



## **BearCat Side Running Board – Weight Capacity Test Report**

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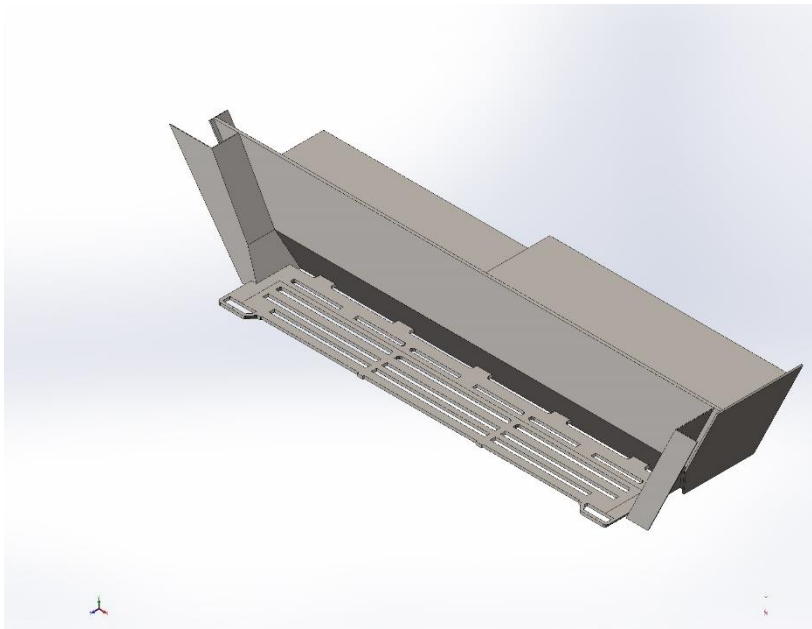
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# Simulation of RBoard side test 01

**Date:** Wednesday, October 24, 2018  
**Designer:** Solidworks  
**Study name:** Static 1  
**Analysis type:** Static

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## Study Properties

Study name	Static 1
Analysis type	Static
Mesh type	Solid Mesh
Thermal Effect:	On
Thermal option	Include temperature loads
Zero strain temperature	77 Fahrenheit
Include fluid pressure effects from SOLIDWORKS Flow Simulation	Off
Solver type	FFEPlus
Inplane Effect:	Off
Soft Spring:	Off
Inertial Relief:	Off
Incompatible bonding options	Automatic
Large displacement	Off
Compute free body forces	On
Friction	Off
Use Adaptive Method:	Off
Result folder	SOLIDWORKS document (C:\Users\smonti\Documents\Simulations\RBoards)

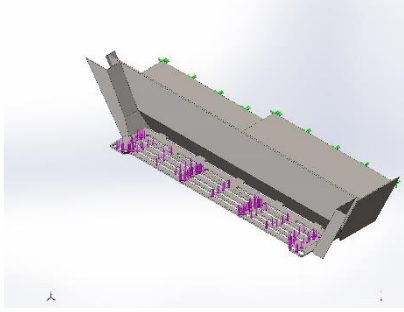
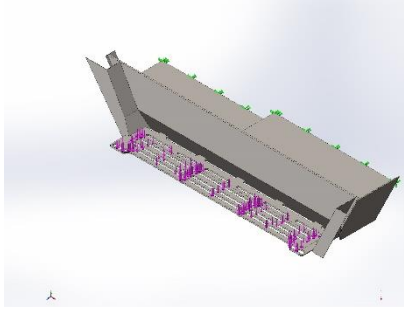
## Units

Unit system:	English (IPS)
Length/Displacement	in
Temperature	Fahrenheit
Angular velocity	Hertz
Pressure/Stress	psi

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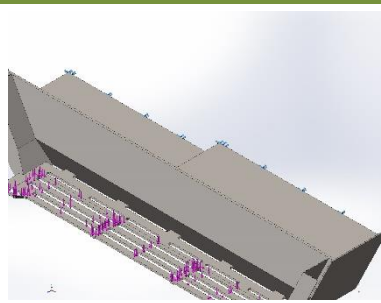


