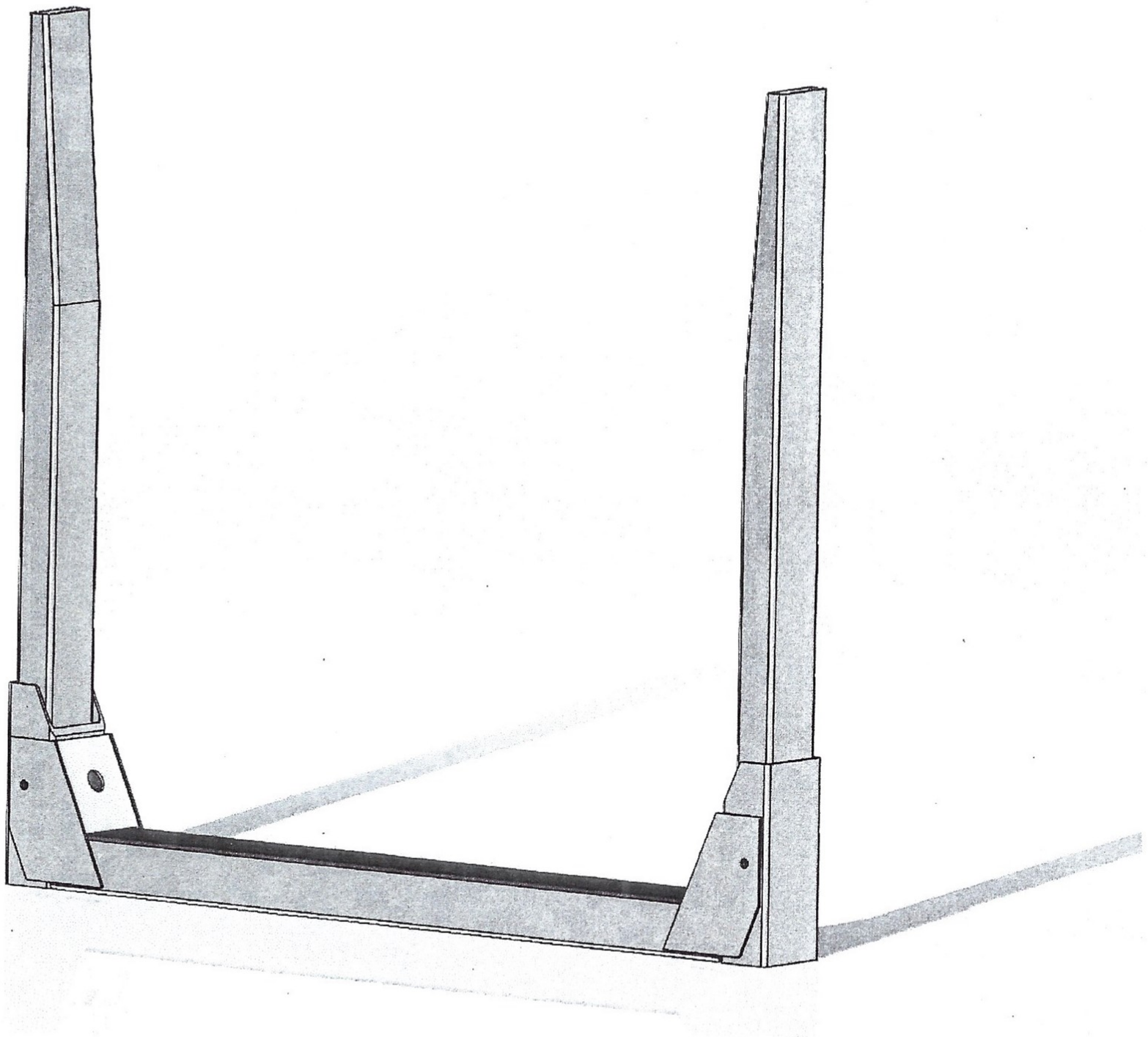
Projekt ”Timmerbanke XL”



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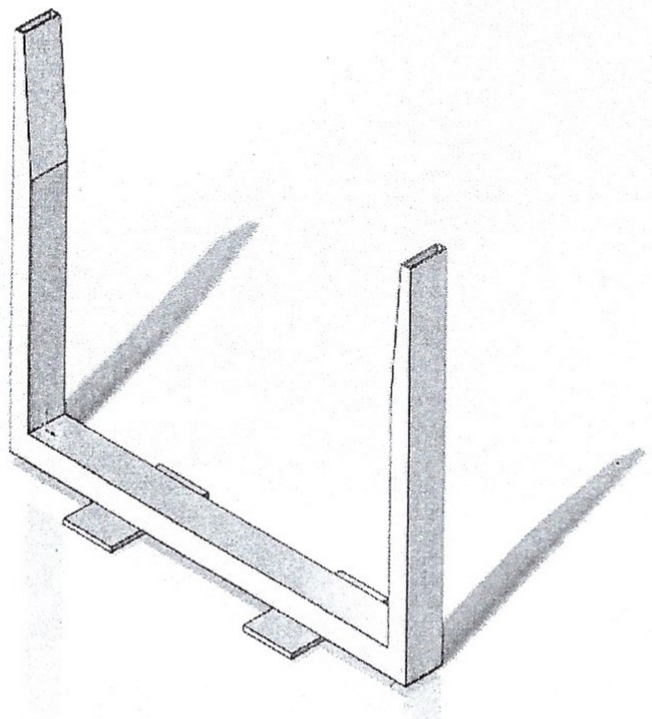


Simulation of annalys

Date: den 4 maj 2017
Designer: Solidworks
Study name: SimulationXpress Study
Analysis type: Static

