



# Tutorial

## **Report Designer**

**ANSYS**<sup>®</sup>

15 Jan 2020  
Version 5.3

Report designer gives a possibility to completely control the structure of your report and easily preview and modify it.

This tutorial demonstrates how to build reports using the Report Designer:



- ▶ Open predefined project;
- ▶ Model Setup Report (First Page, Preface, Materials, Properties, Fem Loads and Constraints);
- ▶ Result Report (Content items, Predefined Tables, Add Plots and Tables);
- ▶ Number Format, Legend Settings;
- ▶ Tables and Plots for Static Stress Check.

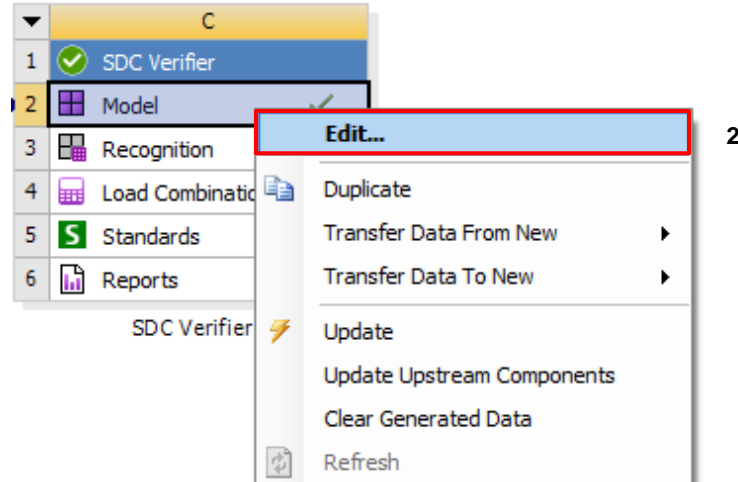
# Open Project

1

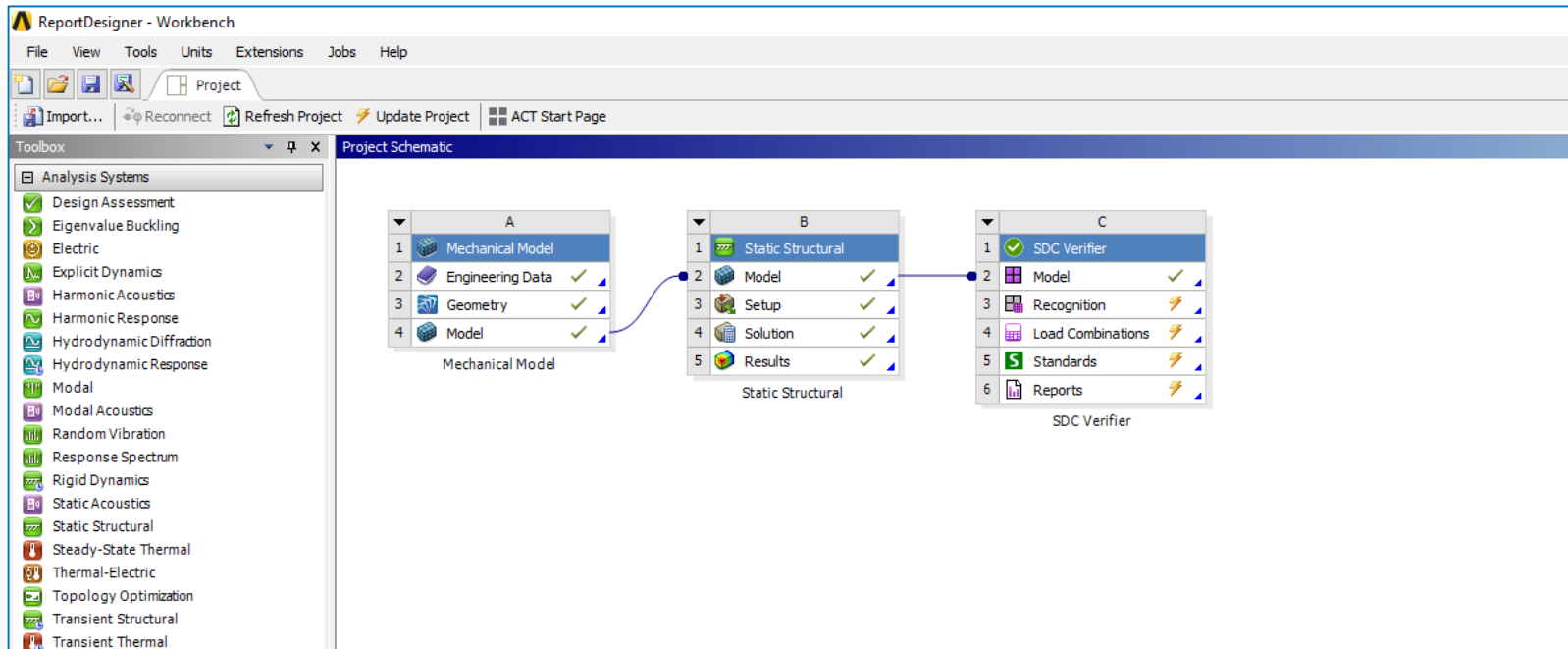
Open in **Ansys Workbench**   
**Report Designer.wbpj**

2

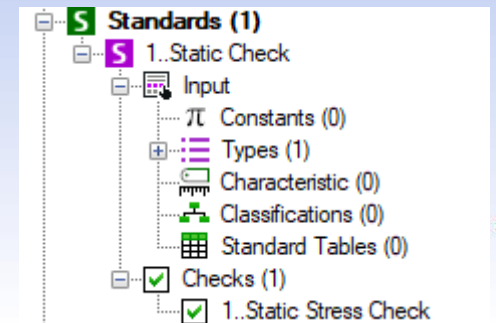
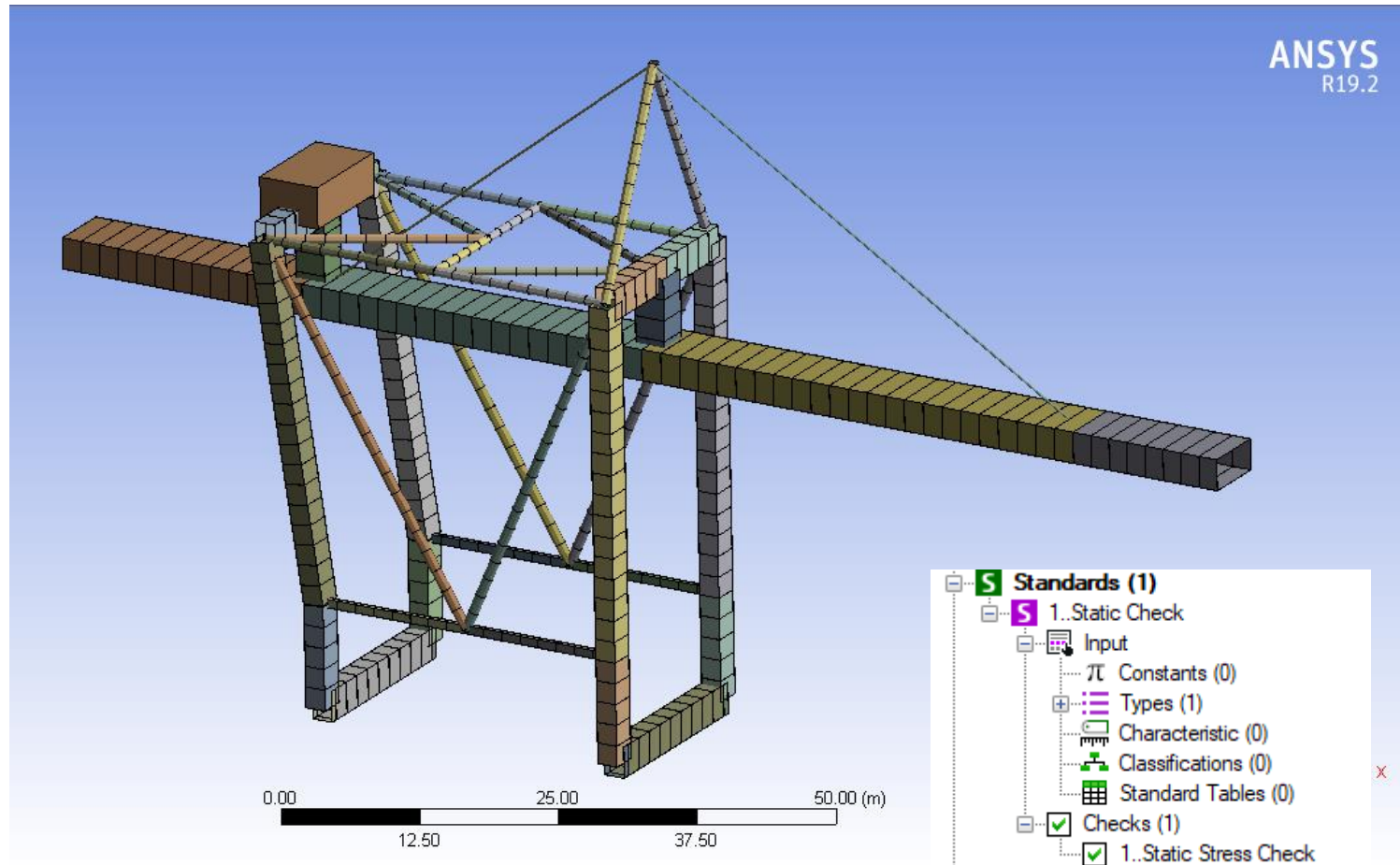
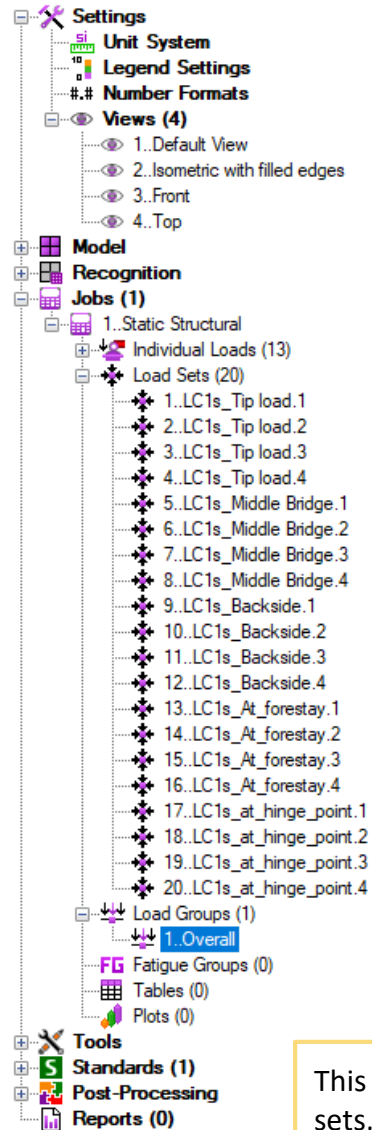
Double Click on  Model   
or execute from **Edit** context menu



2.



# Predefined project

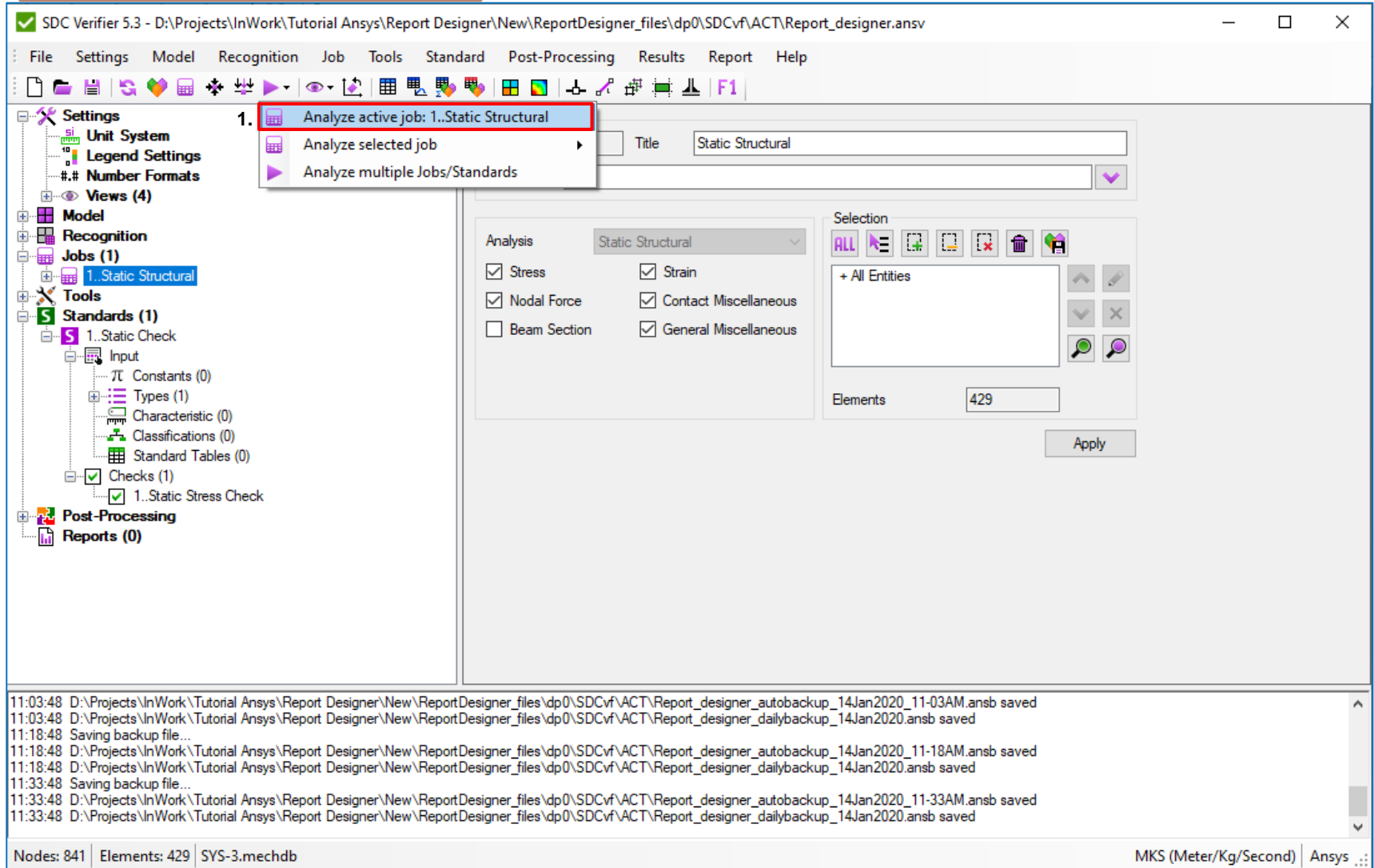


This tutorial uses predefined project with the following created data: individual loads, load sets, load groups and static stress check. The focus of this tutorial is on creating report.

