



## **Get started with SDC Verifier**

9 Dec 2020  
Version 2020.0.2



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** ✓

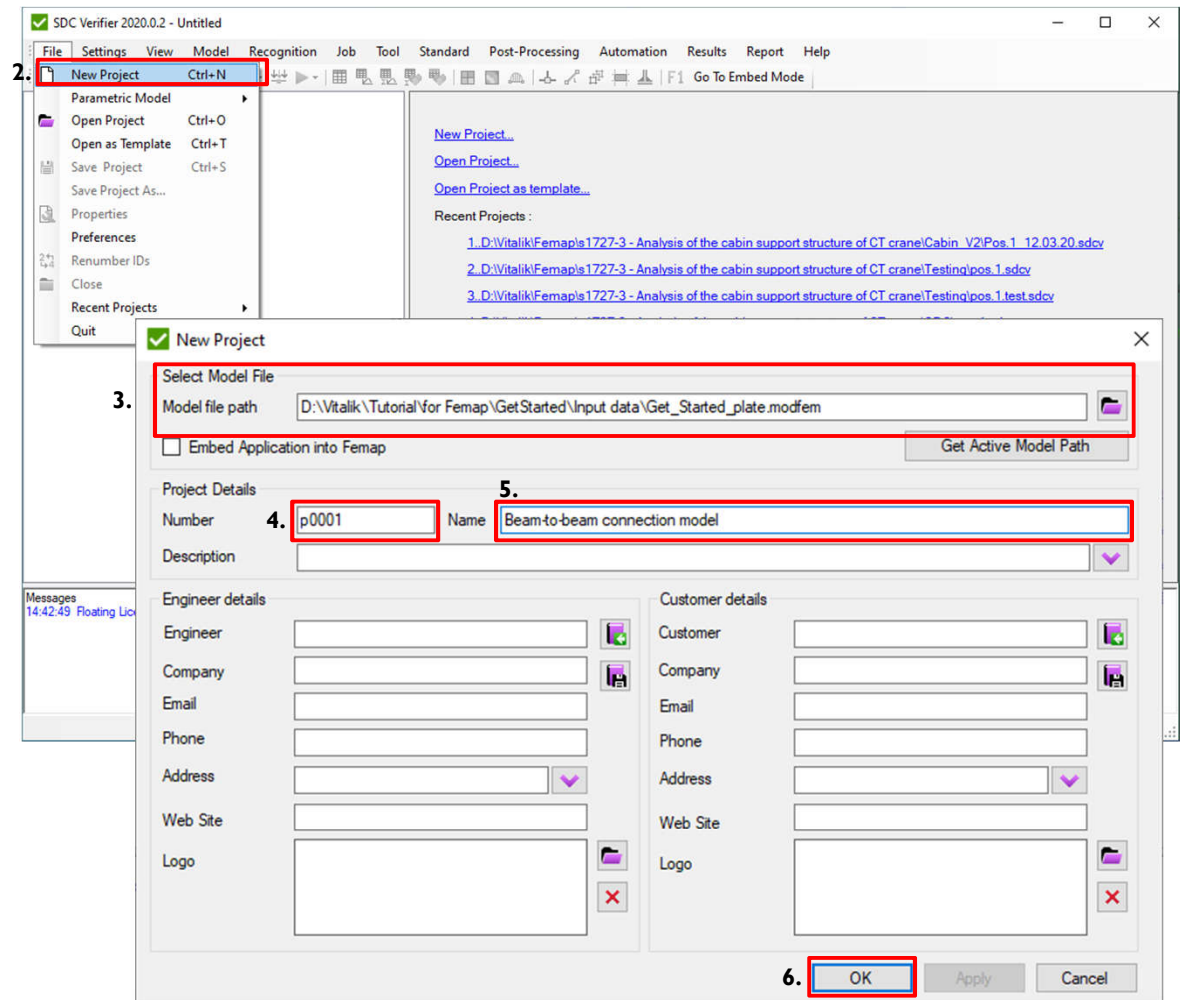
2 Execute *File - New Project*.

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.**

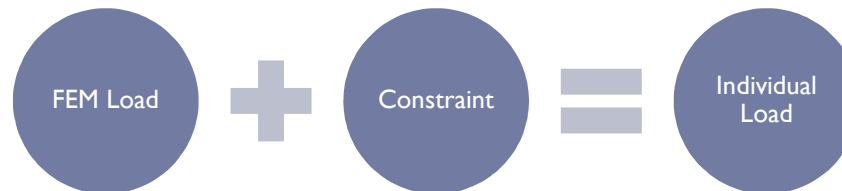
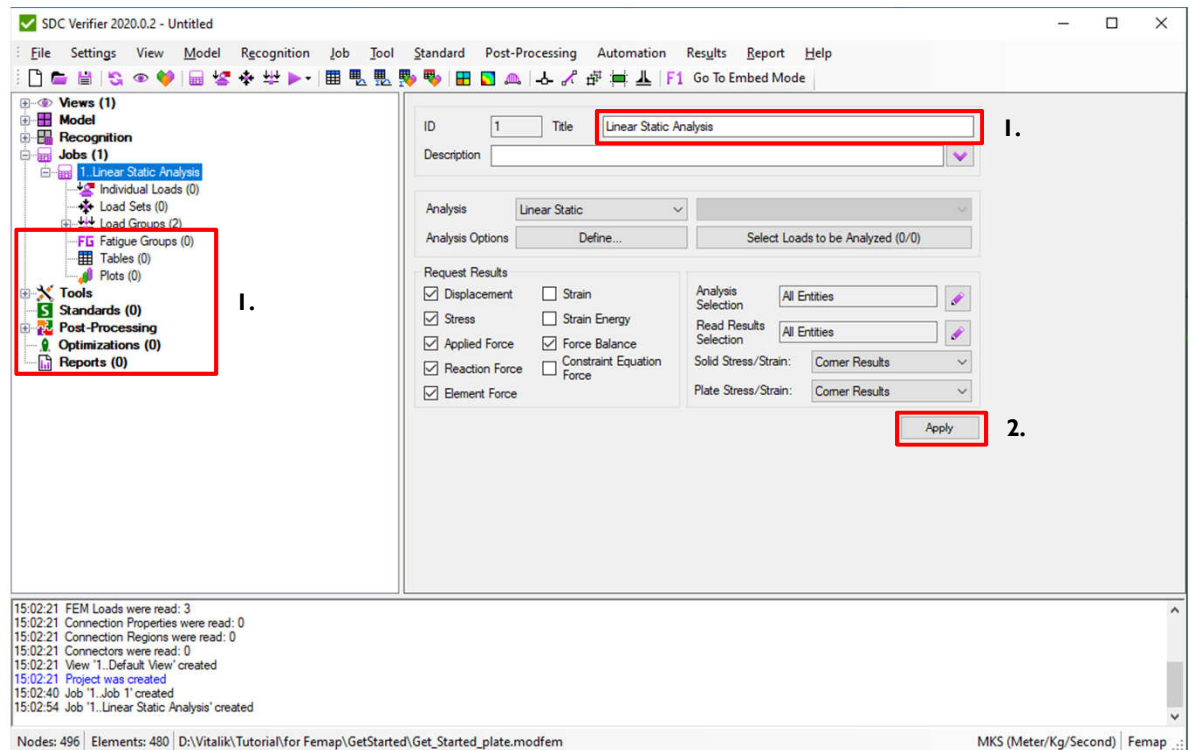
2 Press *Apply*.

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

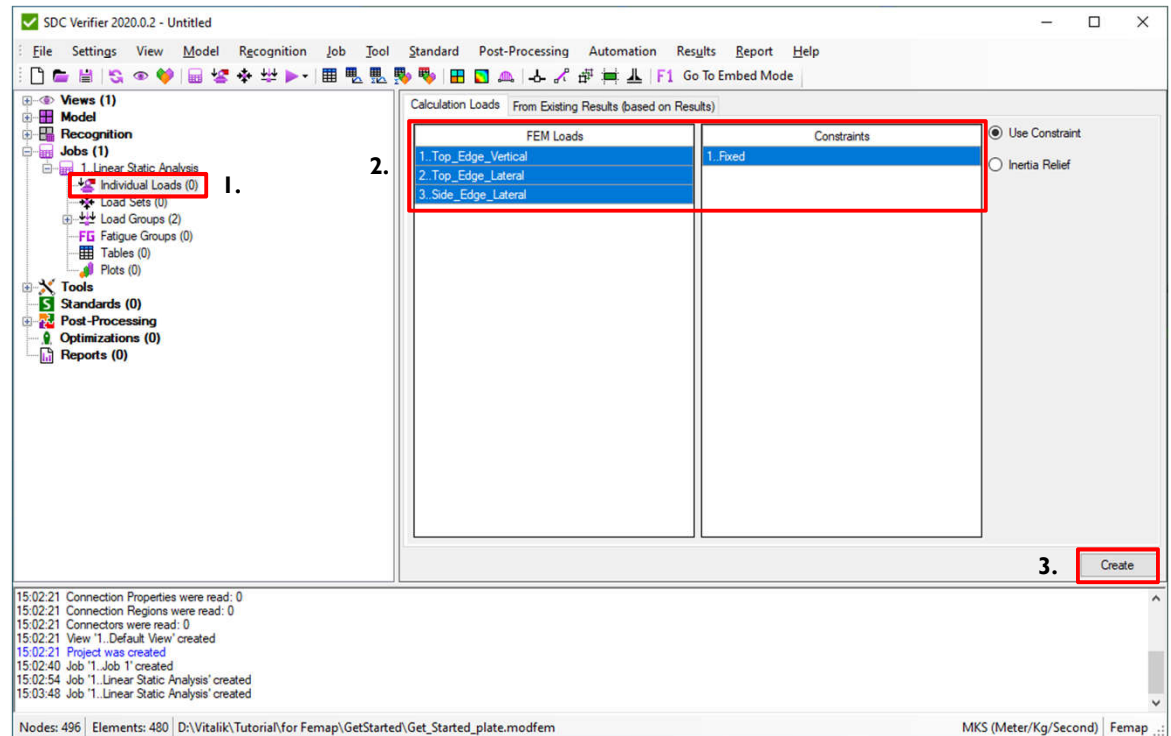
Select all *FEM Loads* and *Constraints*.

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.