Table of Contents

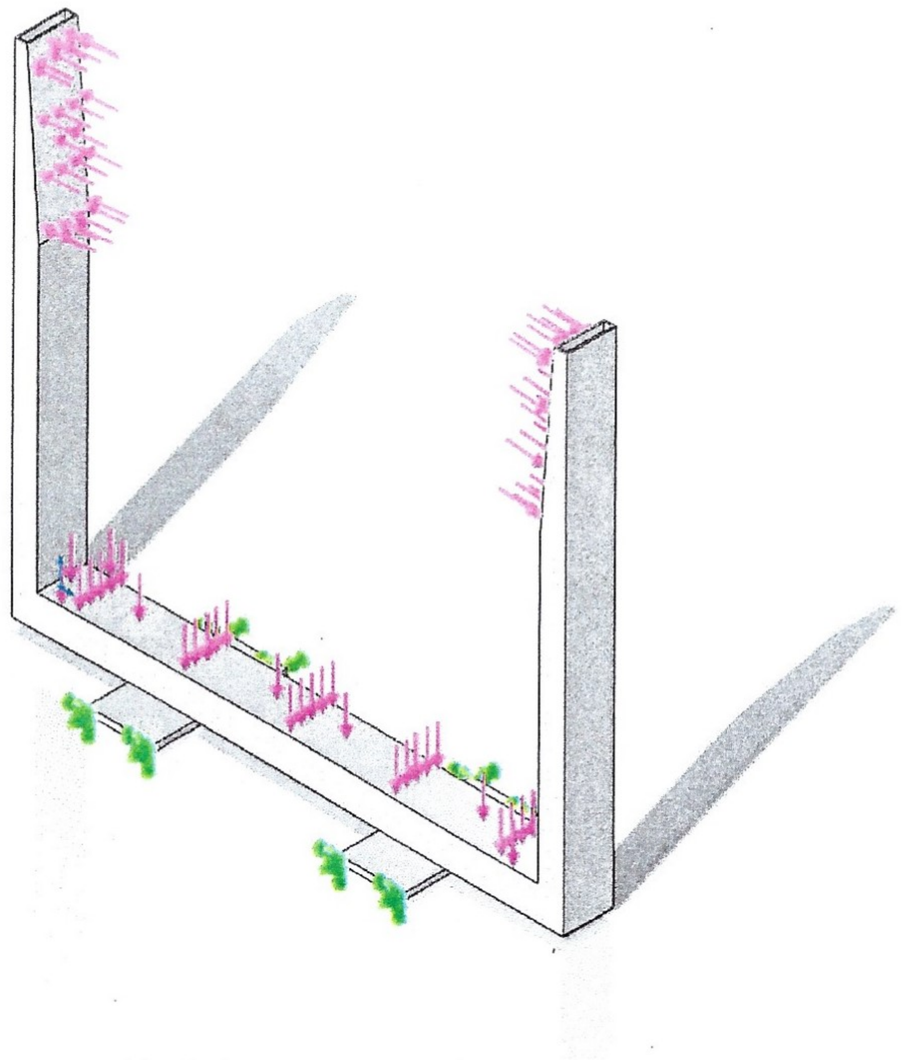
Description

Timmerbanke för ingårdstransporter av virke på fabriksområde.

Assumptions

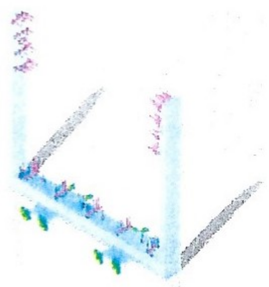
Man antar lastfallet 5ton rakt ut på den sluttande delen av spjutet och 20ton på liggande banken båda I statiskform.

Model Information



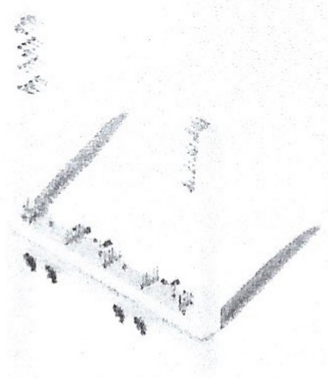
Model name: annalys
Current Configuration: Default

Solid Bodies

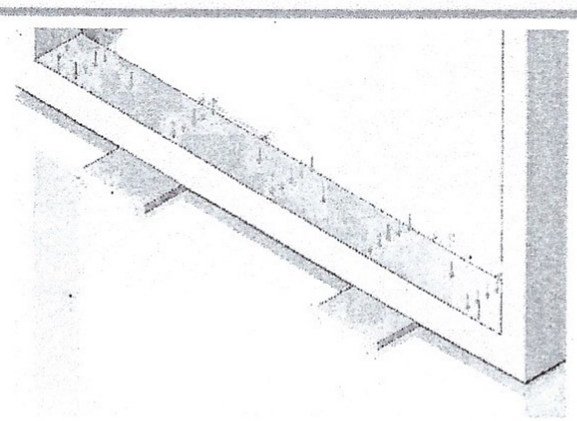
Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
Boss-Extrude2 	Solid Body	**Mass:957.649 kg** **Volume:0.122776 m^3** **Density:7800 kg/m^3** **Weight:9384.96 N**	**C:\Users\bmm1mll\Desktop\annalys.SLDPRT** May 03 15:21:15 2017

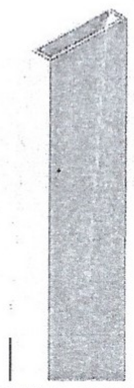
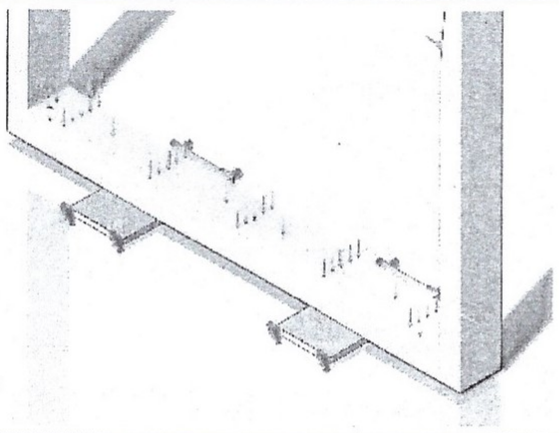
Modellen är kraftigt förenklad för att ge n bild av hur krafter kan uppträda I konstruktionen. Utformningen kan anses sämre än värkligheten

Material Properties

Model Reference	Properties		Components
	**Name:**	S355JRG2	SolidBody 1(Boss-Extrude2)(annalys)
	Model type:	Linear Elastic Isotropic	
	Default failure criterion:	Max von Mises Stress	
	Yield strength:	3.5e+008 N/m^2	
	Tensile strength:	4.9e+008 N/m^2	

Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Fixed-1		**Entities:** 4 face(s) **Type:** Fixed Geometry

Load name	Load Image	Load Details
Force-1		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** 50000 N
Force-2		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** 50000 N
Force-3		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** 200000 N

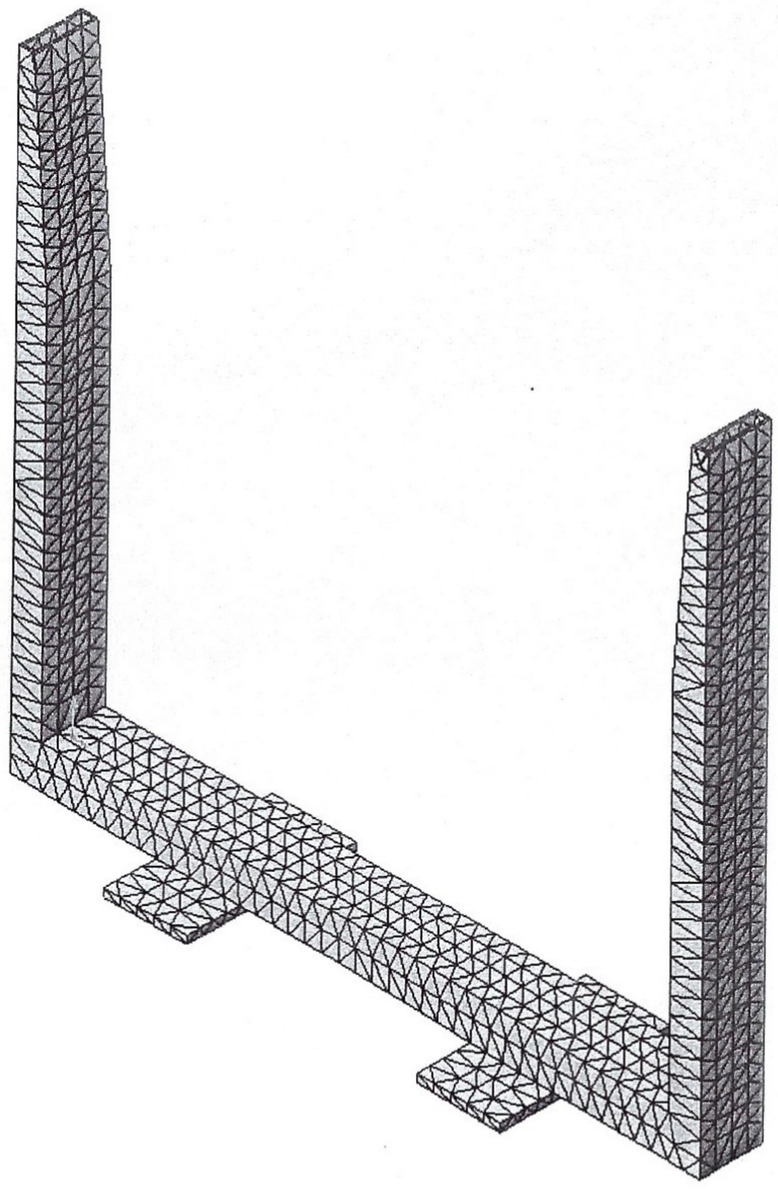
Mesh Information

Mesh type	Solid Mesh
Mesher Used:	Standard mesh
Automatic Transition:	Off
Include Mesh Auto Loops:	Off
Jacobian points	4 Points
Element Size	81.3821 mm
Tolerance	4.0691 mm
Mesh Quality	High

