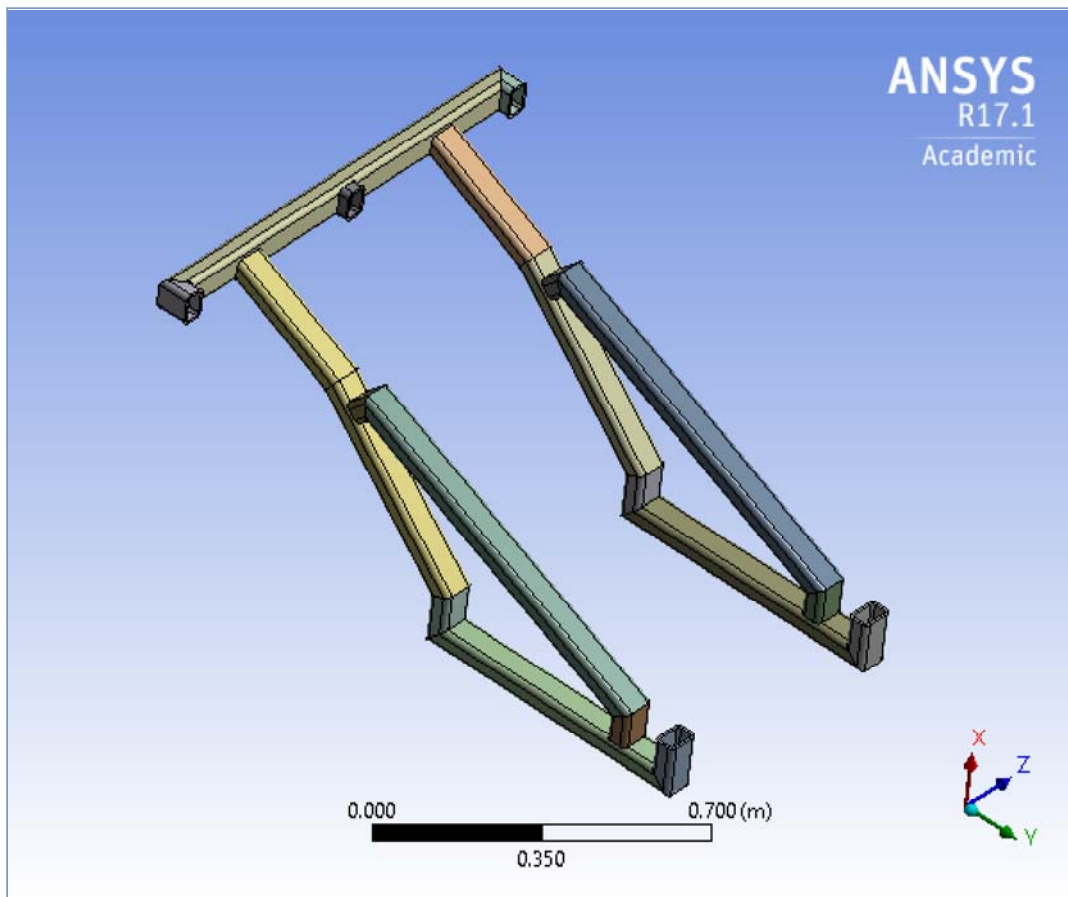




## Project

First Saved	Tuesday, December 12, 2017
Last Saved	Tuesday, December 12, 2017
Product Version	17.1 Release
Save Project Before Solution	No
Save Project After Solution	No



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## 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)

### Geometry

**TABLE 2**  
**Model (A4) > Geometry**

Object Name	<i>Geometry</i>
State	Fully Defined
<b>Definition</b>	
Source	C:\Users\Braden\Desktop\CAD verification\frame_files\dp0\SYS\DM\SYS.agdb
Type	DesignModeler
Length Unit	Meters
Element Control	Program Controlled
Display Style	Body Color
<b>Bounding Box</b>	
Length X	0.6635 m
Length Y	1.3258 m
Length Z	1.0508 m
<b>Properties</b>	
Volume	8.4551e-003 m <sup>3</sup>
Mass	66.373 kg
Scale Factor Value	1.
<b>Statistics</b>	
Bodies	20

Active Bodies	20
Nodes	10026
Elements	2258
Mesh Metric	None
<b>Basic Geometry Options</b>	
Solid Bodies	Yes
Surface Bodies	Yes
Line Bodies	Yes
Parameters	Independent
Parameter Key	
Attributes	Yes
Attribute Key	
Named Selections	Yes
Named Selection Key	
Material Properties	Yes
<b>Advanced Geometry Options</b>	
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
Attach File Via Temp File	Yes
Temporary Directory	C:\Users\Braden\AppData\Local\Temp
Analysis Type	3-D
Mixed Import Resolution	None
Decompose Disjoint Geometry	Yes
Enclosure and Symmetry Processing	Yes