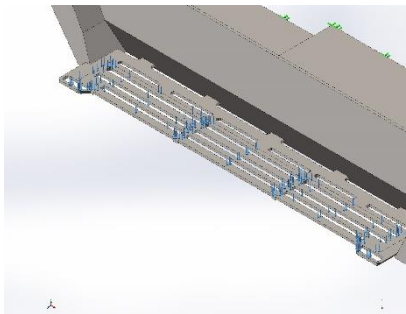
## Material Properties

Model Reference	Properties	Components
	<b>Name:</b> Hard Steel <b>Model type:</b> Linear Elastic Isotropic <b>Default failure criterion:</b> Unknown <b>Yield strength:</b> 159542 psi <b>Tensile strength:</b> 217557 psi <b>Elastic modulus:</b> 3.04e+07 psi <b>Poisson's ratio:</b> 0.3 <b>Mass density:</b> 0.284502 lb/in <sup>3</sup> <b>Shear modulus:</b> 1.1603e+07 psi <b>Thermal expansion coefficient:</b> /Fahrenheit	SolidBody 1(Boss-Extrude5)(RBoard side 01-1)
Curve Data:N/A		
	<b>Name:</b> Soft Steel <b>Model type:</b> Linear Elastic Isotropic <b>Default failure criterion:</b> Unknown <b>Yield strength:</b> 31994.5 psi <b>Tensile strength:</b> 57989.9 psi <b>Elastic modulus:</b> 3.04579e+07 psi <b>Poisson's ratio:</b> 0.28 <b>Mass density:</b> 0.281793 lb/in <sup>3</sup> <b>Shear modulus:</b> 1.1458e+07 psi <b>Thermal expansion coefficient:</b> /Fahrenheit	SolidBody 1(Boss-Extrude3)(RBoard side 03-1), SolidBody 2(Boss-Extrude6)(RBoard side 03-1)
Curve Data:N/A		

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## Loads and Fixtures

Fixture name	Fixture Image	Fixture Details		
Fixed-1		<b>Entities:</b> 1 face(s) <b>Type:</b> Fixed Geometry		
<b>Resultant Forces</b>				
Components	X	Y	Z	Resultant
Reaction force(lbf)	0.625226	3001.21	0.941337	3001.21
Reaction Moment(lbf.in)	0	0	0	0

Load name	Load Image	Load Details
Force-1		<b>Entities:</b> 1 face(s) <b>Type:</b> Apply normal force <b>Value:</b> 3000 lbf

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Analyzed with SOLIDWORKS Simulation

Simulation of RBoard side test 01

## Mesh information

Mesh type	Solid Mesh
Mesher Used:	Standard mesh
Automatic Transition:	Off
Include Mesh Auto Loops:	Off
Jacobian points	4 Points
Element Size	1.63437 in
Tolerance	0.0817185 in
Mesh Quality Plot	High
Remesh failed parts with incompatible mesh	Off