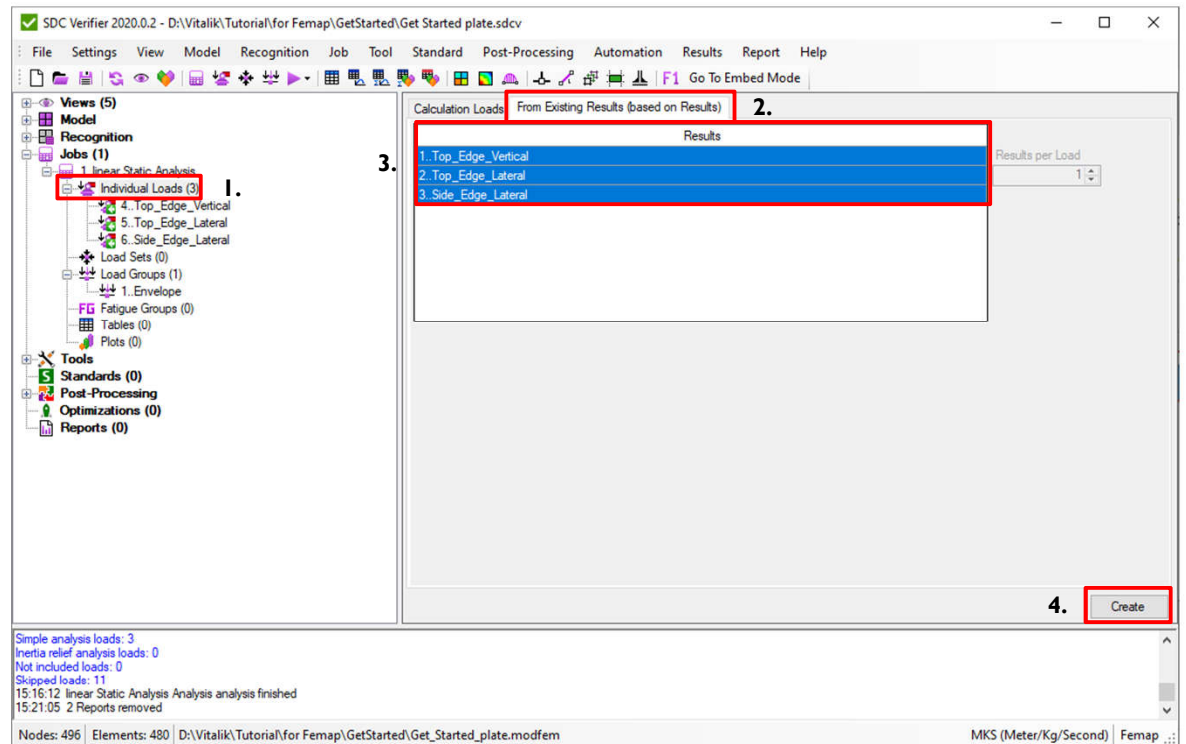
1. Activate *Individual Loads* in the *Model Tree*.

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

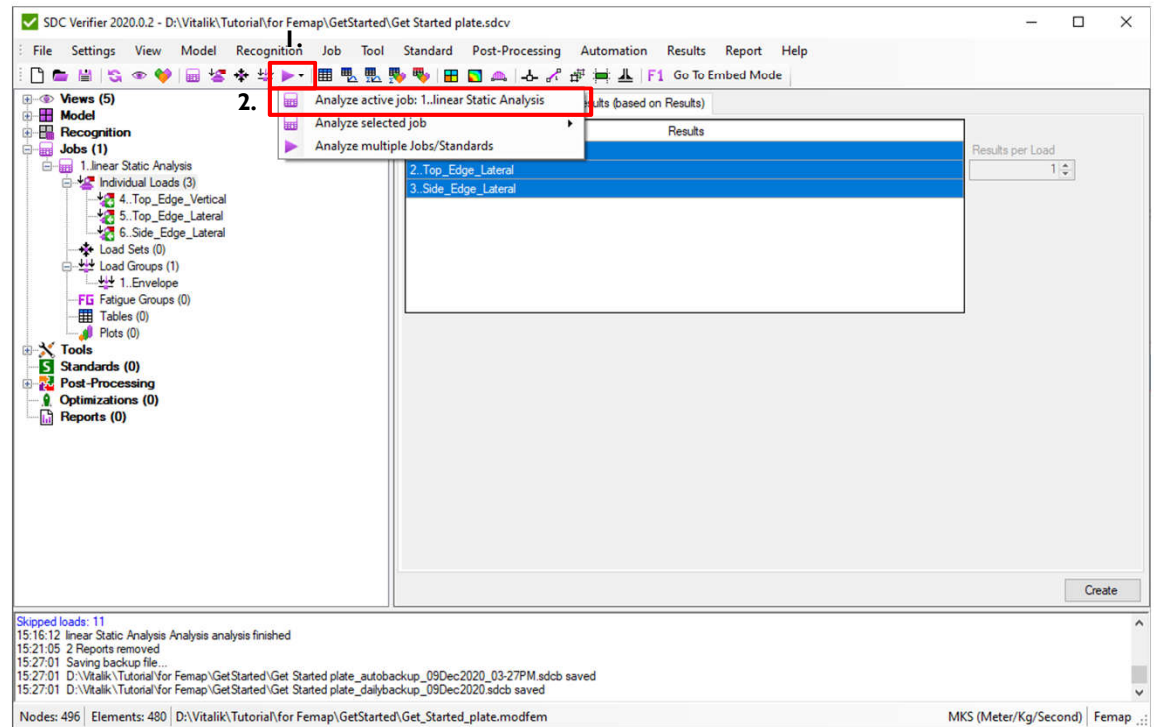
1 Press  on toolbar to analyze job.

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..linear Static Analysis Linear

- Solver : Simcenter Nastran
- Type : Static
- Integrated Solver : Simcenter Nastran
- Options
- Master Requests and Conditions
- Case : 1..Top\_Edge\_Vertical
- Case : 2..Top\_Edge\_Lateral
- Case : 3..Side\_Edge\_Lateral



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**

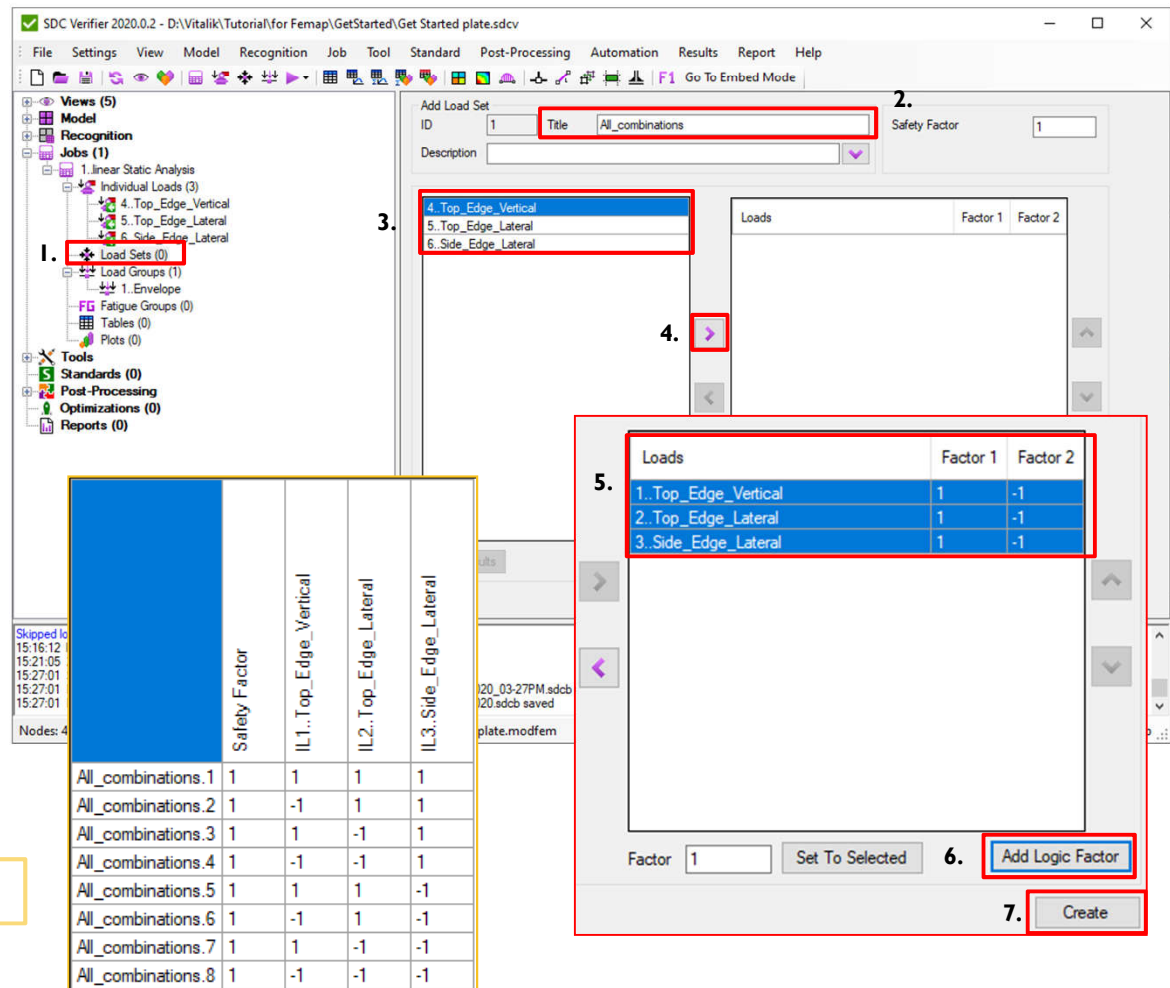
3 Select all Individual Loads from the list of loads.