# Analyze Job

1

Press  and select **Analyze active job:**  
**1..Static Structural**



The screenshot displays the SDC Verifier 5.3 software interface. The left-hand tree view shows the project hierarchy, with 'Jobs (1)' expanded to show '1..Static Structural'. A red box highlights the 'Analyze active job: 1..Static Structural' menu item in the top toolbar. The main workspace shows the 'Static Structural' analysis settings. The 'Analysis' section has a dropdown set to 'Static Structural'. Below it, checkboxes for 'Stress', 'Strain', 'Nodal Force', 'Contact Miscellaneous', 'Beam Section', and 'General Miscellaneous' are visible. The 'Selection' section shows '+ All Entities' and a list of 'Elements' with a count of 429. The status bar at the bottom indicates 'Nodes: 841', 'Elements: 429', and 'SYS-3.mechdb'.

SDC Verifier 5.3 - D:\Projects\InWork\Tutorial Ansys\Report Designer\New\ReportDesigner\_files\dp0\SDCvf\ACT\Report\_designer.ansv

File Settings Model Recognition Job Tools Standard Post-Processing Results Report Help

1. Analyze active job: 1..Static Structural

Analyze selected job

Analyze multiple Jobs/Standards

Title Static Structural

Analysis Static Structural

☒ Stress ☒ Strain

☒ Nodal Force ☒ Contact Miscellaneous

☐ Beam Section ☒ General Miscellaneous

Selection

+ All Entities


Elements 429

Apply

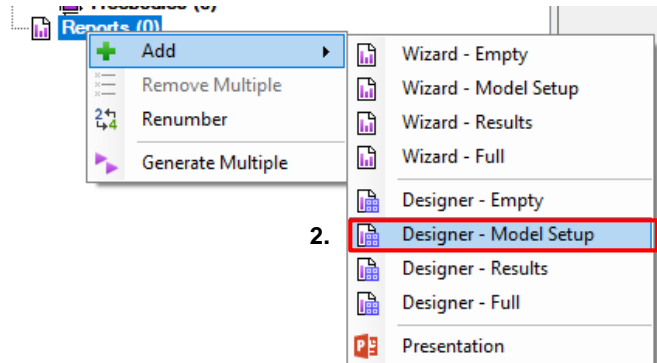
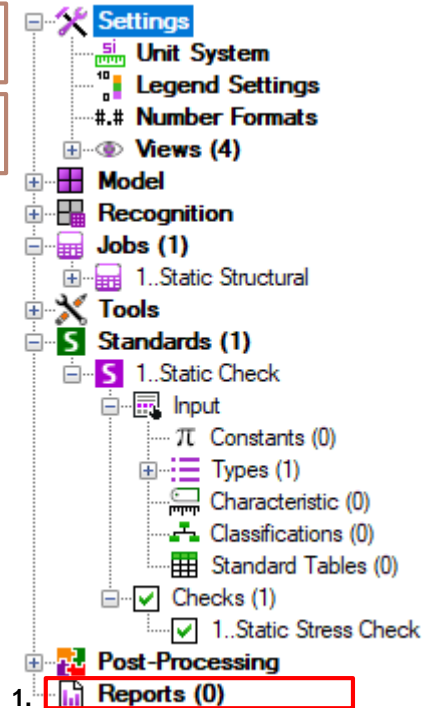
Nodes: 841 Elements: 429 SYS-3.mechdb

MKS (Meter/Kg/Second) Ansys

# Add Model Setup Report

1 Press right mouse button  Reports (0)

2 Execute **Add – Model Setup**



There are 4 templates of reports:

Empty – only first page and preface items are included;

Model Setup – description of model data (materials, properties, components) is included;

Results – for each load extreme displacement tables, stress and displacement plots are included. Predefined tables: sum of reaction forces, stresses/displacements summary tables;

Full – Model Setup + Results + all tables created in Job.

# Report Designer Interface (Components)

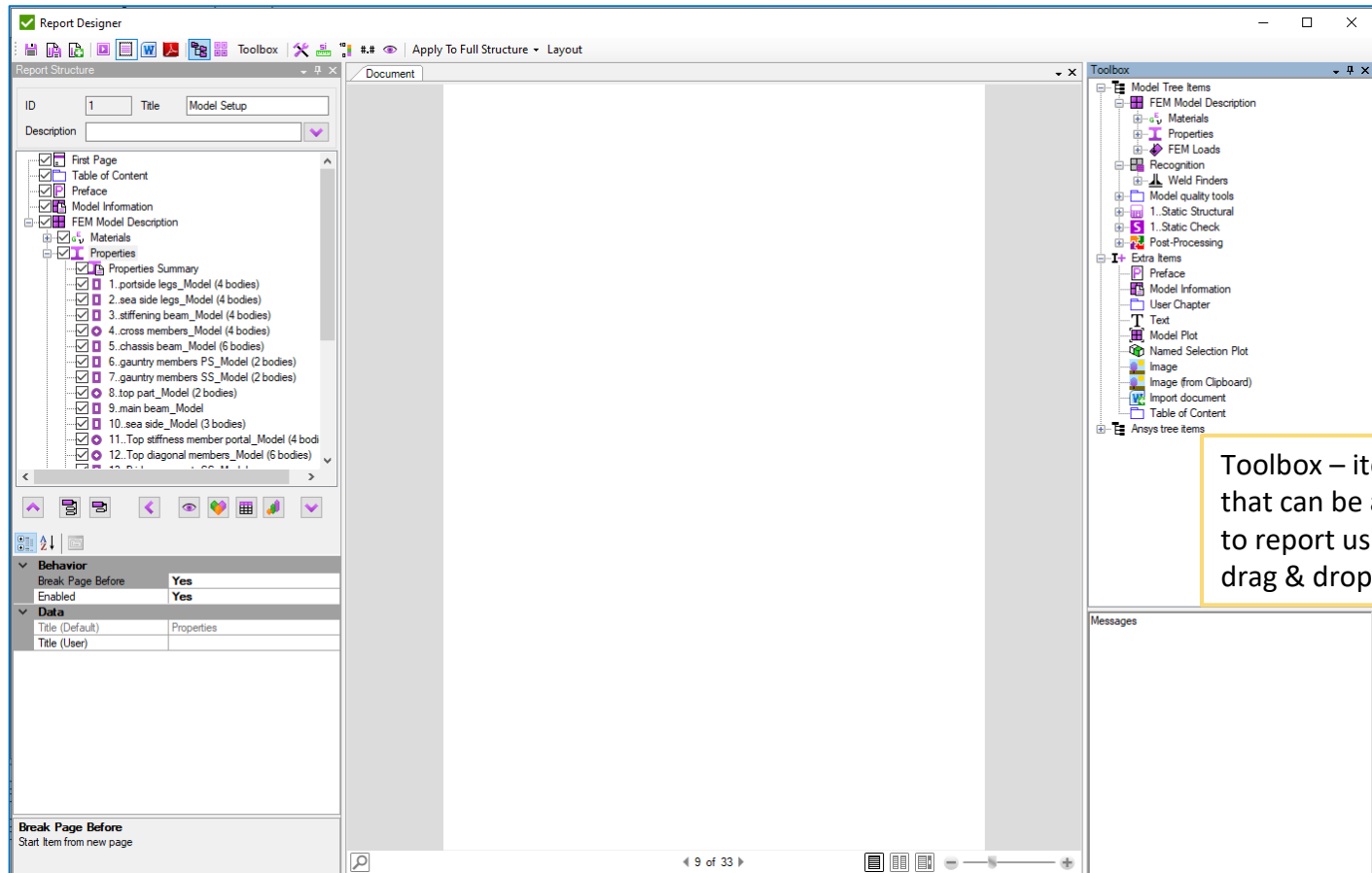
Toolbar contains main functions

Report Structure –  
displays structure  
of the report



Displays properties  
of selected item. It  
is possible to  
modify them.


Toolbox – items  
that can be added  
to report using  
drag & drop.

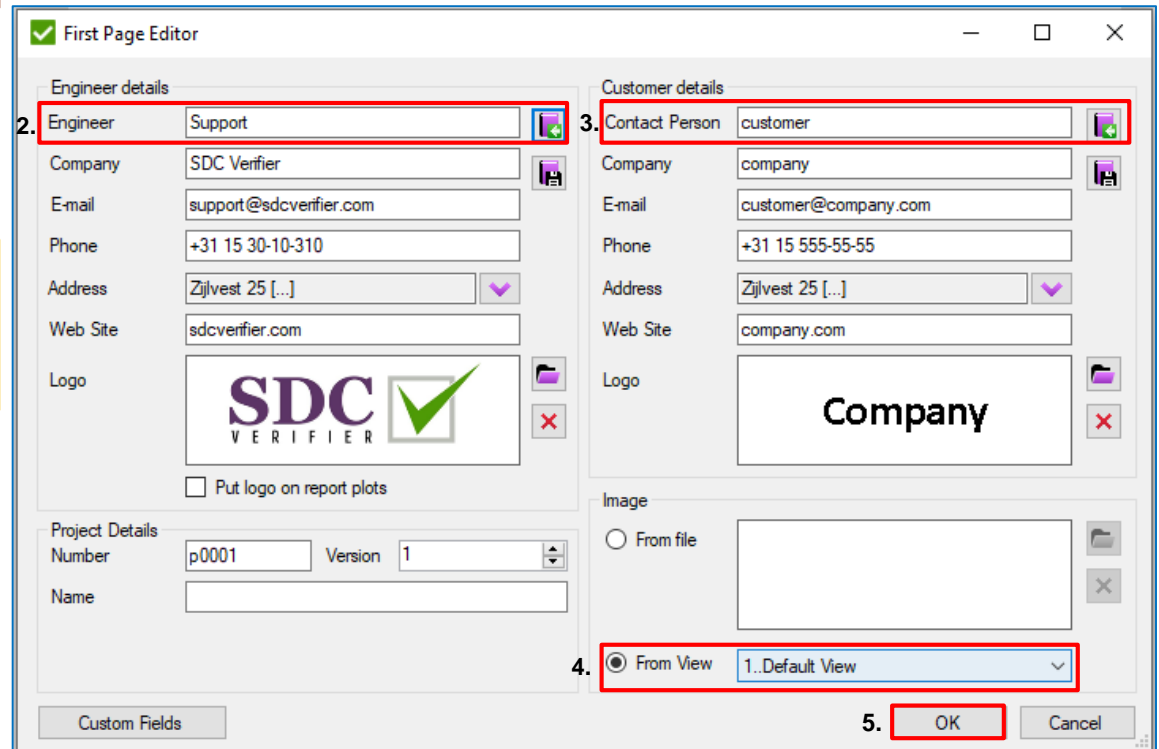
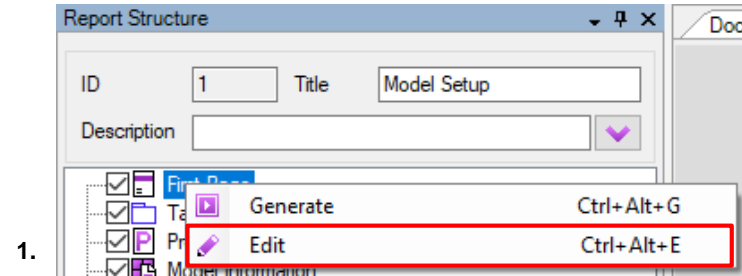
Report document



# Editing First Page

- 1 Execute *Edit* from First Page context menu
- 2 Press  and select Support Engineer from the library
- 3 Press  and select Customer from the library
- 4 Image – From View: **1..Default View**
- 5 Press *OK*.

For an engineer and customer the default data from the library is used. It is possible to fill in your data and store it to the library  and reuse it in future projects.



**First Page Editor**

**Engineer details**

2. Engineer: Support


Company: SDC Verifier

E-mail: support@sdcverifier.com

Phone: +31 15 30-10-310

Address: Zijlvest 25 [...]

Web Site: sdcverifier.com

Logo: 

☐ Put logo on report plots

**Project Details**

Number: p0001 Version: 1

Name:

**Customer details**

3. Contact Person: customer


Company: company

E-mail: customer@company.com

Phone: +31 15 555-55-55

Address: Zijlvest 25 [...]

