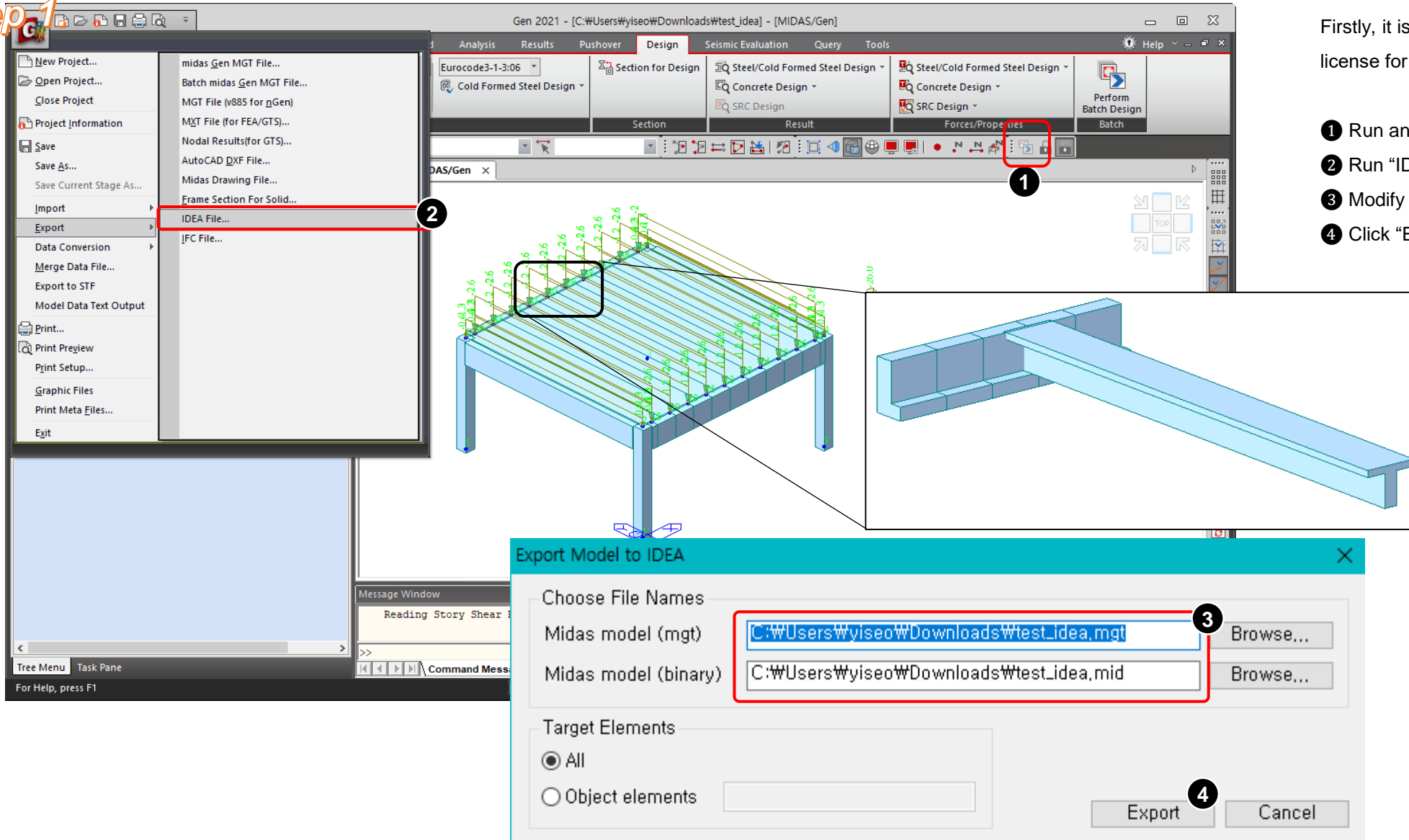


# **Irregular RC Design**

# Irregular RC Design

Step 1

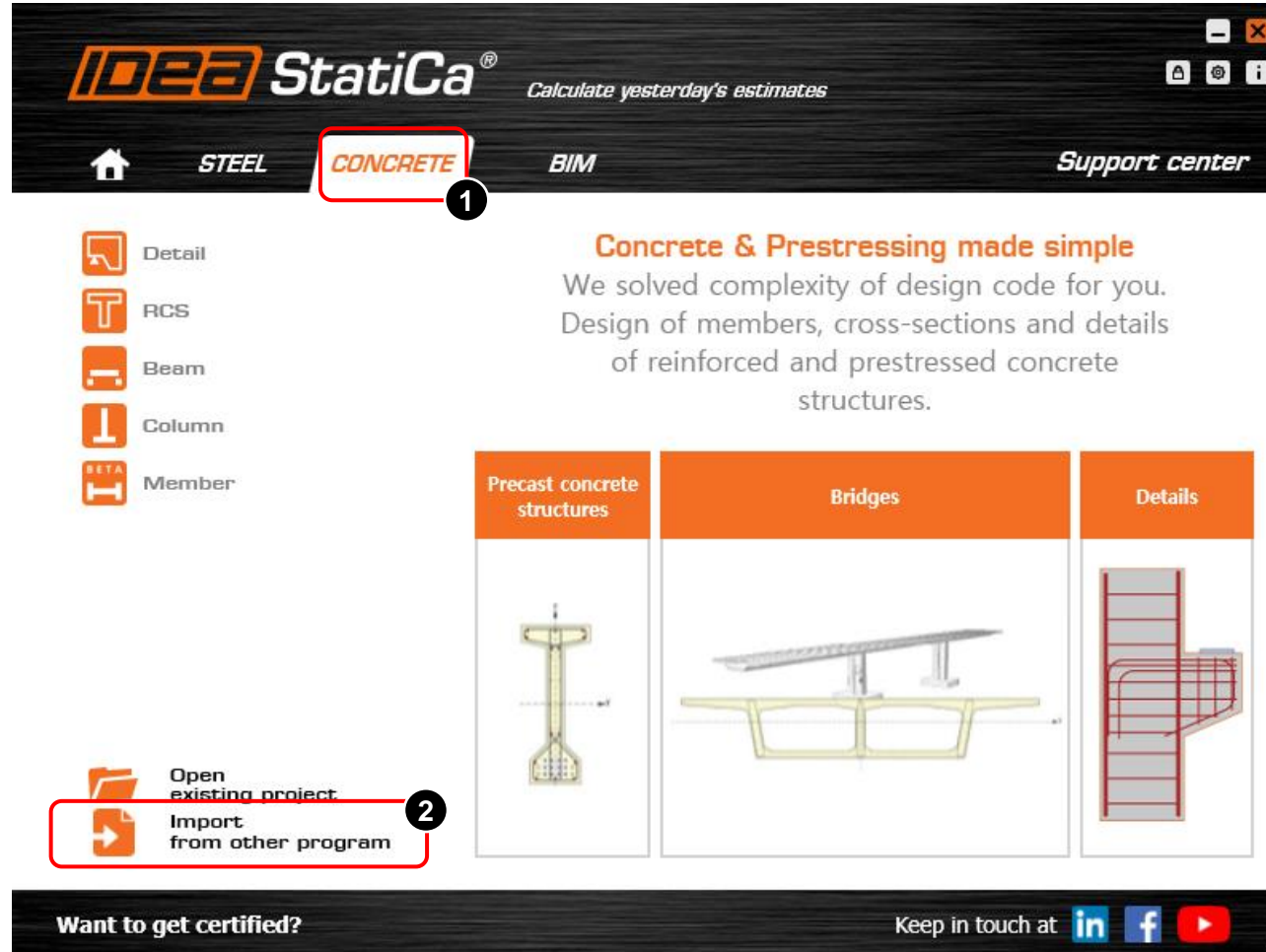


Firstly, it is necessary to check whether the license for “Export IDEA” is supported.

- 1 Run an analysis.
- 2 Run “IDA file...” in File > Export.
- 3 Modify the model names in dialog box.
- 4 Click “Export”.