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. Linear Static Analysis

Individual Loads (3)

4.Top\_Edge\_Vertical

5.Top\_Edge\_Lateral

6.Side\_Edge\_Lateral

Load Sets (0)

Load Groups (1)

1.Envelope

FG Fatigue Groups (0)

Tables (0)

Plots (0)

Tools

Standards (0)

Post-Processing

Optimizations (0)

Reports (0)

Skipped to 15:16:12 15:21:05 15:27:01 15:27:01

Nodes: 4

20\_03-27PM.sdbb 20.sdbb saved plate.modfem

1. Top\_Edge\_Vertical

2. Top\_Edge\_Lateral

3. Side\_Edge\_Lateral

Factor 1 Factor 2

1 1 -1

1 1 -1

1 1 -1

Factor 1 Set To Selected

Add Logic Factor

Create

	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

List of the created Load Sets



# 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

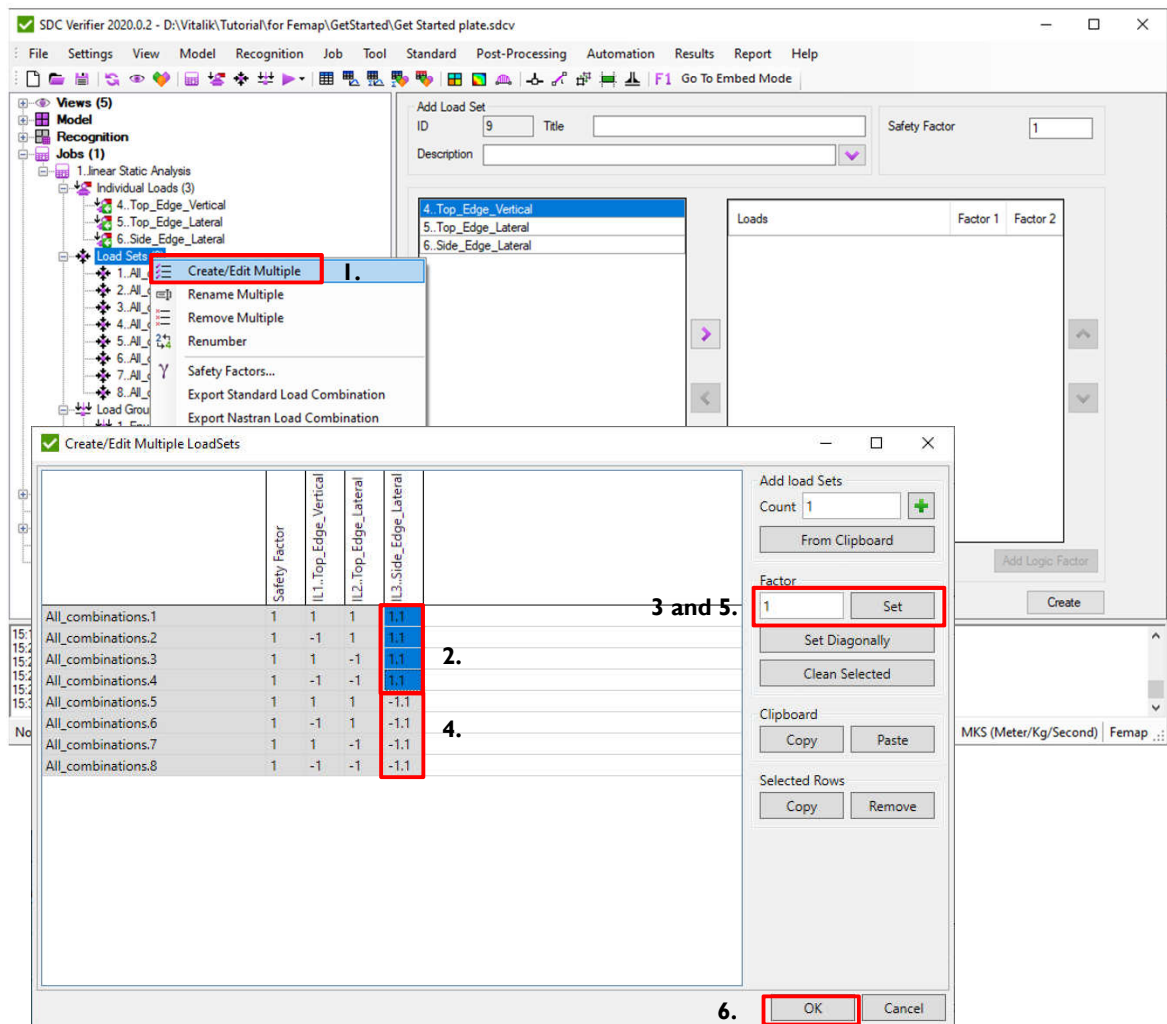
Factor: **-1.1**. Press *Set*

6

Press *OK*.

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

	IL1..Top_E dge_Ver cal.Fixed	IL2..Top_E dge_Lat al.Fixed	IL3..Side Edge_Lat eral.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)

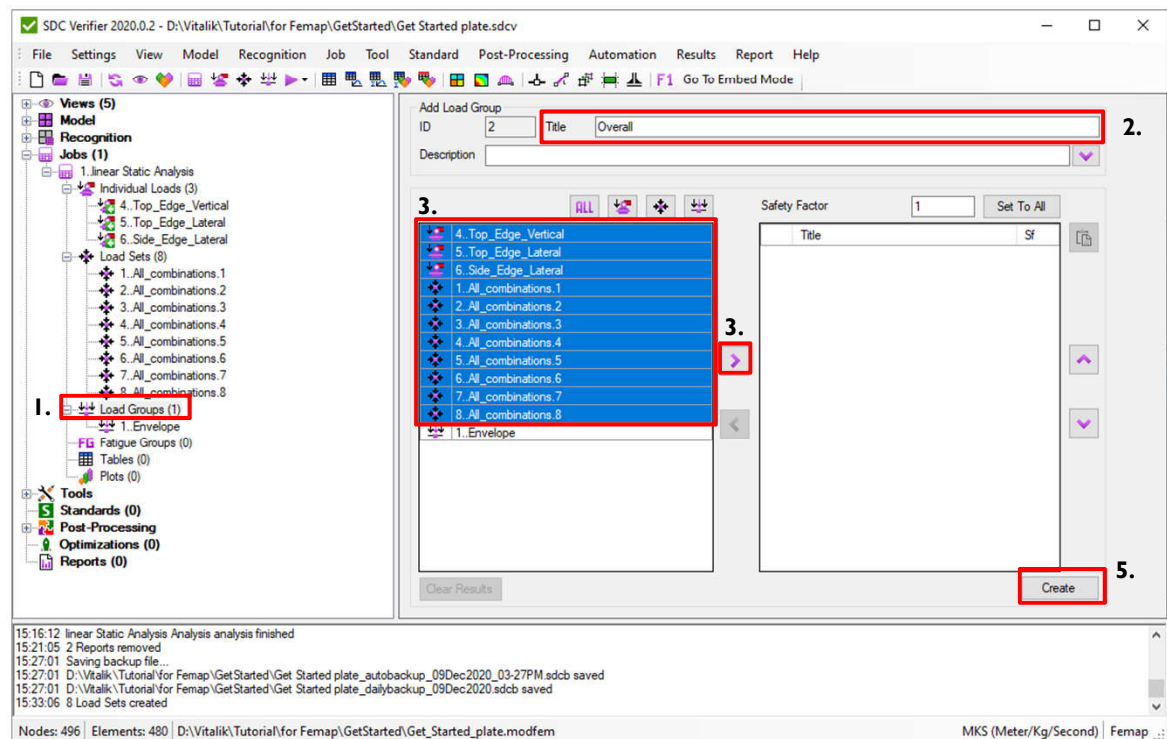
1 Activate *Load Groups* node in the *Model* tree.

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

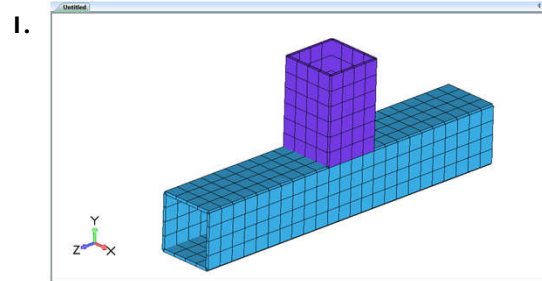
3 Title: **Front View**. Press *OK*.

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

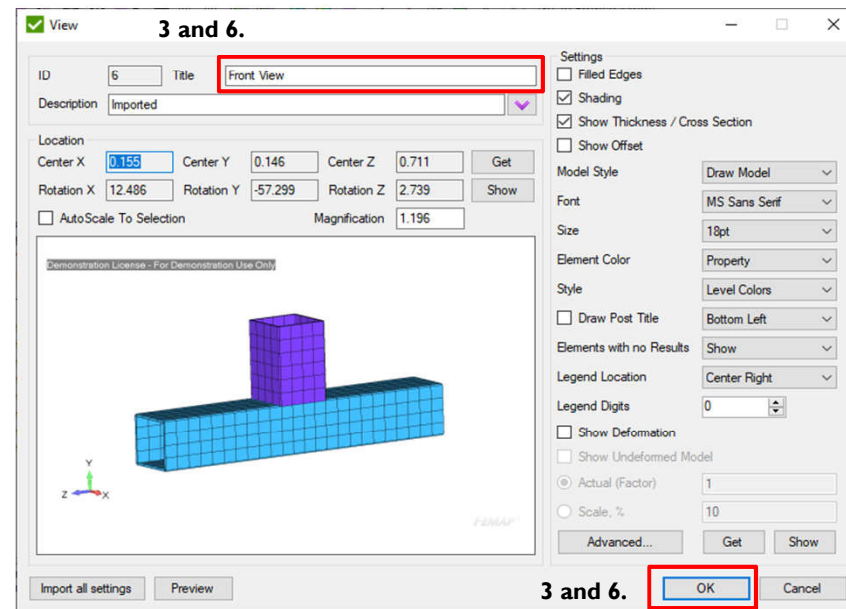
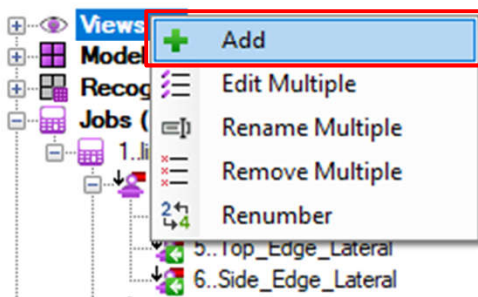
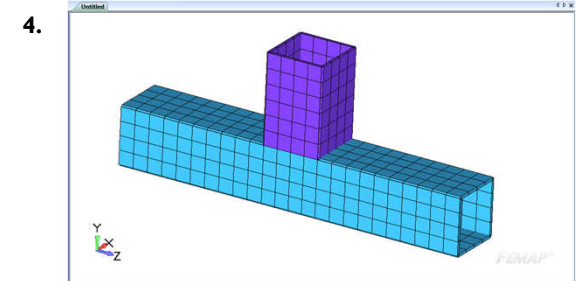
5 Execute *View – Add* from context menu

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

Front View



Back View





# Create 2 detailed Views

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

2 Execute *View – Add* from context menu

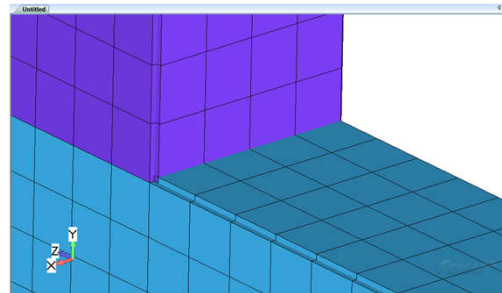
3 Title: **Front Detail**. Press *OK*.