**TABLE 3**  
**Model (A4) > Geometry > Parts**

Object Name	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>
State	Meshed										
<b>Graphics Properties</b>											
Visible	Yes										
Transparency	1										
<b>Definition</b>											
Suppressed	No										
Stiffness Behavior	Flexible										
Coordinate System	Default Coordinate System										
Reference Temperature	By Environment										
Behavior	None										
<b>Material</b>											
Assignment	Structural Steel										
Nonlinear Effects	Yes										
Thermal Strain Effects	Yes										
<b>Bounding Box</b>											
Length X	0.1408 m	0.37676 m	0.13592 m	0.3814 m	8.0541e-002 m	0.39672 m	9.0776e-002 m	0.39672 m	8.0073e-002 m	7.62e-002 m	
Length Y	5.08e-002 m	0.39037 m	5.08e-002 m	0.39045 m	5.538e-002 m	0.78078 m	5.08e-002 m	0.78078 m	5.516e-002 m	2.46e-002 m	
Length Z	7.62e-002 m										5.08e-002 m
<b>Properties</b>											

Volume	1.4121e-004 m <sup>3</sup>	6.6256e-004 m <sup>3</sup>	1.3478e-004 m <sup>3</sup>	6.671e-004 m <sup>3</sup>	6.1069e-005 m <sup>3</sup>	1.1155e-003 m <sup>3</sup>	1.0054e-004 m <sup>3</sup>		1.1155e-003 m <sup>3</sup>	6.0412e-005 m <sup>3</sup>	3.3155e-005 m <sup>3</sup>
Mass	1.1085 kg	5.2011 kg	1.058 kg	5.2367 kg	0.47939 kg	8.7563 kg	0.78925 kg	0.78927 kg	8.7563 kg	0.47424 kg	0.26027 kg
Centroid X	5.0987e-002 m	0.27765 m	4.8526e-002 m	0.27526 m	0.43923 m	0.27553 m	6.367e-002 m	6.3669e-002 m	0.27553 m	0.4395 m	0.6 m
Centroid Y	-1.9742e-003 m	-0.17467 m	-2.0837e-003 m	-0.17467 m	-0.26854 m	0.12523 m	0.50304 m	0.50303 m	0.12523 m	-0.26844 m	-0.6123 m
Centroid Z	-5.938e-007 m	3.7744e-010 m	0.6 m					-8.0192e-007 m	-5.1838e-011 m	4.7803e-007 m	0.3 m
Moment of Inertia Ip1	1.0623e-003 kg·m <sup>2</sup>	0.10836 kg·m <sup>2</sup>	1.0064e-003 kg·m <sup>2</sup>	0.111055 kg·m <sup>2</sup>	4.08e-004 kg·m <sup>2</sup>	0.50674 kg·m <sup>2</sup>	7.6999e-004 kg·m <sup>2</sup>	7.7007e-004 kg·m <sup>2</sup>	0.50673 kg·m <sup>2</sup>	4.0296e-004 kg·m <sup>2</sup>	1.0548e-004 kg·m <sup>2</sup>
Moment of Inertia Ip2	2.0783e-003 kg·m <sup>2</sup>	5.3847e-003 kg·m <sup>2</sup>	1.9035e-003 kg·m <sup>2</sup>	5.4217e-003 kg·m <sup>2</sup>	5.2228e-004 kg·m <sup>2</sup>	9.0679e-003 kg·m <sup>2</sup>	9.9881e-004 kg·m <sup>2</sup>	9.9893e-004 kg·m <sup>2</sup>	9.0674e-003 kg·m <sup>2</sup>	5.1497e-004 kg·m <sup>2</sup>	2.694e-004 kg·m <sup>2</sup>
Moment of Inertia Ip3	1.6317e-003 kg·m <sup>2</sup>	0.10666 kg·m <sup>2</sup>	1.4699e-003 kg·m <sup>2</sup>	0.10884 kg·m <sup>2</sup>	2.7773e-004 kg·m <sup>2</sup>	0.50389 kg·m <sup>2</sup>	6.9475e-004 kg·m <sup>2</sup>	6.9481e-004 kg·m <sup>2</sup>	0.50388 kg·m <sup>2</sup>	2.724e-004 kg·m <sup>2</sup>	1.9013e-004 kg·m <sup>2</sup>
<b>Statistics</b>											
Nodes	152	656	152	656	96	1048	96		1048	96	
Elements	16	88	16	88	8	144	8		144	8	
Mesh Metric	None										