Web Site: company.com

Logo: 

**Image**

☐ From file

4. ☒ From View: 1..Default View

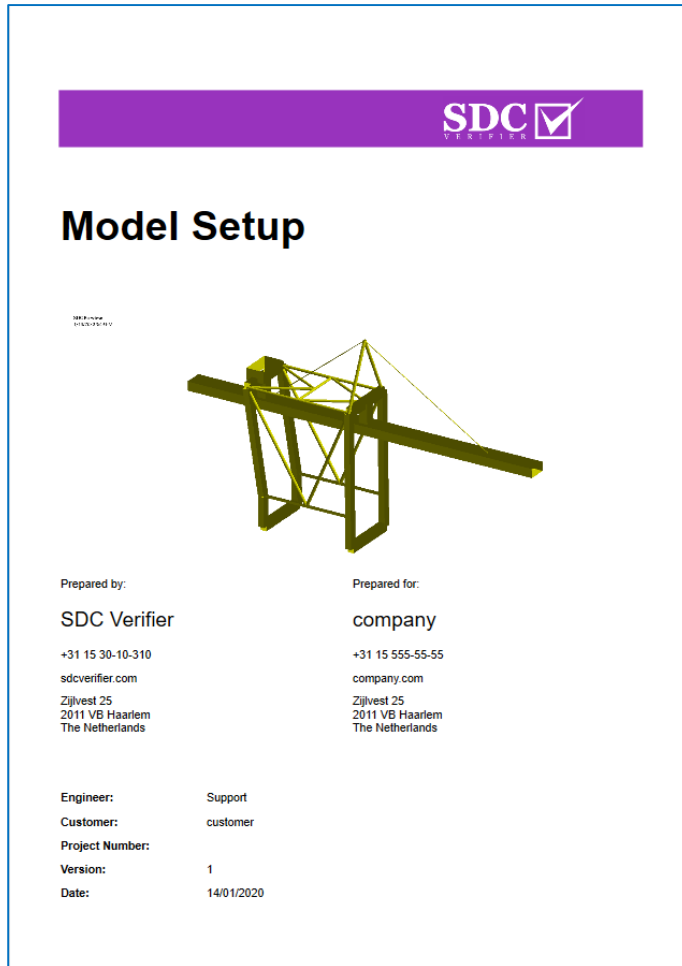
5. **OK** Cancel



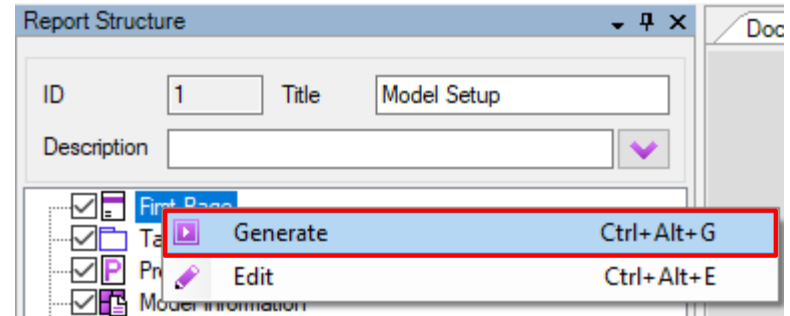
# Generate First Page

1

Execute *Generate* from First Page context menu



1.



Company name and logo from engineer and customer are used in footer. All pages except first one have the footer.

Report in designer does not contain headers and footers, they are inserted when export to Word Document.

# Generate Preface item

1 Select **Preface** item in report structure

2 Execute *Generate* from context menu

In first paragraph you can find what versions of SDC Verifier and ANSYS were used, full path to the model and project files and based on what profile report was generated.

Description on current unit system. It has an influence on calculations according to some standards.

## Preface

This document is generated with SDC Verifier 5.3 and calculated with Ansys v19.2  
Model File: D:\Projects\InWork\Tutorial Ansys\Report Designer\New\ReportDesigner\_files\dp0\global\MECH  
\SYS-3.mechdb  
Project File: D:\Projects\InWork\Tutorial Ansys\Report Designer\New\ReportDesigner\_files\dp0\SDCv\ACT  
\Report\_designer.ansv  
Report Profile: 1..Model Setup  
Generation on: 1/14/2020 4:08:34 PM

### Unit System

Current Unit System = MKS (Meter/Kg/Second). It is used in calculations for the following standards: API RP 2A, ISO 19902, Norsok N004, DIN 15018, FEM 1.001 and Eurocode3.

Dimensions	Value
Length	Meter
Mass	Kilogram
Time	Second
Force	Newton
Stress	Pa

# Exclude Item

1

Select **Model Information** item in report structure

2

Set option Enabled: **No** in property toolbox

Model Information (with all sub items) are excluded from the report. The Model Information item will not be generated but remains in the report structure. Alternatively, it is possible to delete item from the context menu or using DEL button on keyboard.

1.

The screenshot shows the SDC Verifier interface. The top part displays a tree view of the report structure with the following items: First Page, Table of Content, Model Information (highlighted with a red box), FEM Model Description, Materials, Properties, FEM Loads, and Preface. Below the tree view is a toolbar with various icons. The bottom part of the screenshot shows a properties table for the selected 'Model Information' item.

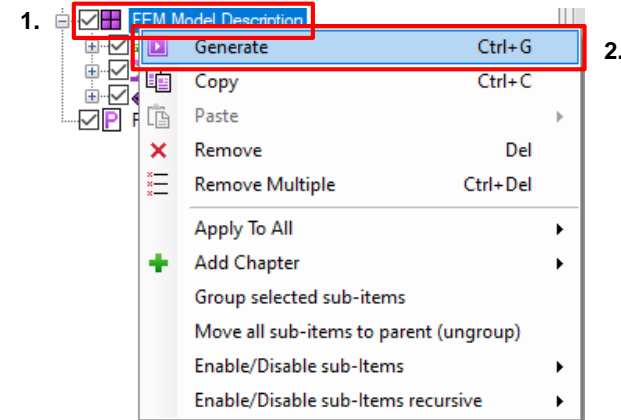
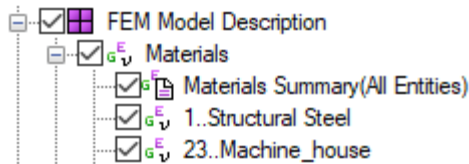
Behavior	
Break Page Before	Yes
Enabled	No
Data	
Include Entities Table	No
Selection	All Entities
Title (Default)	Model Information

2.

# Generate Model Setup items

1 Select **FEM Model Description** item in report structure

2 Execute *Generate* from context menu



## FEM Model Description

This paragraph shows detailed or brief model overview.

### Materials

This paragraph contains materials information.

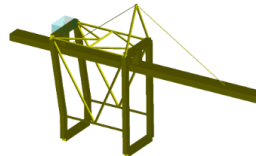
### Materials Summary(All Entities)

Entity	Elements	Mass
1..Structural Steel	420	800265.7
23..Machine_house	1	79992.0
Summed Over Materials	420	880257.7
Full Model	420	880257.7

## 1..Structural Steel

Fatigue Data at zero mean stress comes from 1998 ASME BPV Code, Section 8, Div 2, Table S-110.1

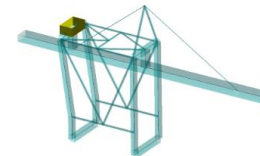
Property	Value
Elements	420
Mass [kg]	800265.7
Young Modulus [Pa]	2.00e+11
Shear Modulus [Pa]	76923076923.08
Poisson Ratio	0.30
Shear [Pa]	1.00
Mass Density [kg/m <sup>3</sup> ]	9812.50
Tensile Strength [Pa]	360.00e+6
Yield Stress [Pa]	240.00e+6



## 23..Machine\_house

Fatigue Data at zero mean stress comes from 1998 ASME BPV Code, Section 8, Div 2, Table S-110.1

Property	Value
Elements	1
Mass [kg]	79992.0
Young Modulus [Pa]	2.00e+11
Shear Modulus [Pa]	76923076923.08
Poisson Ratio	0.30
Shear [Pa]	1.00
Mass Density [kg/m <sup>3</sup> ]	333.30
Tensile Strength [Pa]	460.00e+6
Yield Stress [Pa]	250.00e+6



Material Summary – mass overview over materials

Detailed Material description with plots

# Material Options

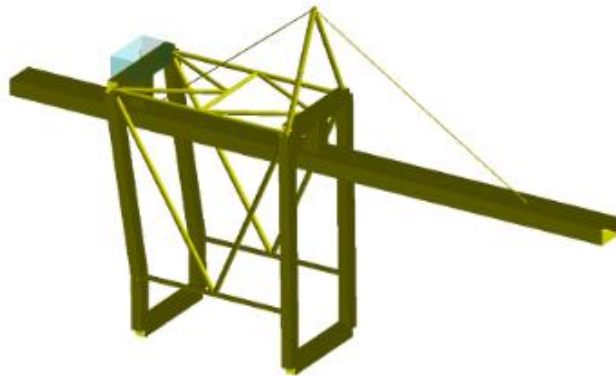
1 Select Material: **1..Structural Steel** in report structure

2 Preview Mode: **Display Only Selected**

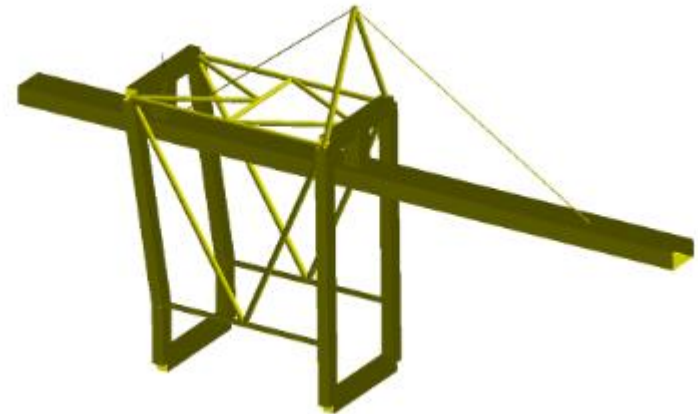
It is possible to exclude a plot using option – Insert Plot.

2.

<b>Behavior</b>	
Break Page Before	Yes
Enabled	Yes
Insert MinMax	No
Insert Plot	Yes
<b>Data</b>	
Selection	All Entities
Title (Default)	1..Structural Steel
Title (User)	
<b>Plot</b>	
Comments	Objects selected: 0
Preview Mode	Highlight
View	1..Default View




Preview Mode: Highlight




Preview Mode: Display Only Selected

# Create View

1

Press  to open View Manager

2

Press  to add View

3

Title: ***Isometric with filled edges.***

4

Locate View in Mechanical as shown on picture

5

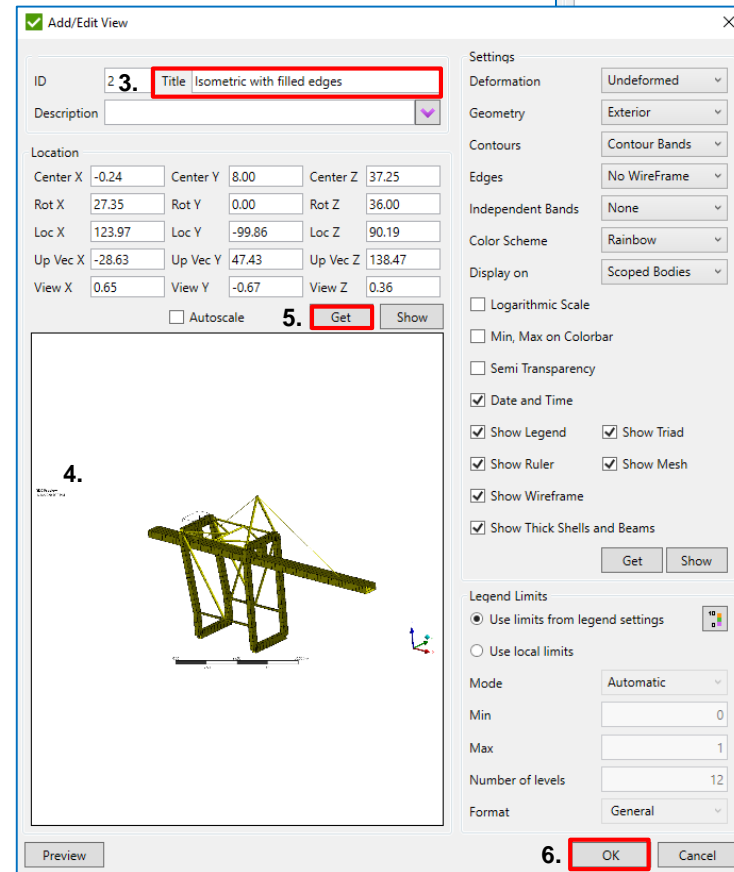
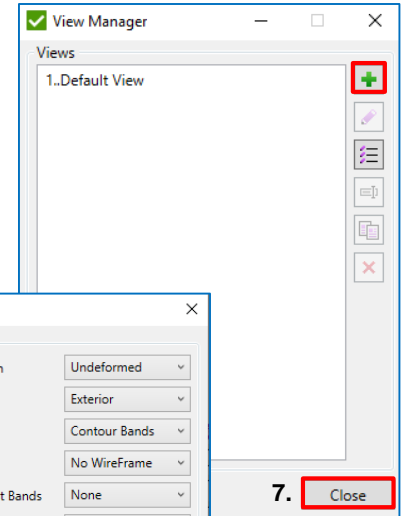
Press *Get*

6

Press *OK*

7

Press *Close*.