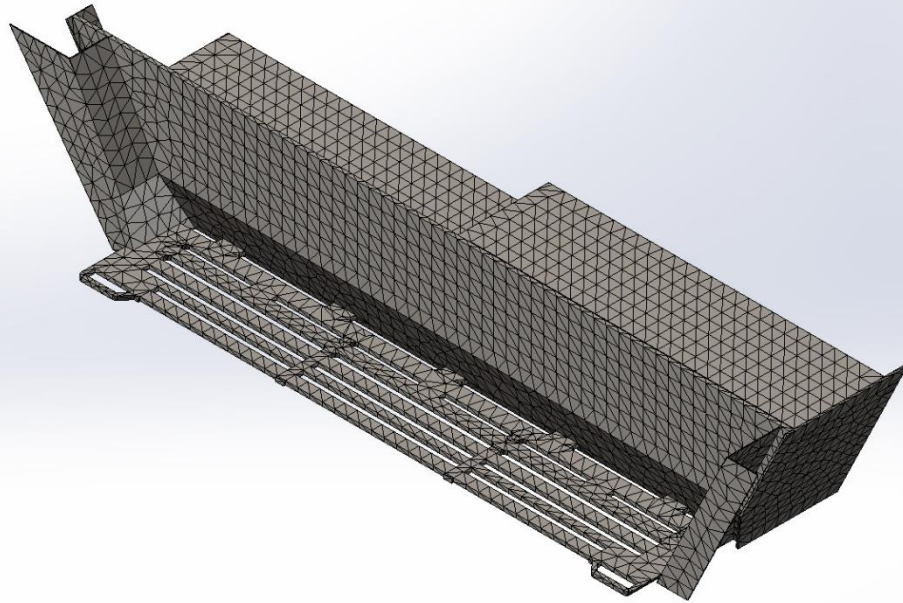
## Mesh information - Details

Total Nodes	26797
Total Elements	12752
Maximum Aspect Ratio	62.019
% of elements with Aspect Ratio < 3	11.8
% of elements with Aspect Ratio > 10	11.9
% of distorted elements(Jacobian)	0
Time to complete mesh(hh:mm:ss):	00:00:23
Computer name:	2-LENCO

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Model name: RBoard side test 01  
Study name: Static 1: Default  
Mesh type: Solid Mesh



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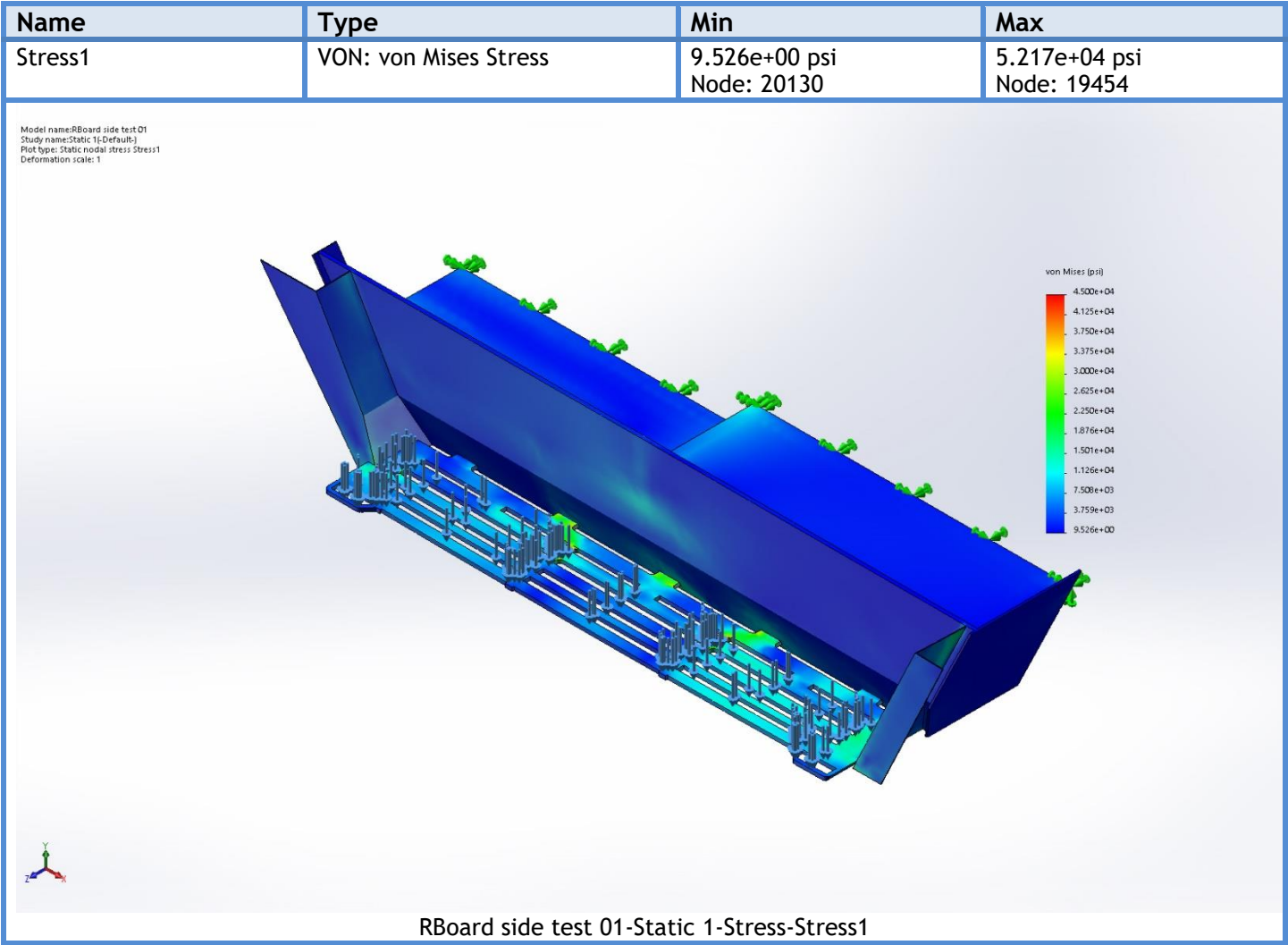