Mesh Information - Details

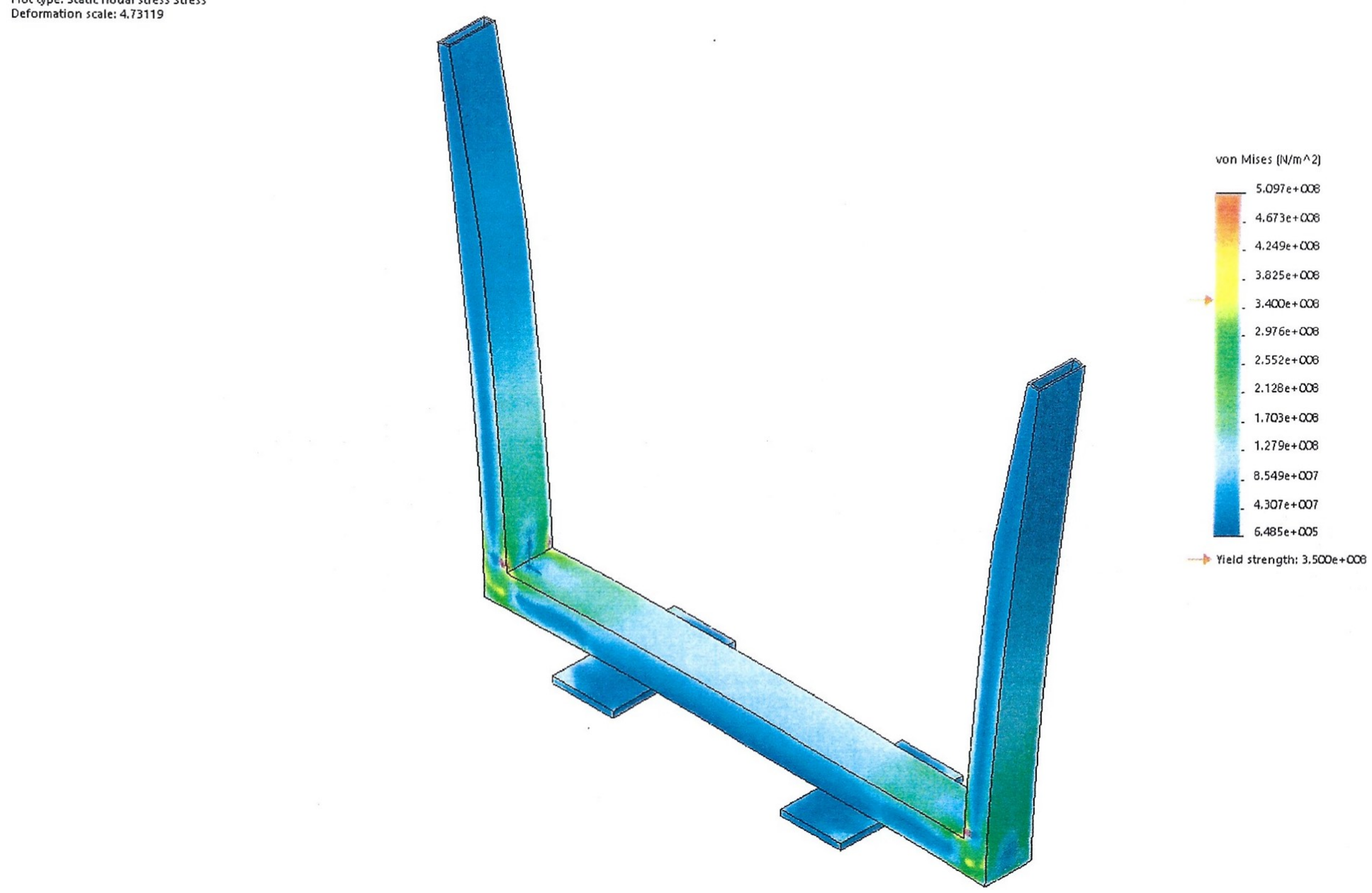
Total Nodes	14035
Total Elements	6945
Maximum Aspect Ratio	28.582
% of elements with Aspect Ratio < 3	7.76
% of elements with Aspect Ratio > 10	5.87
% of distorted elements(Jacobian)	0
Time to complete mesh(hh;mm;ss):	00:00:02
Computer name:	KISZ2718

Model name: annalys
Study name: SimulationXpress Study(-Default-)
Mesh type: Solid mesh



Study Results

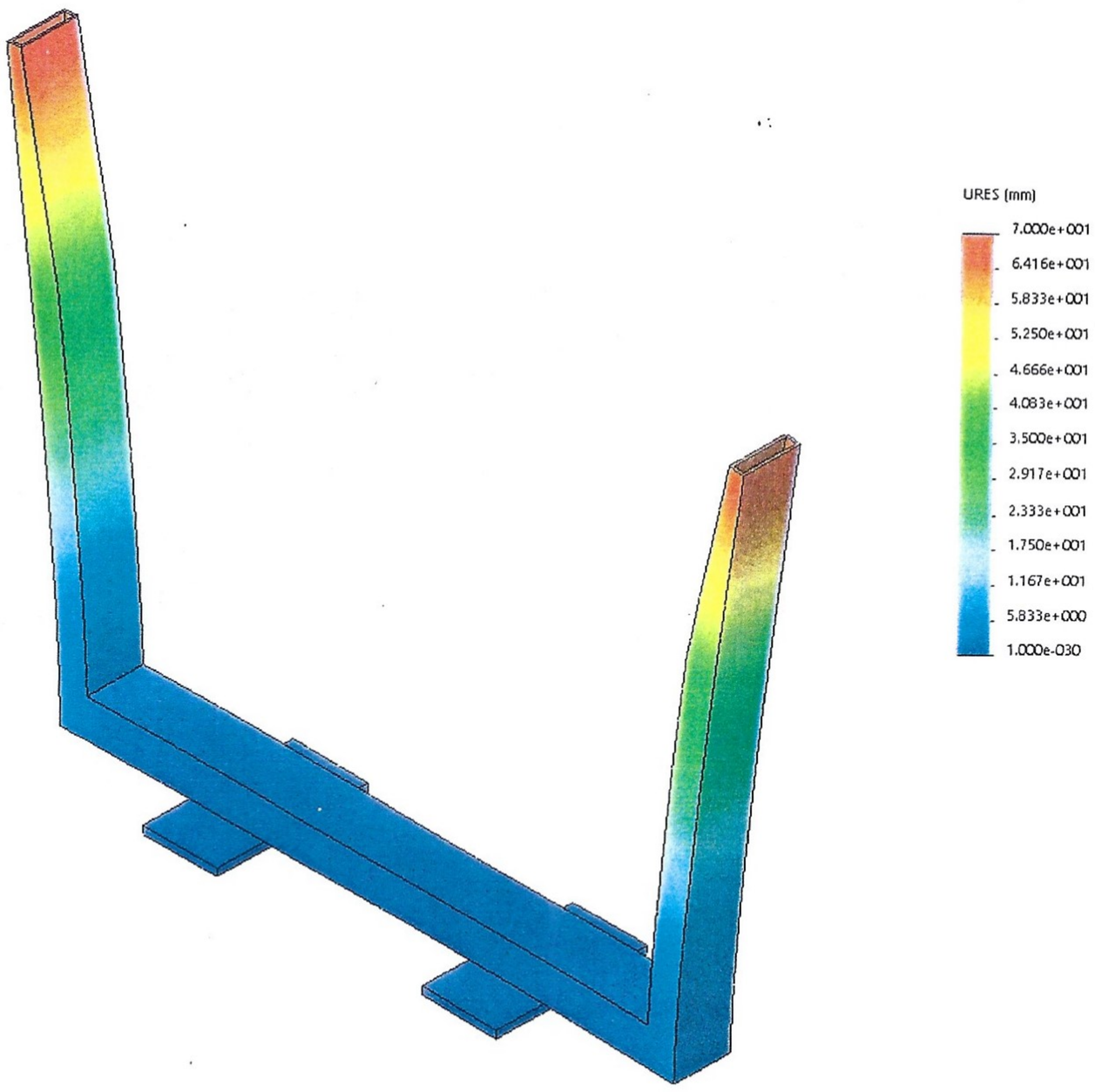
Name	Type	Min	Max
Stress	VON: von Mises Stress	648507 N/m^2 Node: 12679	5.09726e+008 N/m^2 Node: 9563