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

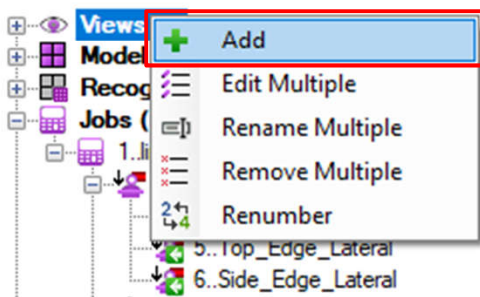
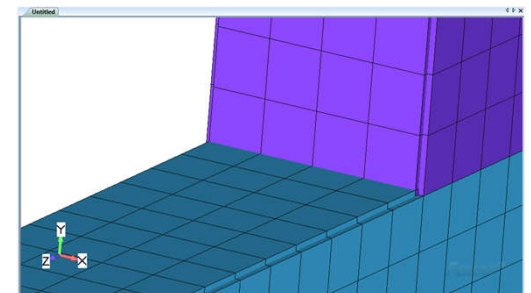
5 Execute *View – Add* from context menu

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

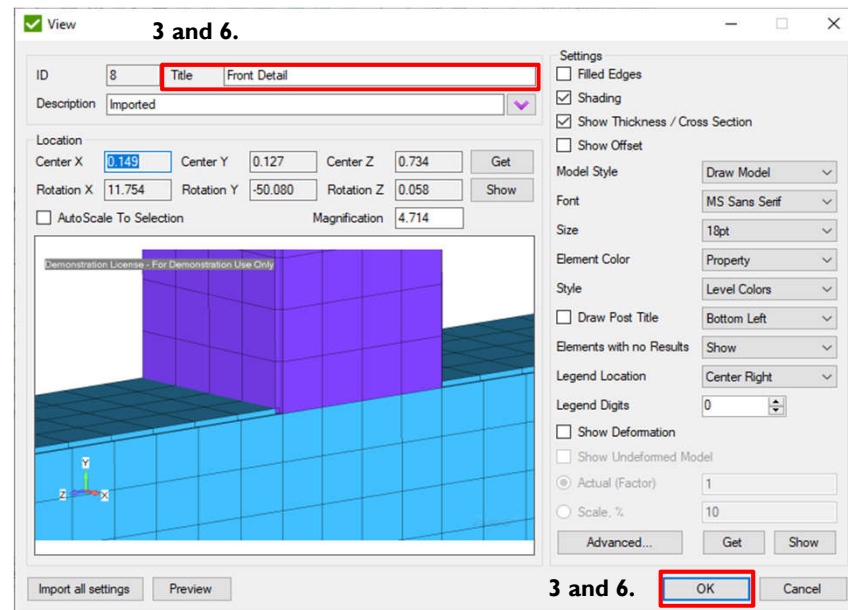
Front Detail



Back Detail




2 and 5.






# Report Wizard – Model Setup report

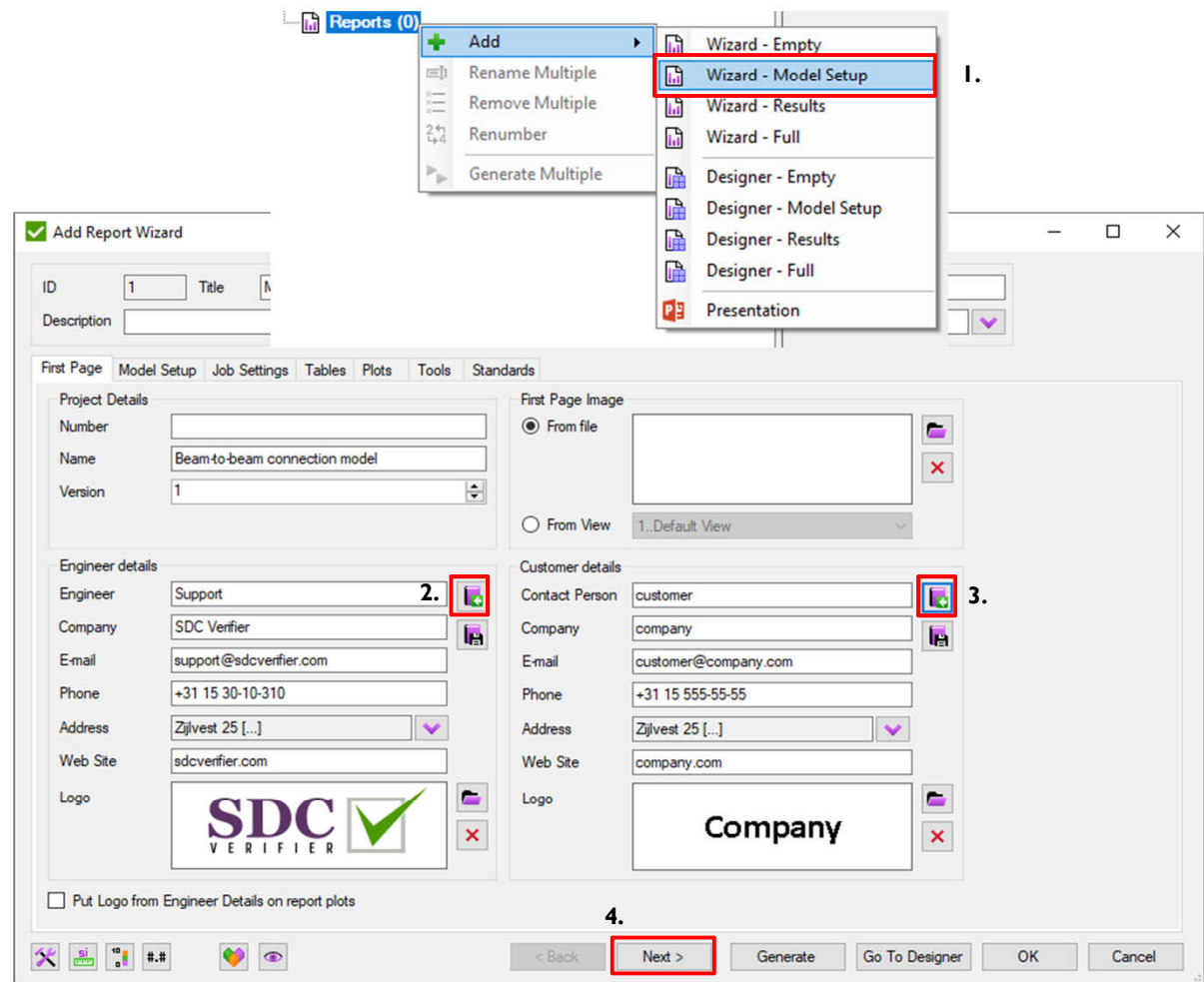
1 Execute Add -> Wizard - Model Setup from Reports in the Model tree.

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).



The screenshot shows the 'Add Report Wizard' dialog box in SDC Verifier. The 'Reports (0)' tree on the left has a context menu open with 'Add' selected, leading to a submenu where 'Wizard - Model Setup' is highlighted. The main dialog has tabs for 'First Page', 'Model Setup', 'Job Settings', 'Tables', 'Plots', 'Tools', and 'Standards'. The 'First Page' tab is active, showing 'Project Details' (Number: 1, Name: Beam-to-beam connection model, Version: 1), 'Engineer details' (Engineer: Support, Company: SDC Verifier, Email: support@sdcverifier.com, Phone: +31 15 30-10-310, Address: Zijlvest 25 [...], Web Site: sdcverifier.com, Logo: SDC VERIFIER), and 'Customer details' (Contact Person: customer, Company: company, Email: customer@company.com, Phone: +31 15 555-55-55, Address: Zijlvest 25 [...], Web Site: company.com, Logo: Company). The 'Next >' button is highlighted with a red box.



# Model Setup options

1 Plot View: **Front View**

2 Press *Generate*.

**Add Report Wizard**

ID: 1 Title: Model Setup

Description:

First Page | Model Setup | Job Settings | Tables | Plots | Tools | Standards

☒ Preface  
☒ Model Information  
 Full Model Description  
☒ Include

☒ Materials (1/1) ☒ Plot Full (detailed for each material)  
☒ Properties (2/2) ☒ Plot Full (detailed for each property)  
☒ Components (0/0) ☒ Plot

Preview Mode: Highlight

Recognition Tools

☐ Include

☐ 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

< Back Next > **1 Generate** Go To Designer OK Cancel

SDC

## Model Setup

Beam-to-beam connection model

Prepared by:  
SDC Verifier

Prepared for:  
company

Engineer:  
Customer:  
Project Number:  
Version:  
Date:

Support  
customer:  
project:  
1  
01-06-2018

2\_plate\_10mm 355

Material	Value
Beam	10
Type	2-plate
Material	355
Mass	18.2
Section Center	0.00, 0.00, 0.00
Thicknesses 1	0.010
Thicknesses 2	0
Thicknesses 3	0
Thicknesses 4	0
Nonstructural Masses	0
Top Flange	0
Bottom Flange	0
Band Stiffeners	0
Thinweb Flange	0

3.Side\_Edge\_Lateral

Definition	Load Type	Applied On	Value
P1	Force	Columns 75, 125, 175, 225, 275, 325, 375, 425, 475, 525, 575, 625, 675, 725, 775, 825, 875, 925, 975, 1025, 1075, 1125, 1175, 1225, 1275, 1325, 1375, 1425, 1475, 1525, 1575, 1625, 1675, 1725, 1775, 1825, 1875, 1925, 1975, 2025, 2075, 2125, 2175, 2225, 2275, 2325, 2375, 2425, 2475, 2525, 2575, 2625, 2675, 2725, 2775, 2825, 2875, 2925, 2975, 3025, 3075, 3125, 3175, 3225, 3275, 3325, 3375, 3425, 3475, 3525, 3575, 3625, 3675, 3725, 3775, 3825, 3875, 3925, 3975, 4025, 4075, 4125, 4175, 4225, 4275, 4325, 4375, 4425, 4475, 4525, 4575, 4625, 4675, 4725, 4775, 4825, 4875, 4925, 4975, 5025, 5075, 5125, 5175, 5225, 5275, 5325, 5375, 5425, 5475, 5525, 5575, 5625, 5675, 5725, 5775, 5825, 5875, 5925, 5975, 6025, 6075, 6125, 6175, 6225, 6275, 6325, 6375, 6425, 6475, 6525, 6575, 6625, 6675, 6725, 6775, 6825, 6875, 6925, 6975, 7025, 7075, 7125, 7175, 7225, 7275, 7325, 7375, 7425, 7475, 7525, 7575, 7625, 7675, 7725, 7775, 7825, 7875, 7925, 7975, 8025, 8075, 8125, 8175, 8225, 8275, 8325, 8375, 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80125, 80175, 80225, 80275, 80325, 80375, 80425, 80475, 80525, 80575, 8062	