# Apply View to Properties

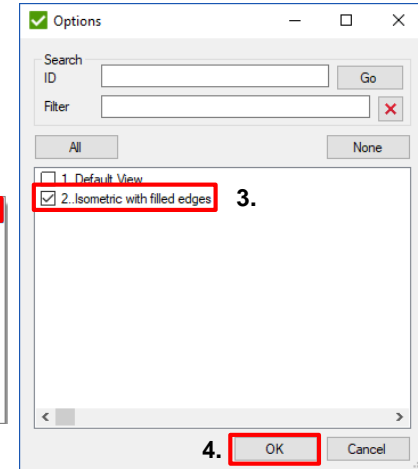
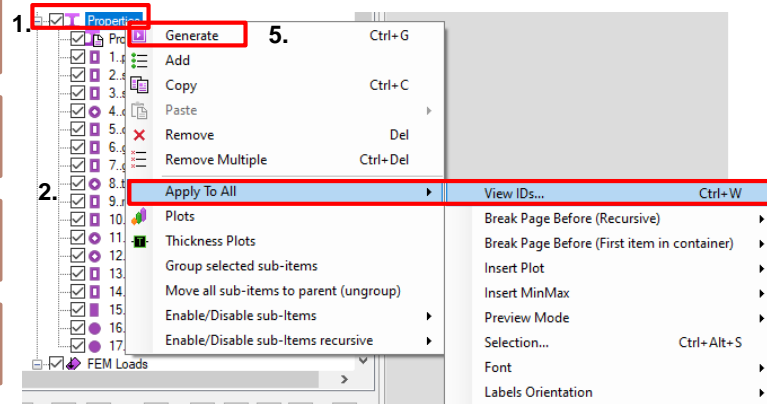
1 Select **Properties** in report structure

2 Execute *Apply to All – View IDs* from context menu

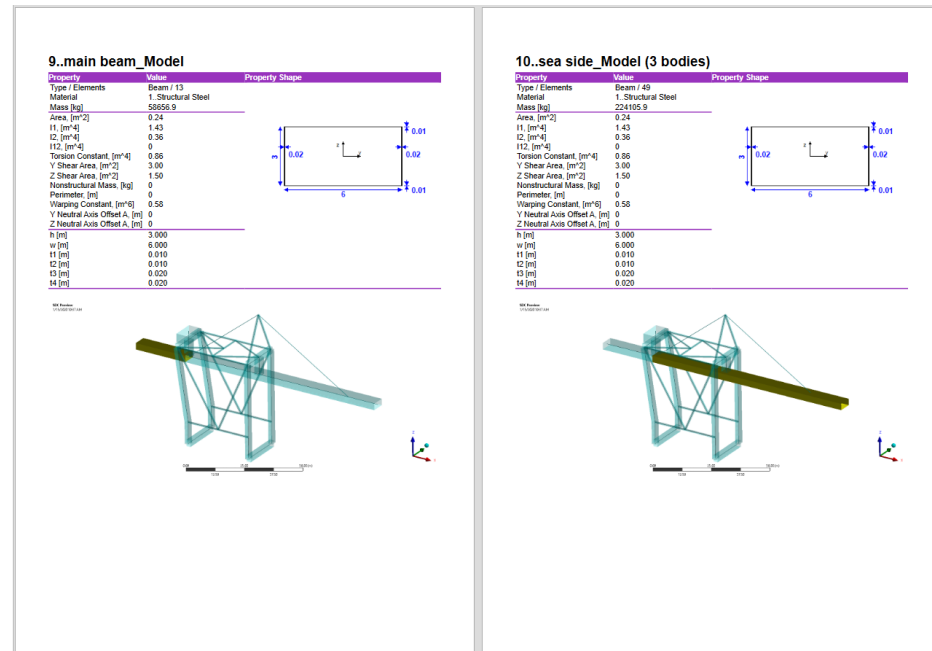
3 Select: 4..Isometric with filled edges

4 Press *OK*

5 Press *Generate*



Apply to All menu helps to change properties (view, selection, break page before, etc.) for multiple items at once.



# Generate Report

1

Press  to generate report

2

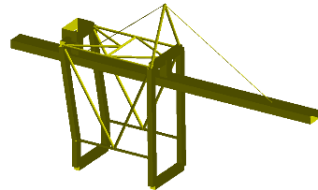
Press  to export report to Word

1.

2.



## Model Setup



Prepared by:  
SDC Verifier  
+31 15 30-10-310  
sdccverifier.com  
Zijlvest 25  
2011 VB Haarlem  
The Netherlands

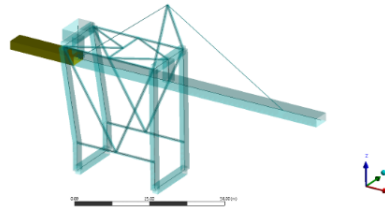
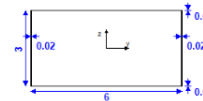
Prepared for:  
company  
+31 15 555-55-55  
company.com  
Zijlvest 25  
2011 VB Haarlem  
The Netherlands

Engineer:  
Customer:  
Project Number:  
Version:  
Date:

Support  
customer  
1  
14/01/2020

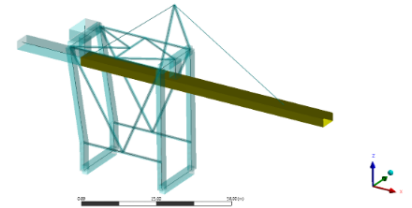
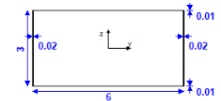
### 9..main beam\_Model

Property	Value	Property Shape
Type / Elements	Beam / 13	
Material	1. Structural Steel	
Mass [kg]	58558.9	
Area, [m <sup>2</sup> ]	0.24	
I1, [m <sup>4</sup> ]	1.43	
I2, [m <sup>4</sup> ]	0.36	
I12, [m <sup>4</sup> ]	0	
Torsion Constant, [m <sup>4</sup> ]	0.86	
Y Shear Area, [m <sup>2</sup> ]	3.00	
Z Shear Area, [m <sup>2</sup> ]	1.50	
Nonstructural Mass, [kg]	0	
Perimeter, [m]	0	
Warping Constant, [m <sup>6</sup> ]	0.58	
Y Neutral Axis Offset A, [m]	0	
Z Neutral Axis Offset A, [m]	0	
h [m]	3.000	
w [m]	6.000	
t1 [m]	0.010	
t2 [m]	0.010	
t3 [m]	0.020	
t4 [m]	0.020	



### 10..sea side\_Model (3 bodies)

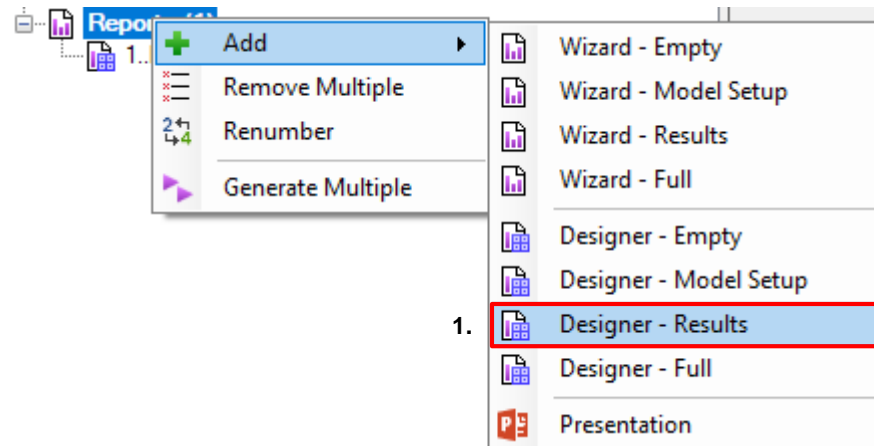
Property	Value	Property Shape
Type / Elements	Beam / 49	
Material	1. Structural Steel	
Mass [kg]	224105.9	
Area, [m <sup>2</sup> ]	0.24	
I1, [m <sup>4</sup> ]	1.43	
I2, [m <sup>4</sup> ]	0.36	
I12, [m <sup>4</sup> ]	0	
Torsion Constant, [m <sup>4</sup> ]	0.86	
Y Shear Area, [m <sup>2</sup> ]	3.00	
Z Shear Area, [m <sup>2</sup> ]	1.50	
Nonstructural Mass, [kg]	0	
Perimeter, [m]	0	
Warping Constant, [m <sup>6</sup> ]	0.58	
Y Neutral Axis Offset A, [m]	0	
Z Neutral Axis Offset A, [m]	0	
h [m]	3.000	
w [m]	6.000	
t1 [m]	0.010	
t2 [m]	0.010	
t3 [m]	0.020	
t4 [m]	0.020	



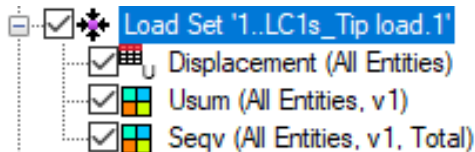


# Add Result Report

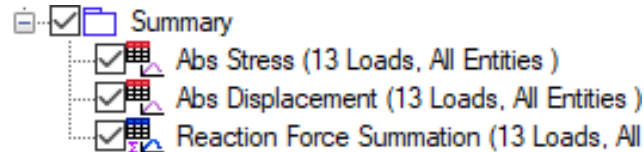
- 1 Execute *Add Report Designer – Results* from report context menu



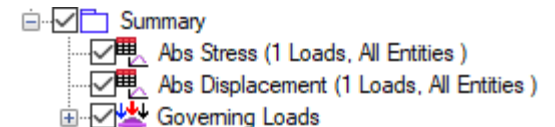
Result report includes predefined items



For each load extreme displacement table, displacement and stress plots are created



For individual loads and load sets the following summary tables are included: reaction forces summation, displacement and stresses over loads

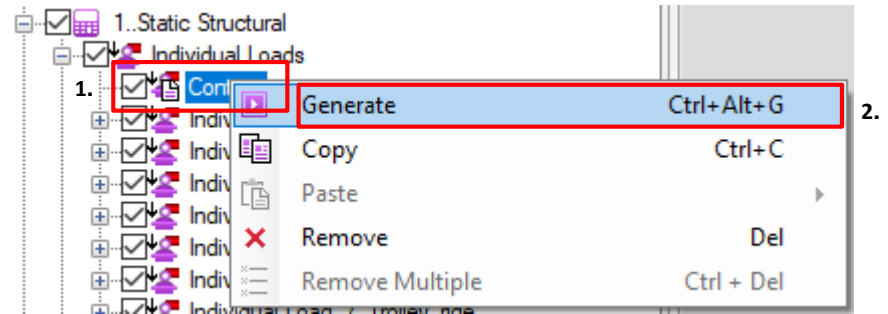


For load groups displacement and stresses over loads tables are included only

# Individual Loads Content

1 Select **Content** under Individual Loads item in report structure

2 Execute *Generate* from context menu



## Content

Individual Load [Safety Factor]	Result Case
1..gravity [1]	Static Structural - step: 1 (0)
2..tip load [1]	Static Structural - step: 2 (0)
3..middle_bridge [1]	Static Structural - step: 3 (0)
4..back side [1]	Static Structural - step: 4 (0)
5..at_forestay [1]	Static Structural - step: 5 (0)
6..at_hinge_point [1]	Static Structural - step: 6 (0)
7..Trolley_ride [1]	Static Structural - step: 7 (0)
8..tip side_load [1]	Static Structural - step: 8 (0)
9..middle_bridge_side_load [1]	Static Structural - step: 9 (0)
10..back side_side_load [1]	Static Structural - step: 10 (0)
11..at_forestay_side_load [1]	Static Structural - step: 11 (0)
12..at_hinge_point_side_load [1]	Static Structural - step: 12 (0)
13..Crane_ride [1]	Static Structural - step: 13 (0)

Content shows the list of Individual loads and referenced step.

# Load Set Content

1 Select **Content** under **Load Sets** item in report structure

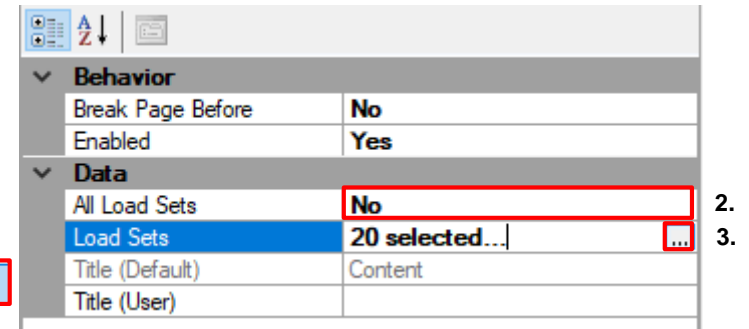
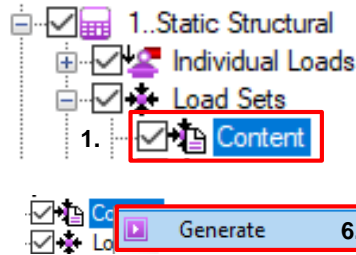
2 In table below for **All Load Sets** choose **No**

3 Select **Load Sets** and press ...

4 In menu **Select Items** select all load sets what should be displayed

5 Press **OK**

6 Select **Content** and Execute **Generate**

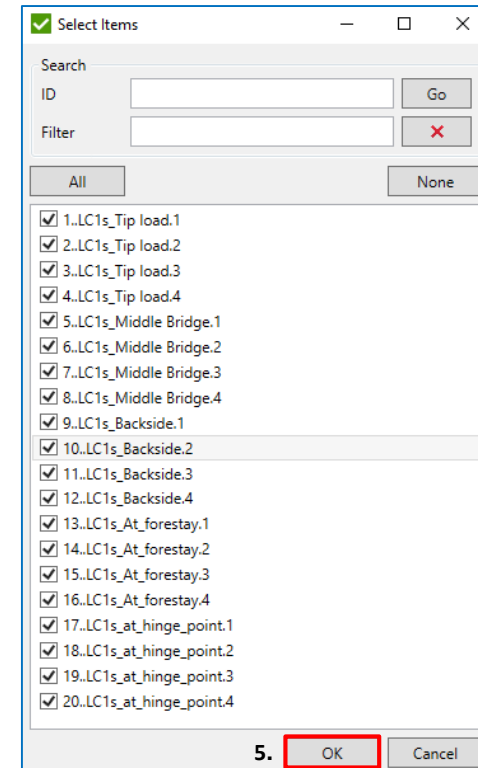


2.  
3.

