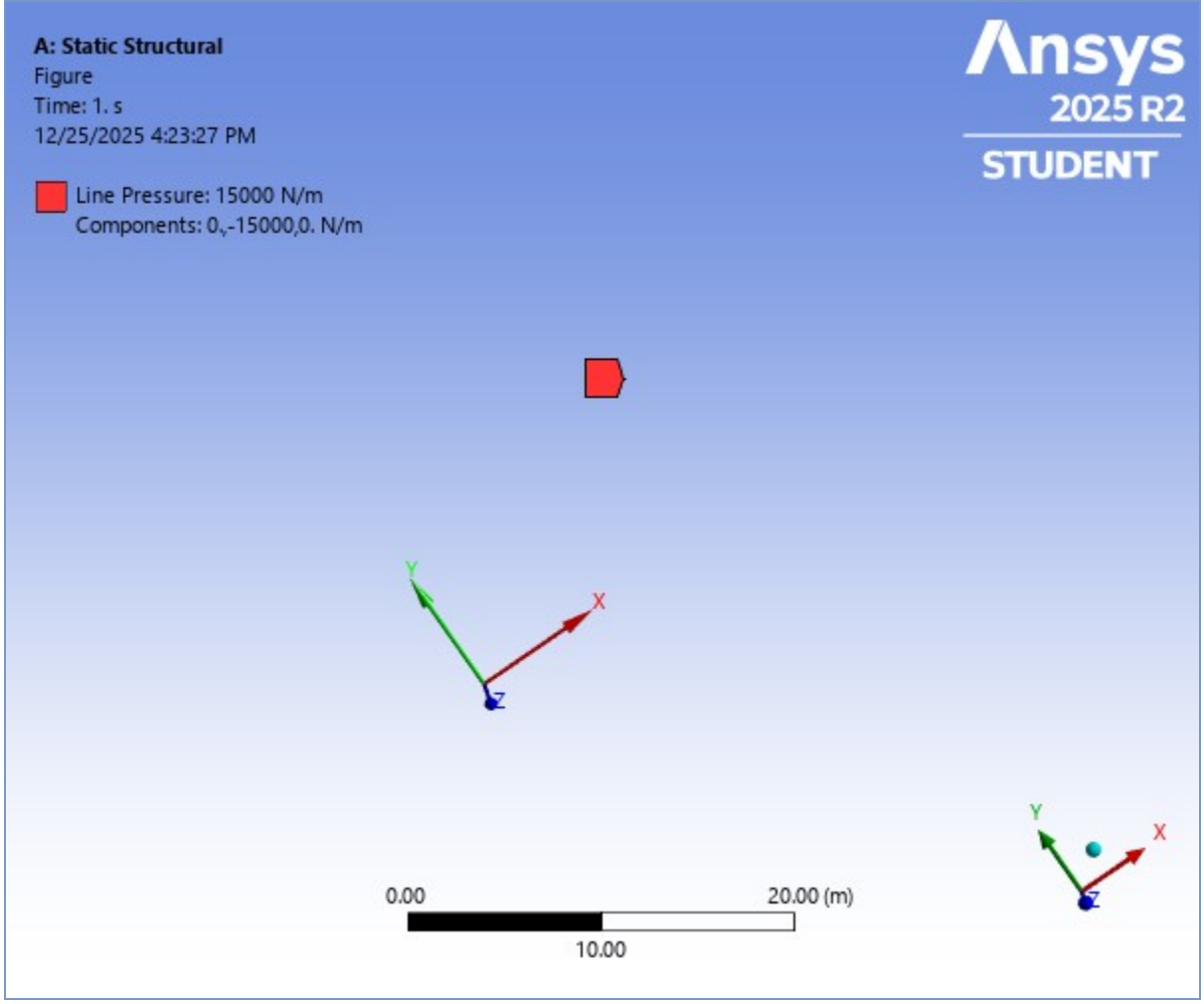


FIGURE 7
Model (A4) > Static Structural (A5) > Line Pressure > Figure



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	384. 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	1.9029e-002 m
Average	7.1167e-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 8
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

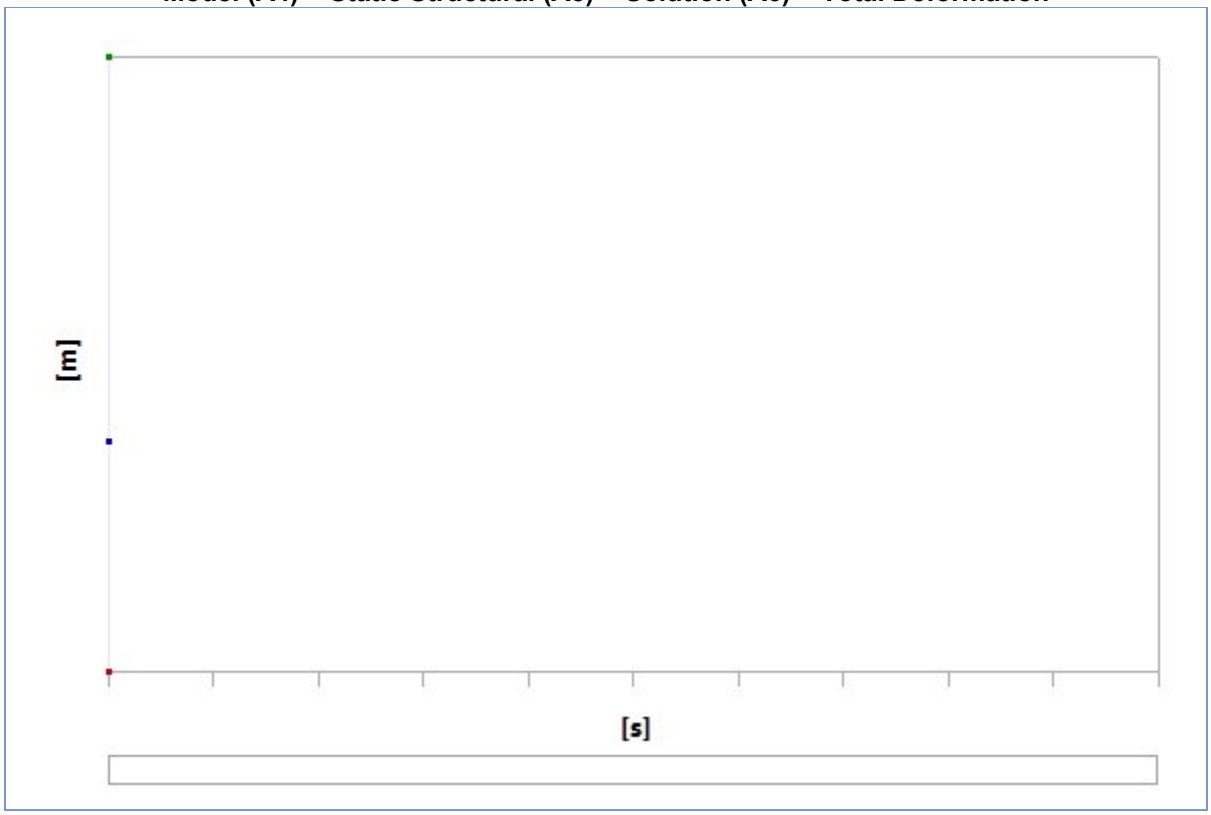


TABLE 17
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.	0.	1.9029e-002	7.1167e-003

