



# **Get started with SDC Verifier**

5 Feb 2020  
version 5.3

SDC Verifier is a powerful FEMAP add-on that helps verify structures according to standards and generates full calculations reports.

This step-by-step tutorial is designed to *get you started* with main SDC Verifier features:

- ▶ Creating new project;
- ▶ Create Individual Loads, Combinations and Envelop;
- ▶ Define Views;
- ▶ Model Setup report;
- ▶ Calculation report;
- ▶ Open as template feature;

# Create new project

1 Launch **SDC Verifier for FEMAP** 

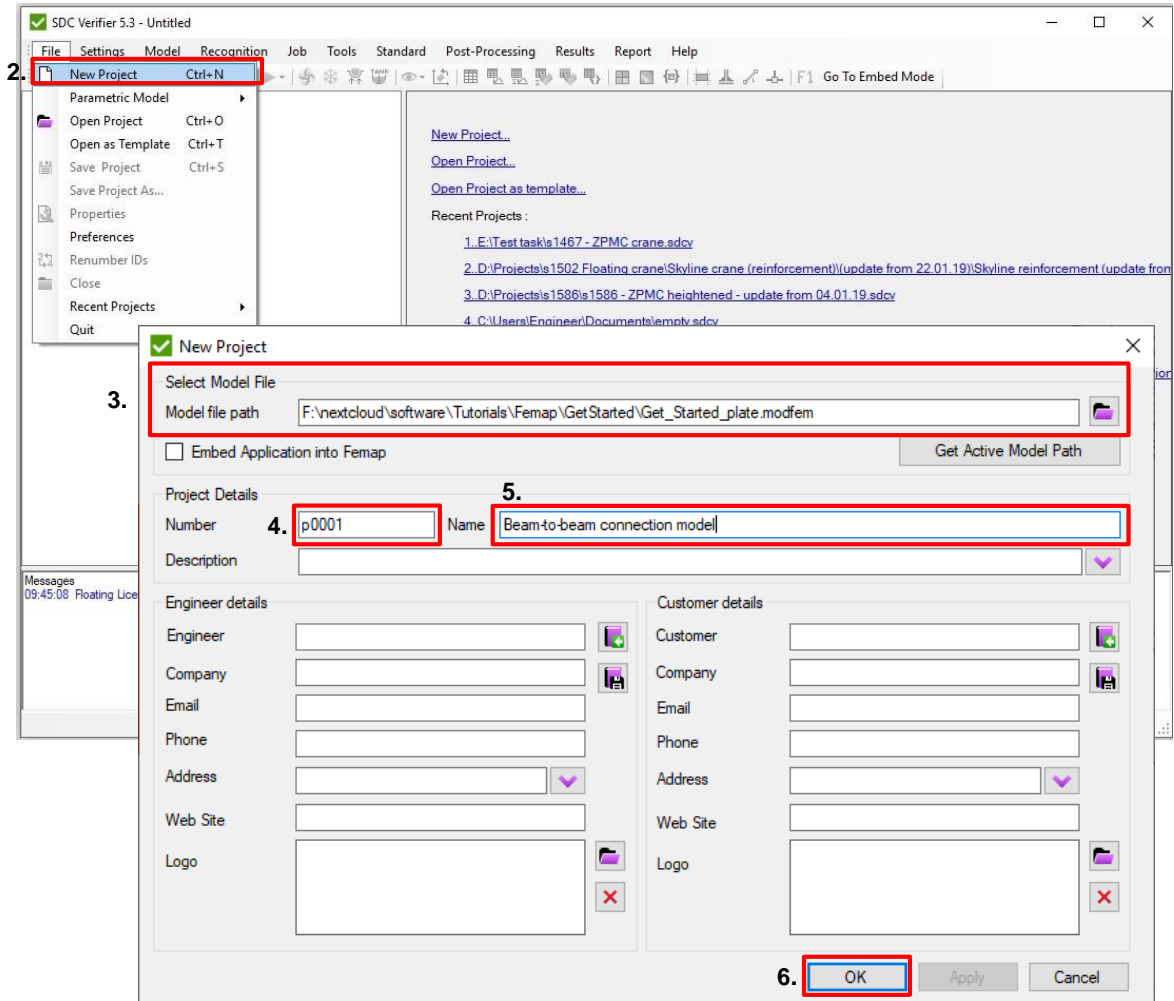
2 Execute *File - New Project*.

3 Press  and select *Get\_Started\_plate* femap model.

4 Number: **p0001**

5 Name: **Beam-to-beam connection model**

6 Press *OK*



# Job explanation

1

Title: **Linear Static Analysis.**

2

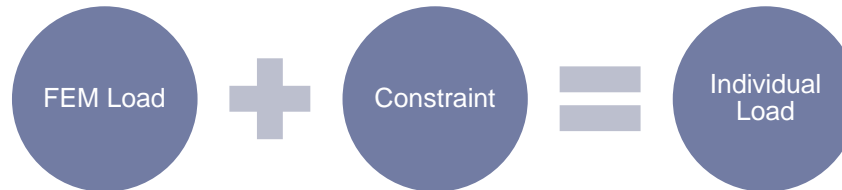
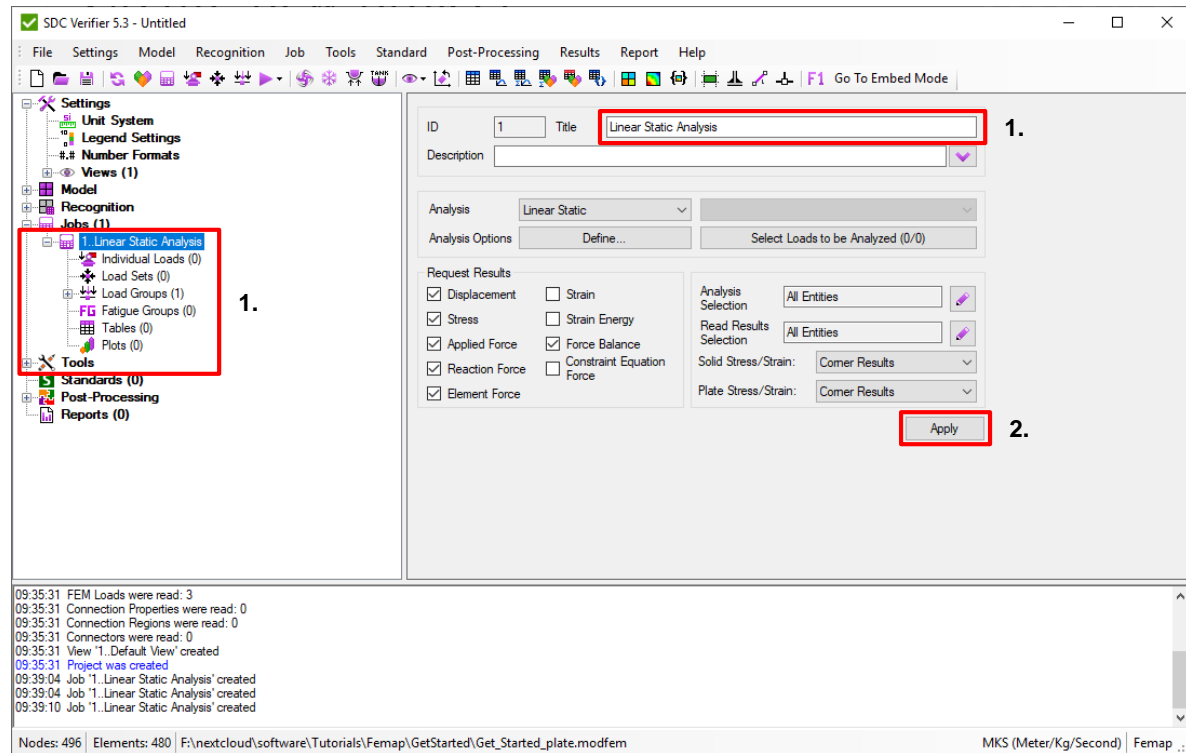
Press *Apply*.

Job – calculation set that contains analysis with options, boundary conditions, load combinations, envelopes and tables/plots.

Individual Loads = FEM load + Constraint.  
Boundary condition + Output Set;

Load Sets – combination of individual loads with factors;

Load Groups (envelop – worst results among loads)



# Create individual loads.

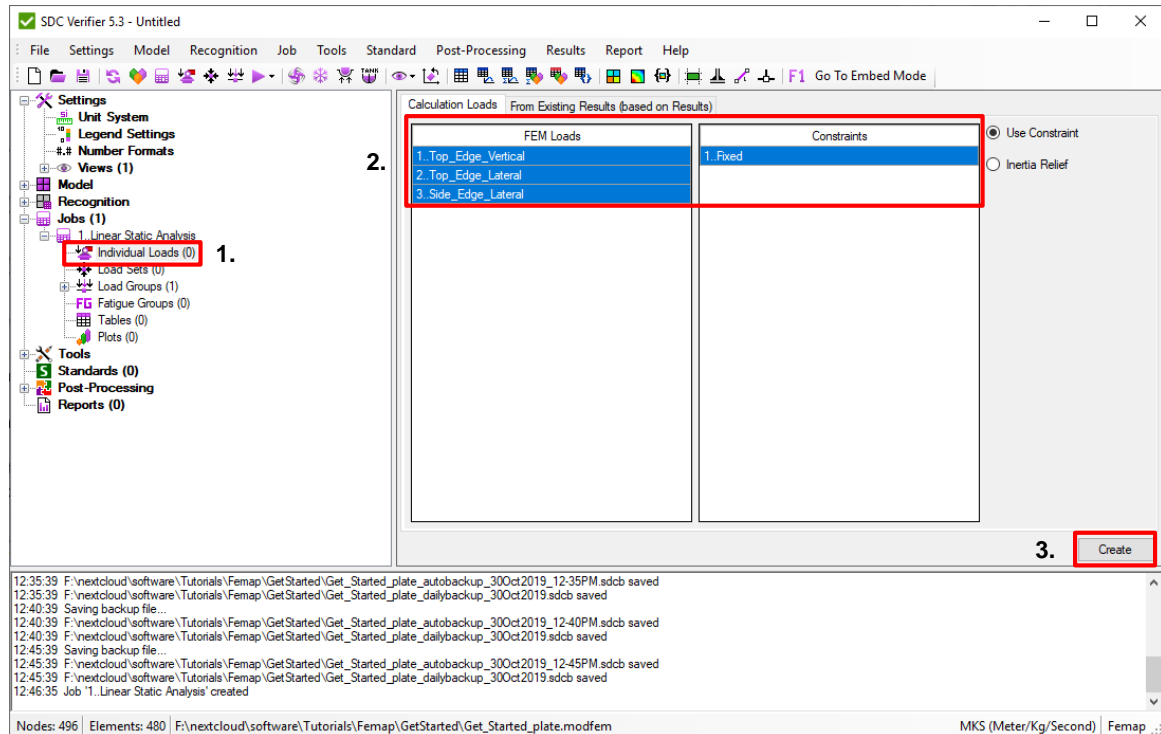
1 Select *Individual Loads* in the *Model Tree*.