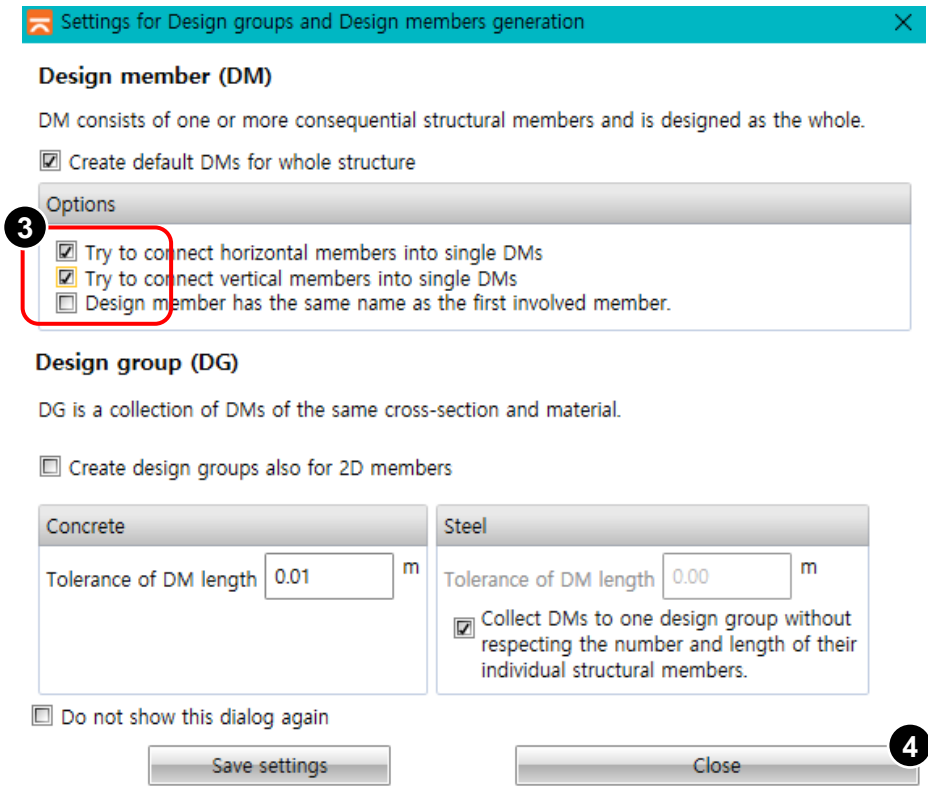
# Irregular RC Design

## Step 2.



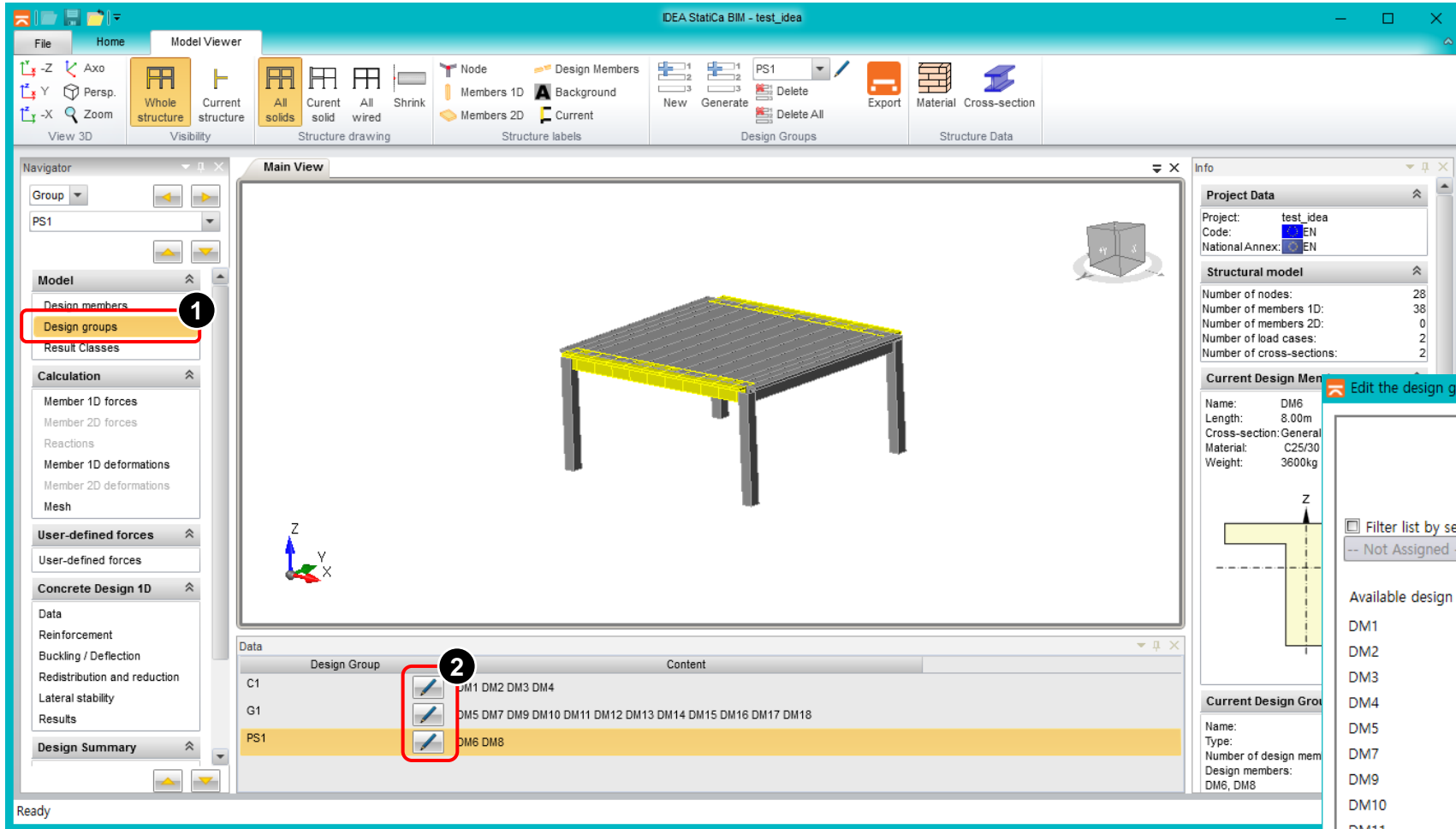
Run IDEA Statica

- 1 Click "Steel" tap.
- 2 Click "Import from other program".
- 3 Check on the options.
- 4 Click "Close".