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Analyzed with SOLIDWORKS Simulation

Simulation of RBoard side test 01

# Study Results

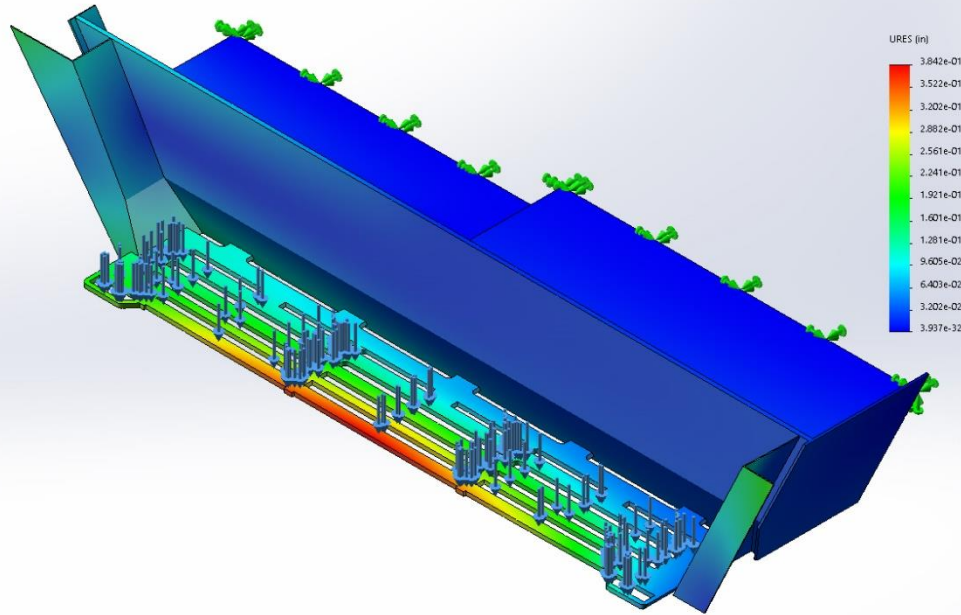


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Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.000e+00 in Node: 1902	3.842e-01 in Node: 3064