FIGURE 9
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation > Figure

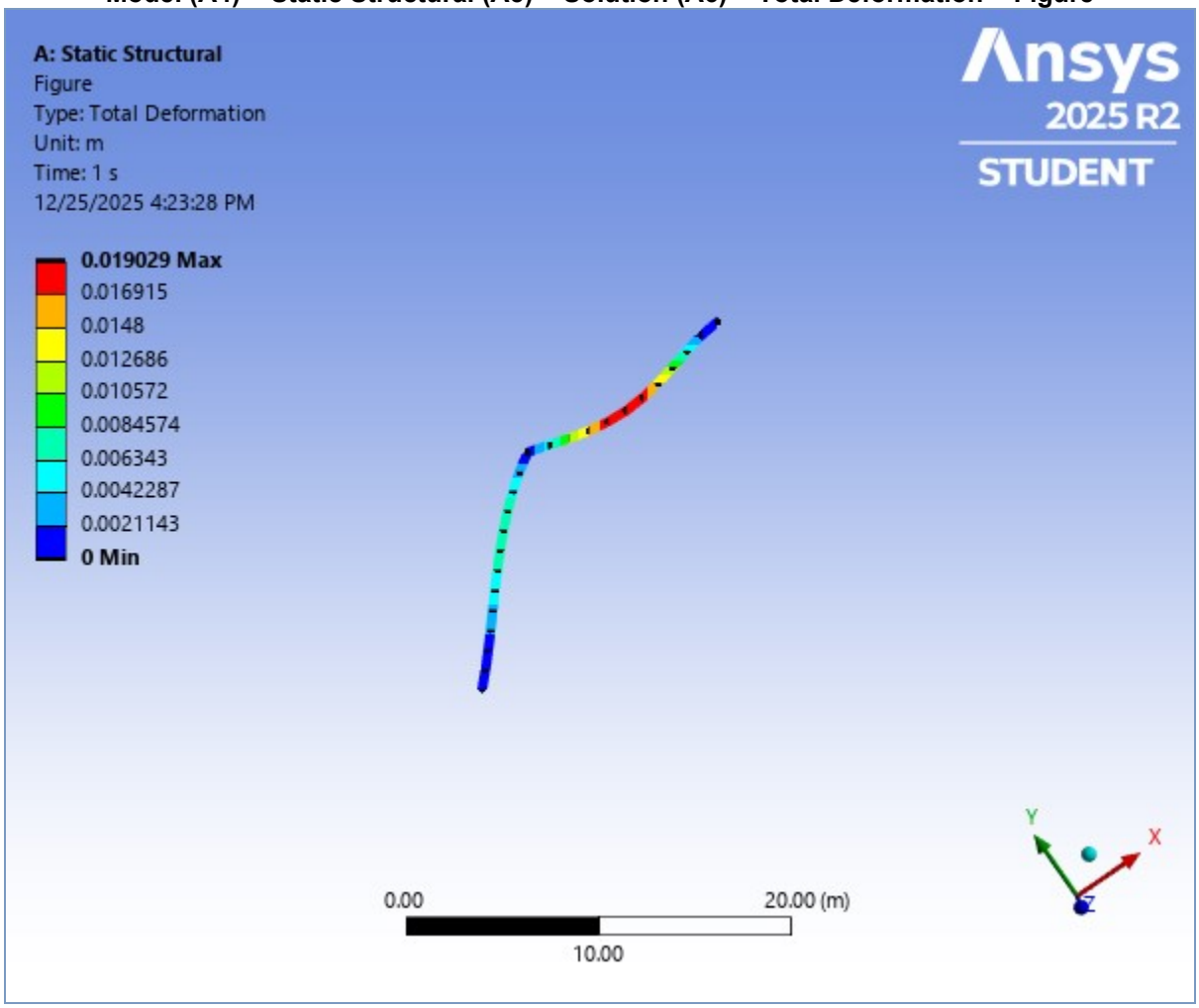


TABLE 18
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool

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	-1.877e+006 Pa	-9.9029e+007 Pa	-1.7808e+006 Pa
Maximum	-1.4381e+006 Pa	-1.9731e+006 Pa	9.6152e+007 Pa
Average	-1.6667e+006 Pa	-2.8242e+007 Pa	2.4908e+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 10
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Direct Stress