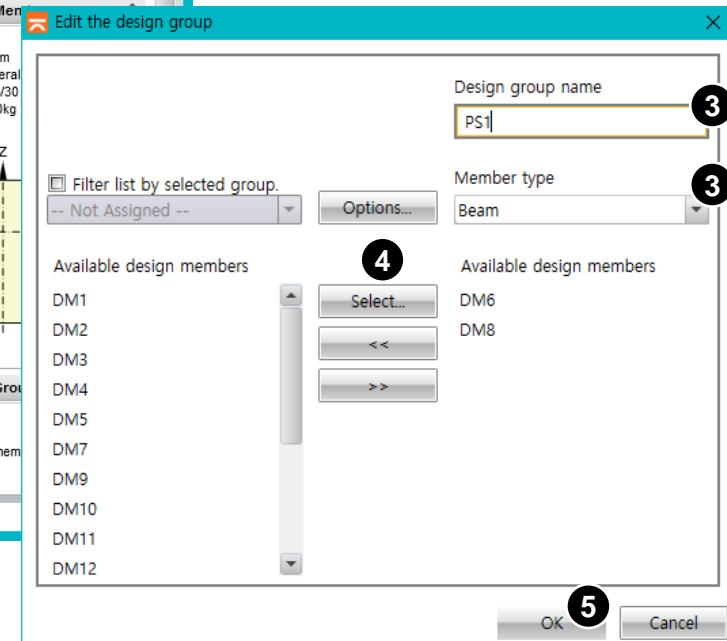


# Irregular RC Design

## Step 3.

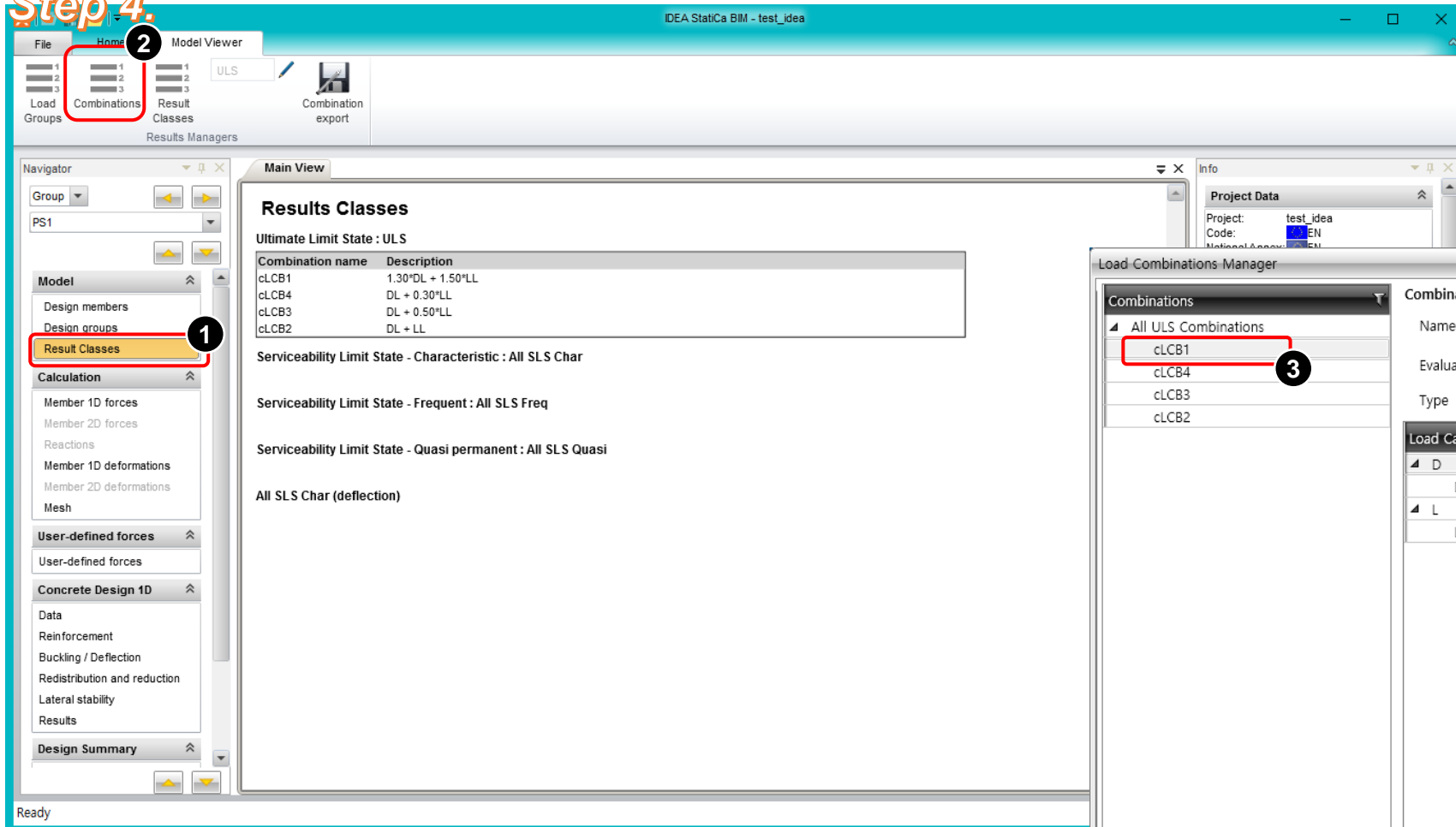


- 1 Click "Design Group".
- 2 Click .
- 3 Modify the group name and member type.
- 4 Modify the design members.
- 5 Click .