annalys-SimulationXpress Study-Stress-Stress

Name	Type	Min	Max
Displacement	URES: Resultant Displacement	0 mm Node: 2155	69.997 mm Node: 180

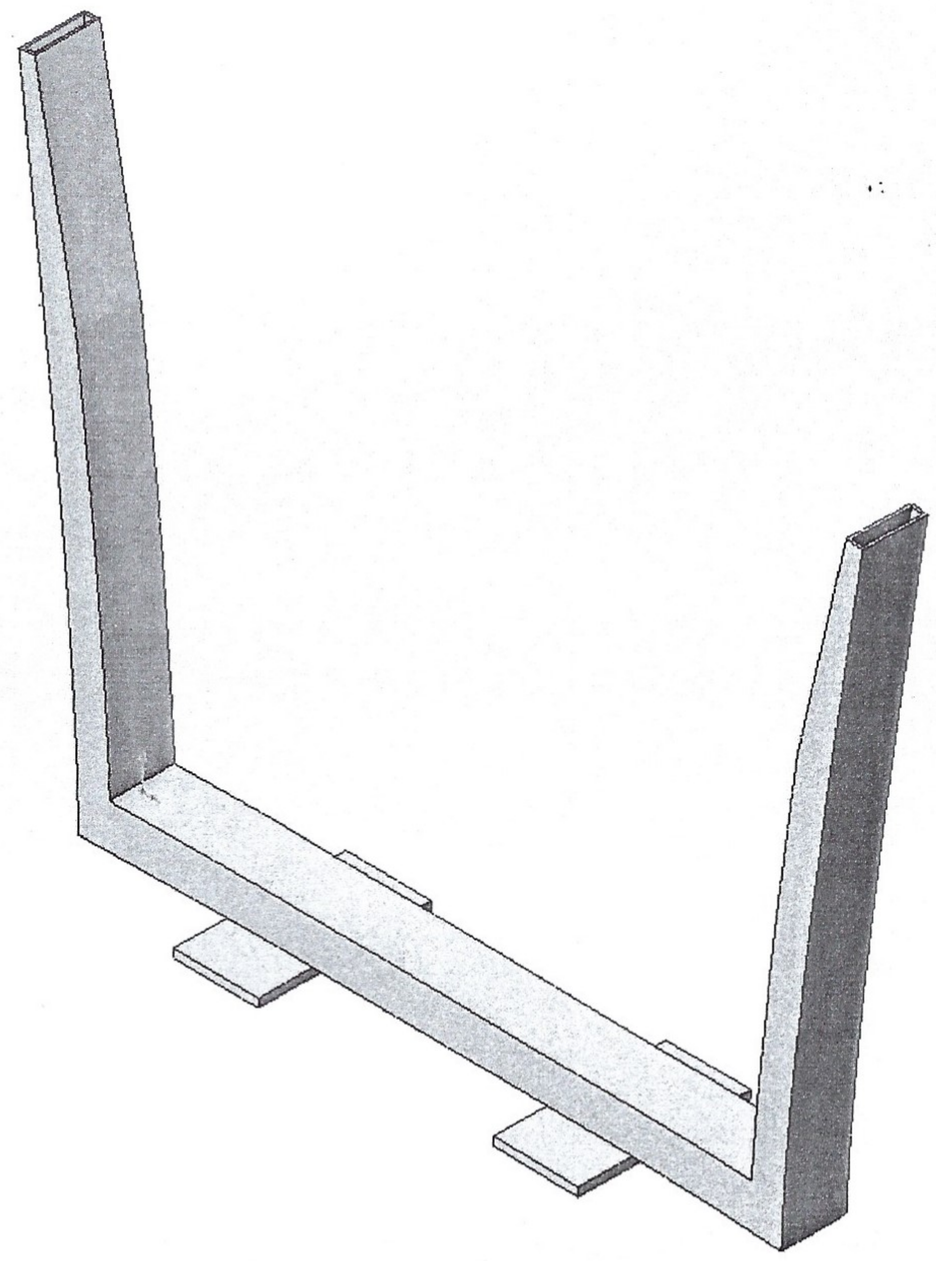
Model name: annalys
Study name: SimulationXpress Study(-Default-)
Plot type: Static displacement Displacement
Deformation scale: 4.73119



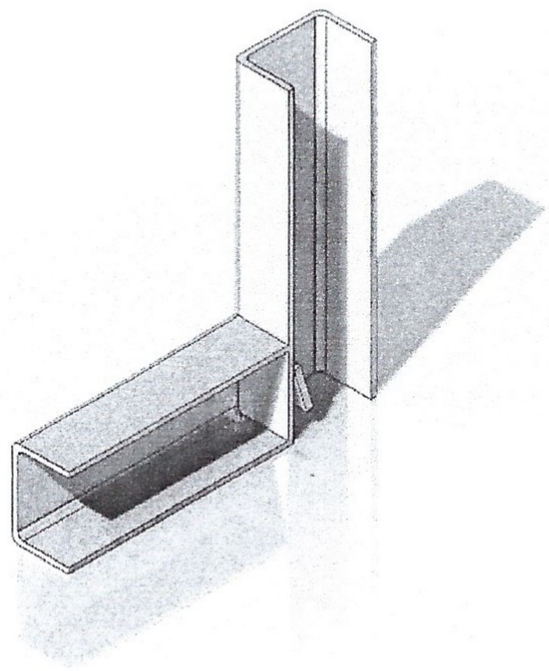
annalys-SimulationXpress Study-Displacement-Displacement