**TABLE 4**  
**Model (A4) > Geometry > Parts**

Object Name	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	<i>Solid</i>	
State	Meshed										
<b>Graphics Properties</b>											
Visible	Yes										
Transparency	1										
<b>Definition</b>											
Suppressed	No										
Stiffness Behavior	Flexible										
Coordinate System	Default Coordinate System										
Reference Temperature	By Environment										
Behavior	None										
<b>Material</b>											
Assignment	Structural Steel										
Nonlinear Effects	Yes										
Thermal Strain Effects	Yes										
<b>Bounding Box</b>											
Length X	5.08e-002 m	0.12346 m	0.1254 m	5.08e-002 m	0.18657 m	7.62e-002 m	0.18661 m	7.62e-002 m			
Length Y	0.6758 m	5.08e-002 m		0.6758 m	0.29564 m	7.54e-002 m	0.29556 m	7.54e-002 m	5.08e-002 m		
Length Z	7.62e-002 m					5.08e-002 m	7.62e-002 m	5.08e-002 m	1.0508 m		
<b>Properties</b>											
Volume	8.4237e-004 m <sup>3</sup>	1.3217e-004 m <sup>3</sup>	1.3478e-004 m <sup>3</sup>	8.4237e-004 m <sup>3</sup>	4.1431e-004 m <sup>3</sup>	6.7389e-005 m <sup>3</sup>	4.1431e-004 m <sup>3</sup>	6.7389e-005 m <sup>3</sup>	1.3478e-003 m <sup>3</sup>		
Mass	6.6126 kg	1.0375 kg	1.058 kg	6.6126 kg	3.2523 kg	0.529 kg	3.2523 kg	0.529 kg	10.58 kg		
Centroid X	-1.1386e-003 m	4.7215e-002 m	4.8218e-002 m	-1.1395e-003 m	0.51945 m	0.6 m	0.51944 m	0.6 m			
Centroid Y	0.3125 m	0.62863 m	0.62856 m	0.3125 m	-0.48725	-0.62856	-0.48726	-0.62856	-0.65071		

					m	m	m	m	m
Centroid Z	0.6 m		2.1141e-006 m	6.5448e-007 m	0.6 m	0.80711 m	2.8637e-007 m	-0.20711 m	0.3 m
Moment of Inertia Ip1	0.22189 kg·m <sup>2</sup>	1.0159e-003 kg·m <sup>2</sup>	1.0382e-003 kg·m <sup>2</sup>	0.2219 kg·m <sup>2</sup>	2.7945e-002 kg·m <sup>2</sup>	3.5849e-004 kg·m <sup>2</sup>	2.7945e-002 kg·m <sup>2</sup>	3.5849e-004 kg·m <sup>2</sup>	0.8883 kg·m <sup>2</sup>
Moment of Inertia Ip2	6.8407e-003 kg·m <sup>2</sup>	1.7622e-003 kg·m <sup>2</sup>	1.829e-003 kg·m <sup>2</sup>	6.841e-003 kg·m <sup>2</sup>	3.3647e-003 kg·m <sup>2</sup>	4.5658e-004 kg·m <sup>2</sup>	3.365e-003 kg·m <sup>2</sup>	4.5658e-004 kg·m <sup>2</sup>	0.89175 kg·m <sup>2</sup>
Moment of Inertia Ip3	0.21973 kg·m <sup>2</sup>	1.3662e-003 kg·m <sup>2</sup>	1.4276e-003 kg·m <sup>2</sup>	0.21974 kg·m <sup>2</sup>	2.6886e-002 kg·m <sup>2</sup>	6.2178e-004 kg·m <sup>2</sup>	2.6886e-002 kg·m <sup>2</sup>	6.2178e-004 kg·m <sup>2</sup>	1.0953e-002 kg·m <sup>2</sup>
<b>Statistics</b>									
Nodes	768	152	768	1268	96	1262	96	1272	
Elements	104	16	104	647	8	643	8	176	
Mesh Metric	None								

## Coordinate Systems

**TABLE 5**  
Model (A4) > Coordinate Systems > Coordinate System

Object Name	<i>Global Coordinate System</i>
State	Fully Defined
<b>Definition</b>	
Type	Cartesian
Coordinate System ID	0.
<b>Origin</b>	
Origin X	0. m
Origin Y	0. m
Origin Z	0. m
<b>Directional Vectors</b>	
X Axis Data	[ 1. 0. 0. ]
Y Axis Data	[ 0. 1. 0. ]
Z Axis Data	[ 0. 0. 1. ]

## Connections

**TABLE 6**  
Model (A4) > Connections

Object Name	<i>Connections</i>
State	Fully Defined
<b>Auto Detection</b>	
Generate Automatic Connection On Refresh	Yes
<b>Transparency</b>	
Enabled	Yes

**TABLE 7**  
Model (A4) > Connections > Contacts

Object Name	<i>Contacts</i>
State	Fully Defined
<b>Definition</b>	
Connection Type	Contact
<b>Scope</b>	
Scoping Method	Geometry Selection
Geometry	All Bodies
<b>Auto Detection</b>	
Tolerance Type	Slider
Tolerance Slider	0.
Tolerance Value	4.543e-003 m
Use Range	No
Face/Face	Yes
Cylindrical Faces	Include