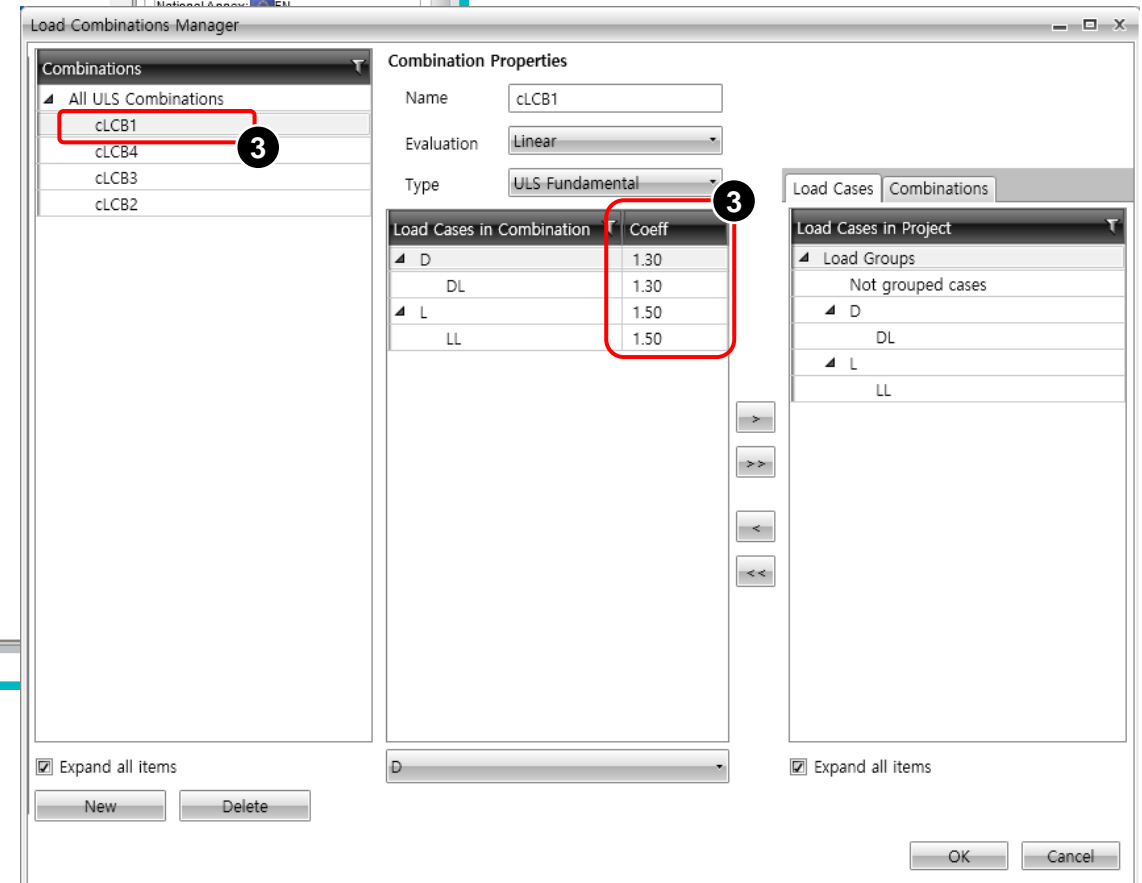
# Irregular RC Design

## Step 4.



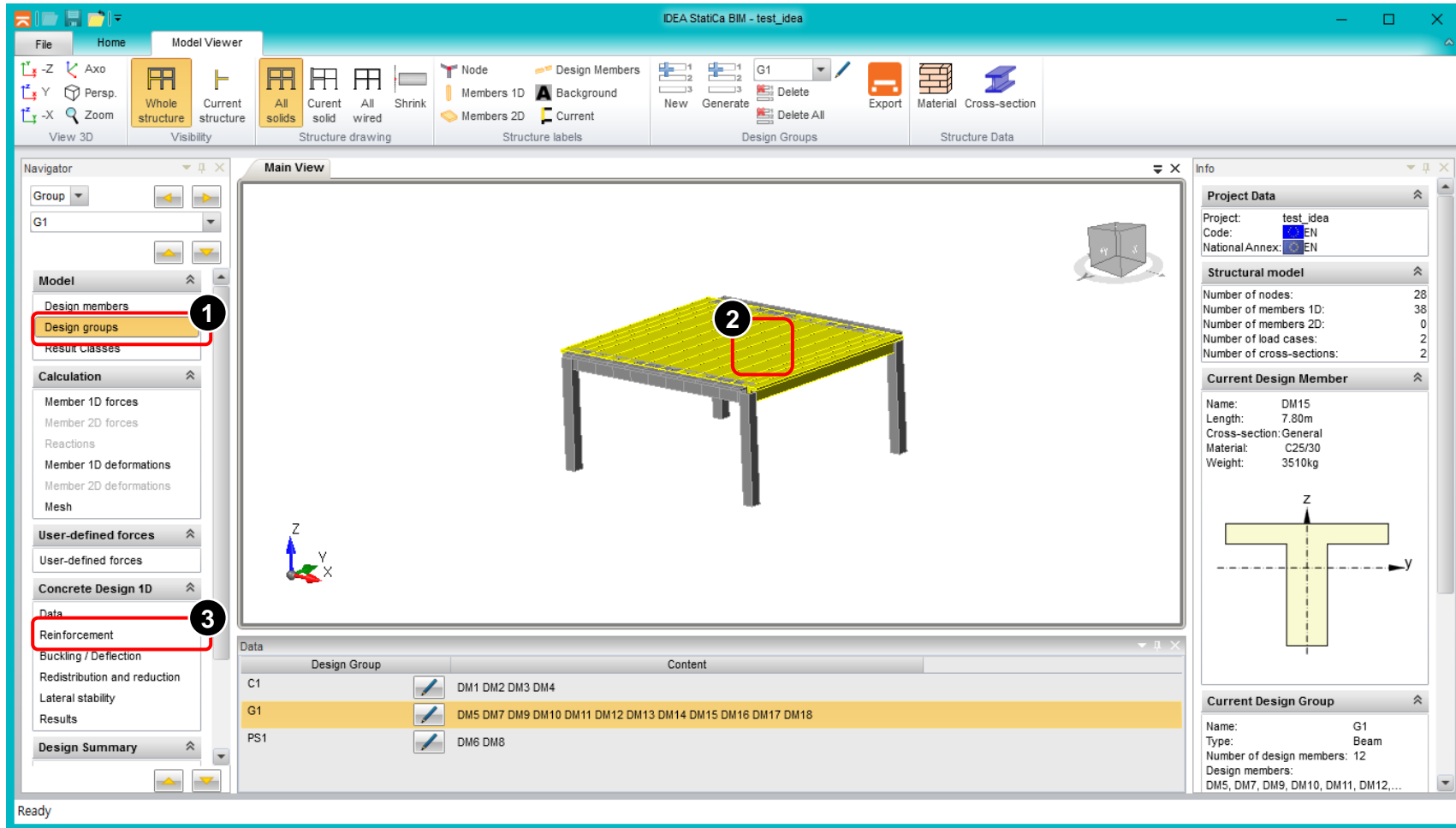
If there are the load combinations generated in Gen, these combinations are automatically applied.

- 1 Click "Result Classes".
- 2 Click "Combinations".
- 3 Add or Modify the combinations.