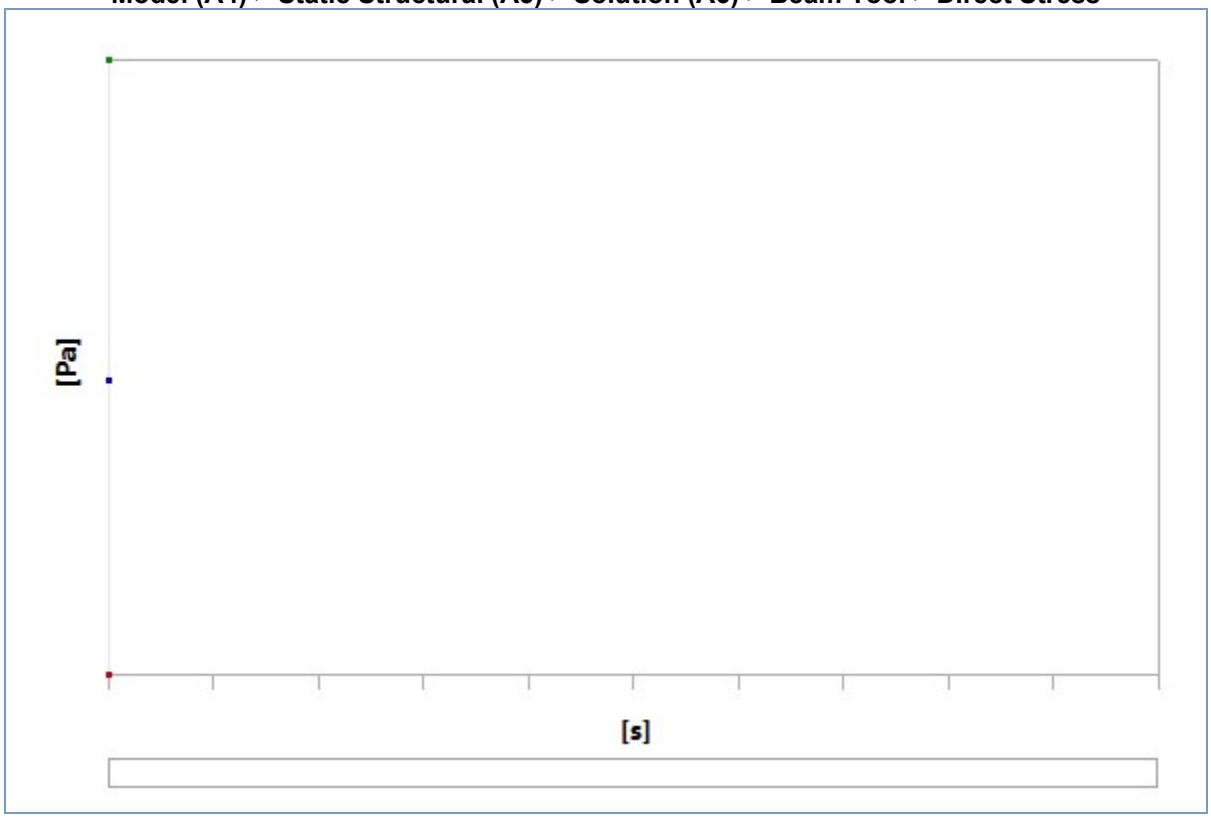


TABLE 20
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Direct Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-1.877e+006	-1.4381e+006	-1.6667e+006

FIGURE 11
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Minimum Combined Stress

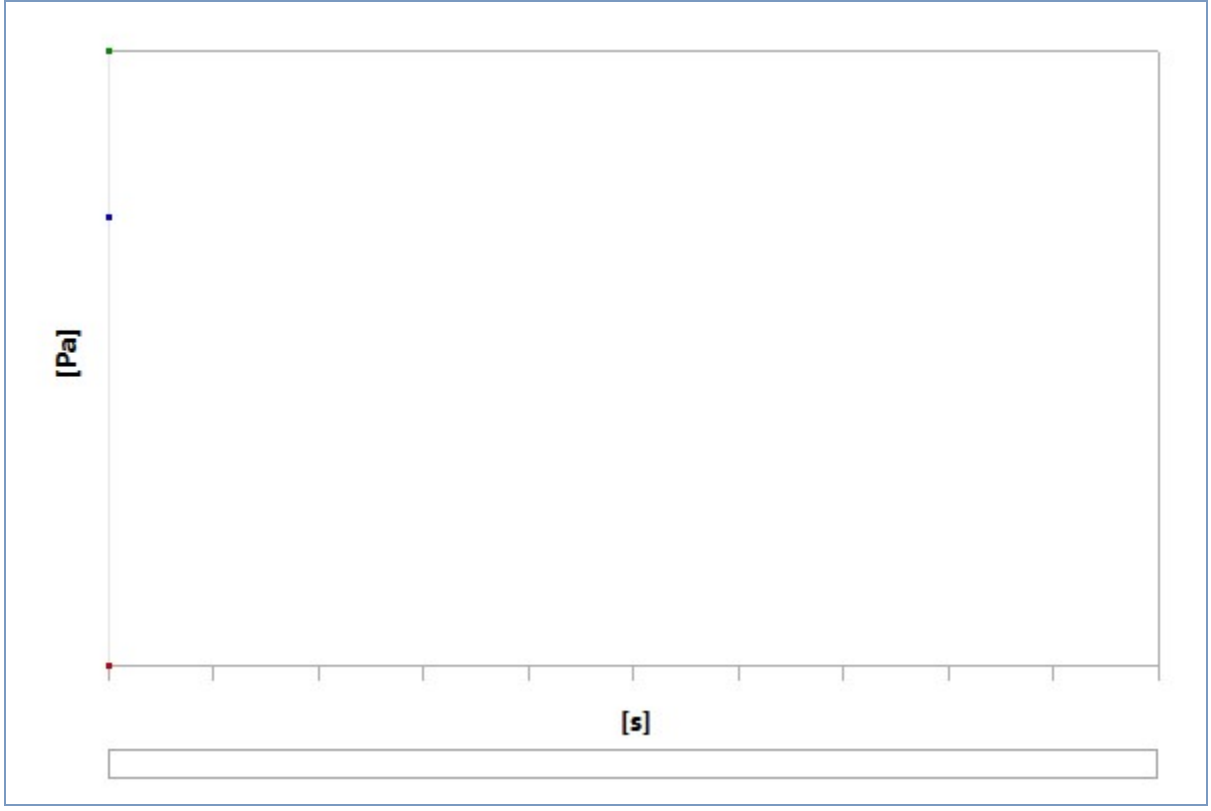


TABLE 21
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Minimum Combined Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-9.9029e+007	-1.9731e+006	-2.8242e+007

FIGURE 12
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Maximum Combined Stress