12. LC1s_Backside.4 [1]	5	1. gravity [1.15] 4. back side [1.35] 7. Trolley_ride [-1.15] 10. back side_side_load [-1.15] 13. Crane_ride [-1.15]
13. LC1s_At_forestay.1 [1]	5	1. gravity [1.15] 5. at_forestay [1.35] 7. Trolley_ride [1.15] 11. at_forestay_side_load [1.15] 13. Crane_ride [1.15]
14. LC1s_At_forestay.2 [1]	5	1. gravity [1.15] 5. at_forestay [1.35] 7. Trolley_ride [1.15] 11. at_forestay_side_load [-1.15] 13. Crane_ride [-1.15]
15. LC1s_At_forestay.3 [1]	5	1. gravity [1.15] 5. at_forestay [1.35] 7. Trolley_ride [1.15] 11. at_forestay_side_load [1.15] 13. Crane_ride [1.15]
16. LC1s_At_forestay.4 [1]	5	1. gravity [1.15] 5. at_forestay [1.35] 7. Trolley_ride [-1.15] 11. at_forestay_side_load [-1.15] 13. Crane_ride [-1.15]
17. LC1s_at_hinge_point.1 [1]	5	1. gravity [1.15] 6. at_hinge_point [1.35] 7. Trolley_ride [1.15] 12. at_hinge_point_side_load [1.15] 13. Crane_ride [1.15]
18. LC1s_at_hinge_point.2 [1]	5	1. gravity [1.15] 6. at_hinge_point [1.35] 7. Trolley_ride [1.15] 12. at_hinge_point_side_load [-1.15] 13. Crane_ride [-1.15]
19. LC1s_at_hinge_point.3 [1]	5	1. gravity [1.15] 6. at_hinge_point [1.35] 7. Trolley_ride [-1.15] 12. at_hinge_point_side_load [1.15] 13. Crane_ride [1.15]
20. LC1s_at_hinge_point.4 [1]	5	1. gravity [1.15] 6. at_hinge_point [1.35] 7. Trolley_ride [-1.15] 12. at_hinge_point_side_load [-1.15] 13. Crane_ride [-1.15]

## Content

Title [Safety Factor]	Count	Items [Partial Load Factor]
1. LC1s_Tip load.1 [1]	5	1. gravity [1.15] 2. tip load [1.35] 7. Trolley_ride [1.15] 8. tip side_load [1.15] 13. Crane_ride [1.15]
2. LC1s_Tip load.2 [1]	5	1. gravity [1.15] 2. tip load [1.35] 7. Trolley_ride [1.15] 8. tip side_load [-1.15] 13. Crane_ride [-1.15]
3. LC1s_Tip load.3 [1]	5	1. gravity [1.15] 2. tip load [1.35] 7. Trolley_ride [-1.15] 8. tip side_load [1.15] 13. Crane_ride [1.15]
4. LC1s_Tip load.4 [1]	5	1. gravity [1.15] 2. tip load [1.35] 7. Trolley_ride [-1.15] 8. tip side_load [-1.15] 13. Crane_ride [-1.15]
5. LC1s_Middle Bridge.1 [1]	5	1. gravity [1.15] 3. middle_bridge [1.35] 7. Trolley_ride [1.15] 9. middle_bridge_side_load [1.15] 13. Crane_ride [1.15]
6. LC1s_Middle Bridge.2 [1]	5	1. gravity [1.15] 3. middle_bridge [1.35] 7. Trolley_ride [1.15] 9. middle_bridge_side_load [-1.15] 13. Crane_ride [-1.15]
7. LC1s_Middle Bridge.3 [1]	5	1. gravity [1.15] 3. middle_bridge [1.35] 7. Trolley_ride [-1.15] 9. middle_bridge_side_load [1.15] 13. Crane_ride [1.15]
8. LC1s_Middle Bridge.4 [1]	5	1. gravity [1.15] 3. middle_bridge [1.35] 7. Trolley_ride [-1.15] 9. middle_bridge_side_load [-1.15] 13. Crane_ride [-1.15]
9. LC1s_Backside.1 [1]	5	1. gravity [1.15] 4. back side [1.35] 7. Trolley_ride [1.15] 10. back side_side_load [1.15] 13. Crane_ride [1.15]
10. LC1s_Backside.2 [1]	5	1. gravity [1.15] 4. back side [1.35] 7. Trolley_ride [1.15] 10. back side_side_load [-1.15] 13. Crane_ride [-1.15]
11. LC1s_Backside.3 [1]	5	1. gravity [1.15] 4. back side [1.35] 7. Trolley_ride [-1.15] 10. back side_side_load [1.15] 13. Crane_ride [1.15]



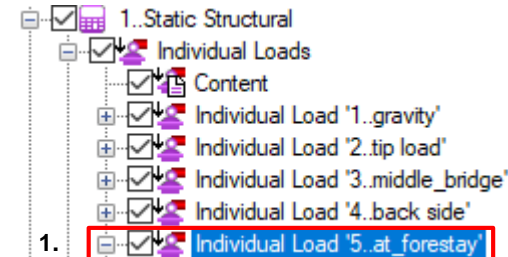
# Individual Load Options

1 Select **5..at\_forestay** in report structure

2 Execute **Generate** from context menu

Individual Load includes Content and Sum of Reaction forces. It is possible to control what should be displayed using the Options.

Behavior	
Break Page Before	Yes
Enabled	Yes
Data	
Job	1..Static Structural
Load Type	IndividualLoad
Title (Default)	Individual Load '5..at_forestay'
Title (User)	
Options	
Include Content	Yes
Selection	All Entities
Sum Of Forces	Yes



## Individual Load '5..at\_forestay'

Title	Value
Individual Load	5..at_forestay
Type	Imported from Result Case
Result Case	Static Structural - step: 5 (0)
Safety Factor	1

### Sum of Reaction Forces

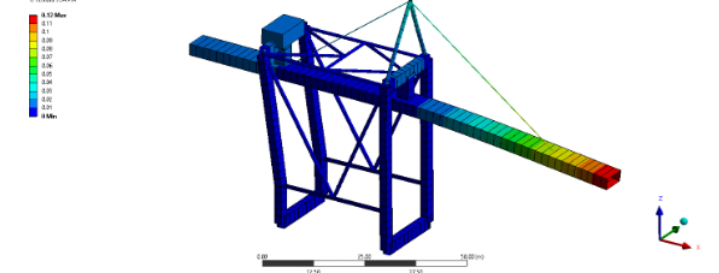
Load	Fx [N]	Fy [N]	Fz [N]	Fsum [N]	Mx [N m]	My [N m]	Mz [N m]	Msum [N m]
All Entities	0	0	1220000	1220000	0.0	0.0	0.0	0.0

### Displacement (All Entities)

Individual Load	5..at_forestay	Selection Category	All Entities Displacement					
Type	Extreme			Ux [m]	Uy [m]	Uz [m]	Usum [m]	
Extreme								
Minimum				0.000	-0.005	-0.120	0.000	-0.04
Maximum				0.035	0.005	0.015	0.120	0.04
Absolute				0.035	-0.005	-0.120	0.120	0.13

### Usum (All Entities, v2)

Usum (All Entities, v2) [m]  
Expression: PB3 (Copied to Document)  
Time: 0.0  
1/16/2024 1:04:04



Individual Load	IL5..at_forestay	Parameter View	Displacement Usum
Selection	All Entities		2..Isometric with filled edges
Limits	None		

# Number Formats

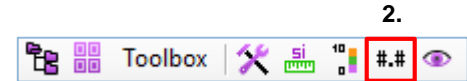
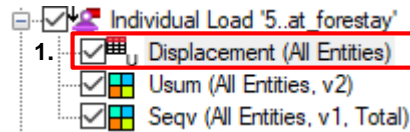
1. Generate **Displacement (All Entities)** under load **5..at\_forestay**

2. Press **##** to open Number Formats

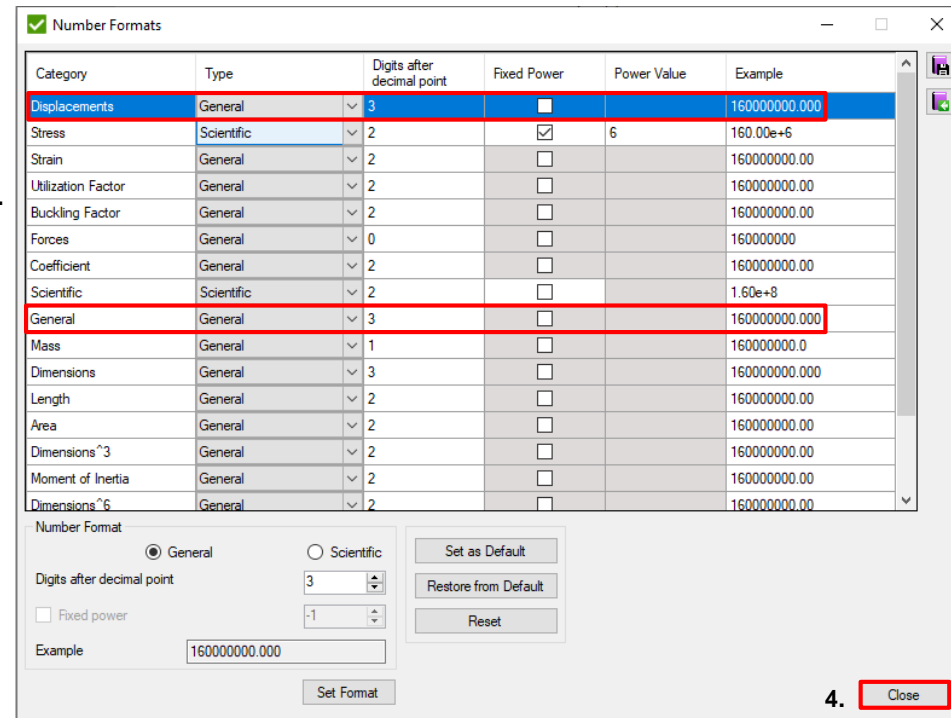
3. Digits after decimal point: **2** for *Displacement* category and **2** for *General* category (Rotation [Rx, Ry, Rz] )

4. Press **Close**

5. Execute **Generate** from context menu



3.



4.

Close

## Displacement (All Entities)

Individual Load Type	5..at_forestay Extreme	Selection Category			All Entities Displacement			
Extreme		Ux [m]	Uy [m]	Uz [m]	Usum [m]	Rx	Ry	Rz
Minimum		0.00	0.00	-0.12	0.00	-0.04	0.00	-0.01
Maximum		0.03	0.00	0.02	0.12	0.04	0.13	0.01
Absolute		0.03	0.00	-0.12	0.12	-0.04	0.13	-0.01
Rsum								0.13

Digits after decimal point = 2

## Displacement (All Entities)


Individual Load Type	5..at_forestay Extreme	Selection Category			All Entities Displacement			
Extreme		Ux [m]	Uy [m]	Uz [m]	Usum [m]	Rx	Ry	Rz
Minimum		0.000	-0.005	-0.120	0.000	-0.035	0.000	-0.013
Maximum		0.035	0.005	0.015	0.120	0.035	0.132	0.013
Absolute		0.035	-0.005	-0.120	0.120	-0.035	0.132	-0.013
Rsum								0.132

Digits after decimal point = 3

Number Formats controls how numbers are displayed in tables for different categories. It is possible to save settings to library and reuse in another projects.

# Legend Settings

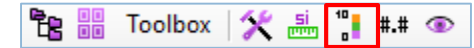
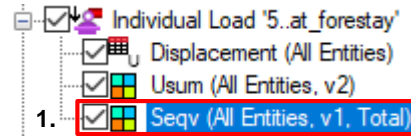
1. Select **Seqv (All Entities. V1. Total)** table under load **5..at\_forestay**

2. Press  to open Legend Settings

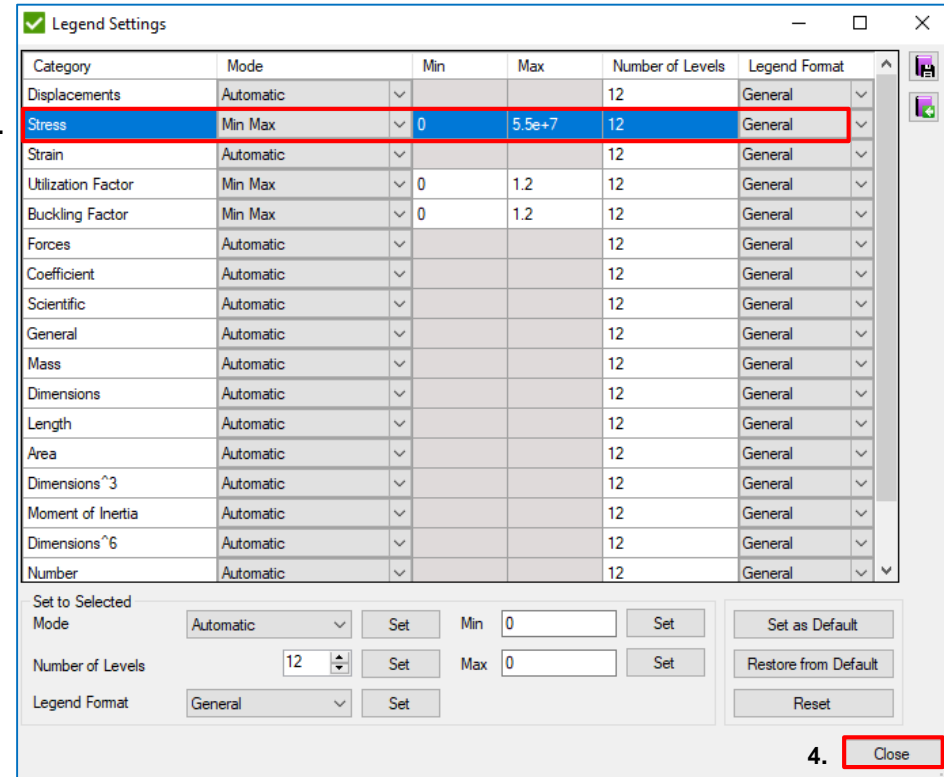
3. Max: **5.5e+7** for Stress category


4. Press *Close*

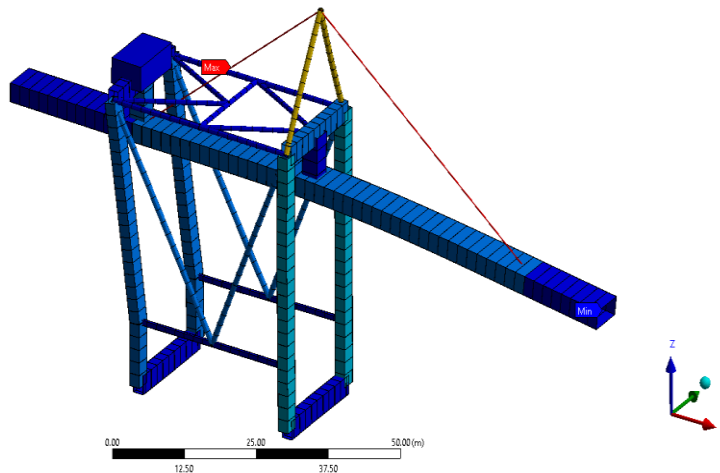
5. Execute *Generate* from context menu



3.