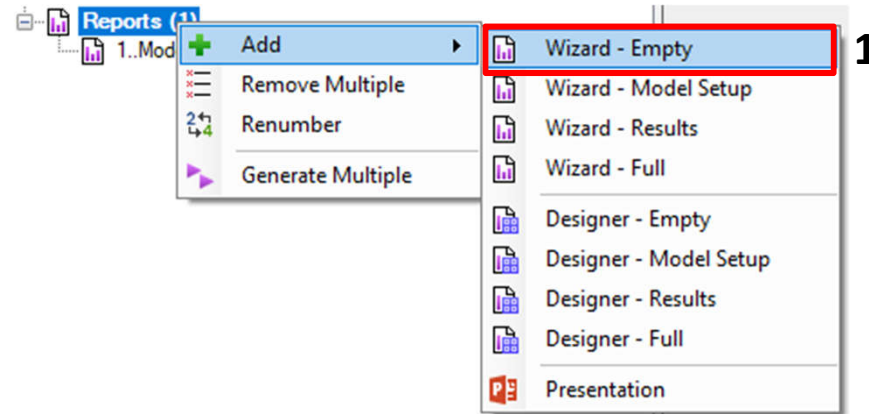
# Create calculation report

1

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

2

Press *Next* twice



The screenshot shows the 'Add Report Wizard' dialog box. The 'ID' field contains '2' and the 'Title' field contains 'Report'. The 'Description' field is empty. The 'First Page' tab is selected, showing 'Project Details', 'Engineer details', and 'Customer details' sections. The 'Next >' button at the bottom right is highlighted with a red rectangular box, and the number '2' is placed to its left.



# Predefined Job Tables

1 Jobs: **ON**

2 Include Sum of Forces: **ON**

3 Press *Next*

1

2

3

The screenshot shows the 'Add Report Wizard' dialog box with the 'Tables' tab selected. The 'ID' is 2 and the 'Title' is 'Report'. The 'Description' field is empty. The 'Tables' tab is active, showing a list of tables with '1. Linear Static Analysis' selected. The 'Job Settings' section has 'Include Jobs' checked. The 'Advanced Tables (Overall)' section has 'Include Sum of Forces' checked. The 'Advanced Tables (For Each Load)' section has 'Include Sum Of Forces' checked. The 'Next >' button is highlighted.

1. Linear Static Analysis

Job Settings

- ☒ Include Jobs
- ☐ Job Description
- ☐ Plot Individual Load
- ☐ Modes Table for Individual Loads and Load Sets
- ☐ 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 Strain
  - ☐ 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

☐ Automatically sort tables and plots by result category


< Back 3 Next > Generate Go To Designer OK Cancel



# Add displacements plots

1 Click on *Plots* in the Navigation list.

2 Select All Loads from the list.

3 Press  to add contour plot.

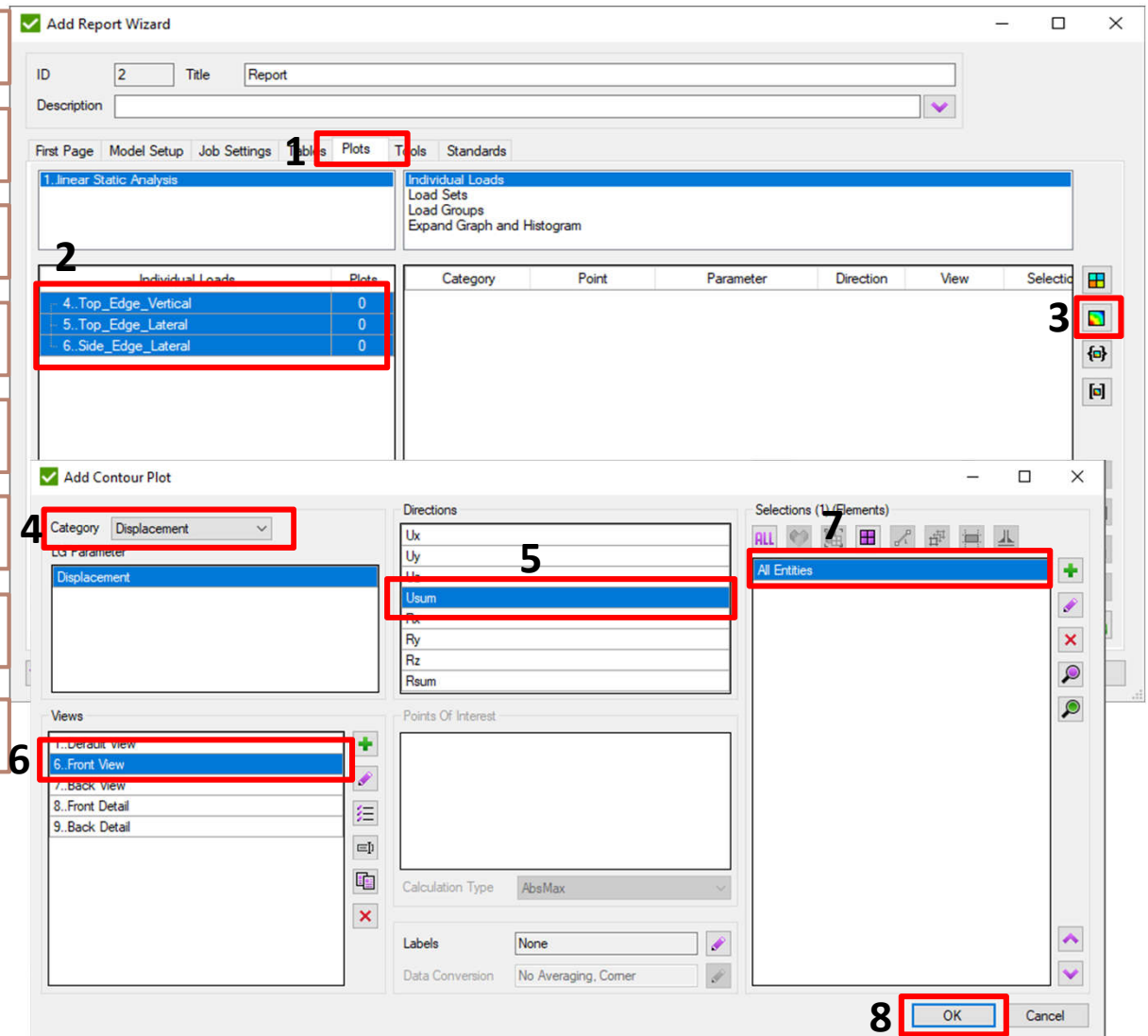
4 *Category: Displacement*

5 *Direction: Usum*

6 *Views: Front Detail*

7 *Selection: All Entities*

8 Press *OK*.



**Add Report Wizard**

ID: 2 Title: Report Description:

First Page Model Setup Job Settings **1 Plots** Tools Standards

1. Linear Static Analysis

Individual Loads

Category	Point	Parameter	Direction	View	Select
4. Top_Edge_Vertical	0				
5. Top_Edge_Lateral	0				
6. Side_Edge_Lateral	0				

**Add Contour Plot**

Category: **Displacement**

Displacement

Directions

Direction
Ux
Uy
Uz
Usum
Rx
Ry
Rz
Rsum

**5 Usum**

Views

View
1. Global view
<b>6. Front View</b>
7. Back View
8. Front Detail
9. Back Detail

Points Of Interest

Calculation Type: AbsMax

Labels: None

Data Conversion: No Averaging, Corner

Selections (Elements)