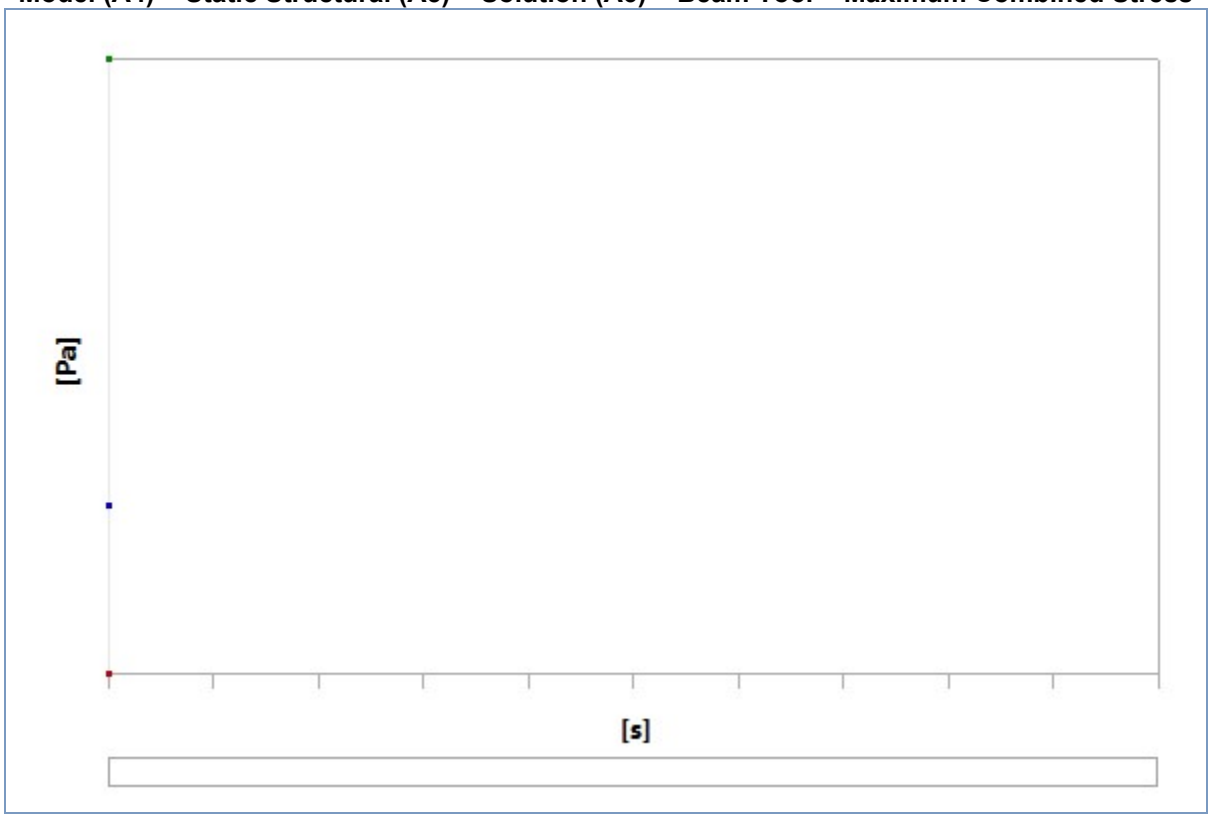


TABLE 22
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Maximum Combined Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-1.7808e+006	9.6152e+007	2.4908e+007

TABLE 23

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

Object Name	*Force Reaction*	*Force Reaction 2*	*Moment Reaction*	*Moment Reaction 2*
State	Solved			
Definition				
Type	Force Reaction		Moment Reaction	
Location Method	Boundary Condition			
Boundary Condition	Fixed Support	Fixed Support 2	Fixed Support	Fixed Support 2
Orientation	Global Coordinate System			
Suppressed	No			
Summation			Centroid	
Options				
Result Selection	All			
Display Time	End Time			
Results				
X Axis	92704 N	-92704 N	-3.8734e-014 N·m	5.0622e-013 N·m
Y Axis	78409 N	1.0159e+005 N	-3.8734e-014 N·m	0. N·m
Z Axis	0. N		-42662 N·m	-2.2508e+005 N·m
Total	1.2142e+005 N	1.3753e+005 N	42662 N·m	2.2508e+005 N·m
Maximum Value Over Time				
X Axis	92704 N	-92704 N	-3.8734e-014 N·m	5.0622e-013 N·m
Y Axis	78409 N	1.0159e+005 N	-3.8734e-014 N·m	0. N·m
Z Axis	0. N		-42662 N·m	-2.2508e+005 N·m
Total	1.2142e+005 N	1.3753e+005 N	42662 N·m	2.2508e+005 N·m
Minimum Value Over Time				
X Axis	92704 N	-92704 N	-3.8734e-014 N·m	5.0622e-013 N·m
Y Axis	78409 N	1.0159e+005 N	-3.8734e-014 N·m	0. N·m
Z Axis	0. N		-42662 N·m	-2.2508e+005 N·m
Total	1.2142e+005 N	1.3753e+005 N	42662 N·m	2.2508e+005 N·m
Information				
Time	1. s			
Load Step	1			
Substep	1			
Iteration Number	1			

FIGURE 13
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction

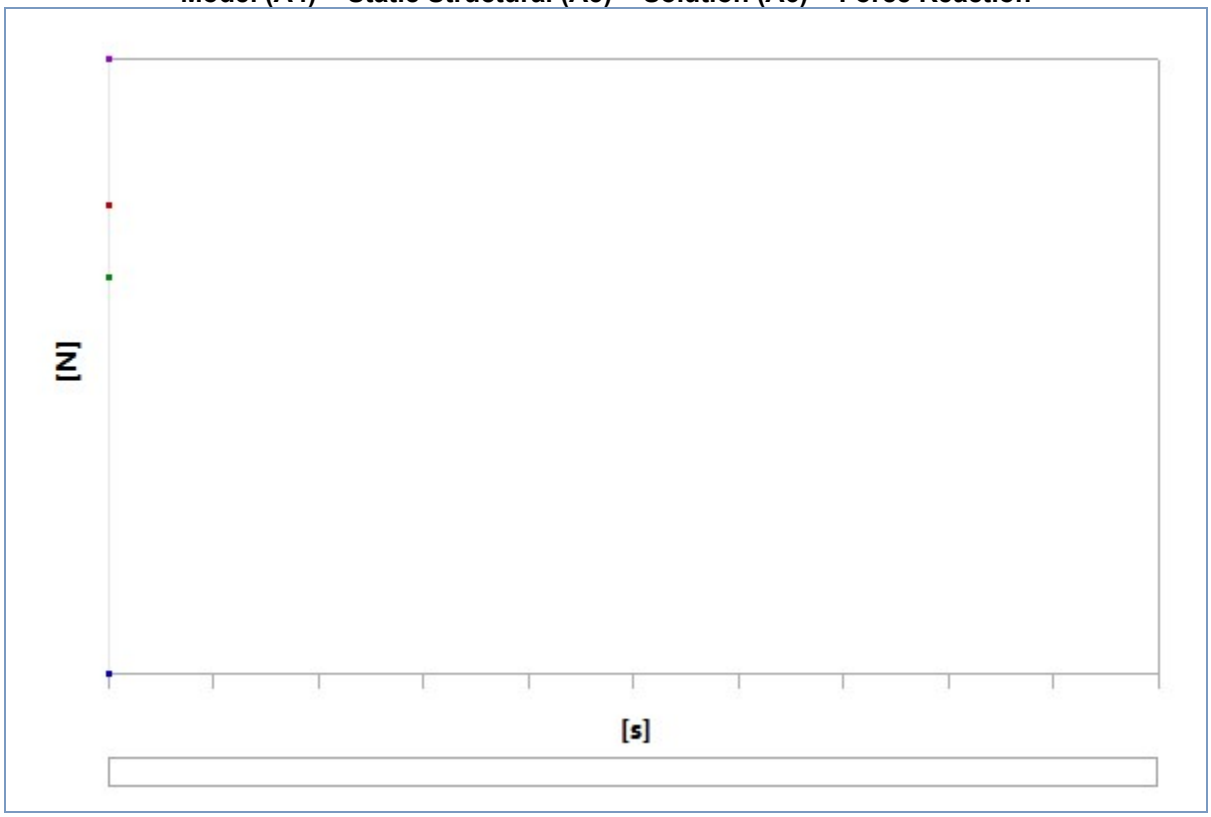


TABLE 24

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.	92704	78409	0.	1.2142e+005