Legend Settings controls legend options for different categories. It is possible to save settings to the library and reuse in another projects. 



# Stress and displacement tables over loads

1 Select **Summary** under **Load Sets** item

2 Execute **Generate** from context menu

3 Select **Abs Displacement**

4 Break Page Before: **Yes**

1. **Summary**
2. **Abs Stress (20 Loads, All Entities)**
3. **Abs Displacement (20 Loads, All Entities)**
4. **Reaction Force Summation (20 Loads, All Entities)**

4.

<b>Behavior</b>	
Break Page Before	Yes
Enabled	Yes
<b>Data</b>	
Title (Default)	Abs Displacement (20 Loads, All Entities)
Title (User)	
Type	Extreme Flow Table

**Abs Stress (20 Loads, All Entities)**

Loads Count	20	Category				Stress		
Selection	All Entities	Type				Extreme		
Parameter	Abs							
Load		X [Pa]	Y [Pa]	Z [Pa]	XY [Pa]	YZ [Pa]	ZX [Pa]	Equivalent [Pa]
LS1.LC1s_Tip load.1		149.13e+6						149.13e+6
LS2.LC1s_Tip load.2		149.13e+6						149.13e+6
LS3.LC1s_Tip load.3		149.81e+6						149.81e+6
LS4.LC1s_Tip load.4		149.81e+6						149.81e+6
LS5.LC1s_Middle Bridge.1		48.83e+6						48.83e+6
LS6.LC1s_Middle Bridge.2		48.83e+6						48.83e+6
LS7.LC1s_Middle Bridge.3		49.51e+6						49.51e+6
LS8.LC1s_Middle Bridge.4		49.51e+6						49.51e+6
LS9.LC1s_Backside.1		50.46e+6						50.46e+6
LS10.LC1s_Backside.2		50.46e+6						50.46e+6
LS11.LC1s_Backside.3		51.14e+6						51.14e+6
LS12.LC1s_Backside.4		51.14e+6						51.14e+6
LS13.LC1s_At_forestay.1		124.91e+6						124.91e+6
LS14.LC1s_At_forestay.2		124.91e+6						124.91e+6
LS15.LC1s_At_forestay.3		125.59e+6						125.59e+6
LS16.LC1s_At_forestay.4		125.59e+6						125.59e+6
LS17.LC1s_at_hinge_point.1		52.81e+6						52.81e+6
LS18.LC1s_at_hinge_point.2		52.81e+6						52.81e+6
LS19.LC1s_at_hinge_point.3		53.49e+6						53.49e+6
LS20.LC1s_at_hinge_point.4		53.49e+6						53.49e+6

Stresses for all load sets

**Abs Displacement (20 Loads, All Entities)**

Loads Count 20				Category		Displacement			
Selection		All Entities		Type		Extreme			
Parameter		Abs							
Load	Ux [m]	Uy [m]	Uz [m]	Usum [m]	Rx	Ry	Rz	Rsum	
LS1.LC1s_Tip load.1	0.087	0.033	-0.367	0.369	0.068	0.587	0.041	0.588	
LS2.LC1s_Tip load.2	0.087	-0.033	-0.367	0.369	-0.068	0.587	-0.041	0.588	
LS3.LC1s_Tip load.3	0.064	0.033	-0.365	0.367	0.070	0.583	0.041	0.584	
LS4.LC1s_Tip load.4	0.064	-0.033	-0.365	0.367	-0.070	0.583	-0.041	0.584	
LS5.LC1s_Middle Bridge.1	0.019	-0.036	-0.076	0.084	0.098	0.205	-0.022	0.214	
LS6.LC1s_Middle Bridge.2	0.019	0.036	-0.076	0.084	-0.098	0.205	0.022	0.214	
LS7.LC1s_Middle Bridge.3	-0.028	-0.036	-0.074	0.084	0.096	0.201	-0.028	0.210	
LS8.LC1s_Middle Bridge.4	-0.028	0.036	-0.074	0.084	-0.096	0.201	0.028	0.210	
LS9.LC1s_Backside.1	-0.016	-0.054	-0.156	0.156	0.125	-0.337	-0.064	0.338	
LS10.LC1s_Backside.2	-0.016	0.054	-0.156	0.156	-0.125	-0.337	0.064	0.338	
LS11.LC1s_Backside.3	-0.035	-0.054	-0.155	0.156	0.122	-0.333	-0.070	0.334	
LS12.LC1s_Backside.4	-0.035	0.054	-0.155	0.156	-0.122	-0.333	0.070	0.334	
LS13.LC1s_At_forestay.1	0.071	-0.028	-0.246	0.247	0.065	0.269	0.036	0.269	
LS14.LC1s_At_forestay.2	0.071	0.028	-0.246	0.247	-0.065	0.269	-0.036	0.269	
LS15.LC1s_At_forestay.3	0.049	-0.028	-0.244	0.245	0.067	0.251	0.037	0.252	
LS16.LC1s_At_forestay.4	0.049	0.028	-0.244	0.245	-0.067	0.251	-0.037	0.252	
LS17.LC1s_at_hinge_point.1	0.027	-0.022	-0.087	0.090	0.089	0.205	-0.024	0.210	
LS18.LC1s_at_hinge_point.2	0.027	0.022	-0.087	0.090	-0.089	0.205	0.024	0.210	
LS19.LC1s_at_hinge_point.3	-0.024	-0.022	-0.085	0.090	0.091	0.201	-0.024	0.206	
LS20.LC1s_at_hinge_point.4	-0.024	0.022	-0.085	0.090	-0.091	0.201	0.024	0.206	

Displacements for all load sets



# Reaction Forces

1. Select **Reaction Forces Summation** under Summary (Load Sets)

2. Break Page Before: **Yes**

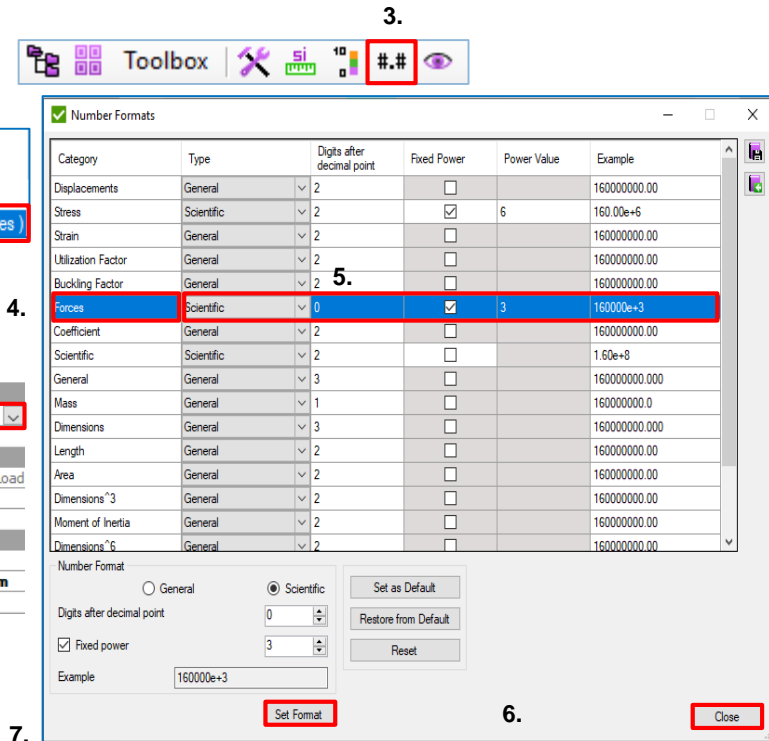
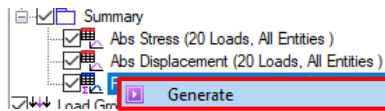
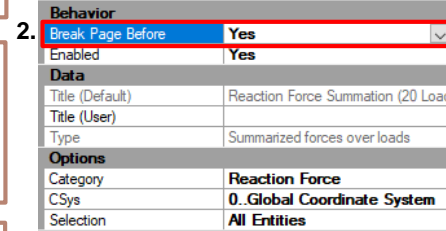
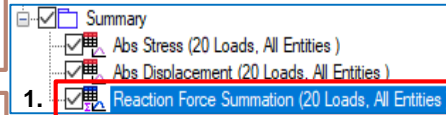
3. Press **##** to open Number Format

4. Select category **Forces**

5. Scientific: **ON**  
Digits after decimal point: **0**  
Fixed Power: **ON**  
Fixed Power Value: **3**

6. Press **Set Format** and **Close**

7. Press **Generate**



Reaction Force Summation (20 Loads, All Entities)									
Loads Count Selection	20 All Entities	Category Type			Reaction Force Expand				
Load		Fx [N]	Fy [N]	Fz [N]	Fsum [N]	Mx [N m]	My [N m]	Mz [N m]	Msum [N m]
LS1..LC1s_Tip load.1		-223100	197270	11576489	11580319	0.0	0.0	0.0	0.0
LS2..LC1s_Tip load.2		-223100	-197270	11576489	11580319	0.0	0.0	0.0	0.0
LS3..LC1s_Tip load.3		223100	197270	11576489	11580319	0.0	0.0	0.0	0.0
LS4..LC1s_Tip load.4		223100	-197270	11576489	11580319	0.0	0.0	0.0	0.0
LS5..LC1s_Middle Bridge.1		-223100	197270	11576488	11580318	0.0	0.0	0.0	0.0
LS6..LC1s_Middle Bridge.2		-223100	-197270	11576488	11580318	0.0	0.0	0.0	0.0
LS7..LC1s_Middle Bridge.3		223100	197270	11576488	11580318	0.0	0.0	0.0	0.0
LS8..LC1s_Middle Bridge.4		223100	-197270	11576488	11580318	0.0	0.0	0.0	0.0
LS9..LC1s_Backside.1		-223100	197270	11576488	11580318	0.0	0.0	0.0	0.0




Reaction Force Summation (20 Loads, All Entities)										
Loads Count Selection	20 All Entities		Category Type		Reaction Force Expand					
Load	Fx [N]	Fy [N]	Fz [N]	Fsum [N]	Mx [N m]	My [N m]	Mz [N m]	Msum [N m]		
LS1..LC1s_Tip load.1	-223e+3	197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS2..LC1s_Tip load.2	-223e+3	-197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS3..LC1s_Tip load.3	223e+3	197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS4..LC1s_Tip load.4	223e+3	-197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS5..LC1s_Middle Bridge.1	-223e+3	197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS6..LC1s_Middle Bridge.2	-223e+3	-197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS7..LC1s_Middle Bridge.3	223e+3	197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS8..LC1s_Middle Bridge.4	223e+3	-197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	
LS9..LC1s_Backside.1	-223e+3	197e+3	11578e+3	11580e+3	0.0	0.0	0.0	0.0	0.0	

Number format from general is changed to scientific with fixed power = 3. The numbers became more readable.