Face/Edge	No
Edge/Edge	No
Priority	Include All
Group By	Bodies
Search Across	Bodies
<b>Statistics</b>	
Connections	21
Active Connections	21

**TABLE 8**  
**Model (A4) > Connections > Contacts > Contact Regions**

Object Name	Contact Region 1	Contact Region 2	Contact Region 3	Contact Region 4	Contact Region 5	Contact Region 6	Contact Region 7	Contact Region 8	Contact Region 9	Contact Region 10	Contact Region 11
State	Fully Defined										
<b>Scope</b>											
Scoping Method	Geometry Selection										
Contact	1 Face	3 Faces		1 Face		3 Faces		1 Face			
Target	1 Face										3 Faces
Contact Bodies	Solid										
Target Bodies	Solid										
<b>Definition</b>											
Type	Bonded										
Scope Mode	Automatic										
Behavior	Program Controlled										
Trim Contact	Program Controlled										
Trim Tolerance	4.543e-003 m										
Suppressed	No										
<b>Advanced</b>											
Formulation	Program Controlled										
Detection Method	Program Controlled										
Penetration Tolerance	Program Controlled										
Elastic Slip Tolerance	Program Controlled										
Normal Stiffness	Program Controlled										
Update Stiffness	Program Controlled										
Pinball Region	Program Controlled										
<b>Geometric Modification</b>											
Contact Geometry Correction	None										
Target Geometry Correction	None										

**TABLE 9**  
**Model (A4) > Connections > Contacts > Contact Regions**

Object Name	Contact Region 12	Contact Region 13	Contact Region 14	Contact Region 15	Contact Region 16	Contact Region 17	Contact Region 18	Contact Region 19	Contact Region 20	Contact Region 21
State	Fully Defined									
<b>Scope</b>										
Scoping										

Method	Geometry Selection									
Contact	1 Face									
Target	1 Face	3 Faces	1 Face	3 Faces	1 Face	2 Faces	1 Face	2 Faces	1 Face	
Contact Bodies	Solid									
Target Bodies	Solid									
<b>Definition</b>										
Type	Bonded									
Scope Mode	Automatic									
Behavior	Program Controlled									
Trim Contact	Program Controlled									
Trim Tolerance	4.543e-003 m									
Suppressed	No									
<b>Advanced</b>										
Formulation	Program Controlled									
Detection Method	Program Controlled									
Penetration Tolerance	Program Controlled									
Elastic Slip Tolerance	Program Controlled									
Normal Stiffness	Program Controlled									
Update Stiffness	Program Controlled									
Pinball Region	Program Controlled									
<b>Geometric Modification</b>										
Contact Geometry Correction	None									
Target Geometry Correction	None									

## Mesh

**TABLE 10**  
**Model (A4) > Mesh**

Object Name	<i>Mesh</i>
State	Solved
<b>Display</b>	
Display Style	Body Color
<b>Defaults</b>	
Physics Preference	Mechanical
Relevance	0
Shape Checking	Standard Mechanical
Element Midside Nodes	Program Controlled
<b>Sizing</b>	
Size Function	Uniform
Relevance Center	Medium
Initial Size Seed	Active Assembly
Smoothing	Medium
Transition	Fast
Min Size	Default (4.5288e-004 m)
Max Face Size	Default (4.5288e-002 m)
Max Tet Size	Default (9.0575e-002 m)
Growth Rate	Default (1.850 )
Automatic Mesh Based Defeaturing	On
Defeaturing Tolerance	Default (2.2644e-004 m)

Max Dual Layers in Thin Regions	No
Minimum Edge Length	9.9746e-003 m
<b>Inflation</b>	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	5
Growth Rate	1.2
Inflation Algorithm	Pre
View Advanced Options	No
<b>Advanced</b>	
Number of CPUs for Parallel Part Meshing	Program Controlled
Straight Sided Elements	No
Number of Retries	0
Rigid Body Behavior	Dimensionally Reduced
Mesh Morphing	Disabled
Triangle Surface Mesher	Program Controlled
Topology Checking	No
Pinch Tolerance	Default (4.0759e-004 m)
Generate Pinch on Refresh	No
<b>Statistics</b>	
Nodes	10026
Elements	2258
Mesh Metric	None

## Static Structural (A5)

**TABLE 11**  
**Model (A4) > Analysis**

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

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

Object Name	<i>Analysis Settings</i>
State	Fully Defined
<b>Step Controls</b>	
Number Of Steps	1.
Current Step Number	1.
Step End Time	1. s
Auto Time Stepping	Program Controlled
<b>Solver Controls</b>	
Solver Type	Program Controlled
Weak Springs	Off
Solver Pivot Checking	Program Controlled
Large Deflection	Off
Inertia Relief	Off
<b>Restart Controls</b>	
Generate Restart Points	Program Controlled
Retain Files After Full Solve	No
<b>Nonlinear Controls</b>	
Newton-Raphson Option	Program Controlled