FIGURE 14
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction > Figure

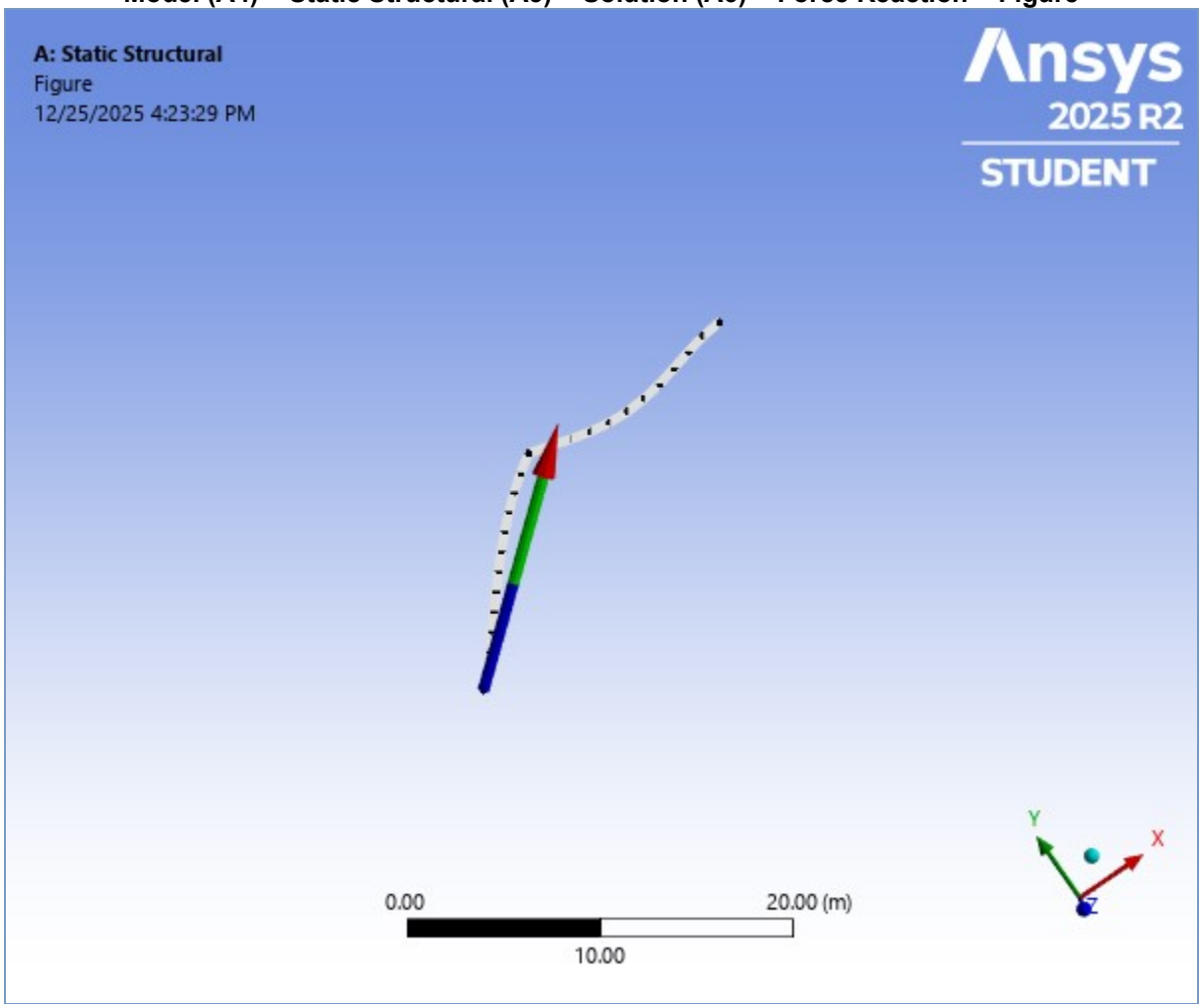


FIGURE 15
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction 2

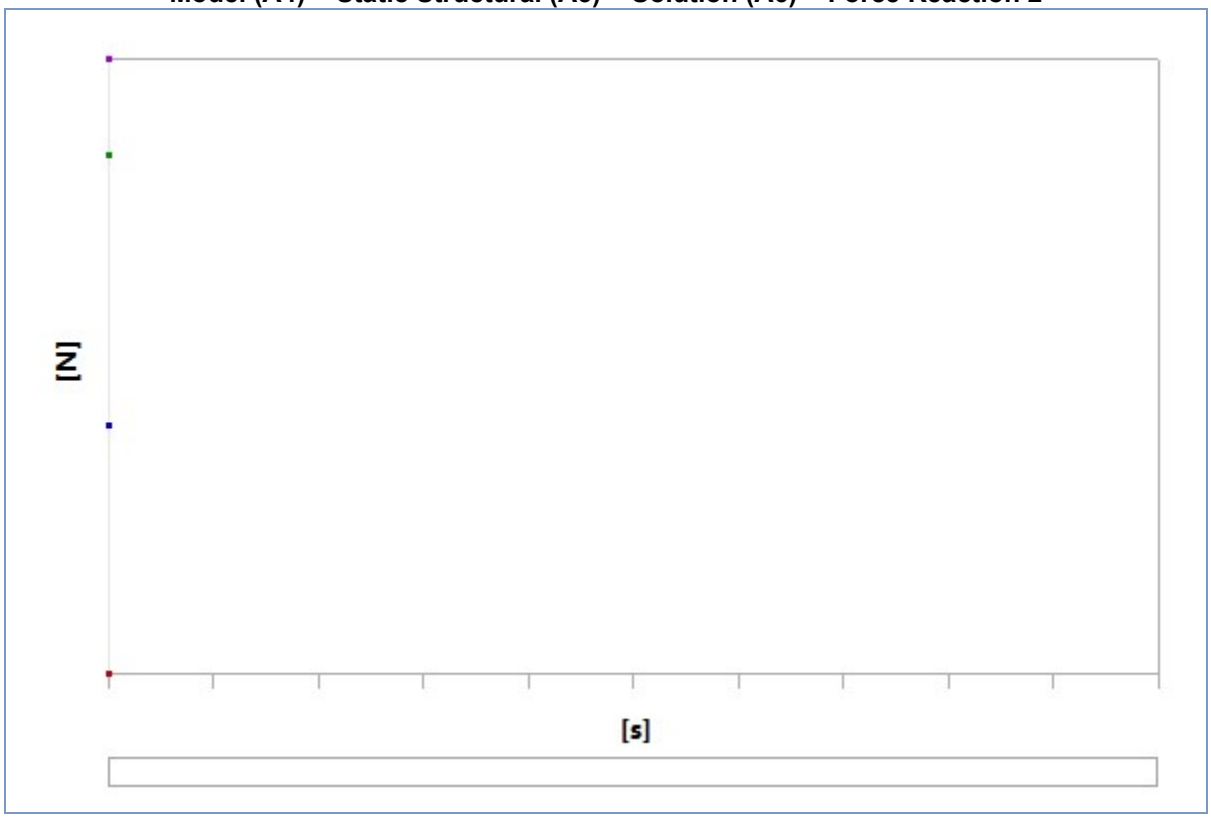


TABLE 25
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction 2

Time [s]	Force Reaction 2 (X) [N]	Force Reaction 2 (Y) [N]	Force Reaction 2 (Z) [N]	Force Reaction 2 (Total) [N]
1.	-92704	1.0159e+005	0.	1.3753e+005