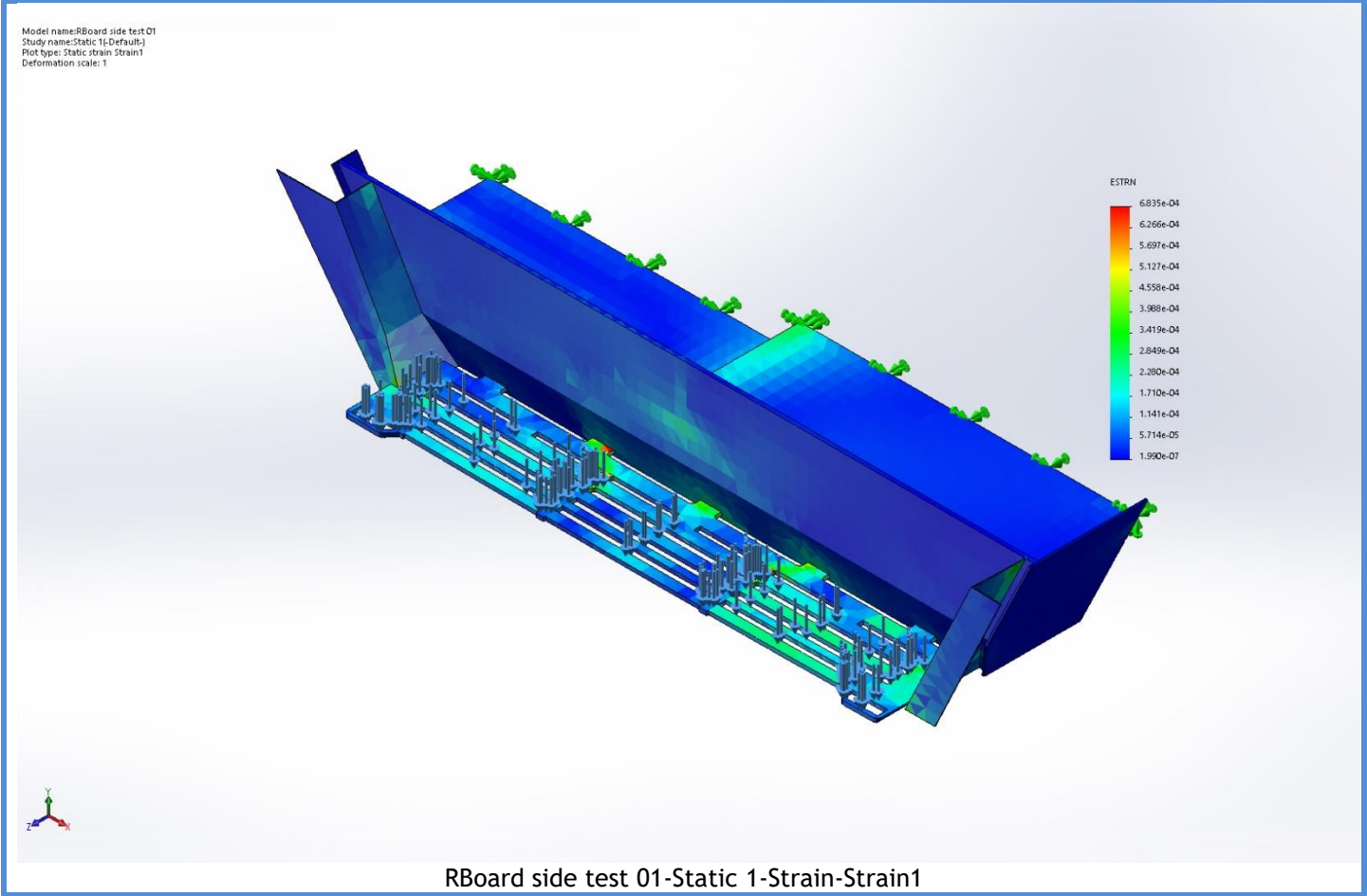
Model name: RBoard side test 01  
Study name: Static 1 (Default)  
Plot type: Static displacement Displacement1  
Deformation scale: 1



RBoard side test 01-Static 1-Displacement-Displacement1

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Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	1.990e-07 Element: 12719	6.835e-04 Element: 40



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