2 Select all *FEM Loads* and *Constraints*.

3 Press *Create*.

Individual Loads will be created automatically from combinations of all selected FEM Loads and Constraints. In our case 3 Individual loads.

If the model already contains Output Sets it is possible to create Individual Loads based on results without boundary conditions (see next slide).



**Note:** Use option “Inertia Relief” to create Individual Loads based on FEM Loads only (without constraint).

# Create individual loads from existing results.

This slide demonstrates alternative method how to create individual loads based on Output Sets. Tutorial model does not contain any results yet, steps from this slide should be skipped.

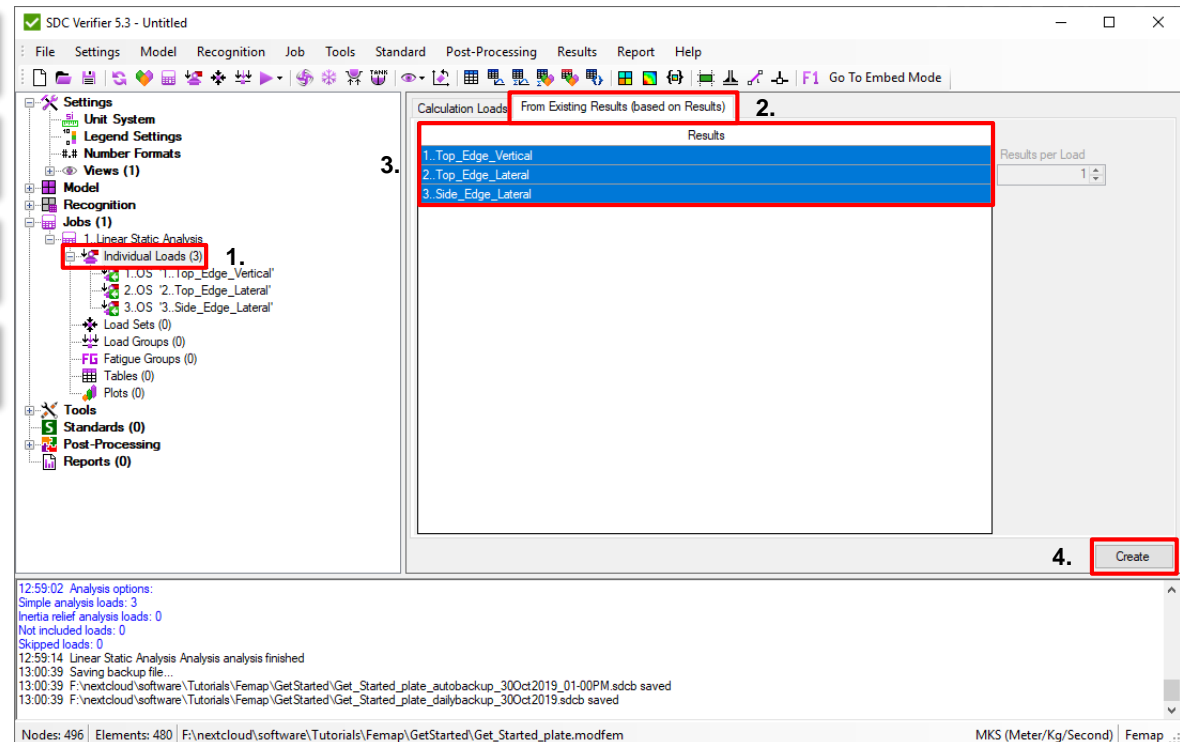
1. Activate *Individual Loads* in the *Model Tree*.

2. Select *From Existing results* option.


3. Select all Output Sets.

4. Press *Create*.

3 Individual Loads will be created based on 3 Output Sets



# Analyze Job

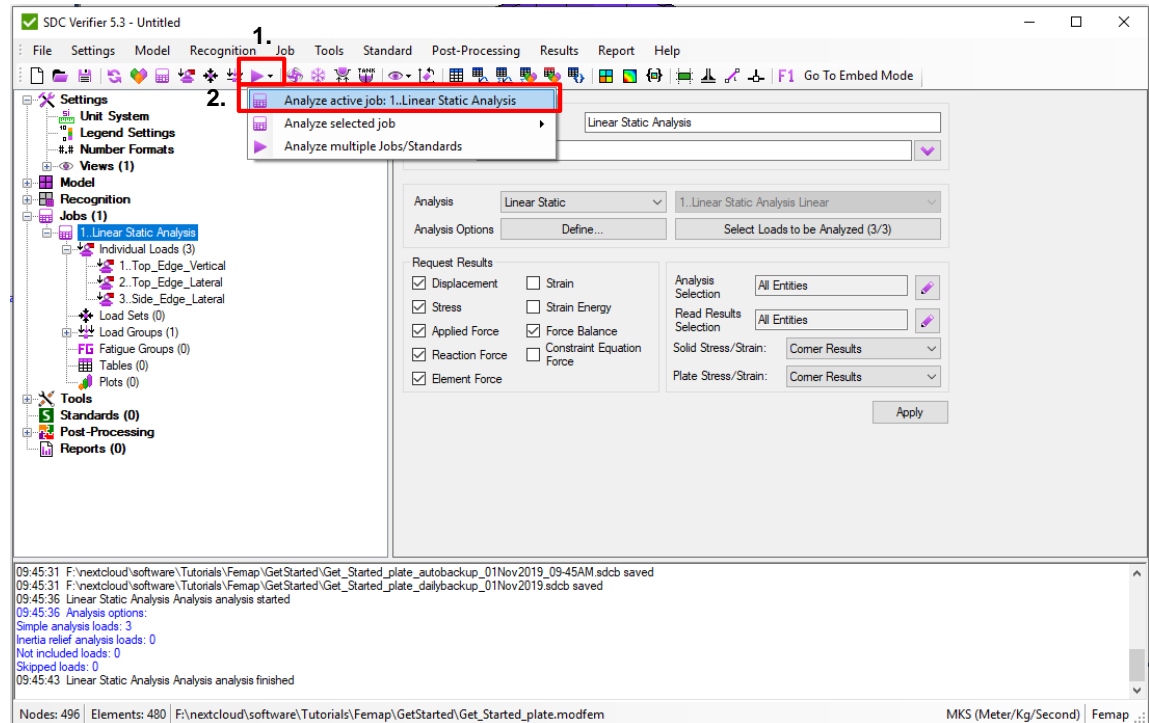
1 Press  on toolbar to analyze job.

2 Select *Analyze active job: 1..Linear Static Analysis*

Analysis with 3 cases will be created and run.  
When finished Output Sets will be linked automatically to correspondent Individual Loads.

Analysis Set : 2..Job 1 Linear Static

- ..... Solver : NX Nastran
- ..... Type : Static
- ..... Analyze : Local
- + Options
- + Master Requests and Conditions
- + Case : 1..Top\_Edge\_Vertical.Fixed
- + Case : 2..Top\_Edge\_Lateral.Fixed
- + Case : 3..Side\_Edge\_Lateral.Fixed




Note: If Individual Loads were created based on Output Sets running analysis is not required.

# Create load combinations (Logic LS)

1 Activate *Load Sets* in the *Model* tree.

2 Title: **All\_combinations**

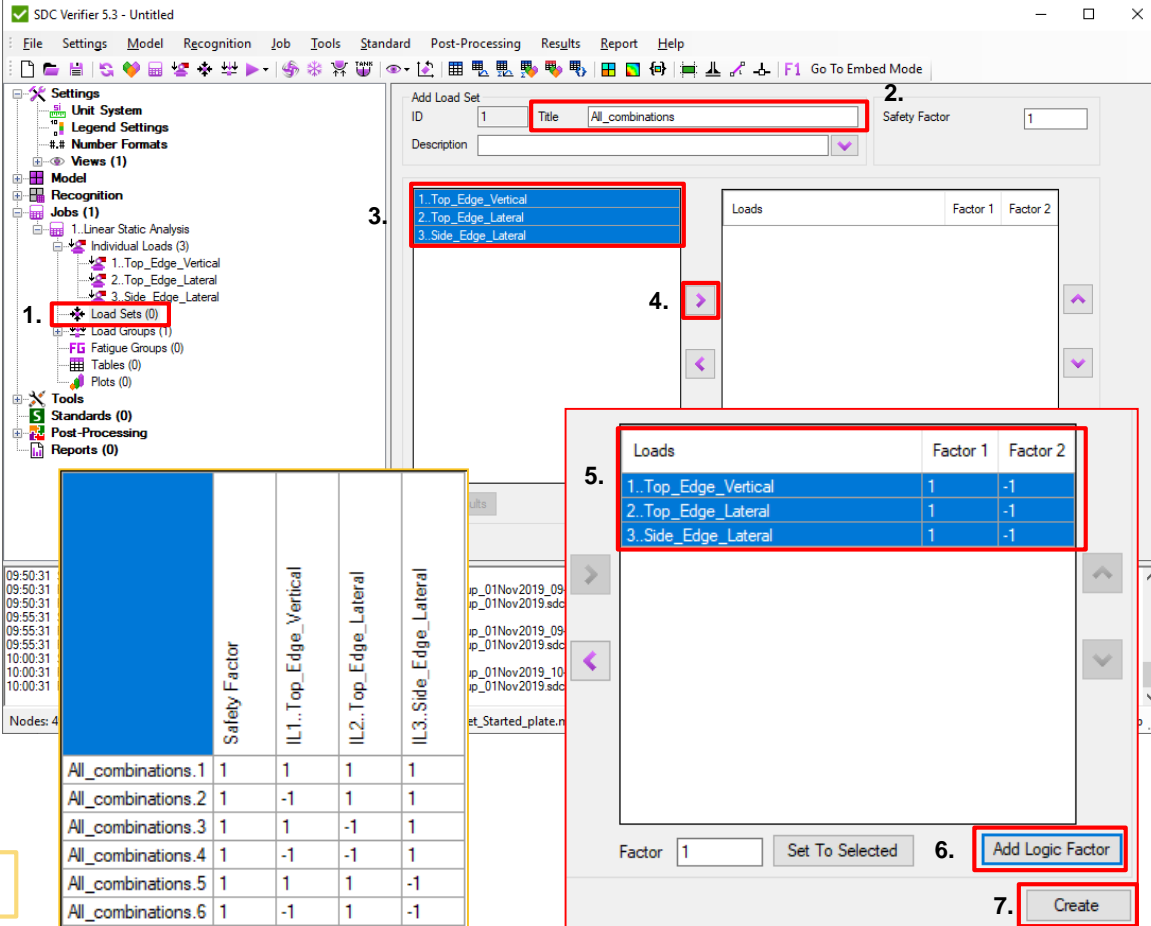
3 Select all Individual Loads from the list of loads.