FIGURE 16
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction 2 > Figure

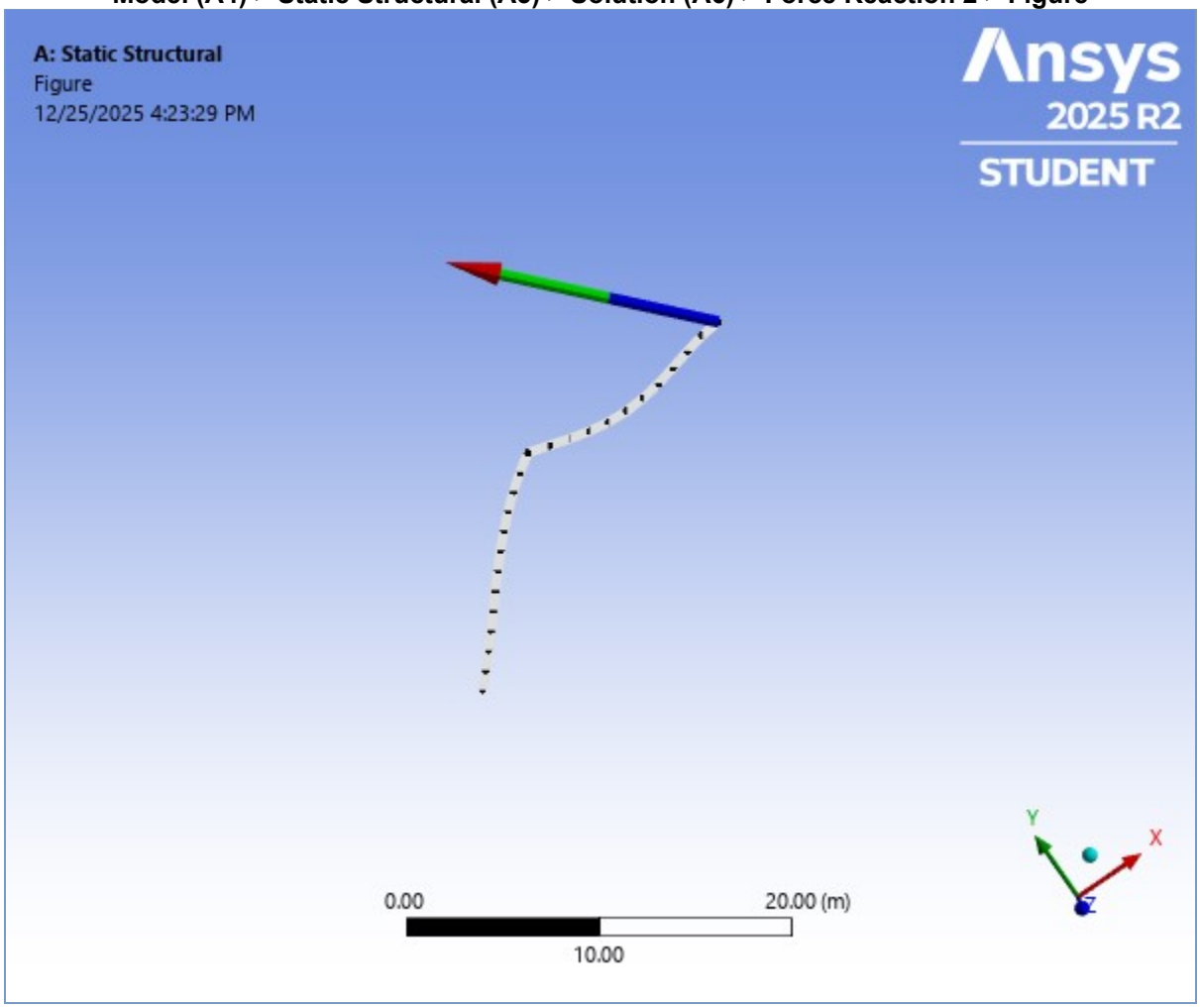


FIGURE 17
Model (A4) > Static Structural (A5) > Solution (A6) > Moment Reaction

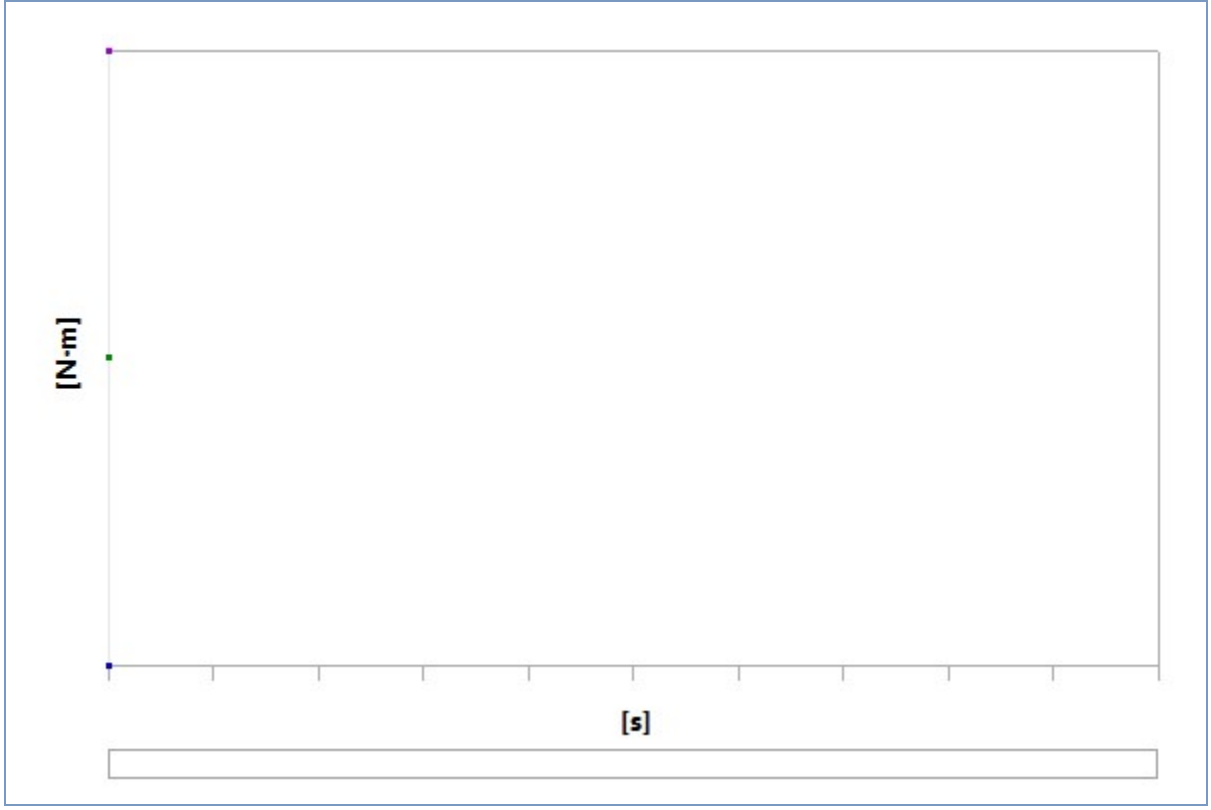


TABLE 26
Model (A4) > Static Structural (A5) > Solution (A6) > Moment Reaction