Name	Type
Deformation	Deformed Shape

Model name: annalys
Study name: SimulationXpress Study(-Default-)
Plot type: Deformed Shape Deformation
Deformation scale: 4.73119



annalys-SimulationXpress Study-Displacement-Deformation



Simulation of beräkning snedplåt

Date: den mars 2017

Study name: Timmerbanke XL
Analysis type: Static

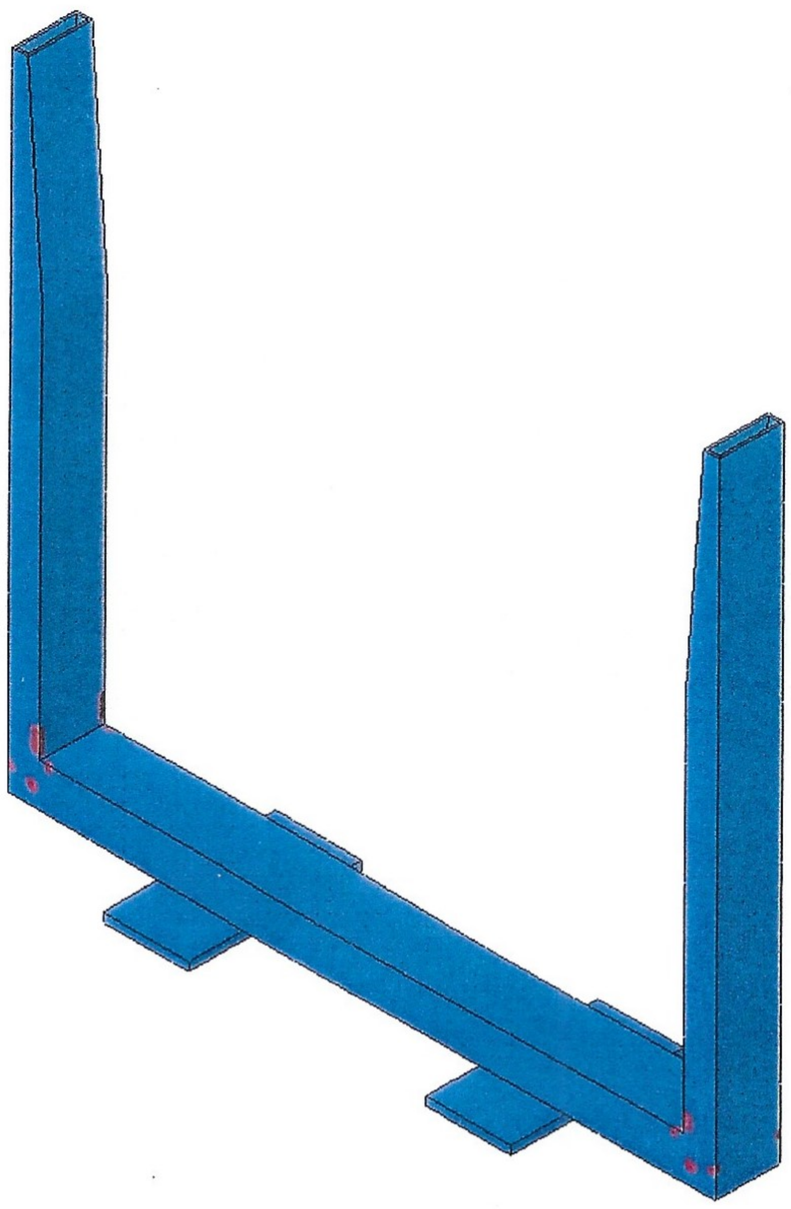
Table of Contents

Description

Kraft på snedplåt I hålken genererad av timmerstötta

Name	Type	Min	Max
Factor of Safety	Max von Mises Stress	0.686644 Node: 9563	539.701 Node: 12679

Model name: annalys
Study name: SimulationXpress Study(-Default-)
Plot type: Factor of Safety Factor of Safety
Criterion : Max von Mises Stress
Red < FOS = 1 < Blue



annalys-SimulationXpress Study-Factor of Safety-Factor of Safety

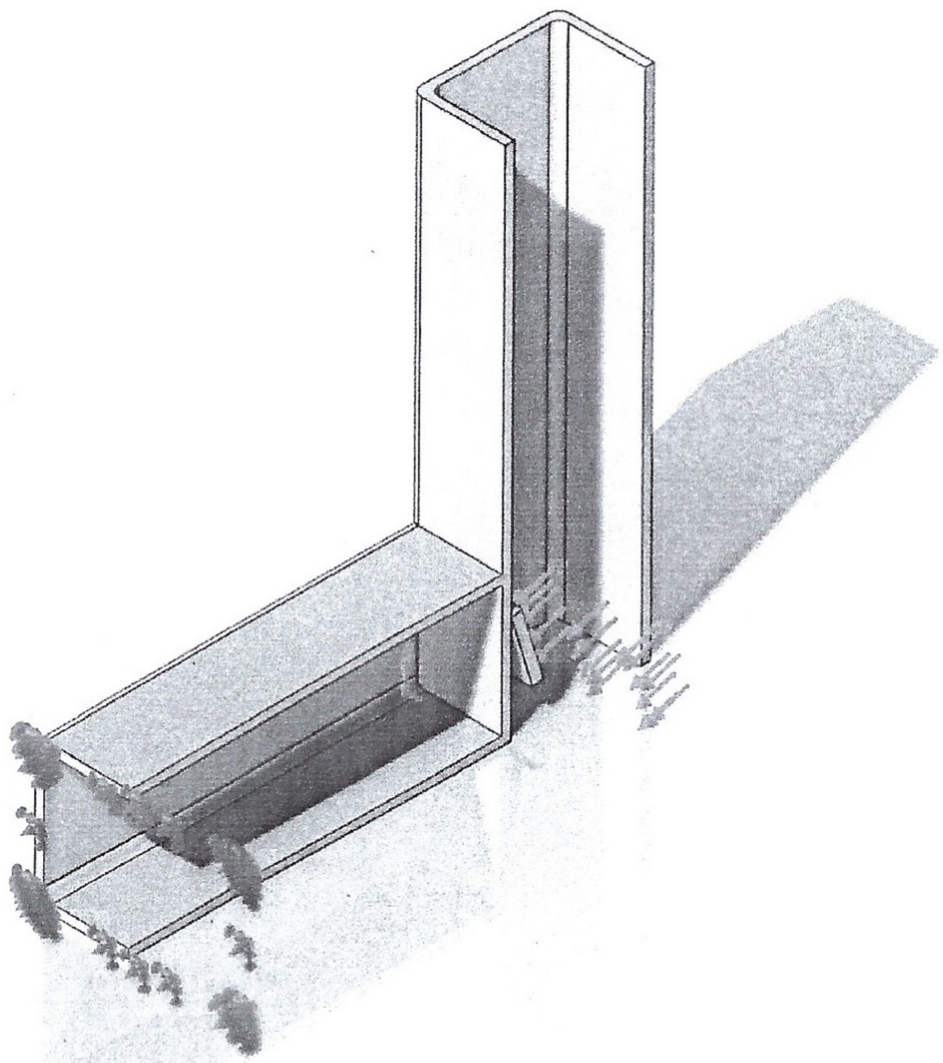
Conclusion

Konstruktionen påvisar inga direkta svagheter med den statiska lastfördelningen. Dock skall man ha i åtanke att det verkliga lastfallen kan innefatta slag och tryck mm som inte innefattas i beräkningen.