4 Press  to add items to load set.

5 Select all Individual Loads from the list of loads.

6 Press *Add Logic Factor* (each item will be added with positive and negative factor).

7 Press *Create*



1. Selecting 'Load Sets' in the Model tree.

2. Title: **All\_combinations**

3. Selecting individual loads (1.Top\_Edge\_Vertical, 2.Top\_Edge\_Lateral, 3.Side\_Edge\_Lateral).

4. Pressing the 'Add' button.

5. Table of loads and factors:

Loads	Factor 1	Factor 2
1.Top_Edge_Vertical	1	-1
2.Top_Edge_Lateral	1	-1
3.Side_Edge_Lateral	1	-1

6. Pressing 'Add Logic Factor'.

7. Pressing 'Create'.

List of the created Load Sets

	Safety Factor	IL1..Top_Edge_Vertical	IL2..Top_Edge_Lateral	IL3..Side_Edge_Lateral
All_combinations.1	1	1	1	1
All_combinations.2	1	-1	1	1
All_combinations.3	1	1	-1	1
All_combinations.4	1	-1	-1	1
All_combinations.5	1	1	1	-1
All_combinations.6	1	-1	1	-1
All_combinations.7	1	1	-1	-1
All_combinations.8	1	-1	-1	-1



# Edit Multiple Load Sets. Modify factors

1 Execute *Create/Edit multiple* in the *Load Sets* node in the *Model* tree.

2 Select cells for All\_combinations with IDs 1-4 in column IL3

3 Factor: **1.1**. Press **Set**

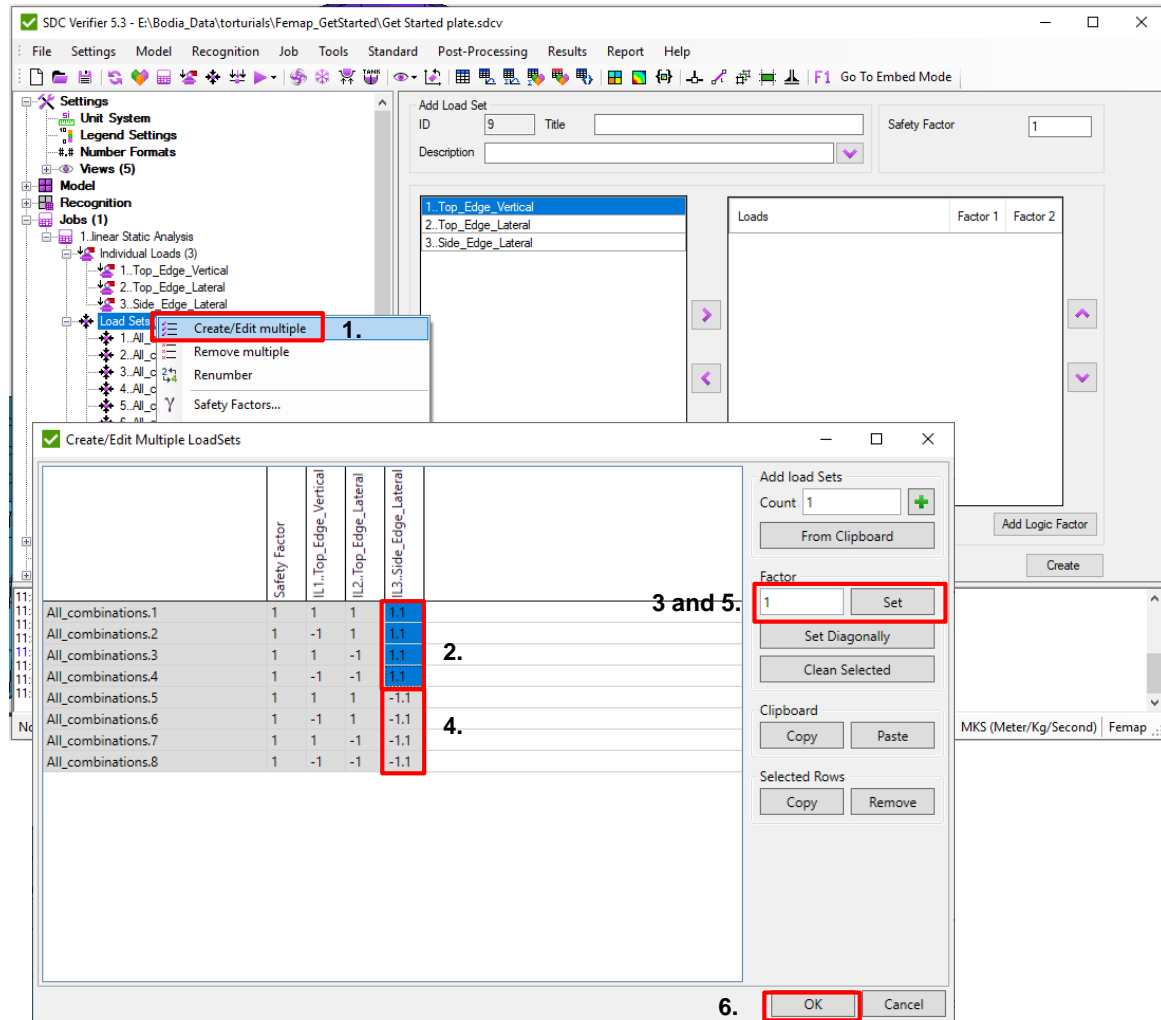
4 Select cells for All\_combinations with IDs 5-8 in column IL3

5 Factor: **-1.1**. Press **Set**

6 Press **OK**.

**Tip:** It is possible to export/import table to excel using *Copy* and *Paste* buttons.

	IL1..Top_Edge_Vertical.Fixed	IL2..Top_Edge_Lateral.Fixed	IL3..Side_Edge_Lateral.Fixed
All_combinations.1	1	1	1.1
All_combinations.2	-1	1	1.1
All_combinations.3	1	-1	1.1
All_combinations.4	-1	-1	1.1
All_combinations.5	1	1	-1.1
All_combinations.6	-1	1	-1.1
All_combinations.7	1	-1	-1.1
All_combinations.8	-1	-1	-1.1




# Create Load Group (Envelop)

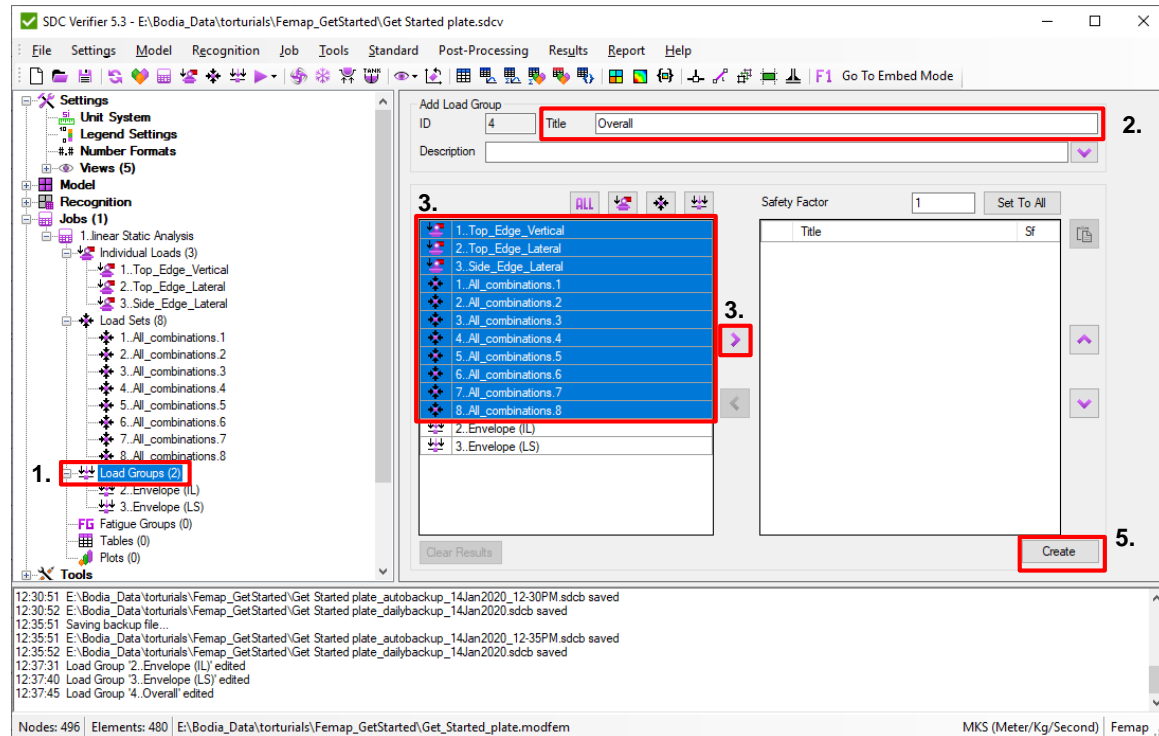
1. Activate *Load Groups* node in the *Model* tree.

2. Title: **Overall**

3. Select all Loads from the list of loads except Envelope (IL) and Envelope (LS).

4. Press  to move selected Loads to Load Group.

5. Press *Create*.



Load Group is envelope for Individual Loads, Load Sets, and other Load Groups. It allows to determine minimum, maximum and absolute values of stresses, displacements, forces, etc.