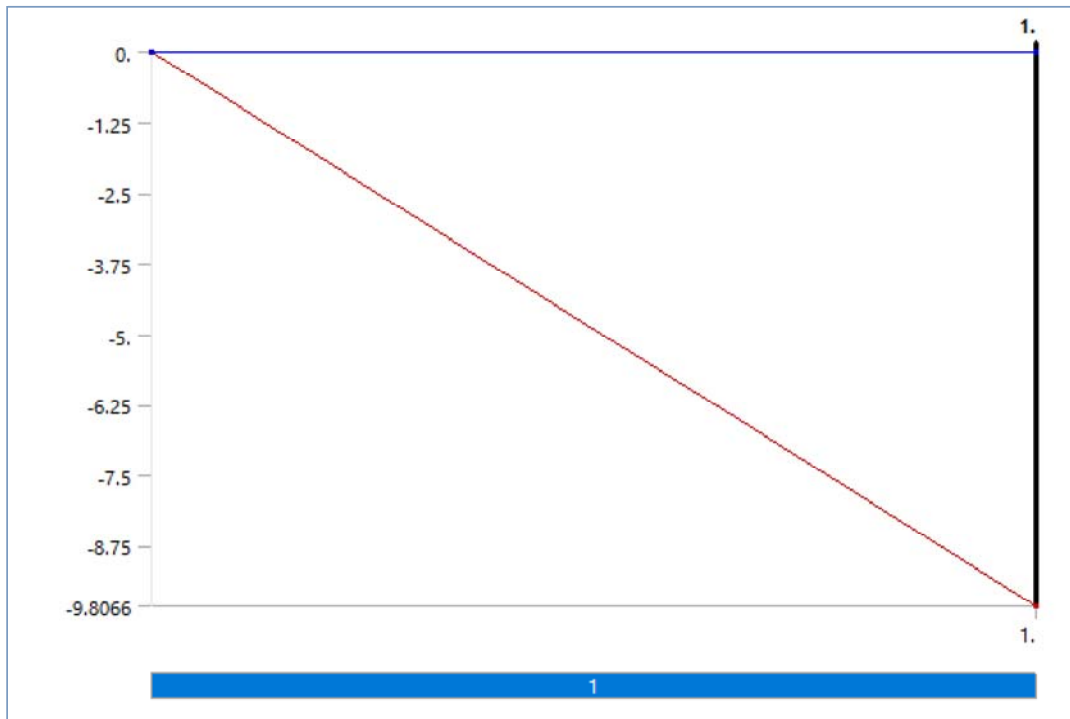


Force Convergence	Program Controlled
Moment Convergence	Program Controlled
Displacement Convergence	Program Controlled
Rotation Convergence	Program Controlled
Line Search	Program Controlled
Stabilization	Off
<b>Output Controls</b>	
Stress	Yes
Strain	Yes
Nodal Forces	No
Contact Miscellaneous	No
General Miscellaneous	No
Store Results At	All Time Points
<b>Analysis Data Management</b>	
Solver Files Directory	C:\Users\Braden\Desktop\CAD verification\frame_files\dp0\SYS\MECH\
Future Analysis	None
Scratch Solver Files Directory	
Save MAPDL db	No
Delete Unneeded Files	Yes
Nonlinear Solution	No
Solver Units	Active System
Solver Unit System	mks

**TABLE 13**  
**Model (A4) > Static Structural (A5) > Accelerations**

Object Name	<i>Standard Earth Gravity</i>
State	Fully Defined
<b>Scope</b>	
Geometry	All Bodies
<b>Definition</b>	
Coordinate System	Global Coordinate System
X Component	-9.8066 m/s <sup>2</sup> (ramped)
Y Component	0. m/s <sup>2</sup> (ramped)
Z Component	0. m/s <sup>2</sup> (ramped)
Suppressed	No
Direction	-X Direction