Selection
<b>All Entities</b>

**8 OK** Cancel



# Add stress plots

1 Select All Loads from the list.

2 Press  to add criteria plots.

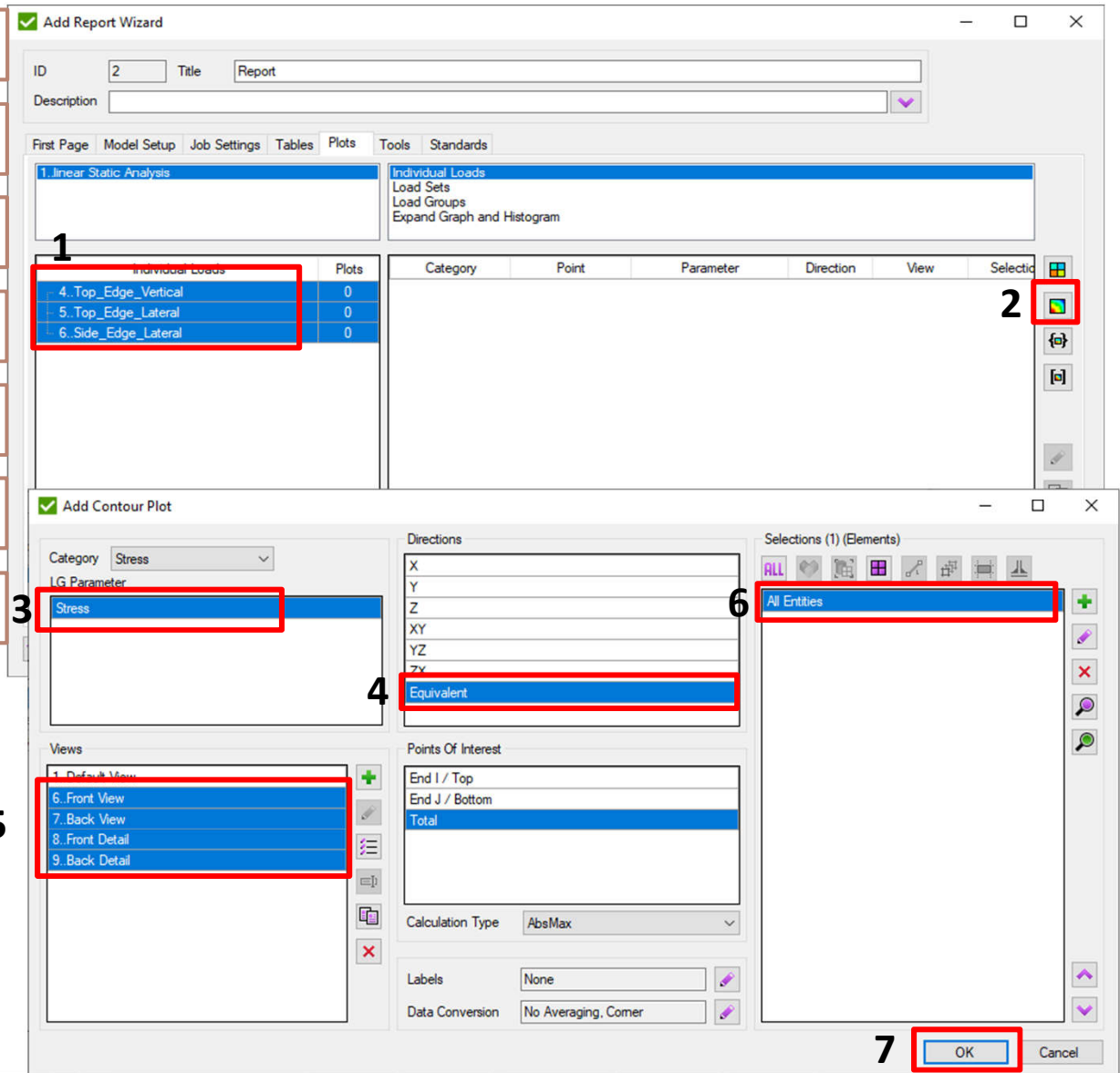
3 *Category: Stress*

4 *Direction: Equivalent.*

5 Select 4 created Views

6 *Selection: All Entities*

7 Press OK.



The screenshot displays two overlapping dialog boxes in the SDC Verifier software. The top dialog, 'Add Report Wizard', has tabs for 'First Page', 'Model Setup', 'Job Settings', 'Tables', 'Plots', 'Tools', and 'Standards'. The 'Plots' tab is active, showing a list of 'Individual Loads' (4. Top\_Edge\_Vertical, 5. Top\_Edge\_Lateral, 6. Side\_Edge\_Lateral) and a table of 'Plots' (all set to 0). A red box highlights the 'Individual Loads' list, and another red box highlights the 'Add Criteria Plots' icon in the bottom right. The bottom dialog, 'Add Contour Plot', has a 'Category' dropdown set to 'Stress' and an 'I.G. Parameter' dropdown set to 'Stress'. The 'Directions' list includes 'X', 'Y', 'Z', 'XY', 'YZ', and 'ZX', with 'Equivalent' selected. The 'Points Of Interest' list includes 'End I / Top', 'End J / Bottom', and 'Total'. The 'Views' list includes '6. Front View', '7. Back View', '8. Front Detail', and '9. Back Detail'. The 'Selections (1) (Elements)' list includes 'All Entities'. The 'Calculation Type' is set to 'AbsMax', 'Labels' is set to 'None', and 'Data Conversion' is set to 'No Averaging, Corner'. A red box highlights the 'All Entities' selection, and another red box highlights the 'OK' button at the bottom right.

1. Linear Static Analysis

Individual Loads

Category	Point	Parameter	Direction	View	Select
4. Top_Edge_Vertical	0				
5. Top_Edge_Lateral	0				
6. Side_Edge_Lateral	0				

2. Add Criteria Plots

3. Add Contour Plot

Category: Stress

I.G. Parameter: Stress

Directions: X, Y, Z, XY, YZ, ZX

Points Of Interest: End I / Top, End J / Bottom, Total

Views: 6. Front View, 7. Back View, 8. Front Detail, 9. Back Detail

Selections (1) (Elements): All Entities

Calculation Type: AbsMax

Labels: None


Data Conversion: No Averaging, Corner

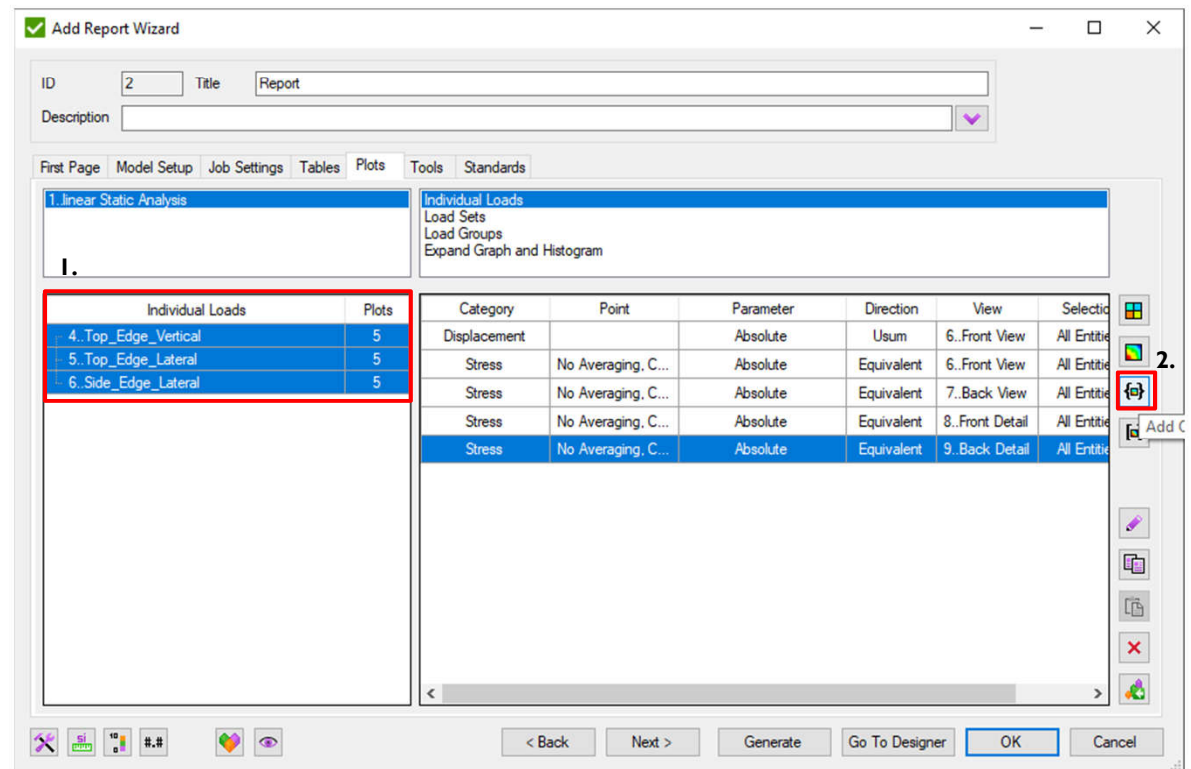
7. OK



# Add output vector plots

1 Select All Loads from the list.

2 Press  to add output criteria plots.





# Add output vector plots (continue)

3 Press *Select* button

4 Select option: **By Category**

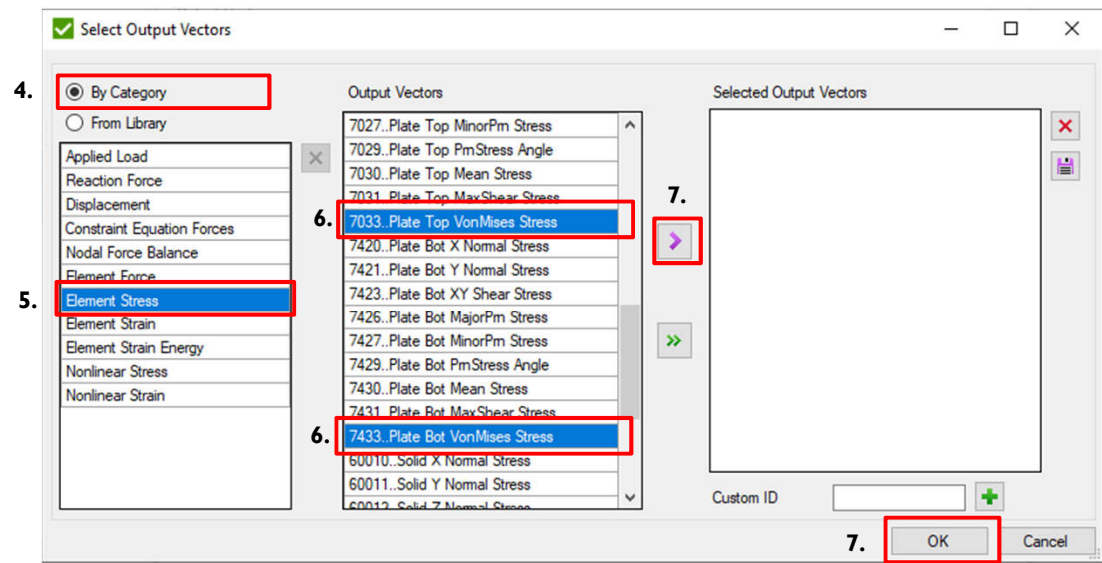
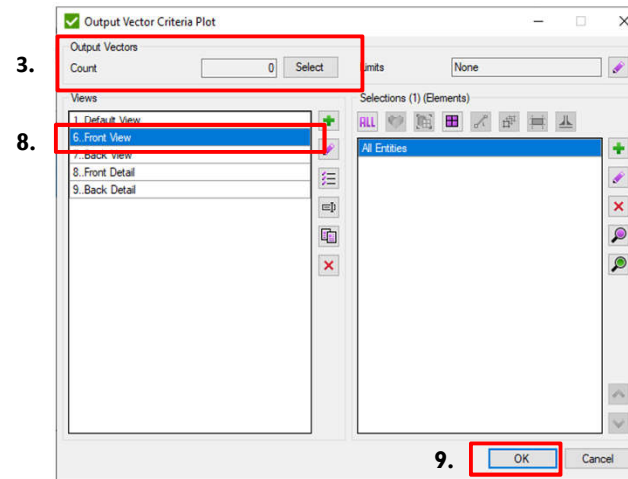
5 Select: **Element Stress**