# Add Extreme Stress Tables

1

Press  to open tables window


2

Table type: **Load Sets**

3

Select all Load Sets

4

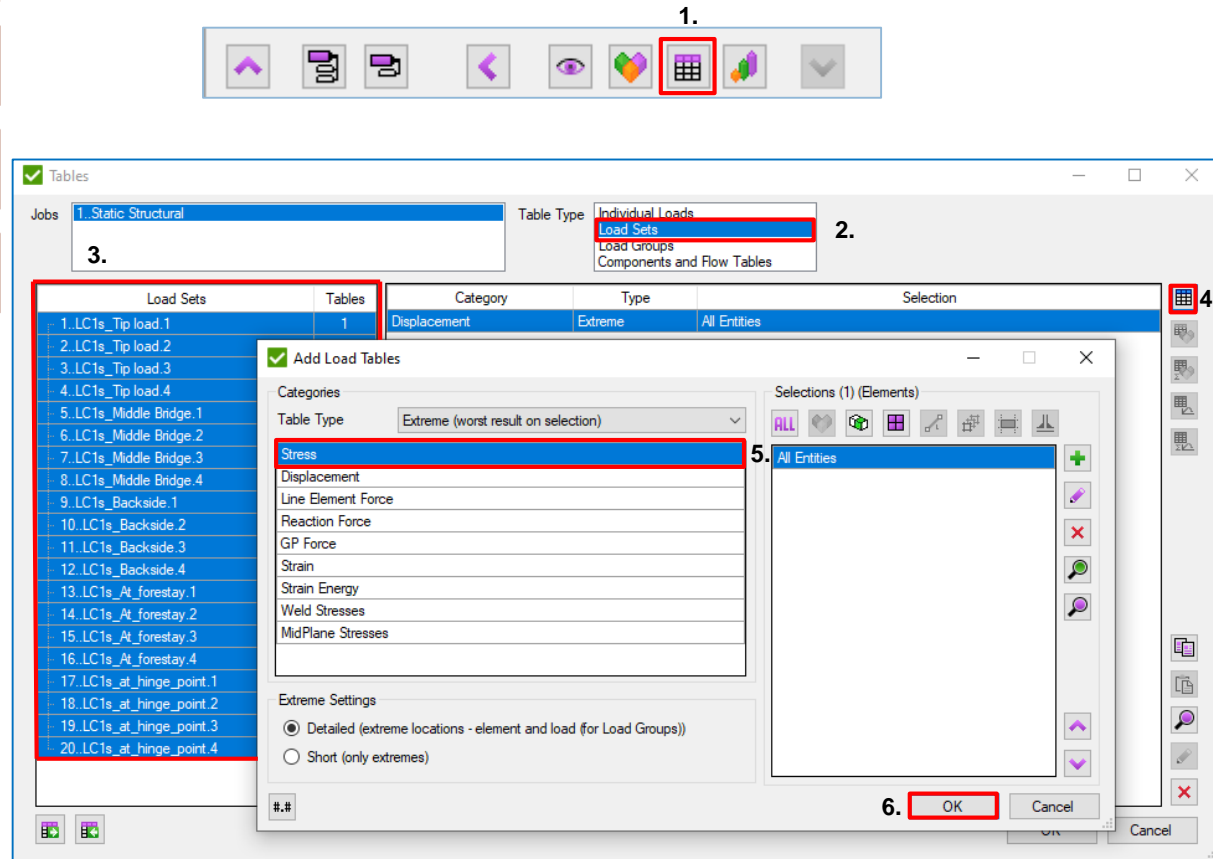
Press  to add table

5



Categories: **Stress**

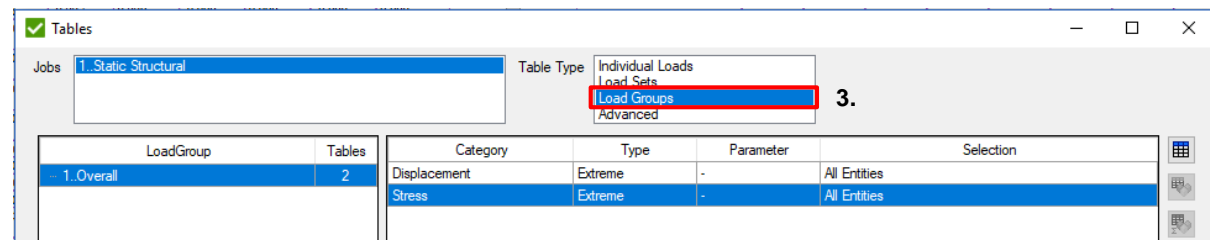
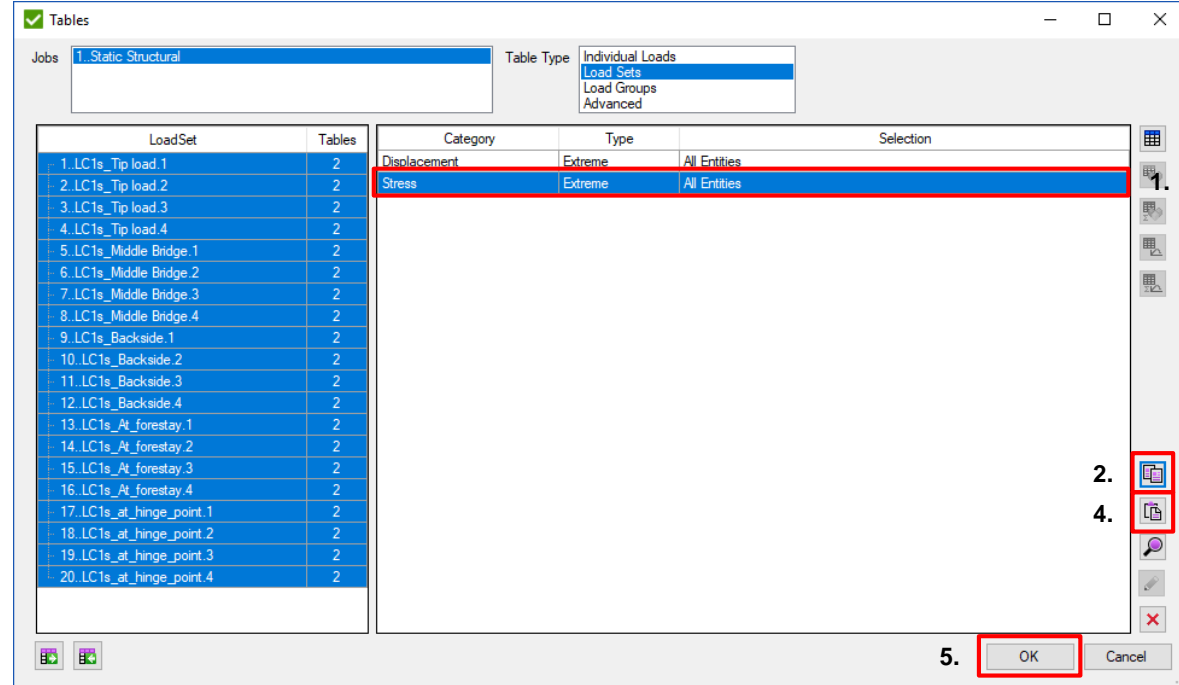
6

Press **OK**



# Copy Table to Load Group

- 1 Select Extreme Stress Table
- 2 Press  to copy table to clipboard
- 3 Table Type: **Load Group**
- 4 Press  to paste table from clipboard
- 5 Press **OK**




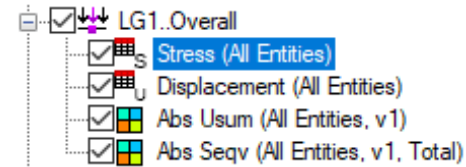
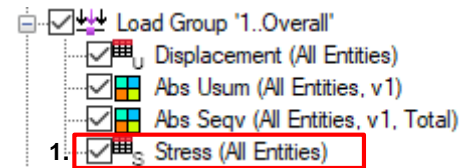
# Move item in the structure

1

Select **Stress (All Entities)**

2

Press  to move item up




# Add plots for Load Group

1 Create two extra views: Front and Top.  
(how to create new View look at slide 14)

2 Press  to add plots

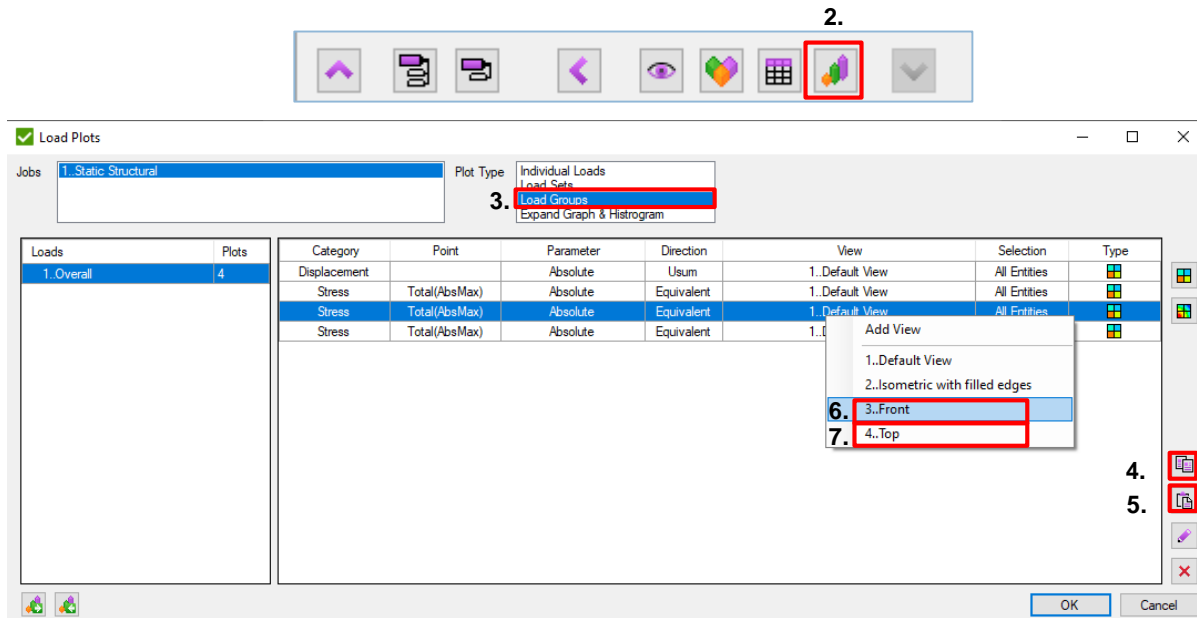
3 Plot Type: **Load Group**





4 Press  to copy plot to clipboard

5 Press  twice to paste 2 plots.

6 For third plot set View = **3..Front** using  
context menu (on top of View column)

7 For fourth plot set View = **4..Top** using  
context menu



Category	Point	Parameter	Direction	View	Selection	Type
Displacement		Absolute	Usum	1..Default View	All Entities	
Stress	Total(AbsMax)	Absolute	Equivalent	1..Default View	All Entities	
Stress	Total(AbsMax)	Absolute	Equivalent	3..Front	All Entities	
Stress	Total(AbsMax)	Absolute	Equivalent	4..Top	All Entities	

It is possible to modify views/selection/parameter for few plots at once using context menus on top of correspondent column.

# Apply to all – 2 items per page

1 Select: **1..Overall** under Load Groups

2 Execute Apply to All – Items per Page

3 Count: 2

4 Press *OK*

The screenshot shows the SDC Verifier interface. In the tree view, 'Load Group '1..Overall'' is selected. The 'Apply To All' context menu is open, and the 'Items per Page' sub-menu is also open. The 'Count' is set to 2 in the 'Set Number' dialog box.

1. **Load Group '1..Overall'**

- Stress (All Entities)
- Displacement (All Entities)
- Abs Usdm (All Entities, v1)
- Abs Seqv (All Entities, v1, Total)
- Abs Seqv (All Entities, v3, Total)
- Abs Seqv (All Entities, v4, Total)

2. **Apply To All**

- Generate Ctrl+Alt+G
- Copy Ctrl+C
- Paste
- Remove Del
- Remove Multiple Ctrl + Del
- Restore default title
- Plots
- Tables
- Governing Loads
- Apply To All**
- Replace
- Sort
- Add User Chapter
- Enable/Disable sub-Items
- Enable/Disable sub-Items recursive
- Copy structure Ctrl+1
- Paste structure Ctrl+2
- Multiply structure to...
- Group selected sub-items
- Move all sub-items to parent (ungroup)

3. **Items per Page**

- View ID... Ctrl+Alt+V
- View IDs... Ctrl+W
- Extreme table type
- Break Page Before (Recursive)
- Break Page Before (Only Subitems)
- Break Page Before (First item in container)
- Items per Page**
- Include all child items
- Selection... Ctrl+Alt+S
- Multiple selections...
- Load...
- Include Table Selection Plot
- Font
- Labels Orientation

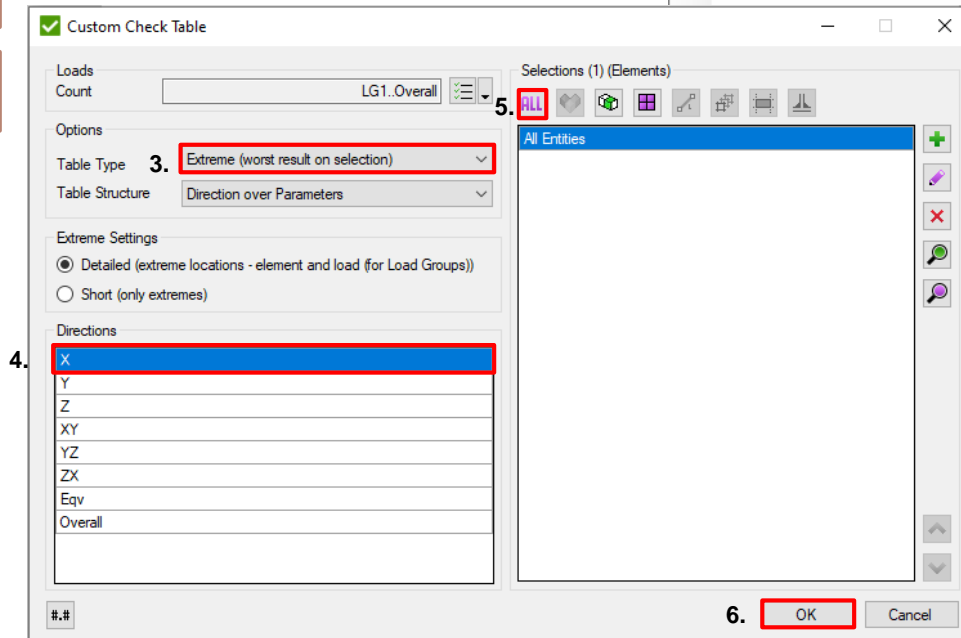
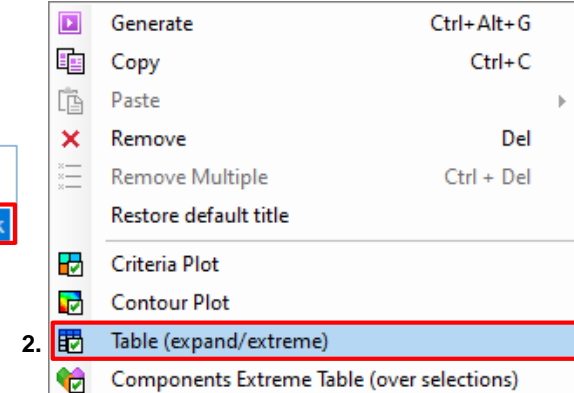
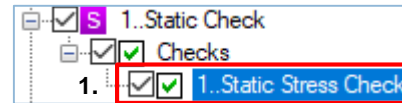
4. **Set Number**