# Create 2 general Views for plots

1. Locate Model in Femap as shown on pic. Front View.

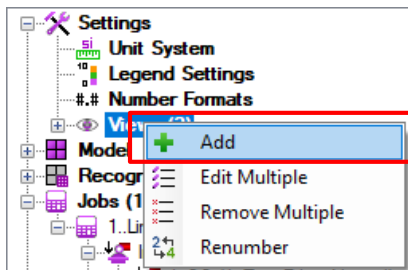
2. Execute *View – Add* from context menu

3. Title: **Front View**. Press *OK*.

4. Locate the Model in Femap as shown on pic. Back View.

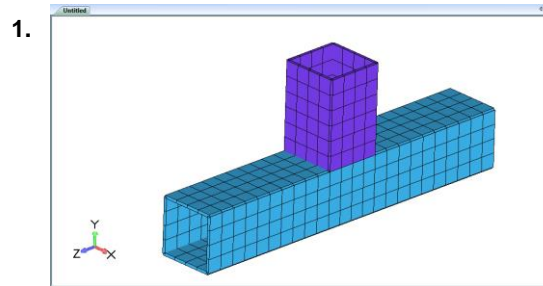
5. Execute *View – Add* from context menu

6. Title: **Back View**. Press *OK*.

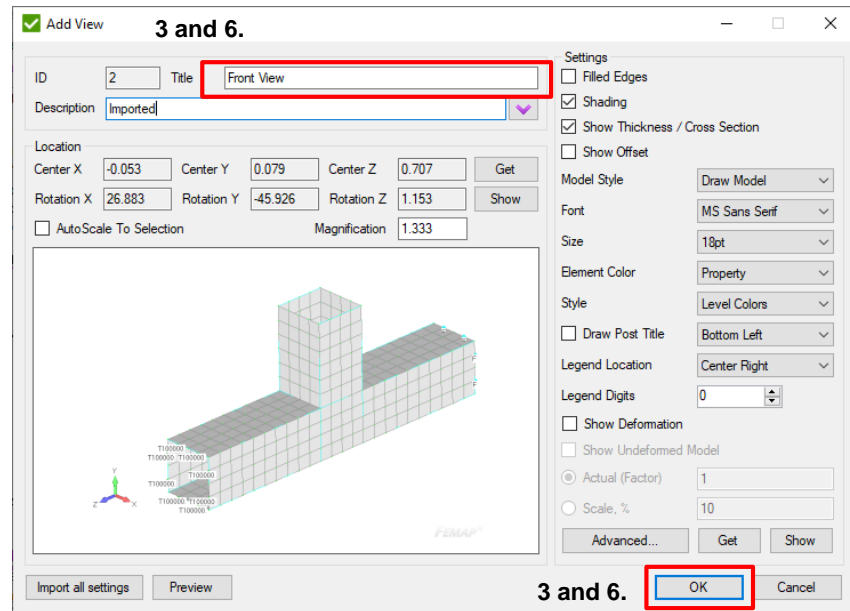
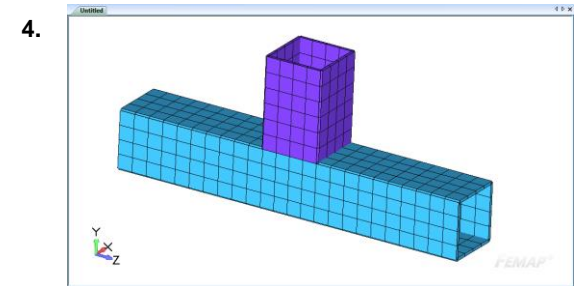


2 and 5.

Front View



Back View



3 and 6. OK

# Create 2 detailed Views

1 Locate Model in Femap as shown on pic.  
Front Detail.

2 Execute *View – Add* from context menu

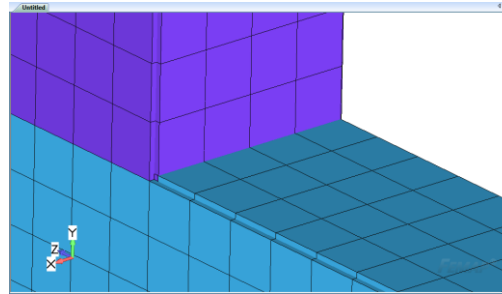
3 Title: **Front Detail**. Press *OK*.

4 Locate the Model in Femap as shown on  
pic. Back Detail.

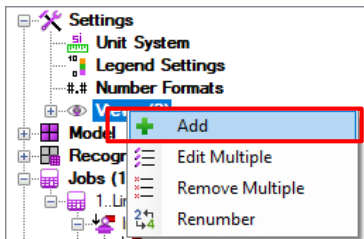
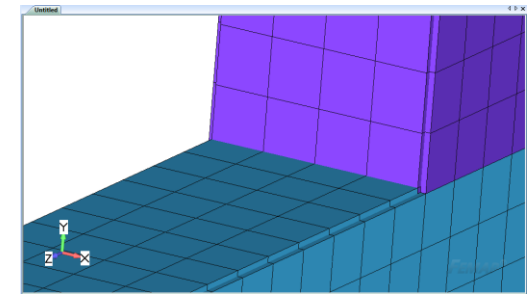
5 Execute *View – Add* from context menu

6 Title: **Back Detail**. Press *OK*.

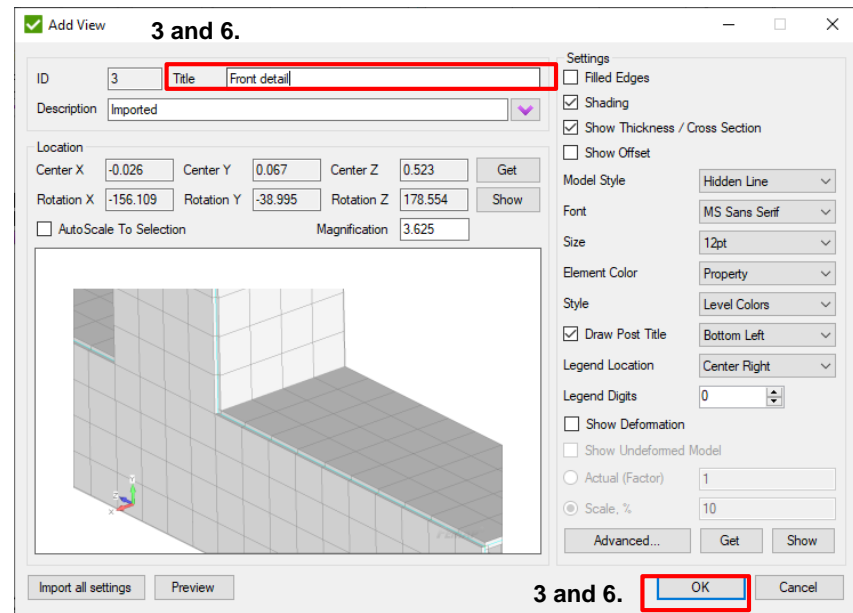
Front Detail



Back Detail





2 and 5.



# Report Wizard – Model Setup report

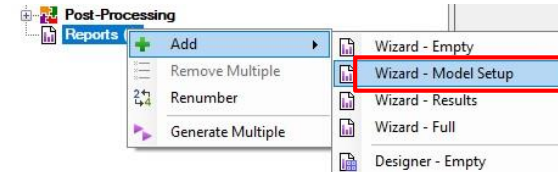
1 Execute Add -> Wizard - Model Setup from Reports in the Model tree.

2 Press  and select Support Engineer from the library

3 Press  and select Customer from the library

4 Press Next.

**Note:** Engineer and customer information is used on the report's first page and in footer (company name and logo).



**Add Report Wizard**


**First Page**  
Define Executor, Client information and Project details


**Navigation**  
First Page  
Model Setup  
Job Settings & Tools  
Tables  
Plots  
Standards

ID: 1 Title: Model Setup

Description:


**Engineer details**

Engineer: Support  2.



Company: SDC Verifier 

E-mail: support@sdcverifier.com

Phone: +31 15 30-10-310


Address: Zijvest 25 [...] 


Web Site: sdcverifier.com

Logo:  

☐ Put logo on report plots


**Customer details**

Contact Person: customer  3.



Company: company 

E-mail: customer@company.com


Phone: +31 15 555-55-55


Address: Zijvest 25 [...] 



Web Site: company.com

Logo:  

**Image**

☒ From file 

☐ From View 1..Default View 

 4.  OK Generate Go To Designer Close

# Model Setup options

1

Plot View: **Front View**

2

Press *Generate*.

✓ Add Report Wizard

**Model Setup**  
Description of the model. Define entities to display and type of their description (brief or full), with or without plots.

Navigation: First Page, **Model Setup**, Job Settings & Tools, Tables, Plots, Standards

☒ Preface  
☒ Model Information  
☒ Model Entities

☒ Materials (2/2) Full (detailed for each material) ☒ Plot  
☒ Properties (2/2) Full (detailed for each property) ☒ Plot  
☒ Components (0/0) ☒ Plot  
☒ Constraints (1/1) ☒ Plot  
☒ FEM Loads (3/3) ☒ Plot  
☐ Groups (0/0)  
☐ Beam/Bar Releases (0/0)

Include Plots Exclude Plots

Default plot settings  
 1. View: 2. Front View  
 Preview Mode: Highlight

☐ Recognition Tools  
☐ Beam Member Finder Brief (overview table and plot)  
☐ Weld Finder Brief (overview table and plot)  
☐ Panel Finder  
☒ Sections X (0/0) 1..Default View  
☒ Sections Y (0/0) 1..Default View  
☒ Sections Z (0/0) 1..Default View  
☒ Sections Custom (0/0) 1..Default View

2. **Generate** OK Go To Designer Close

SDC  
VERIFIER

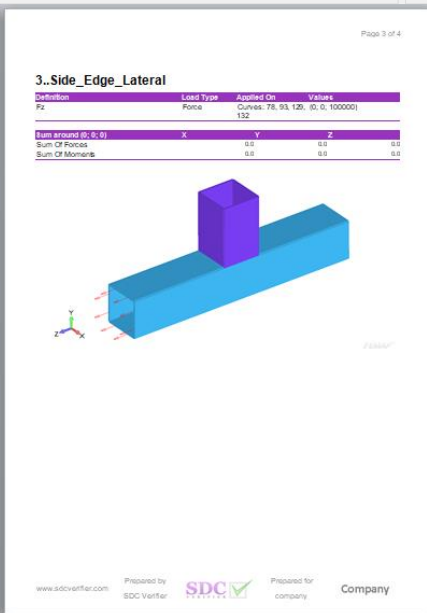
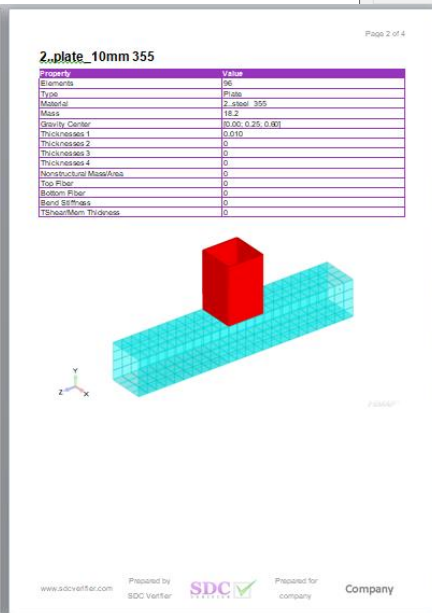
**Model Setup**  
Beam-to-beam connection model

Prepared by:  
SDC Verifier  
+31 15 30-10-310  
sdverifier.com  
Zilverst 25  
2011 VB Houtem  
The Netherlands

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

Engineer:  
Customer:  
Project Number:  
Version:  
Date:


Support:  
customer  
p0001  
1  
01.06.2016




Model setup report has been generated and opened in MS Word. Using the *Report Designer* you can print out the report without any text editor installed.