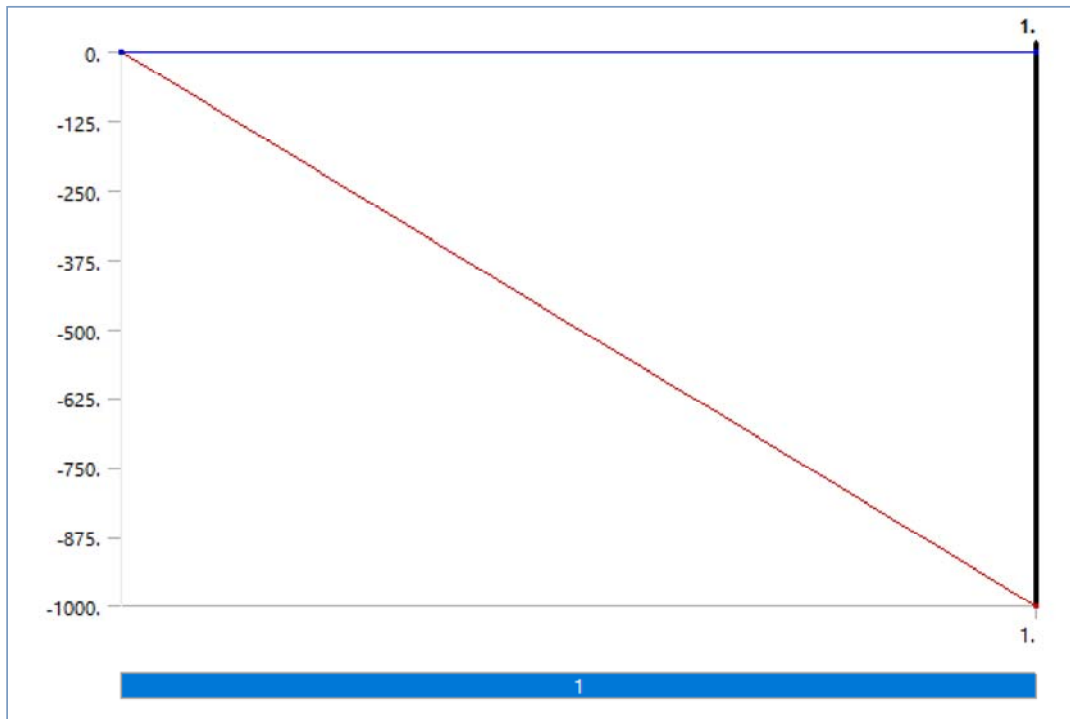
**FIGURE 1**  
**Model (A4) > Static Structural (A5) > Standard Earth Gravity**



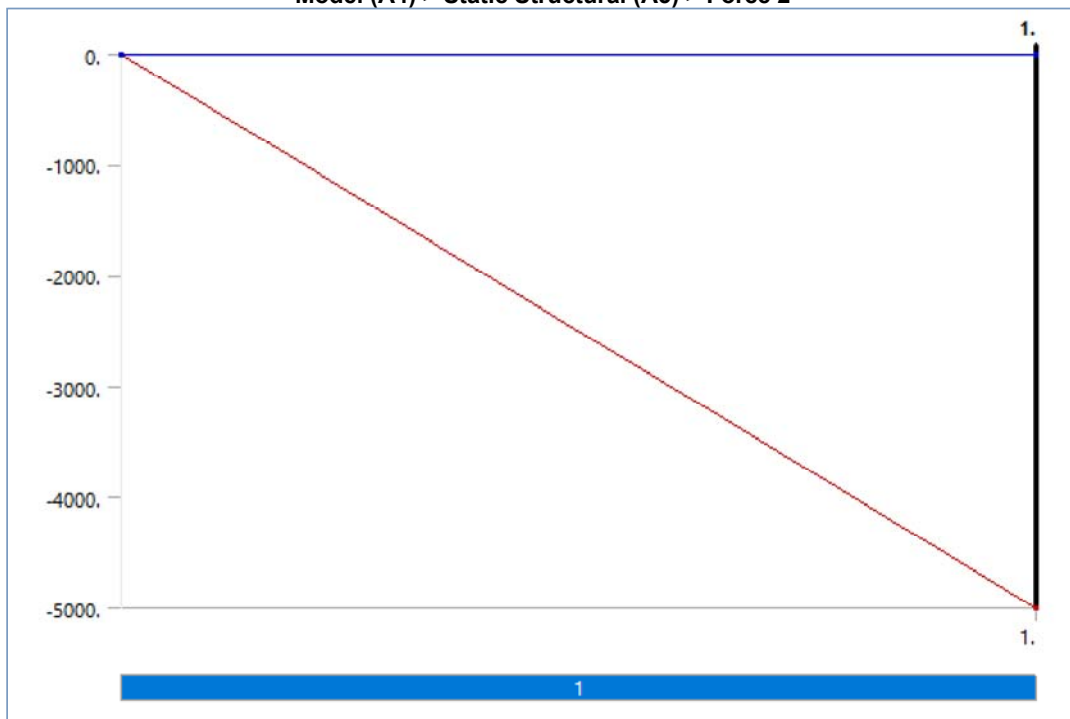
**TABLE 14**  
**Model (A4) > Static Structural (A5) > Loads**

Object Name	<i>Fixed Support</i>	<i>Force</i>	<i>Force 2</i>
State	Fully Defined		
<b>Scope</b>			
Scoping Method	Geometry Selection		
Geometry	2 Faces	1 Face	8 Faces
<b>Definition</b>			
Type	Fixed Support	Force	
Suppressed	No		
Define By	Components		
Coordinate System	Global Coordinate System		
X Component		-1000. N (ramped)	-5000. N (ramped)
Y Component		0. N (ramped)	
Z Component		0. N (ramped)	

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



**FIGURE 3**  
**Model (A4) > Static Structural (A5) > Force 2**



**Solution (A6)**

**TABLE 15**  
**Model (A4) > Static Structural (A5) > Solution**

Object Name	Solution (A6)
State	Solved
<b>Adaptive Mesh Refinement</b>	
Max Refinement Loops	1.