Count: 2

OK Cancel

# Add table for Static Stress Check

- 1 Select **Static Stress Check**
- 2 Execute **Expand/Extreme Tables** from context menu
- 3 Select **Direction over Parameters**
- 4 Direction: **X**
- 5 Press **ALL** to add full model selection
- 6 Press **OK**



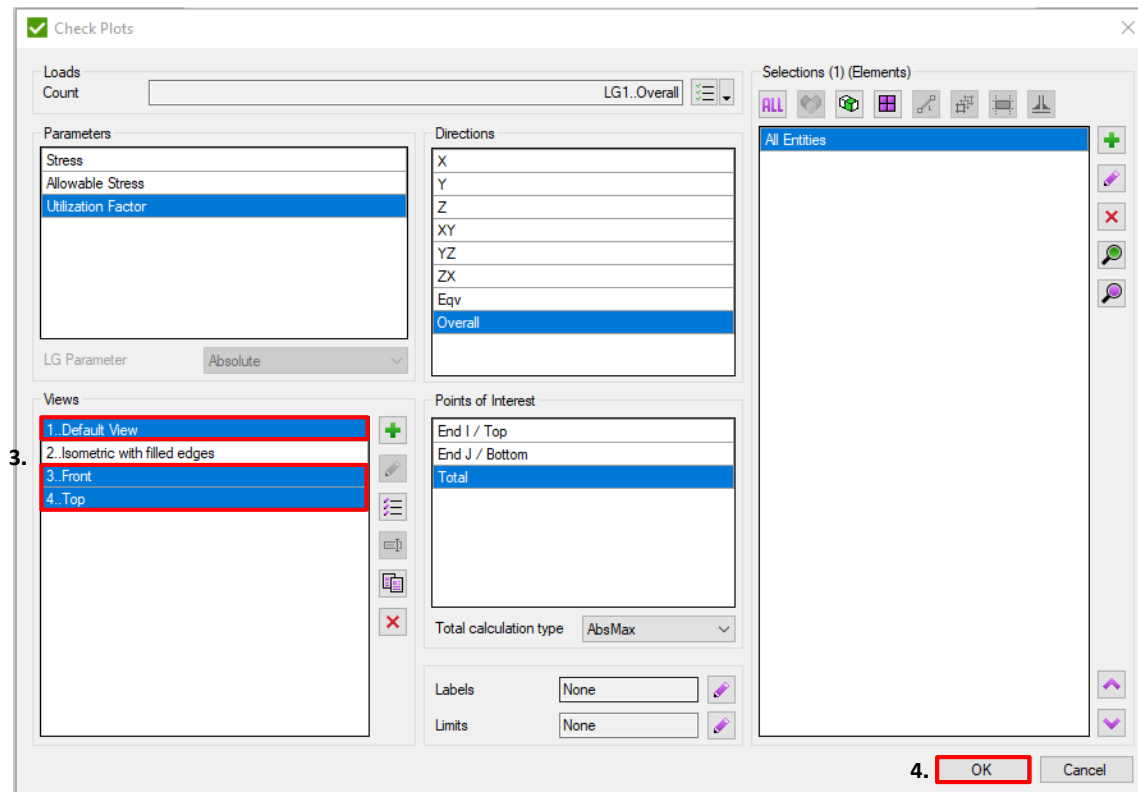
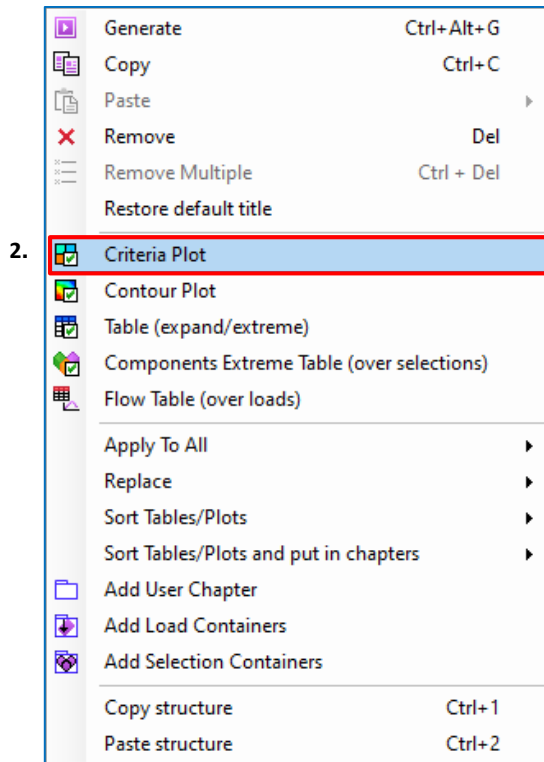
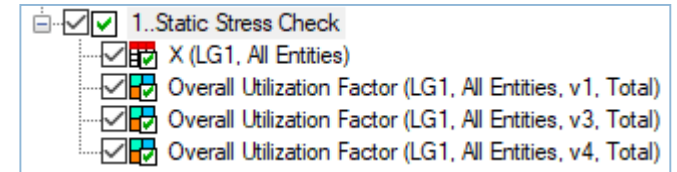
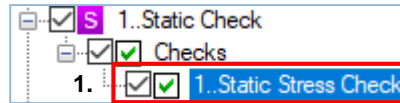
# Add Plot for Static Stress check

1 Select **Static Stress Check**

2 Execute **Criteria Plot** from context menu

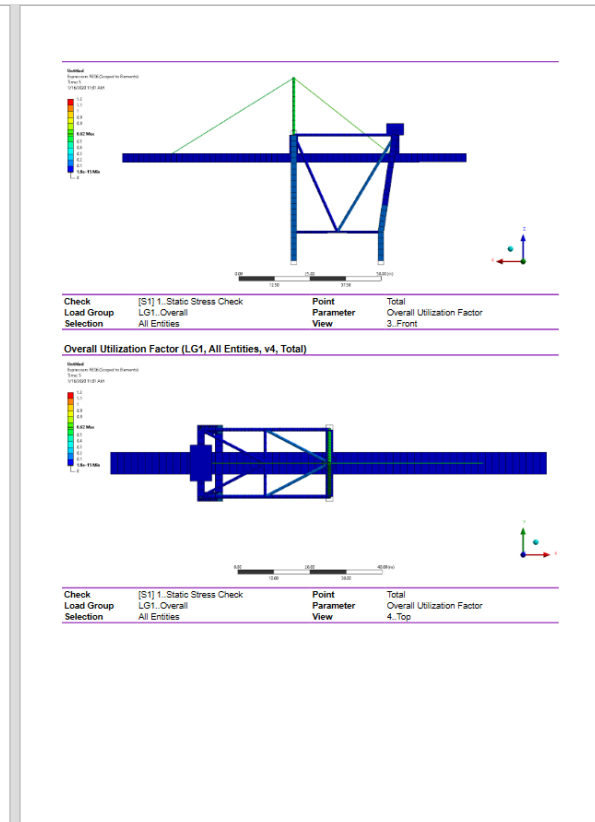
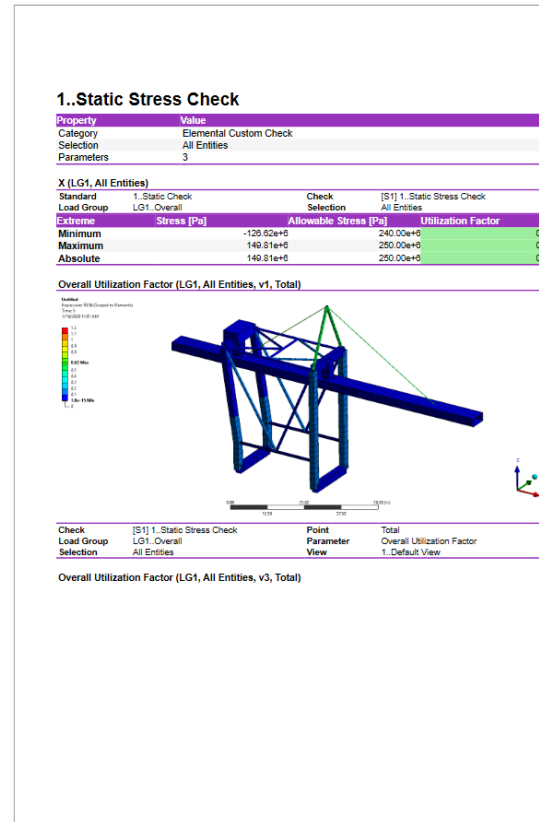
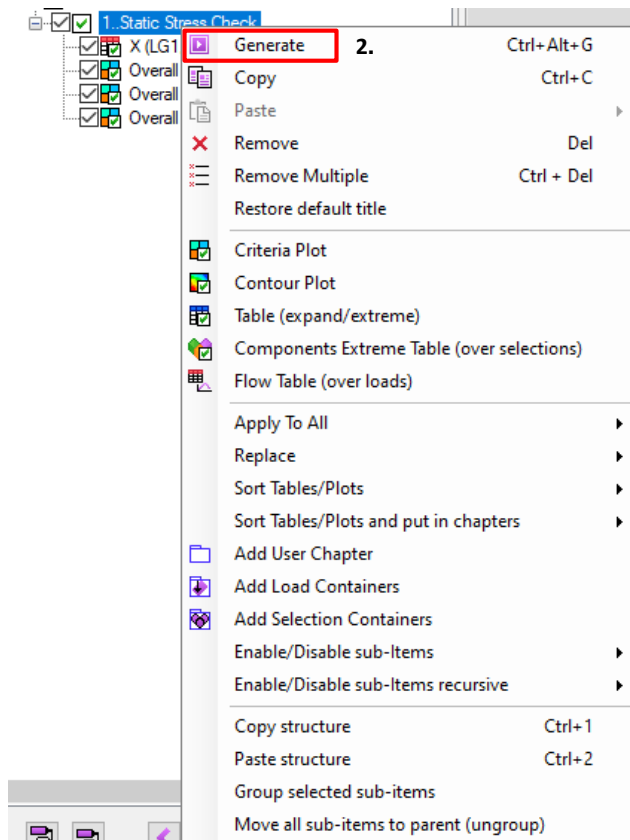
3 Select Views with IDs 1, 3, 4

4 Press **OK**



# Generate Static Stress Check results


- 1 Select **Static Stress Check**
- 2 Execute **Generate** from context menu






# Generated report

- 1

Press  to generate report
- 2

After generation is finished press  to export generated report to Word



# Report



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Engineer:  
Customer:  
Project Number:  
Version:  
Date:

Support  
customer  
  
1  
16/01/2020

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## 1..Static Check

Property	Value
Type	Custom User Standard
Constants	0
Classifications	0
Standard Tables	0
Checks	1

Unit System  
Current Unit System = MKS (Meter/Kg/Second). It is used in calculations for the following standards: API RP 2A, ISO 19902, **Norsok** N004, DIN 15018, FEM 1.001 and Eurocode3.

Safety Factors  
The following checks (1..Static Stress Check) use safety factors from Load Groups.

Load Group	Safety Factor
LG1_Overall	1

### Checks

This paragraph contains checks descriptions with their results.

#### 1..Static Stress Check

Property	Value
Category	Elemental Custom Check
Selection	All Entities
Parameters	3

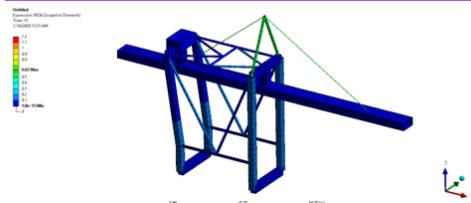
X (LG1, All Entities)

Standard	1..Static Check	Check Selection	(S1) 1..Static Stress Check
Load Group	LG1_Overall	All Entities	

Stress	Stress [Pa]	Allowable Stress [Pa]	Utilization Factor
Minimum	-125.62e+6	240.00e+6	0.00
Maximum	149.81e+6	250.00e+6	0.62
Absolute	149.81e+6	250.00e+6	0.62

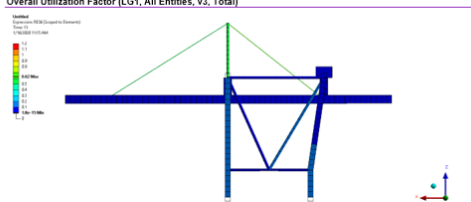
Overall Utilization Factor (LG1, All Entities, v1, Total)

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Check	(S1) 1..Static Stress Check	Point	Total
Load Group	LG1_Overall	Parameter	Overall Utilization Factor
Selection	All Entities	View	1..Default View

Overall Utilization Factor (LG1, All Entities, v3, Total)



Check	(S1) 1..Static Stress Check	Point	Total
Load Group	LG1_Overall	Parameter	Overall Utilization Factor
Selection	All Entities	View	3..Front

Overall Utilization Factor (LG1, All Entities, v4, Total)

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