Assumptions

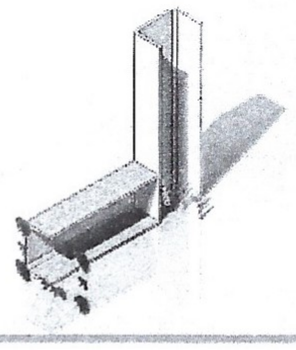
Vi antar att kraften som stöttan kommer att generera på plåten är ca 5 ton per sida. Kraften är vald att distribueras vinkelrät mot plåten vilket ger upphov till en större belastning. Normalfallet är kraften riktad snett ner åt.

Model Information



Model name: beräkning snedplåt
Current Configuration: Default

Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
Boss-Extrude5 	Solid Body	**Mass:113.959 kg** **Volume:0.0146102 m^3** **Density:7800 kg/m^3** **Weight:1116.8 N**	**C:\Users\bmm1mll\Desktop\timmerbanke\beräkning snedplåt.SLDPRT** May 16 09:17:55 2017

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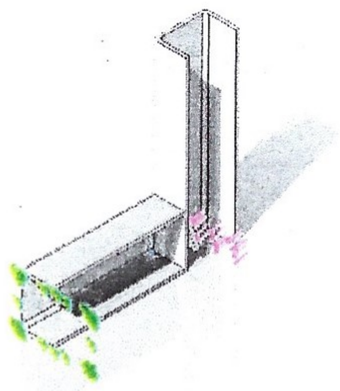
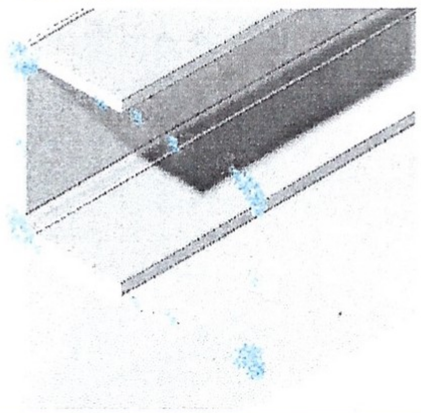
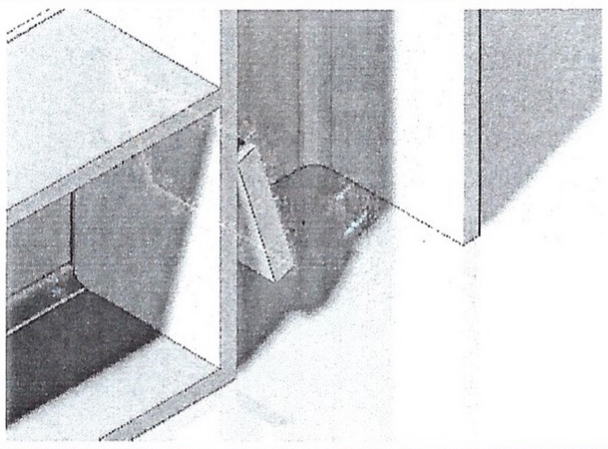
Material Properties

Model Reference	Properties	Components
	**Name:** S355JRG2 **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 3.5e+008 N/m^2 **Tensile strength:** 4.9e+008 N/m^2	SolidBody 1(Boss-Extrude5)(beräkning snedplåt)

Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Fixed-2		**Entities:** 1 face(s) **Type:** Fixed Geometry

Load name	Load Image	Load Details
Force-2		**Entities:** 1 face(s) **Type:** Apply normal force **Value:** 50000 N

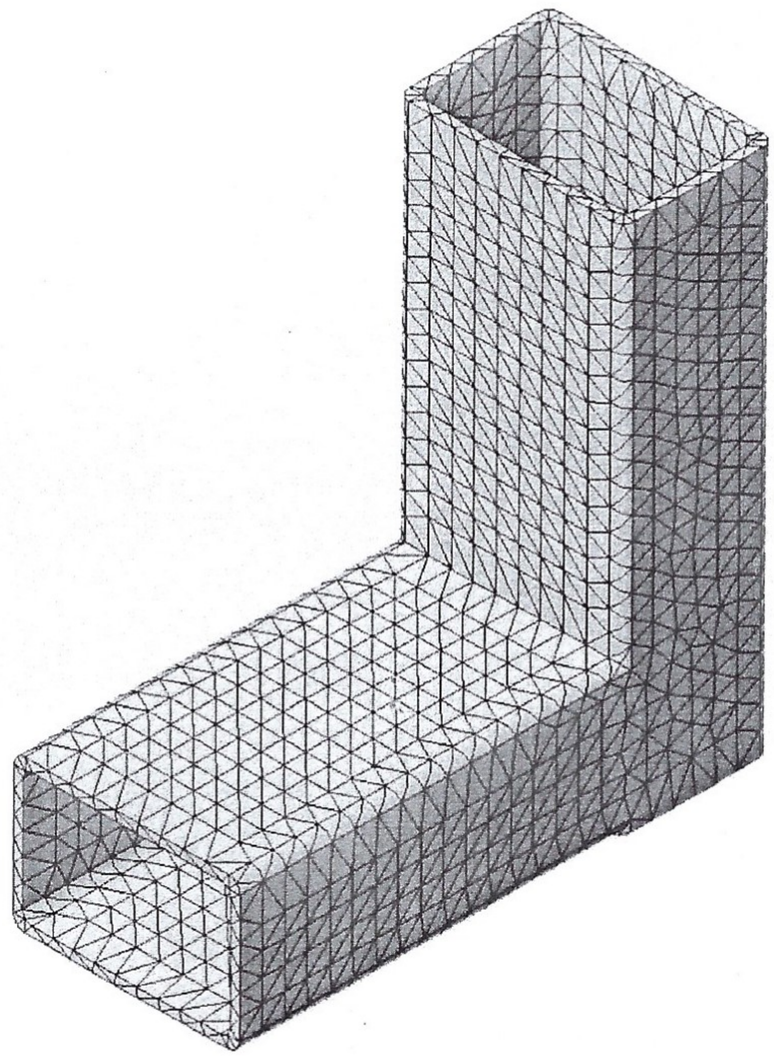
Mesh Information

Mesh type	Solid Mesh
Mesher Used:	Standard mesh
Automatic Transition:	Off
Include Mesh Auto Loops:	Off
Jacobian points	4 Points
Element Size	30.3907 mm
Tolerance	1.51953 mm
Mesh Quality	High

Mesh Information - Details

Total Nodes	16069
Total Elements	7973
Maximum Aspect Ratio	20.758
% of elements with Aspect Ratio < 3	84
% of elements with Aspect Ratio > 10	0.426
% of distorted elements(Jacobian)	0
Time to complete mesh(hh;mm;ss):	00:00:01
Computer name:	KISZ2718

Model name: beräkning snedplåt
Study name: SimulationXpress Study(-Default-)
Mesh type: Solid mesh