Refinement Depth	2.
<b>Information</b>	
Status	Done
MAPDL Elapsed Time	4. s
MAPDL Memory Used	288. MB
MAPDL Result File Size	3.375 MB
<b>Post Processing</b>	
Calculate Beam Section Results	No

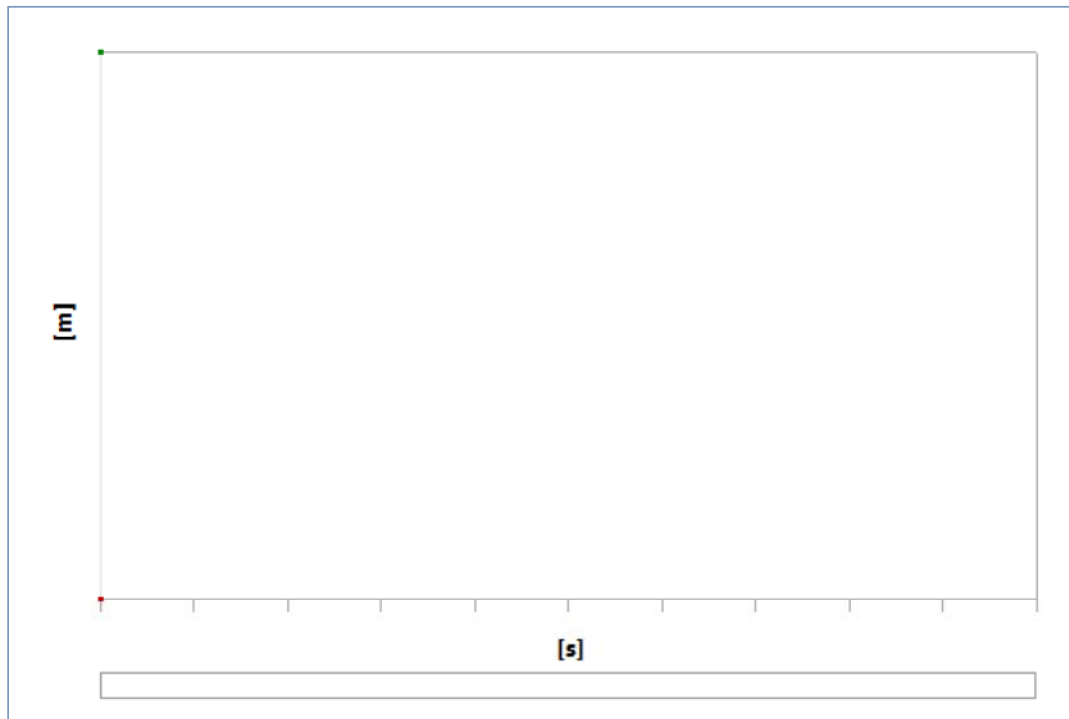
**TABLE 16**  
**Model (A4) > Static Structural (A5) > Solution (A6) > Solution Information**

Object Name	<i>Solution Information</i>
State	Solved
<b>Solution Information</b>	
Solution Output	Solver Output
Newton-Raphson Residuals	0
Identify Element Violations	0
Update Interval	2.5 s
Display Points	All
<b>FE Connection Visibility</b>	
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 17**  
**Model (A4) > Static Structural (A5) > Solution (A6) > Results**

Object Name	<i>Total Deformation</i>
State	Solved
<b>Scope</b>	
Scoping Method	Geometry Selection
Geometry	All Bodies
<b>Definition</b>	
Type	Total Deformation
By	Time
Display Time	Last
Calculate Time History	Yes
Identifier	
Suppressed	No
<b>Results</b>	
Minimum	0. m
Maximum	1.1446e-003 m
Minimum Occurs On	Solid
Maximum Occurs On	Solid
<b>Information</b>	
Time	1. s
Load Step	1
Substep	1
Iteration Number	1