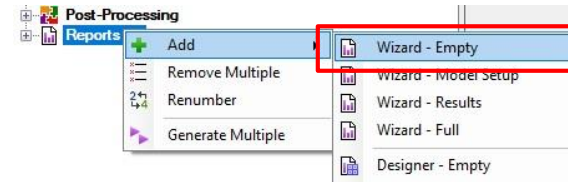
# Create calculation report

1 Execute Add -> Wizard - Empty on Reports in the Model tree.

2 Press  and select Support Engineer from the library

3 Press  and select Customer from the library

4 Press Next 2 times.



**Add Report Wizard**



**First Page**  
Define Executor, Client information and Project details


**Navigation**  
First Page  
Model Setup  
Job Settings & Tools  
Tables  
Plots  
Standards

ID: 2 Title: Report

Description:


**Engineer details**

Engineer: Support  2. 



Company: SDC Verifier 

E-mail: support@sdcverifier.com

Phone: +31 15 30-10-310



Address: Zijvest 25 [...] 


Web Site: sdcverifier.com

Logo:  

☐ Put logo on report plots


**Customer details**

Contact Person: customer  3. 



Company: company 

E-mail: customer@company.com


Phone: +31 15 555-55-55


Address: Zijvest 25 [...] 



Web Site: company.com

Logo:  

**Image**

☒ From file 

☐ From View 1..Default View 

 4.  OK Generate Go To Designer Close

# Predefined Job Tables

1 Jobs: **ON**

2 Plot Individual Loads: **ON**

3 Include Sum of Forces: **ON**

4 Press **Next**.

**Add Report Wizard**

**Job Settings and Tools**  
Set extra job settings and select extra tables to be included

**Navigation**  
First Page  
Model Setup  
**Job Settings & Tools**  
Tables  
Plots  
Standards

1. ☒ Jobs 1. Linear Static Analysis

2. ☒ Plot Individual Load

3. ☒ Include Sum of Forces

**Job Settings**  
☐ Job Description  
☐ Modes Table for ILs and LSs  
☐ Include Contents  
    ☐ Individual Loads Content  
    ☐ Load Sets Content  
    ☐ Load Groups Content

**Advanced Tables (Overall)**  
☒ Include Sum of Forces  
    ☒ Individual Loads Applied Forces  
    ☒ Individual Loads Reaction Forces  
    ☒ Load Sets Applied Forces  
    ☒ Load Sets Reaction Forces  
☐ Absolute Maximum Displacement  
    ☐ Individual Load  
    ☐ Load Set  
    ☐ Load Group  
☐ Absolute Maximum Stresses  
    ☐ Individual Load  
    ☐ Load Set  
    ☐ Load Group

**Advanced Tables (For Each Load)**  
☐ Include Sum Of Forces  
    ☒ Individual Load Reaction Forces  
    ☒ Load Set Reaction Forces  
☐ Stress Over All Properties  
    ☐ Individual Load  
    ☐ Load Set  
    ☐ Load Group  
☐ Stress Over All Components  
    ☐ Individual Load  
    ☐ Load Set  
    ☐ Load Group

**Tools**  
☐ Mass and COG Table (0/0) ☐ Moment Shear Force (0/0) ☐ Thickness Plots (0/0)


4. **Next >** OK Generate Go To Designer Close



# Add displacements plots

1 Click on *Plots* in the Navigation list.

2 Select All Loads from the list.

3 Press  to add contour plot.

4 *Category: Displacement*

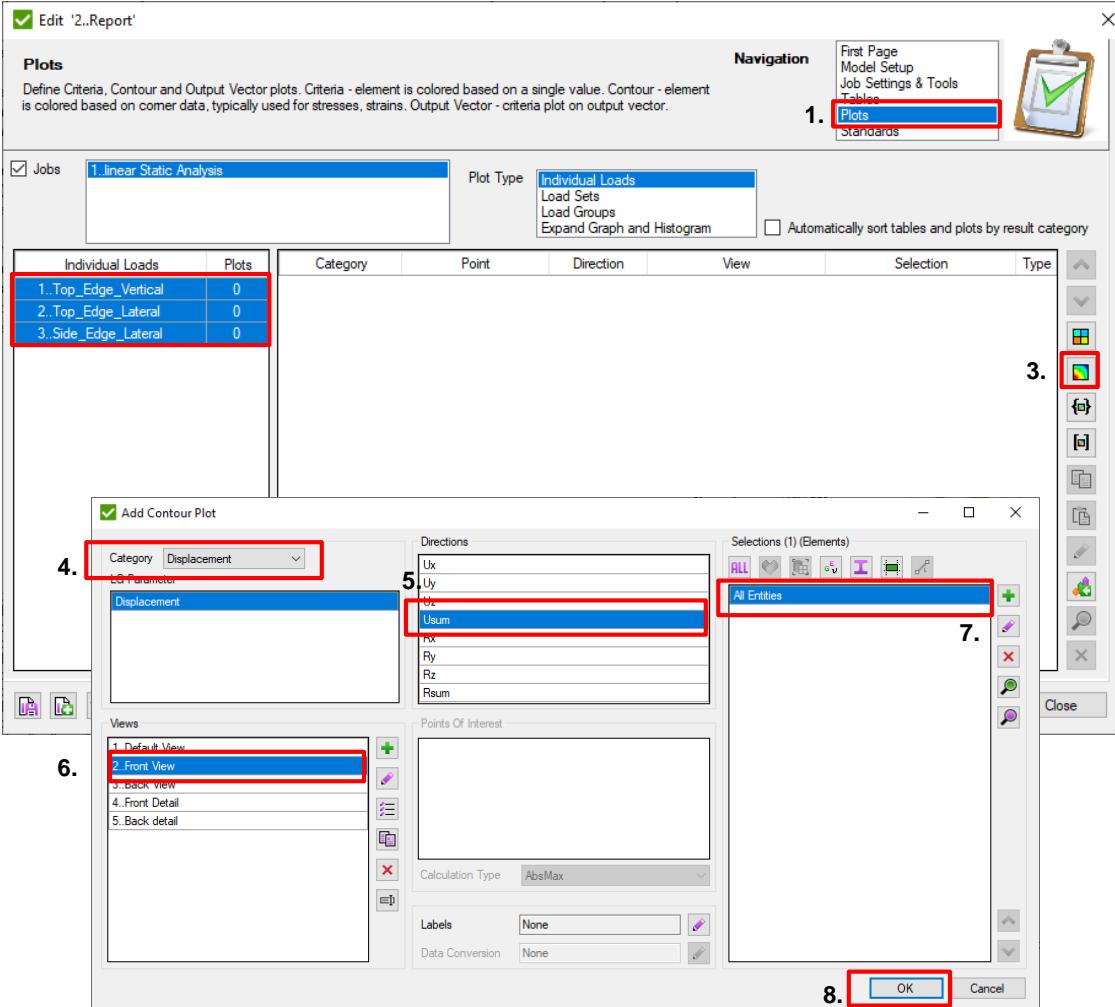
5 *Direction: Usum*

6 *Views: Front View*

7 *Selection: All Elements*

8 Press *OK*.

2.



**Edit '2..Report'**

**Plots**  
Define Criteria, Contour and Output Vector plots. Criteria - element is colored based on a single value. Contour - element is colored based on corner data, typically used for stresses, strains. Output Vector - criteria plot on output vector.

**Navigation**  
1. **Plots**  
First Page  
Model Setup  
Job Settings & Tools  
Tables  
Standards

☒ Jobs  
1. Linear Static Analysis  
Plot Type: Individual Loads  
Load Sets  
Load Groups  
Expand Graph and Histogram  
☐ Automatically sort tables and plots by result category

Individual Loads	Plots
1..Top_Edge_Vertical	0
2..Top_Edge_Lateral	0
3..Side_Edge_Lateral	0