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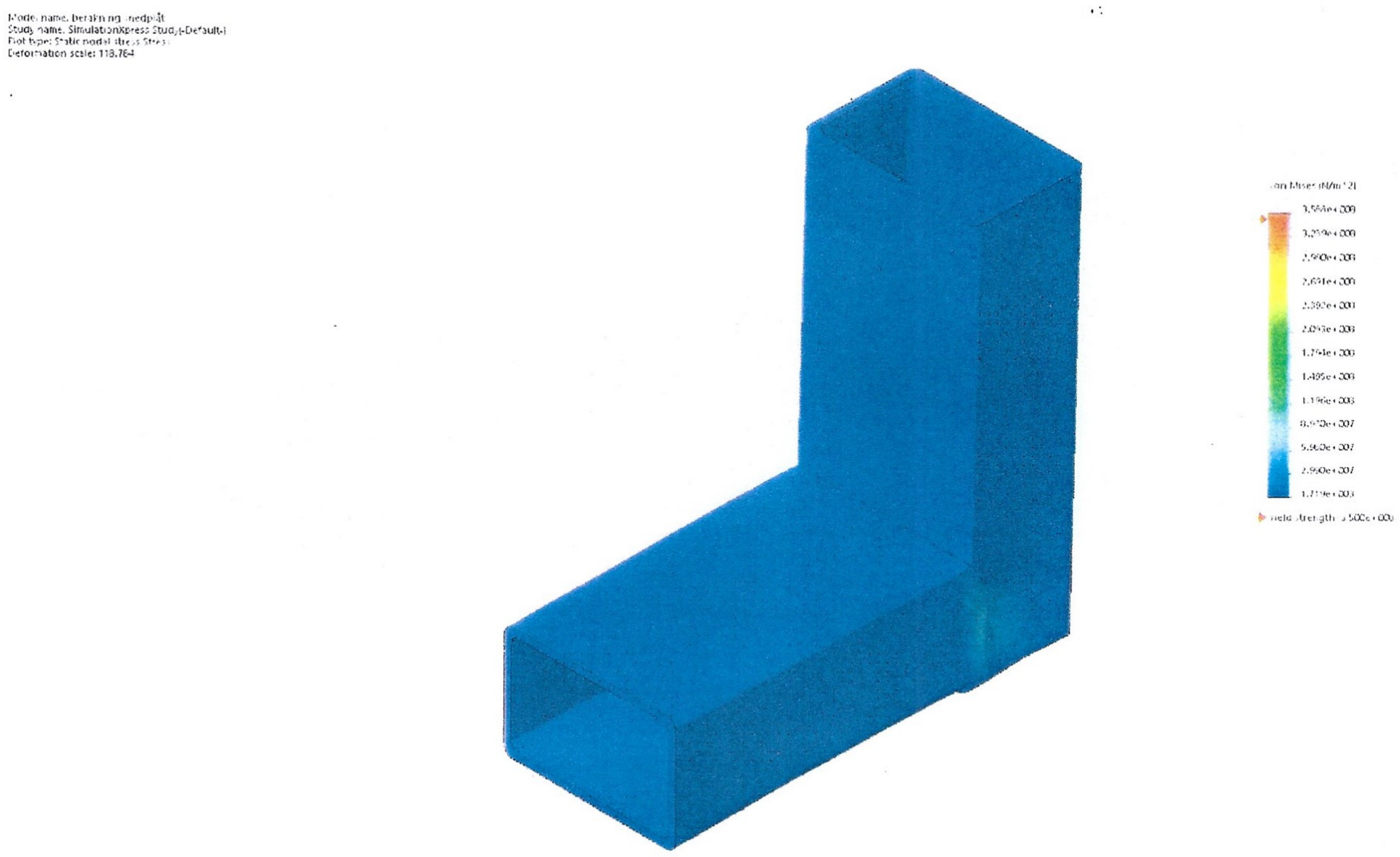
Study Results

Name	Type	Min	Max
Stress	VON: von Mises Stress	1719.5 N/m^2 Node: 15789	3.58812e+008 N/m^2 Node: 6263



beräkning snedplåt-SimulationXpress Study-Stress-Stress

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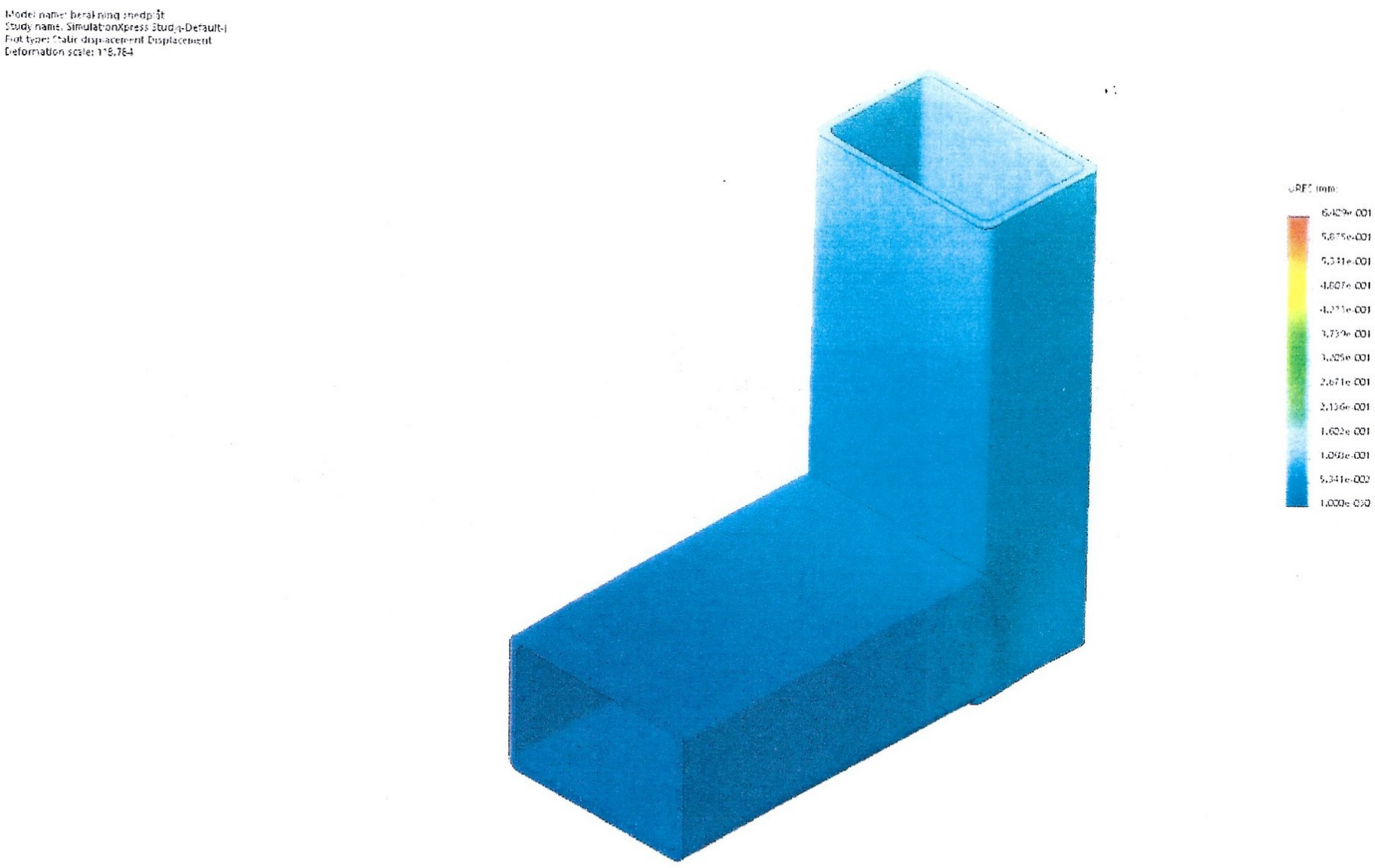
Name	Type	Min	Max
Displacement	URES: Resultant Displacement	0 mm Node: 245	0.64094 mm Node: 6158