Time [s]	Moment Reaction (X) [N·m]	Moment Reaction (Y) [N·m]	Moment Reaction (Z) [N·m]	Moment Reaction (Total) [N·m]
1.	-3.8734e-014	-3.8734e-014	-42662	42662

FIGURE 18
Model (A4) > Static Structural (A5) > Solution (A6) > Moment Reaction > Figure

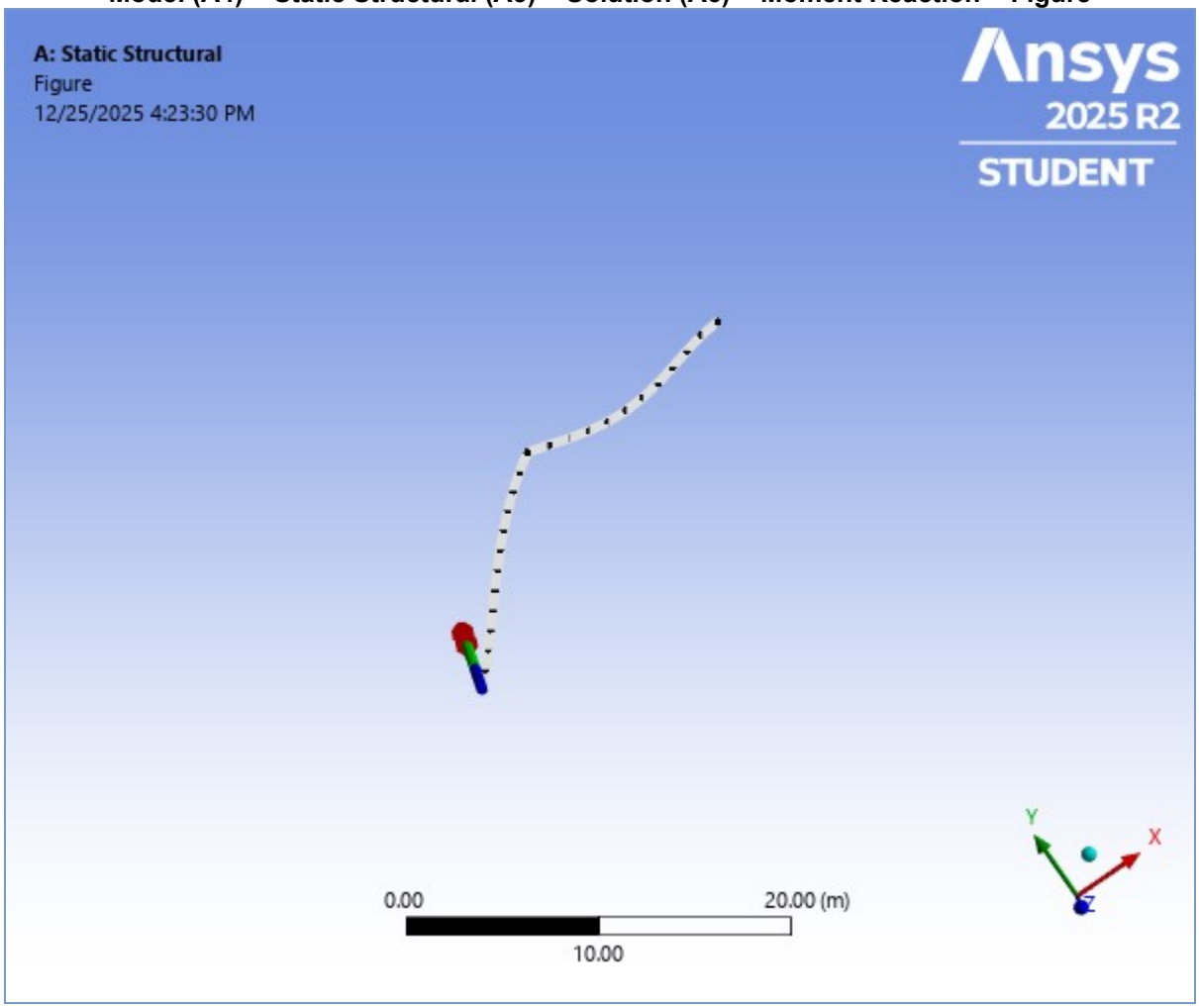


FIGURE 19
Model (A4) > Static Structural (A5) > Solution (A6) > Moment Reaction 2