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**

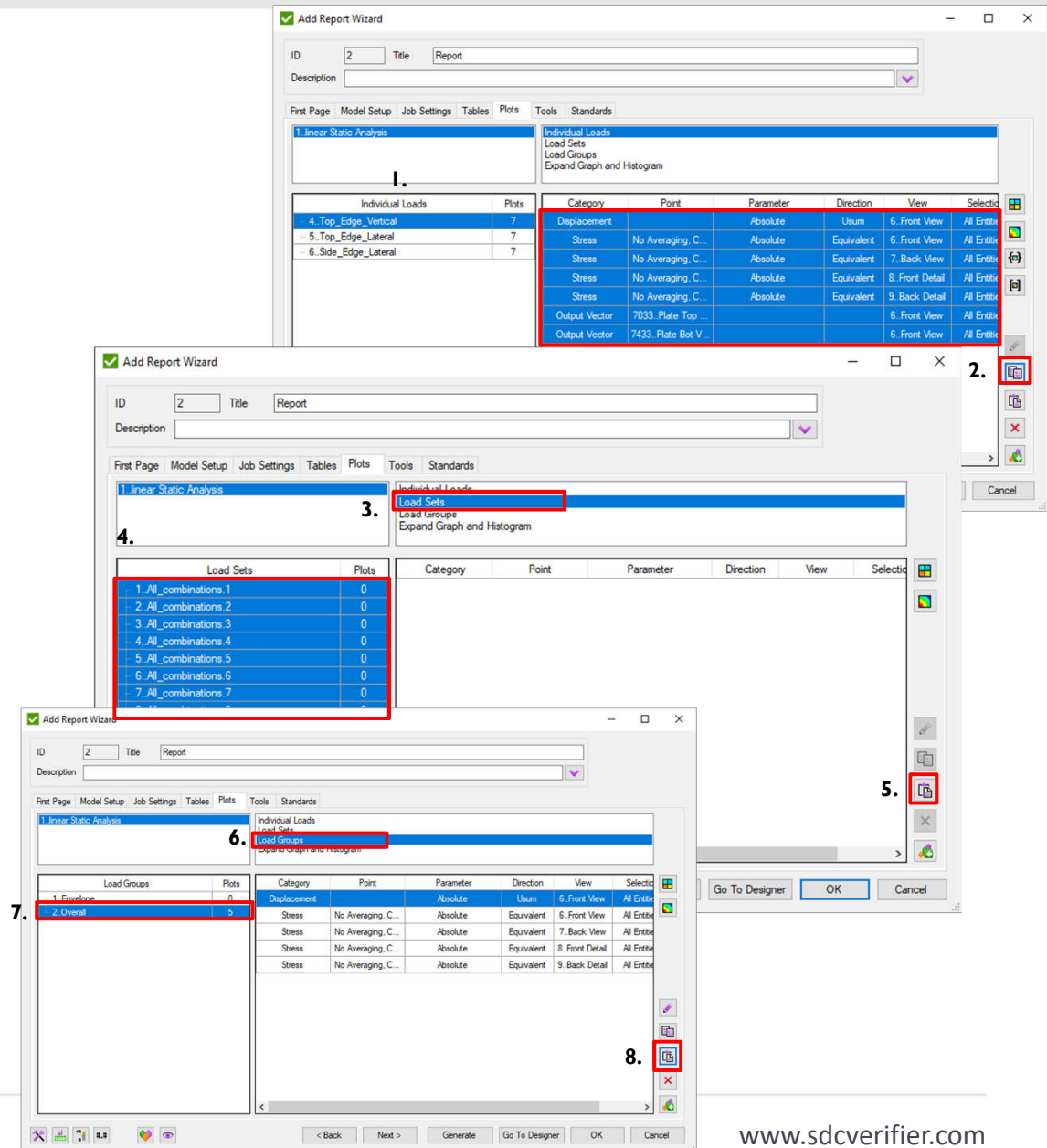
4 Select all loads sets.

5 Press  to paste.

6 Plot Type: **Load Groups**

7 Select **Overall** loads groups.

8 Press  to paste.



The screenshots illustrate the steps in the 'Add Report Wizard' dialog:

- Screenshot 1 (Top):** The 'Plots' tab is selected. The 'Individual Loads' table lists plots 4, 5, and 6. The 'Load Sets' table is empty. A red box highlights the 'Load Sets' table header.
- Screenshot 2 (Middle):** The 'Load Sets' table is populated with 7 rows (1.All\_combinations.1 to 7.All\_combinations.7). A red box highlights the 'Load Sets' table header.
- Screenshot 3 (Bottom):** The 'Load Groups' table is populated with 2 rows (1.Environment and 2.Overall). A red box highlights the 'Load Groups' table header.

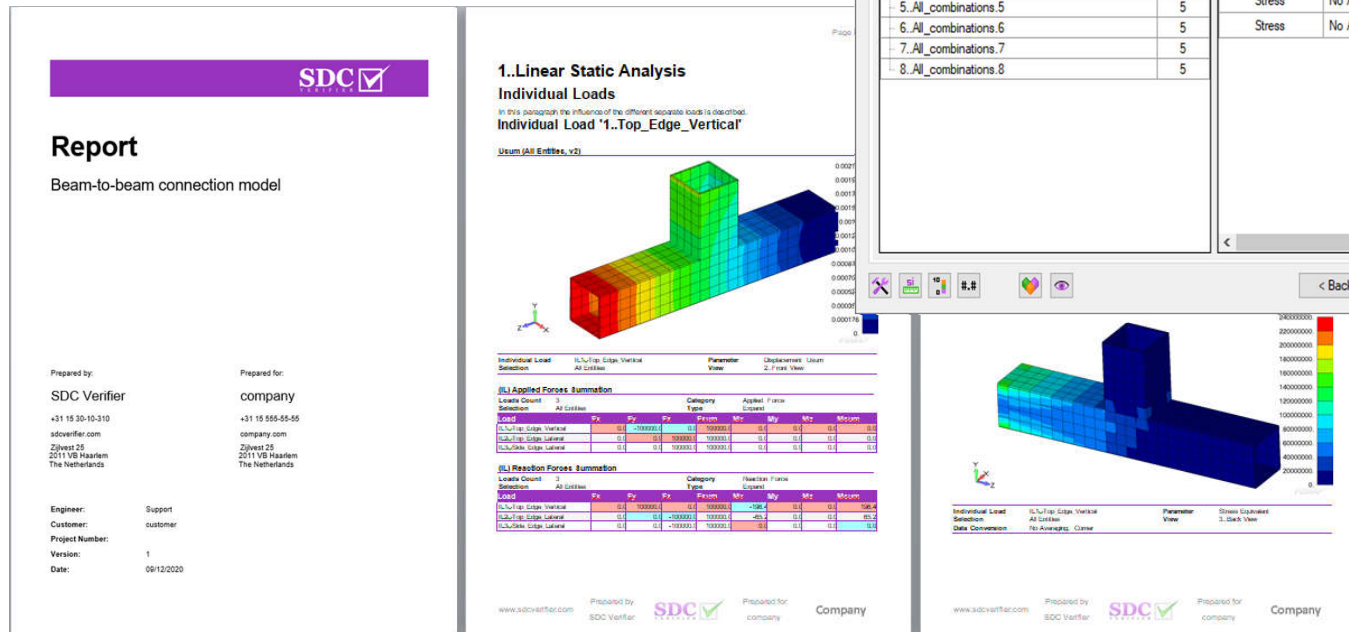
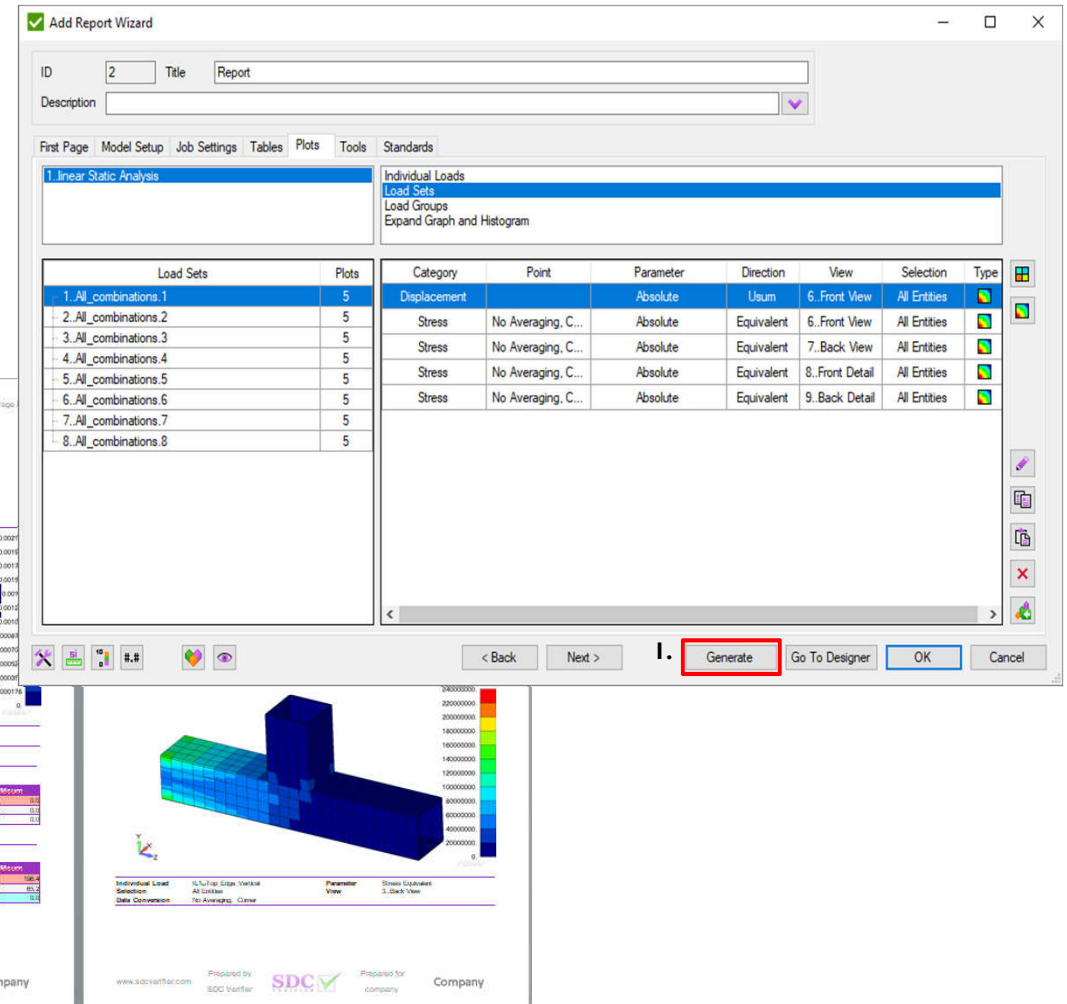
Numbered callouts 1 through 8 correspond to the instructions on the left, indicating the sequence of actions: selecting plots, copying, switching to Load Sets, selecting all, pasting, switching to Load Groups, selecting Overall, and pasting.



# Result Report Generation

1


Press *Generate*.