**FIGURE 4**  
**Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation**



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

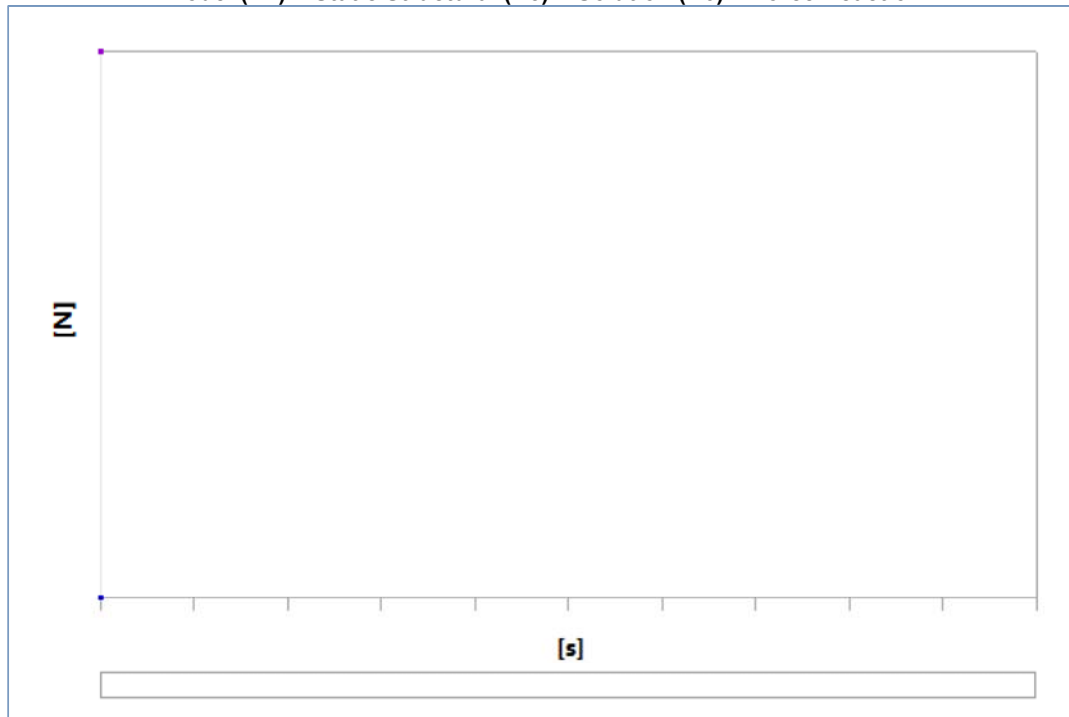
Time [s]	Minimum [m]	Maximum [m]
1.	0.	1.1446e-003

**TABLE 19**  
**Model (A4) > Static Structural (A5) > Solution (A6) > Probes**

Object Name	<i>Force Reaction</i>
State	Solved
<b>Definition</b>	
Type	Force Reaction
Location Method	Boundary Condition
Boundary Condition	Fixed Support
Orientation	Global Coordinate System
Suppressed	No
<b>Options</b>	
Result Selection	All
Display Time	End Time
<b>Results</b>	
X Axis	6649. N
Y Axis	1.7074e-002 N
Z Axis	-1.0948e-003 N
Total	6649. N
<b>Maximum Value Over Time</b>	
X Axis	6649. N
Y Axis	1.7074e-002 N
Z Axis	-1.0948e-003 N
Total	6649. N
<b>Minimum Value Over Time</b>	
X Axis	6649. N
Y Axis	1.7074e-002 N
Z Axis	-1.0948e-003 N
Total	6649. N
<b>Information</b>	
Time	1. s

Load Step	1
Substep	1
Iteration Number	1

**FIGURE 5**  
**Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction**



**TABLE 20**  
**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.	6649.	1.7074e-002	-1.0948e-003	6649.

## Material Data

### Structural Steel

**TABLE 21**  
**Structural Steel > Constants**

Density	7850 kg m <sup>-3</sup>
Coefficient of Thermal Expansion	1.2e-005 C <sup>-1</sup>
Specific Heat	434 J kg <sup>-1</sup> C <sup>-1</sup>
Thermal Conductivity	60.5 W m <sup>-1</sup> C <sup>-1</sup>
Resistivity	1.7e-007 ohm m

**TABLE 22**  
**Structural Steel > Color**

Red	Green	Blue
132	139	179

**TABLE 23**  
**Structural Steel > Compressive Ultimate Strength**

Compressive Ultimate Strength Pa
0

**TABLE 24**  
**Structural Steel > Compressive Yield Strength**

Compressive Yield Strength Pa
2.5e+008

**TABLE 25**  
**Structural Steel > Tensile Yield Strength**

Tensile Yield Strength Pa
2.5e+008

**TABLE 26**  
**Structural Steel > Tensile Ultimate Strength**

Tensile Ultimate Strength Pa
4.6e+008

**TABLE 27**  
**Structural Steel > Isotropic Secant Coefficient of Thermal Expansion**

Zero-Thermal-Strain Reference Temperature C
22

**TABLE 28**  
**Structural Steel > Alternating Stress Mean Stress**

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 29**  
**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 30**  
**Structural Steel > Isotropic Elasticity**

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

**TABLE 31**  
**Structural Steel > Isotropic Relative Permeability**

Relative Permeability
10000