**3.**

**Add Contour Plot**

4. Category: Displacement

5. Direction: Usum


6. Views: Front View

7. Selection: All Elements

8. OK

# Add stress plots

1 Select All Loads from the list.

2 Press  to add contour plots.

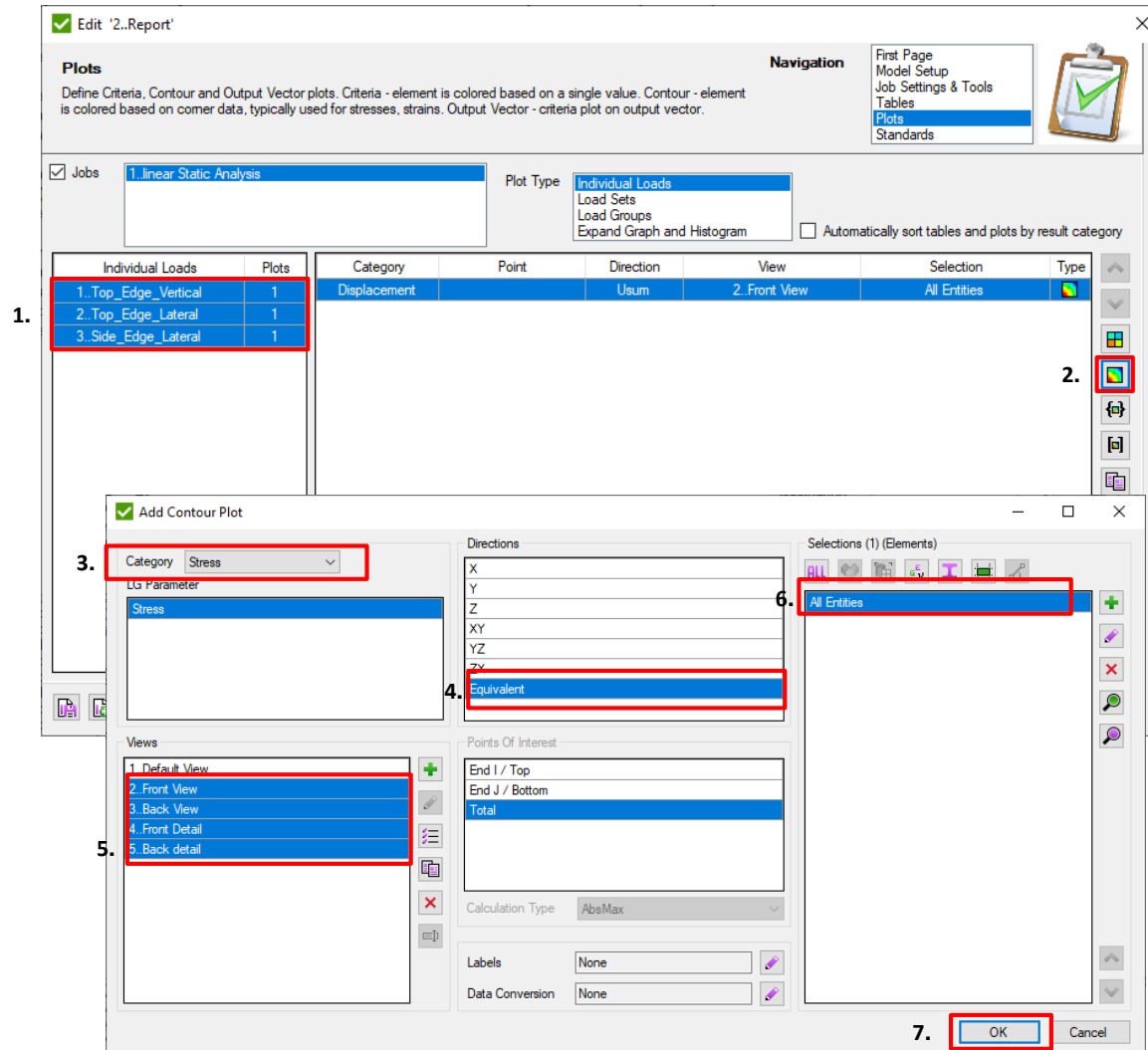
3 *Category: Stress*

4 *Direction: Equivalent.*

5 Select 4 Views: ID from 2 to 5

6 *Selection: All Elements*

7 Press OK.




# Add output vector plots

1

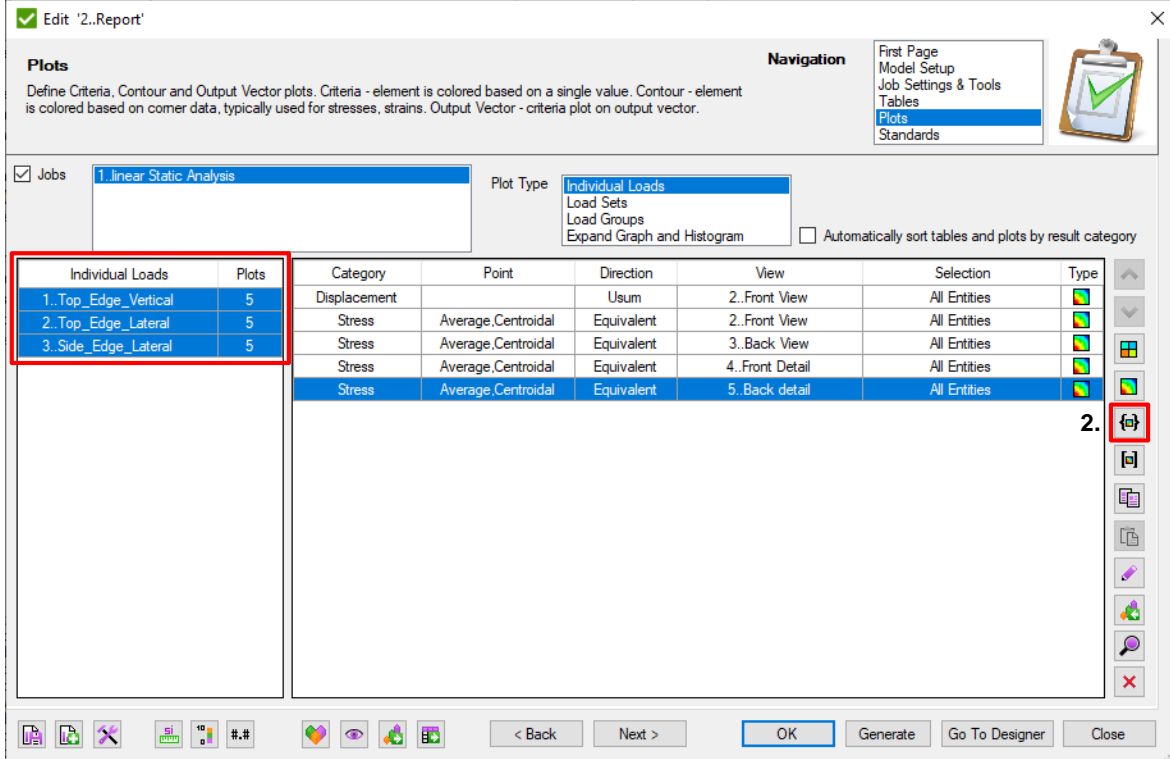
Select All Loads from the list.

2

Press  to add output criteria plots.

1.

2.








**Edit '2..Report'**


**Plots**  
Define Criteria, Contour and Output Vector plots. Criteria - element is colored based on a single value. Contour - element is colored based on corner data, typically used for stresses, strains. Output Vector - criteria plot on output vector.












**Navigation**  
First Page  
Model Setup  
Job Settings & Tools  
Tables  
**Plots**  
Standards

☒ Jobs **1.Linear Static Analysis** Plot Type **Individual Loads**  
Load Sets  
Load Groups  
Expand Graph and Histogram ☐ Automatically sort tables and plots by result category

Individual Loads	Plots
1.Top_Edge_Vertical	5
2.Top_Edge_Lateral	5
3.Side_Edge_Lateral	5

Category	Point	Direction	View	Selection	Type
Displacement		Usun	2..Front View	All Entities	
Stress	Average,Centroidal	Equivalent	2..Front View	All Entities	
Stress	Average,Centroidal	Equivalent	3..Back View	All Entities	
Stress	Average,Centroidal	Equivalent	4..Front Detail	All Entities	
Stress	Average,Centroidal	Equivalent	5..Back detail	All Entities	

**2.** 

< Back Next > OK Generate Go To Designer Close

# Add output vector plots (continue)

3 Press *Select* button

4 Select option: **By Category**

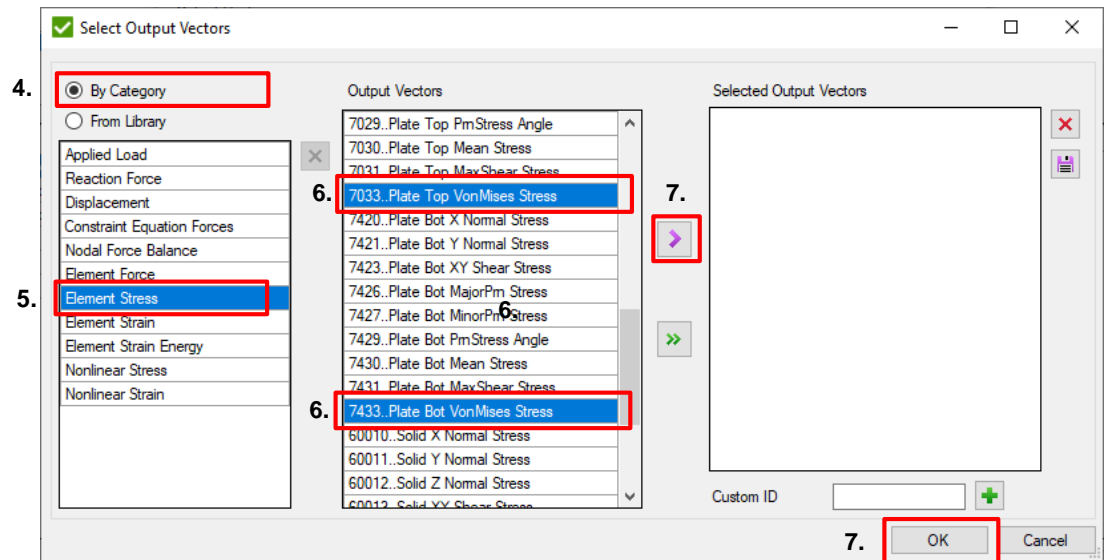
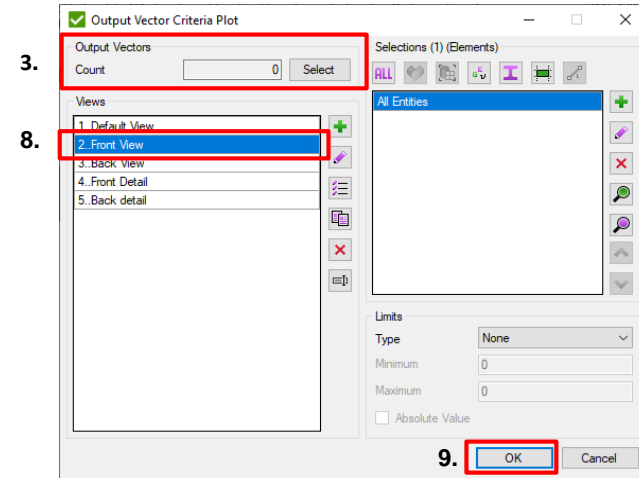
5 Select: **Element Stress**