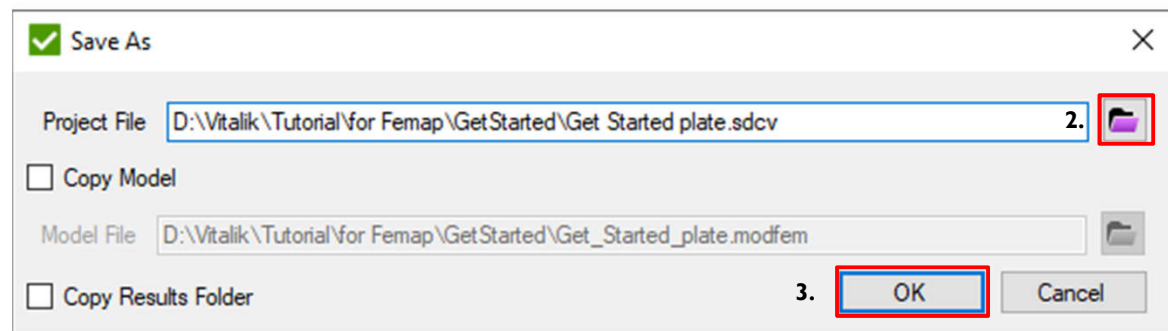
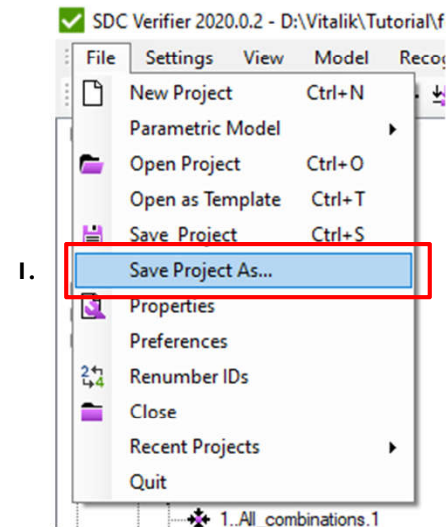


# Save SDC project

1 Execute *File - Save Project As*

2 Press  to browse location and define the filename

3 Press *OK*





# 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**

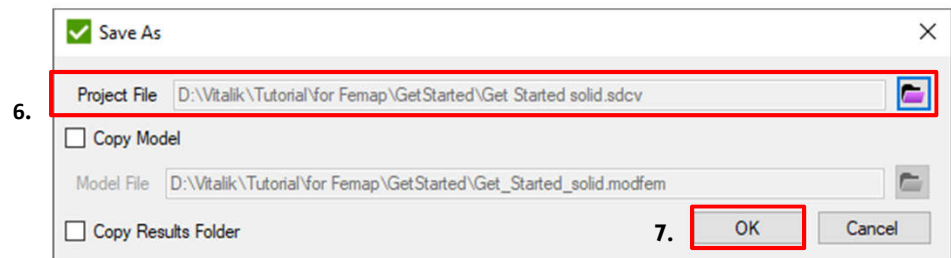
3 Model File: **Get\_Started\_solid.modfem**

4 Press *OK*.

5 Execute *File - Save Project as*



6 Project File: **Get\_Started\_solid.sdcv**

7 Press *OK*.





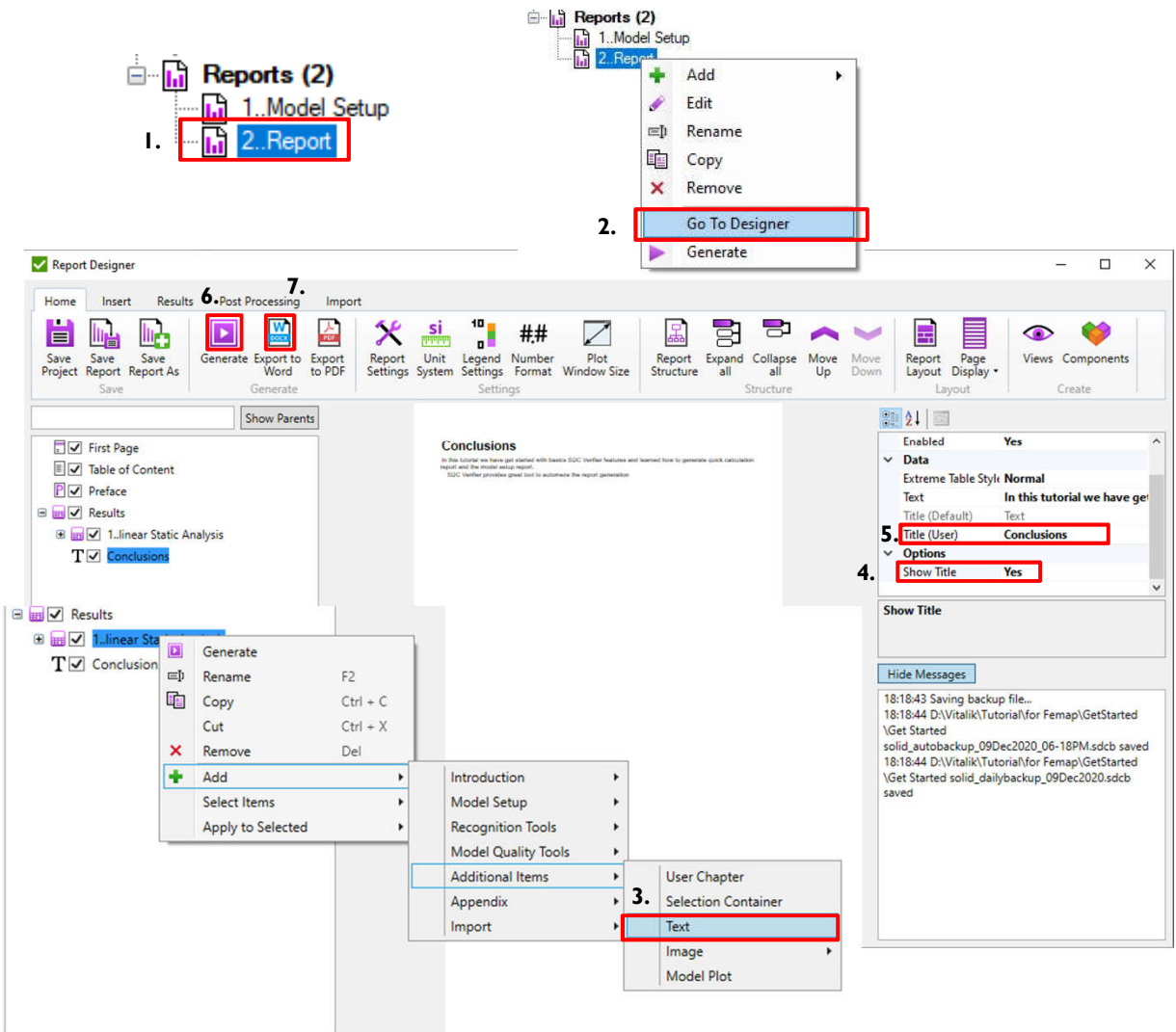
# Generate report for Solid model

- 1 Select *Report* in the *Model* tree
- 2 Execute *Go To Designer* from the context menu
- 3 Expand Linear Static Analysis => Add => Additional Items => Text
- 4 Title: **Conclusions**
- 5 Text:
- 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.

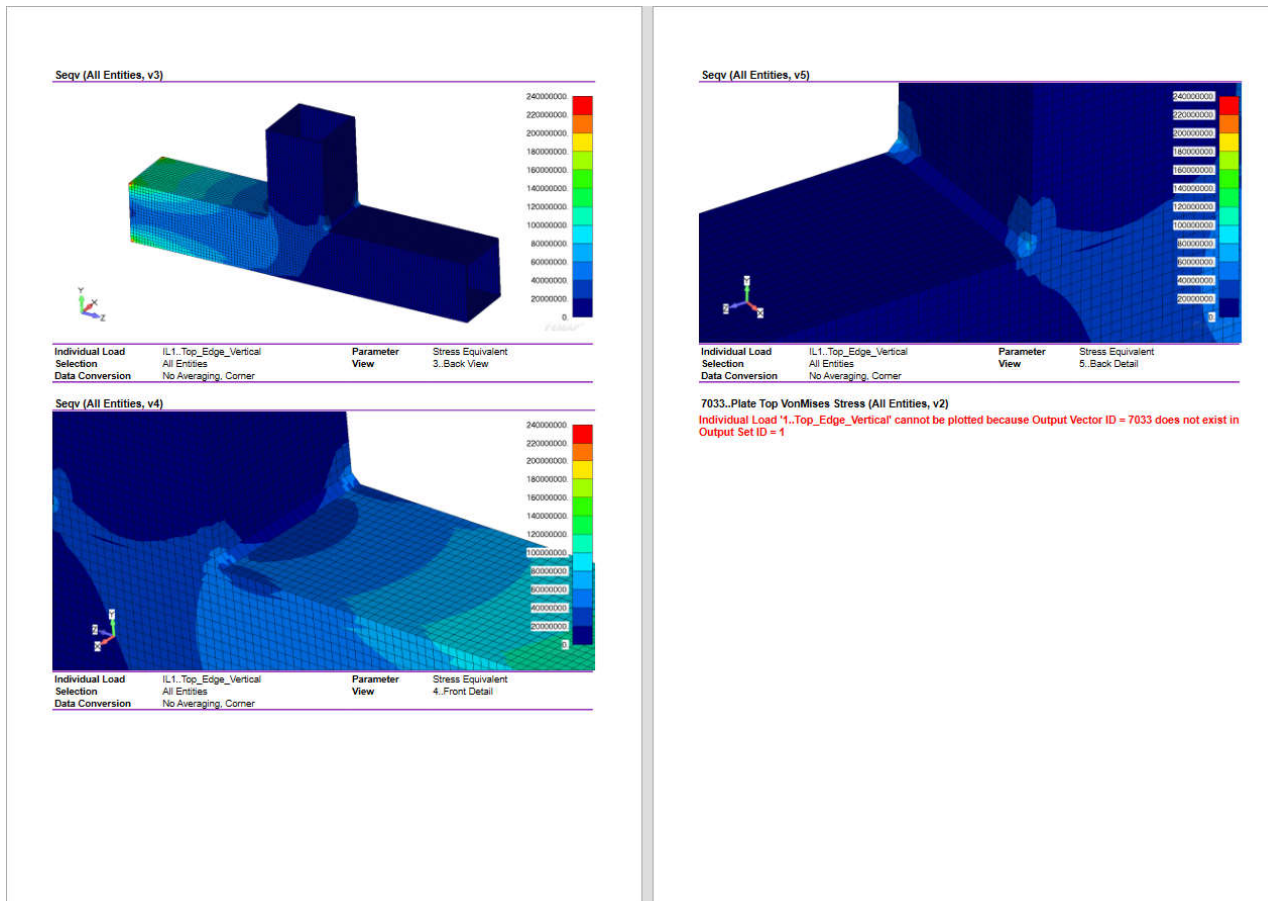
Whereas the Report Designer gives added ability to design your own reports.





# 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 phone or skype

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`;  
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.