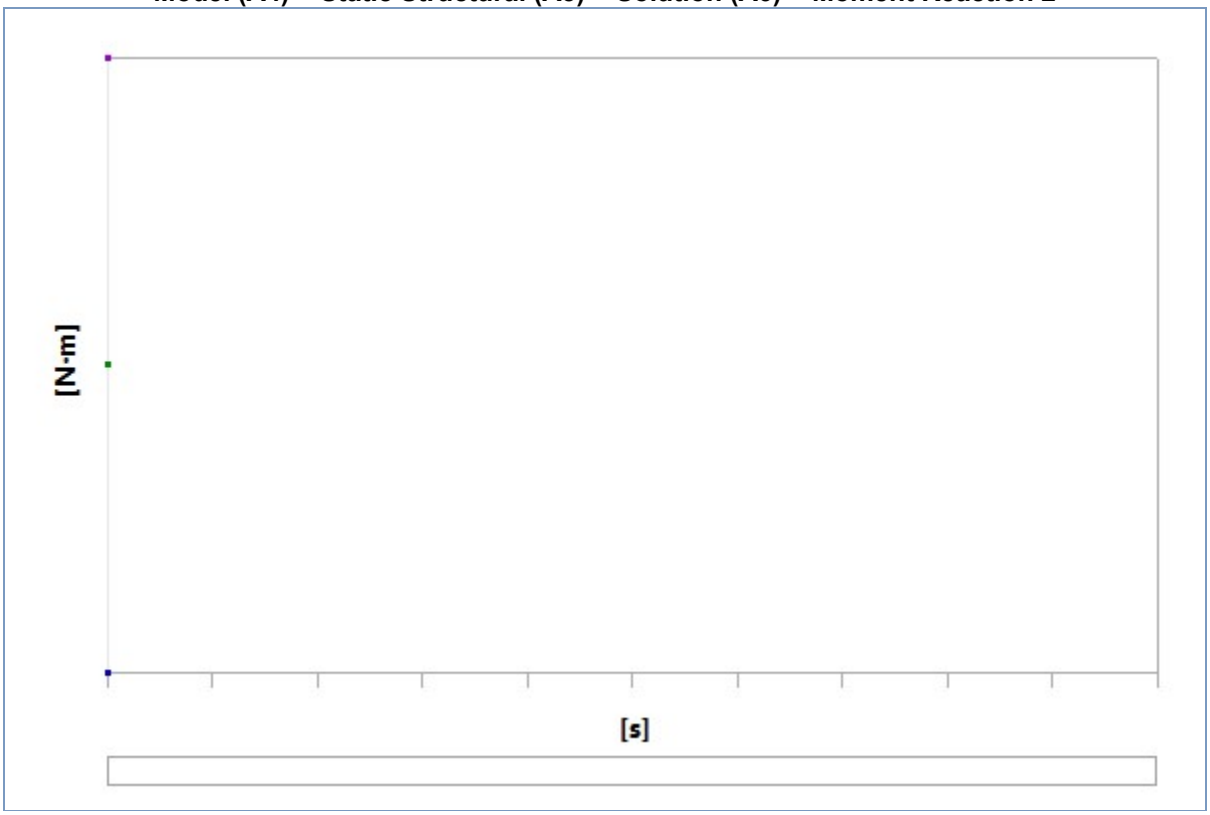
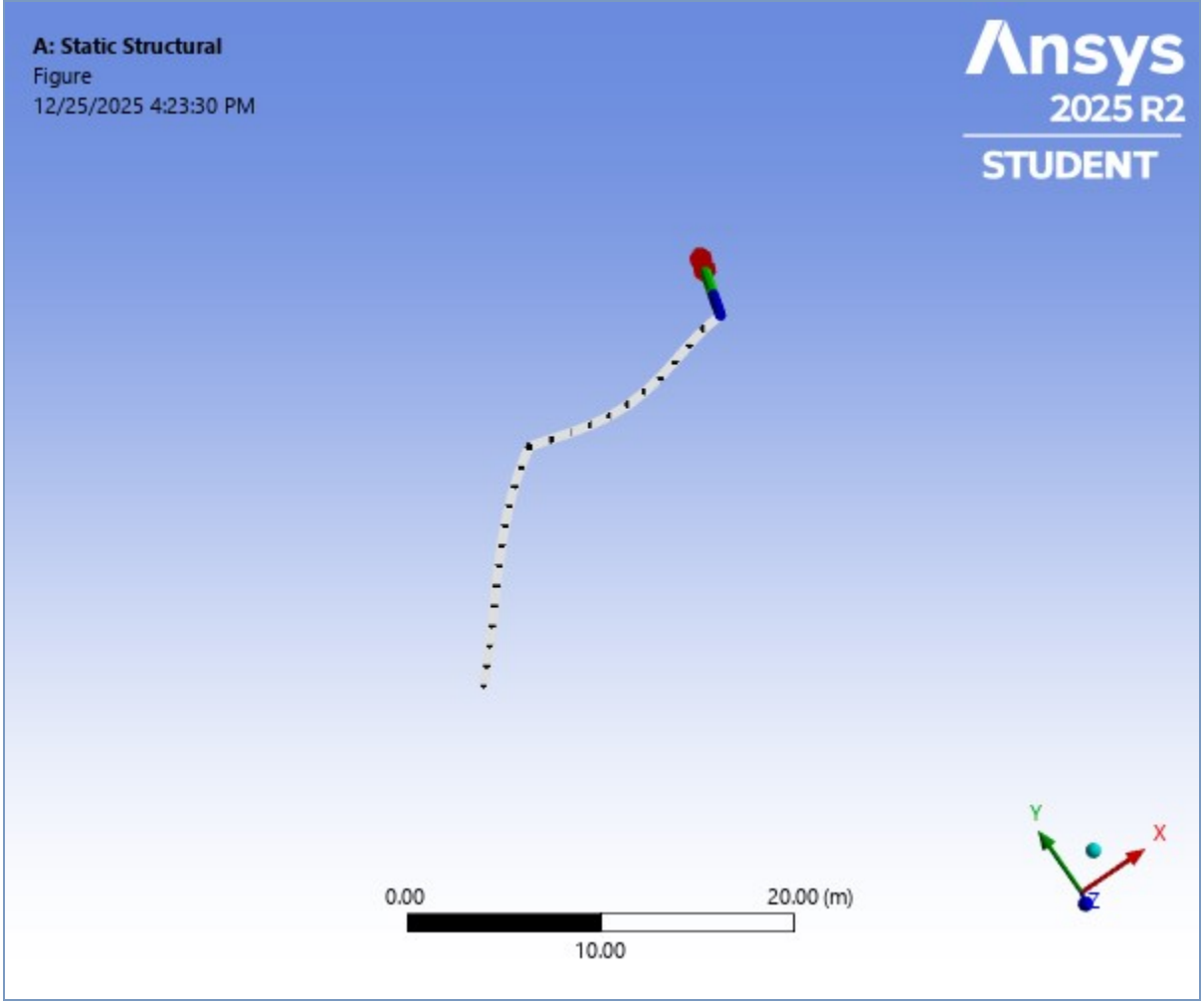


TABLE 27
Model (A4) > Static Structural (A5) > Solution (A6) > Moment Reaction 2

Time [s]	Moment Reaction 2 (X) [N·m]	Moment Reaction 2 (Y) [N·m]	Moment Reaction 2 (Z) [N·m]	Moment Reaction 2 (Total) [N·m]
1.	5.0622e-013	0.	-2.2508e+005	2.2508e+005

FIGURE 20
Model (A4) > Static Structural (A5) > Solution (A6) > Moment Reaction 2 > Figure



Material Data

Structural Steel

TABLE 28
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 29
Structural Steel > Color

Red	Green	Blue
132	139	179

TABLE 30
Structural Steel > Compressive Ultimate Strength

Compressive Ultimate Strength Pa
0

TABLE 31
Structural Steel > Compressive Yield Strength

Compressive Yield Strength Pa
2.5e+008

TABLE 32
Structural Steel > Tensile Yield Strength

Tensile Yield Strength Pa

2.5e+008

TABLE 33
Structural Steel > Tensile Ultimate Strength

Tensile Ultimate Strength Pa
4.6e+008

TABLE 34
Structural Steel > Isotropic Secant Coefficient of Thermal Expansion

Zero-Thermal-Strain Reference Temperature C
22

TABLE 35
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 36
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 37
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 38
Structural Steel > Isotropic Relative Permeability

Relative Permeability
10000