6 *Select Vectors: 7033 and 7433*




7 Press  and *OK*

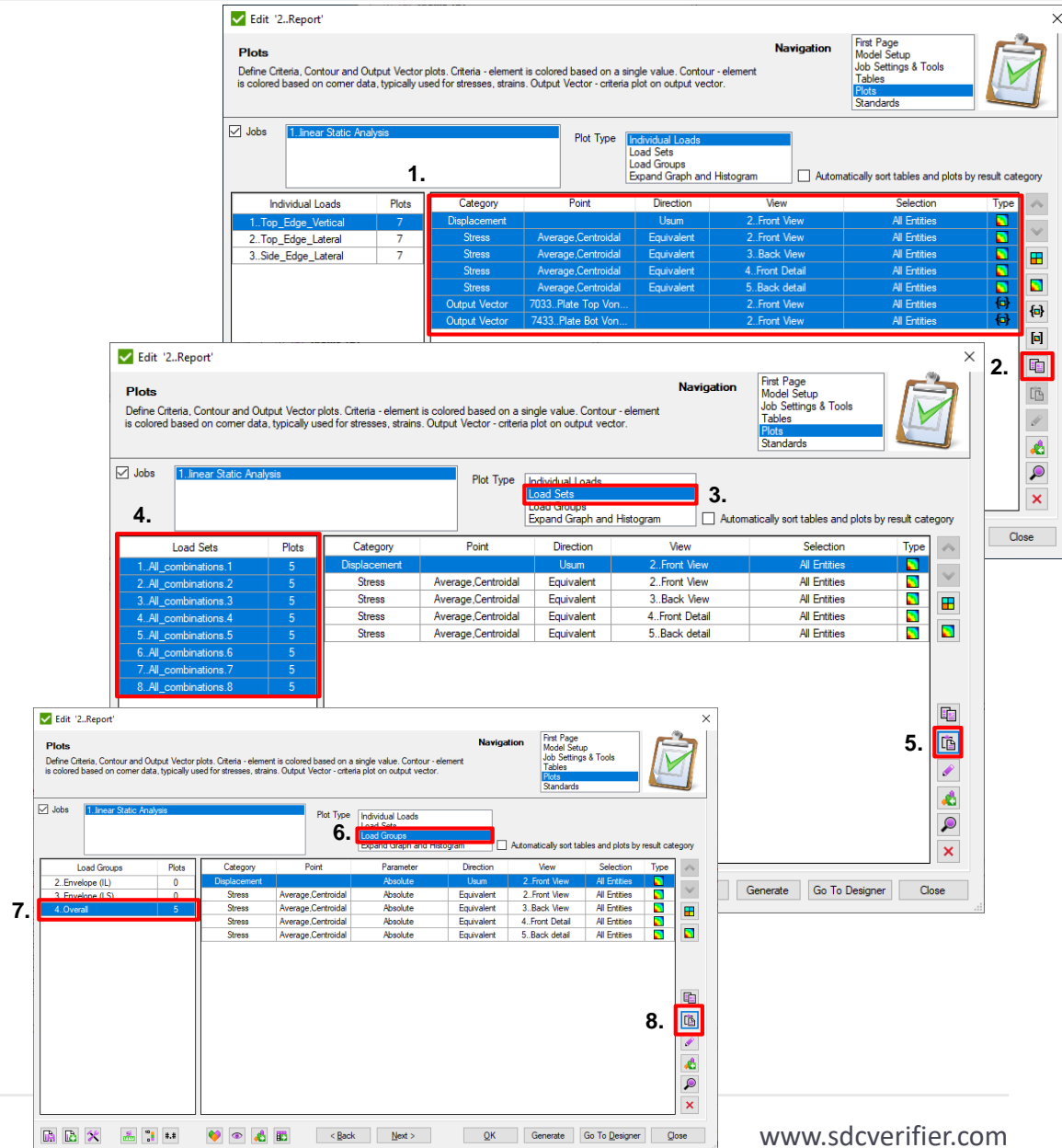
8 *Views: Front View*

9 Press *OK*.



# Copy plots to Load Sets and Load Groups

- 1 Select all plots from the list.
- 2 Press  to copy plot to clipboard.
- 3 Plot Type: **Load Sets**
- 4 Select all loads sets.
- 5 Press  to paste.
- 6 Plot Type: **Load Groups**
- 7 Select **Overall** loads groups.
- 8 Press  to paste.



**Edit ".2.Report"**

**Plots**  
Define Criteria, Contour and Output Vector plots. Criteria - element is colored based on a single value. Contour - element is colored based on corner data, typically used for stresses, strains. Output Vector - criteria plot on output vector.

**Navigation**  
First Page  
Model Setup  
Job Settings & Tools  
Tables  
**Plots**  
Standards

☒ Jobs **1. linear Static Analysis** Plot Type: **Individual Loads**  
Load Sets  
Load Groups  
Expand Graph and Histogram ☐ Automatically sort tables and plots by result category

Individual Loads	Plots	Category	Point	Direction	View	Selection	Type
1.Top_Edge_Vertical	7	Displacement	Average.Centroidal	Usun	2. Front View	All Entities	
2.Top_Edge_Lateral	7	Stress	Average.Centroidal	Equivalent	2. Front View	All Entities	
3.Side_Edge_Lateral	7	Stress	Average.Centroidal	Equivalent	3. Back View	All Entities	
		Stress	Average.Centroidal	Equivalent	4. Front Detail	All Entities	
		Stress	Average.Centroidal	Equivalent	5. Back detail	All Entities	
Output Vector	7033. Plate Top Von...	Output Vector	7033. Plate Top Von...		2. Front View	All Entities	
Output Vector	7433. Plate Bot Von...	Output Vector	7433. Plate Bot Von...		2. Front View	All Entities	

**4.**

**Load Sets**

Load Sets	Plots
1. All combinations.1	5
2. All combinations.2	5
3. All combinations.3	5
4. All combinations.4	5
5. All combinations.5	5
6. All combinations.6	5
7. All combinations.7	5
8. All combinations.8	5

**3.**

**Plot Type: Load Sets**

Category	Point	Direction	View	Selection	Type
Displacement	Average.Centroidal	Usun	2. Front View	All Entities	
Stress	Average.Centroidal	Equivalent	2. Front View	All Entities	
Stress	Average.Centroidal	Equivalent	3. Back View	All Entities	
Stress	Average.Centroidal	Equivalent	4. Front Detail	All Entities	
Stress	Average.Centroidal	Equivalent	5. Back detail	All Entities	

**5.**

**Plot Type: Load Groups**

**6.**

**Load Groups**

Load Groups	Plots
2. Envelope (IL)	0
3. Envelope (ILS)	0
<b>4. Overall</b>	<b>5</b>

**7.**

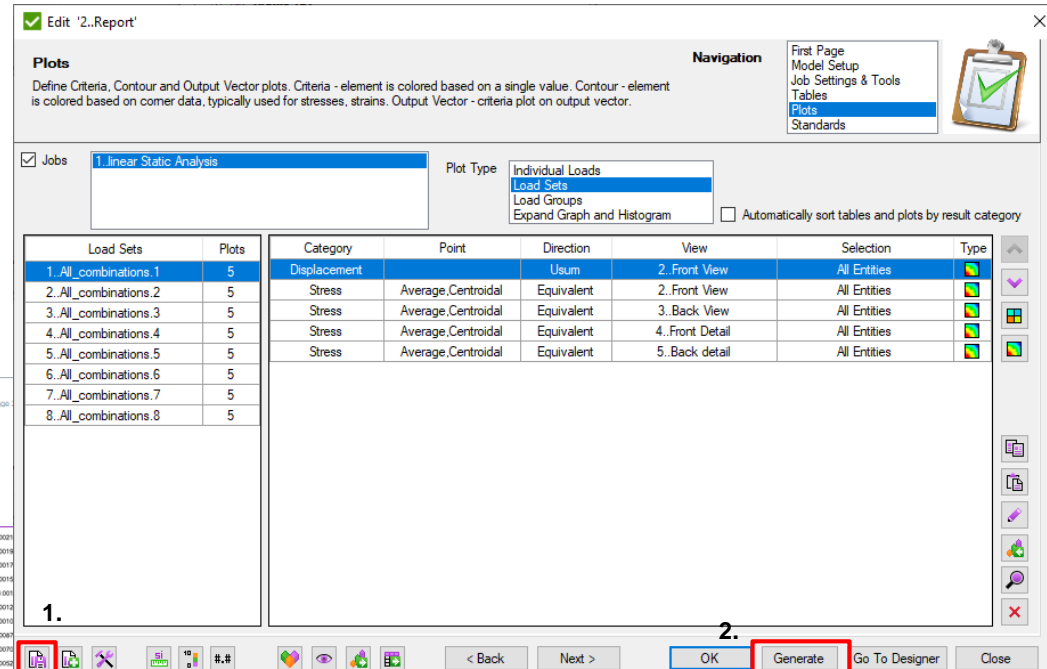
**8.**

**Generate** **Go To Designer** **Close**

# Result Report Generation

1 Press  to save the report profile

2 Press *Generate*.



## Report

Beam-to-beam connection model

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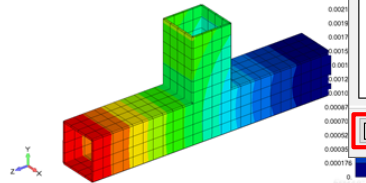
Engineer:  
Customer:  
Project Number:  
Version:  
Date:

Support  
customer  
p0001  
1  
04-05-2018

### 1..Linear Static Analysis Individual Loads

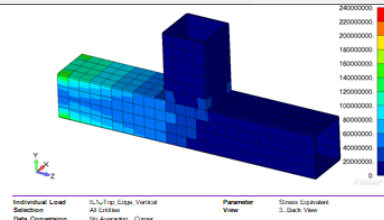
In this paragraph the influence of the different separate loads is described.  
Individual Load '1..Top\_Edge\_Veritical'

Usun (All Entities, v2)



Individual Load Selection	Usun/Top_Edge_Veritical	All Entities	Parameter View	Displacement Usun 2..Front View
<b>(U) Applied Forces Summation</b>				
Linea Object	3			
Selection	All Entities			
Category	Force			
Applied Force	Usun			
Usun/Top_Edge_Veritical	0.0	-100000.0	0.0	100000.0
Usun/Top_Edge_Veritical	0.0	0.0	100000.0	0.0
Usun/Top_Edge_Veritical	0.0	0.0	100000.0	0.0
Usun/Top_Edge_Veritical	0.0	0.0	100000.0	0.0
<b>(U) Reaction Forces Summation</b>				
Linea Object	3			
Selection	All Entities			
Category	Reaction			
Reaction Force	Usun			
Usun/Top_Edge_Veritical	0.0	100000.0	0.0	100000.0
Usun/Top_Edge_Veritical	0.0	0.0	100000.0	0.0
Usun/Top_Edge_Veritical	0.0	0.0	100000.0	0.0
Usun/Top_Edge_Veritical	0.0	0.0	100000.0	0.0


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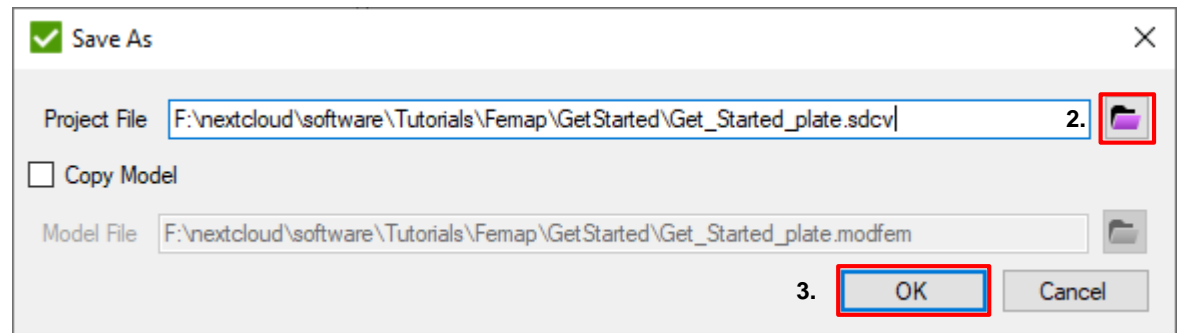
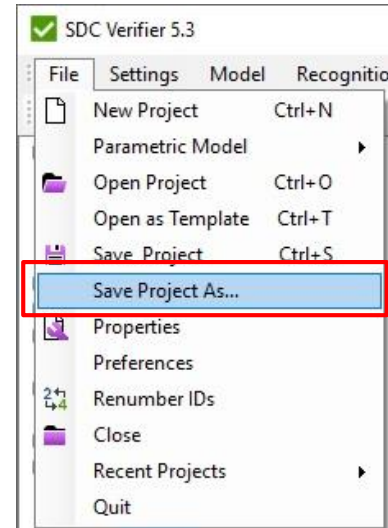
# Save SDC project