beräkning snedplåt-SimulationXpress Study-Displacement-Displacement

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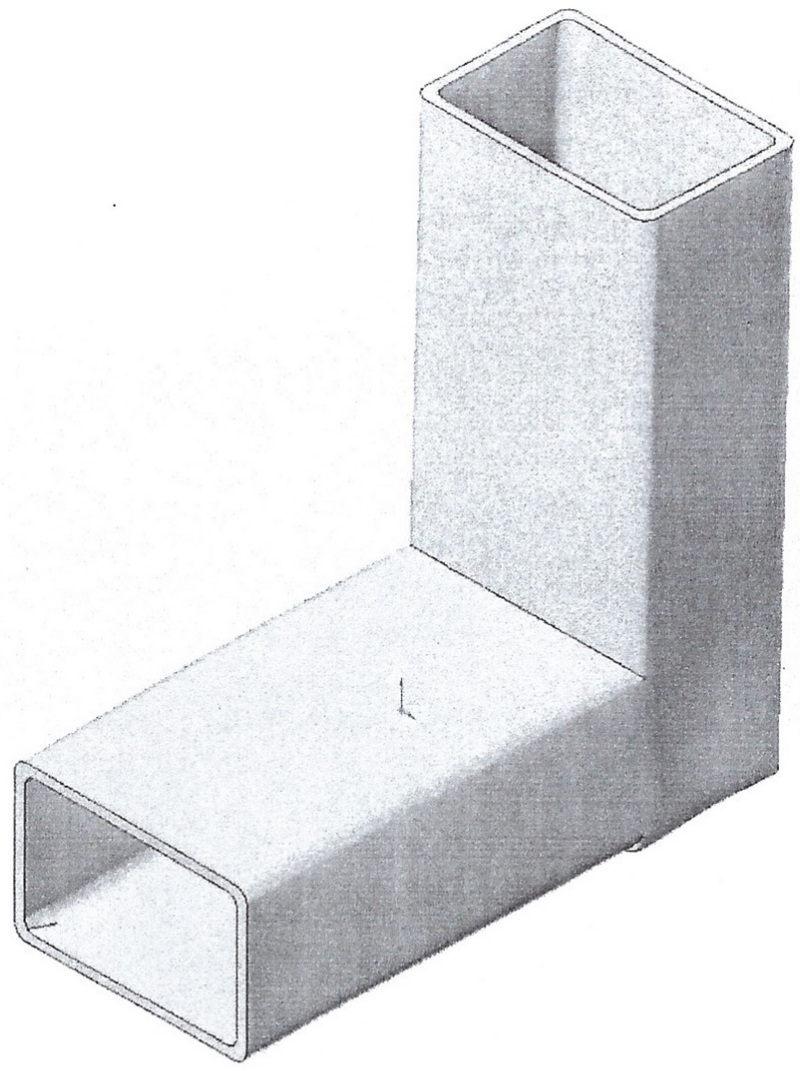
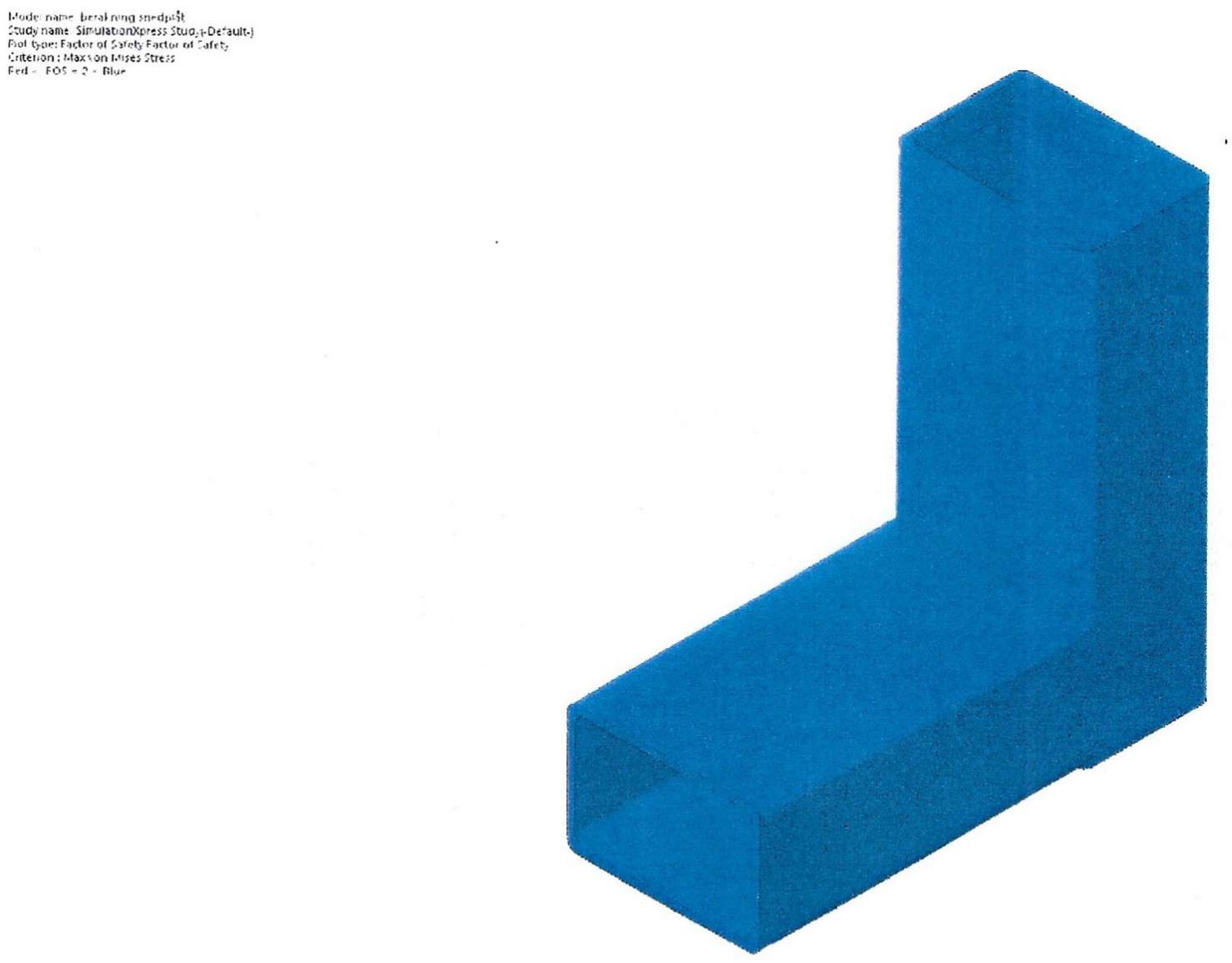
Name	Type
Deformation	Deformed Shape

Model name: beräkning snedplåt
Study name: SimulationXpress Study(-Default-)
Plot type: Deformed Shape Deformation
Deformation scale: 178.784



beräkning snedplåt-SimulationXpress Study-Displacement-Deformation

Name	Type	Min	Max
Factor of Safety	Max von Mises Stress	0.975441 Node: 6263	203548 Node: 15789



beräkning snedplåt-SimulationXpress Study-Factor of Safety-Factor of Safety

Conclusion