1 Execute *File - Save Project As*

2 Press  to browse location and define the filename

3 Press *OK*

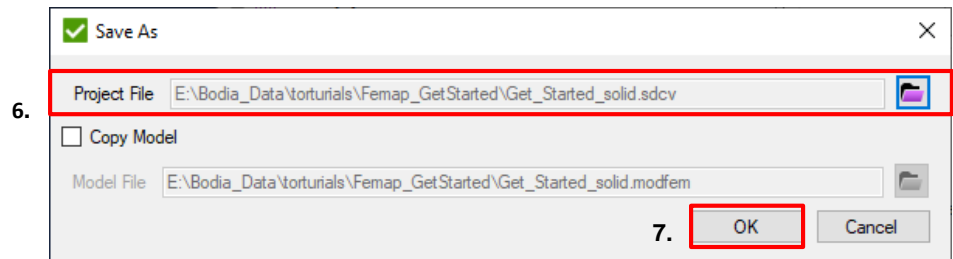
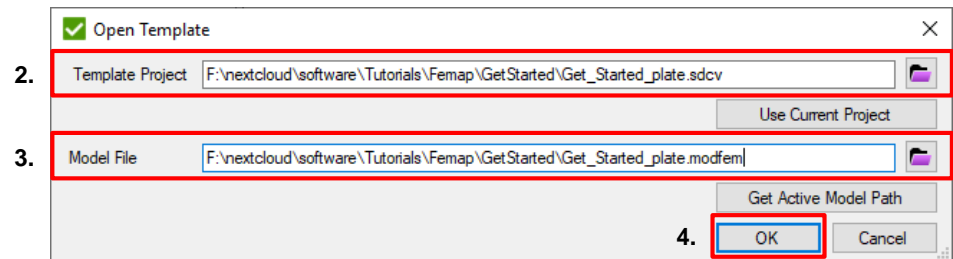
1.



# Open As Template – solid model



Open As Template features allows to reuse project for similar Femap model. In our case a solid model with same boundary conditions

- 1 Execute *File - Open as Template*.
- 2 Template Project: **Get\_Started\_Plate.sdcv**
- 3 Model File: **Get\_Started\_solid.modfem**
- 4 Press *OK*.
- 5 Execute *File - Save Project as*
- 6 Project File: **Get\_Started\_solid.sdcv**
- 7 Press *OK*.





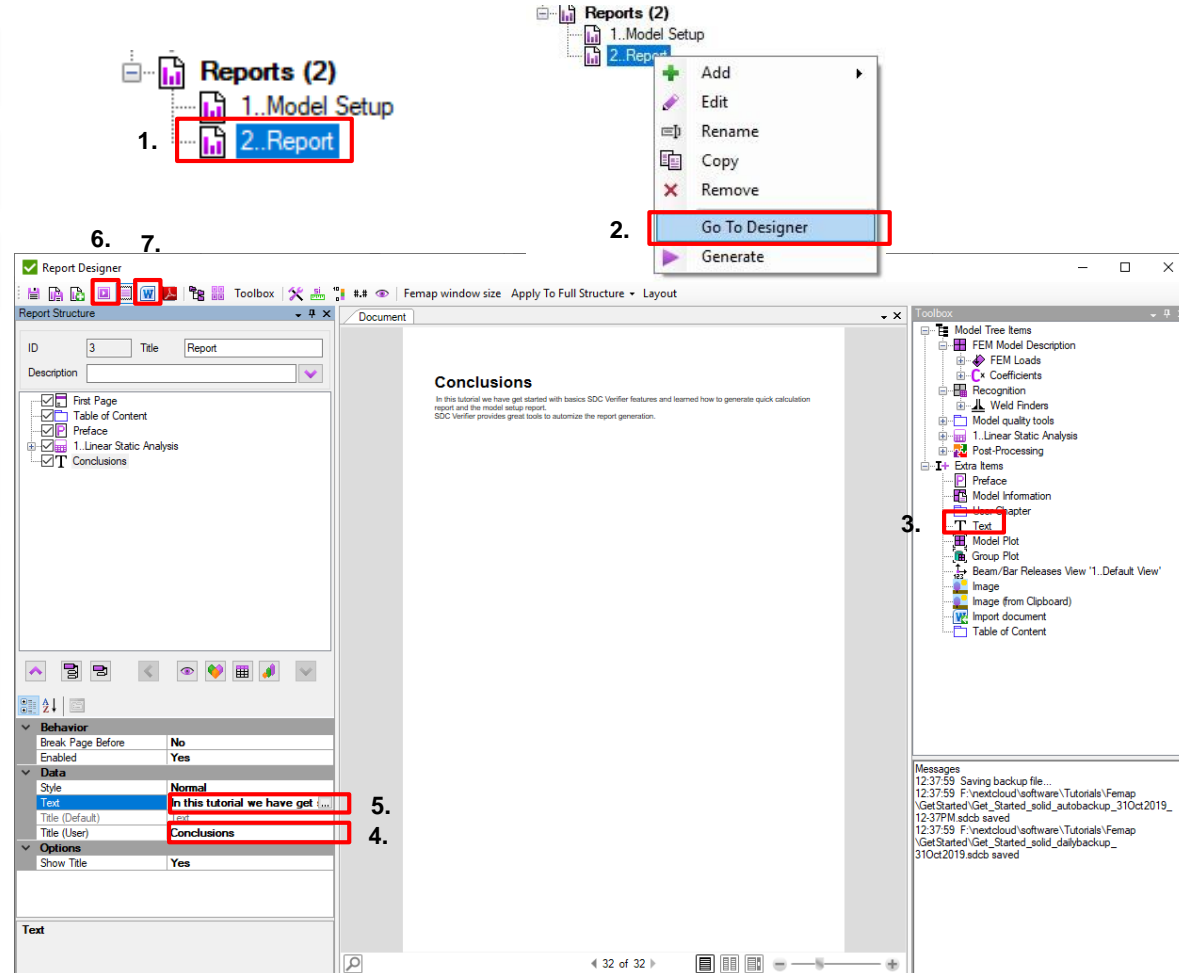
# Generate report for Solid model

- 1 Select *Report* in the *Model* tree
- 2 Execute *Go To Designer* from the context menu
- 3 Add *Text* item from *Toolbox*
- 4 Title: **Conclusions**
- 5 Text:  
**in this tutorial we have get**
- 6 Press  to generate report
- 7 After generation is finished press  to export generated report to Word

Note:

Report Wizard guides you through the steps of building and running the report.

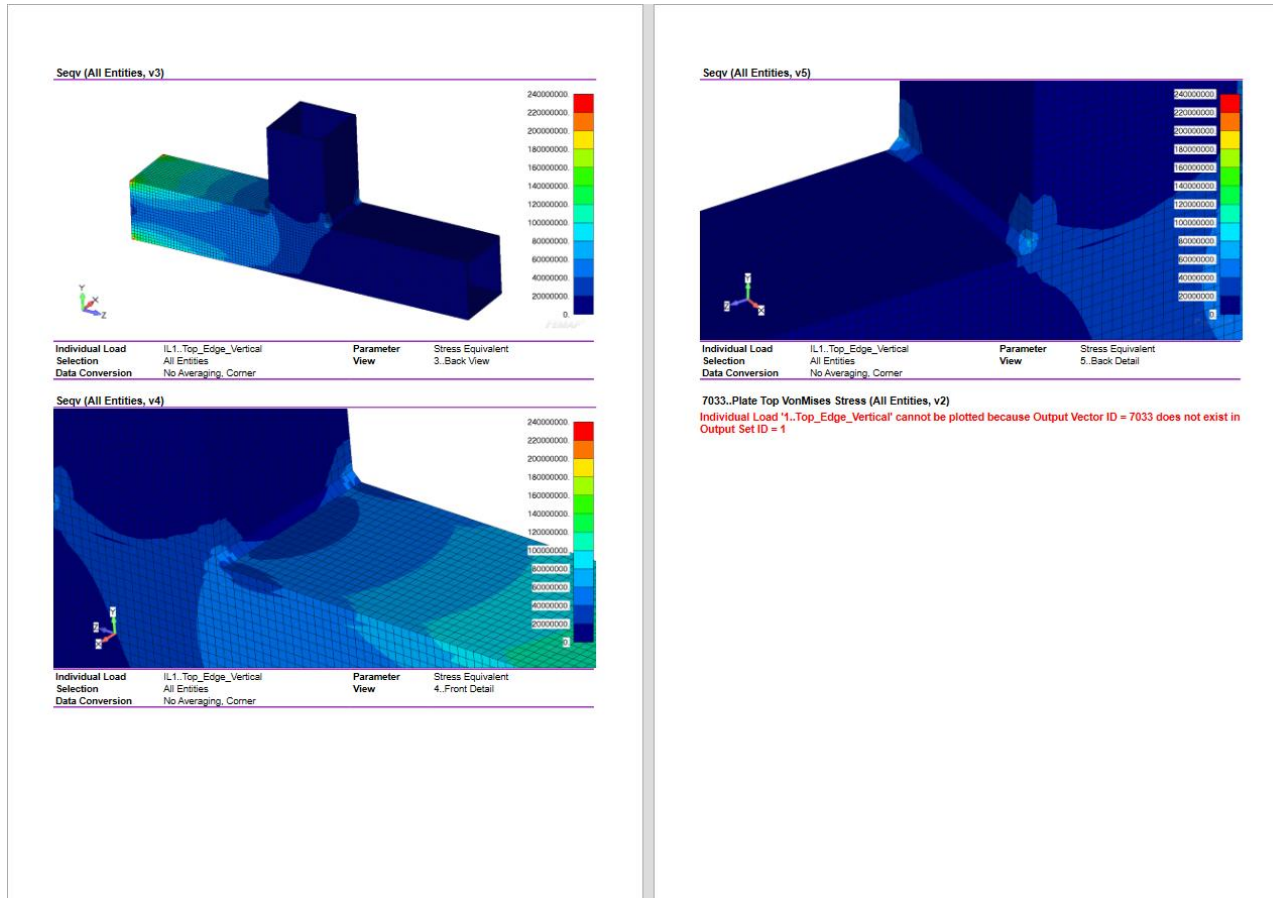
Whereas the Report Designer gives added ability to design your own reports.



# Comments. Report on the volume model



Equivalent Stress plot is automatically displayed correct for plate and solid model. Output Vector plot is displayed for exact ID (7033).



# Quick Support – remote access to your PC

1 Select *Help - Quick Support*

2 Contact helpdesk by Team Viewer

3 Tell your ID to SDC specialist

Quick Support allows to get remote access to your PC by SDC Verifier specialist to solve your problem. All you need is to send your ID to us:  
by Skype: [sdcverifier\\_helpdesk](https://www.skype.com/en/contacts/individual/sdcverifier_helpdesk/);  
by phone: +31 15 30-10-310;  
by email: [support@sdcverifier.com](mailto:support@sdcverifier.com)

Quick Support tool is standalone program.  
Team Viewer is not required to be installed.