# Irregular RC Design

## Step 5.

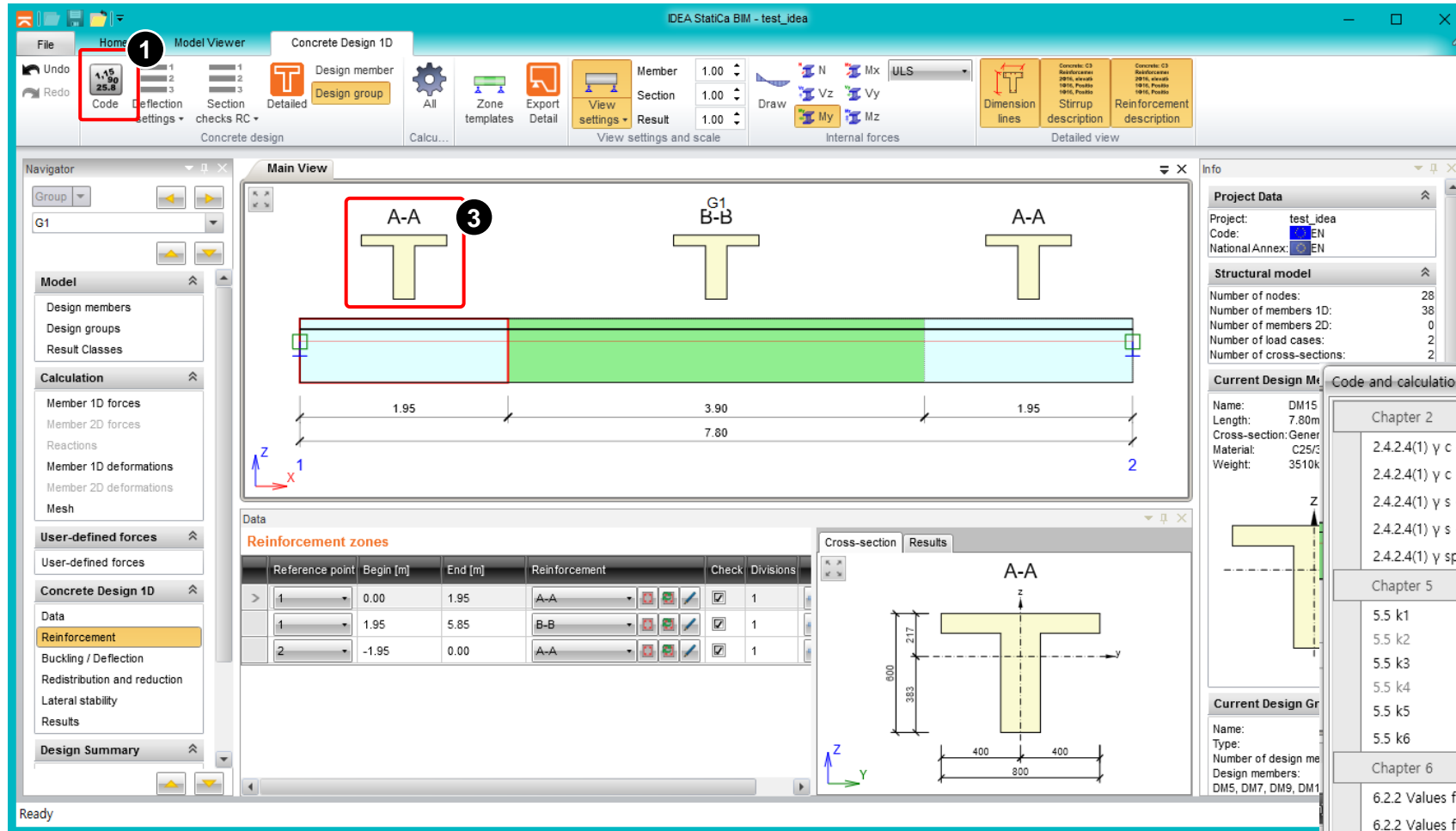


[RC Member Design]

- 1 Click "Design Group".
- 2 Select the target member.
- 3 Click "Reinforcement".

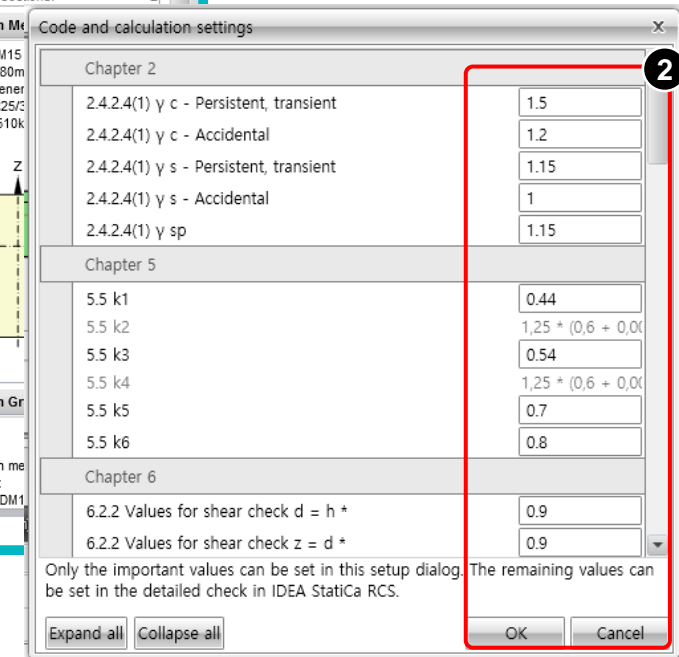
# Irregular RC Design

## Step 6.



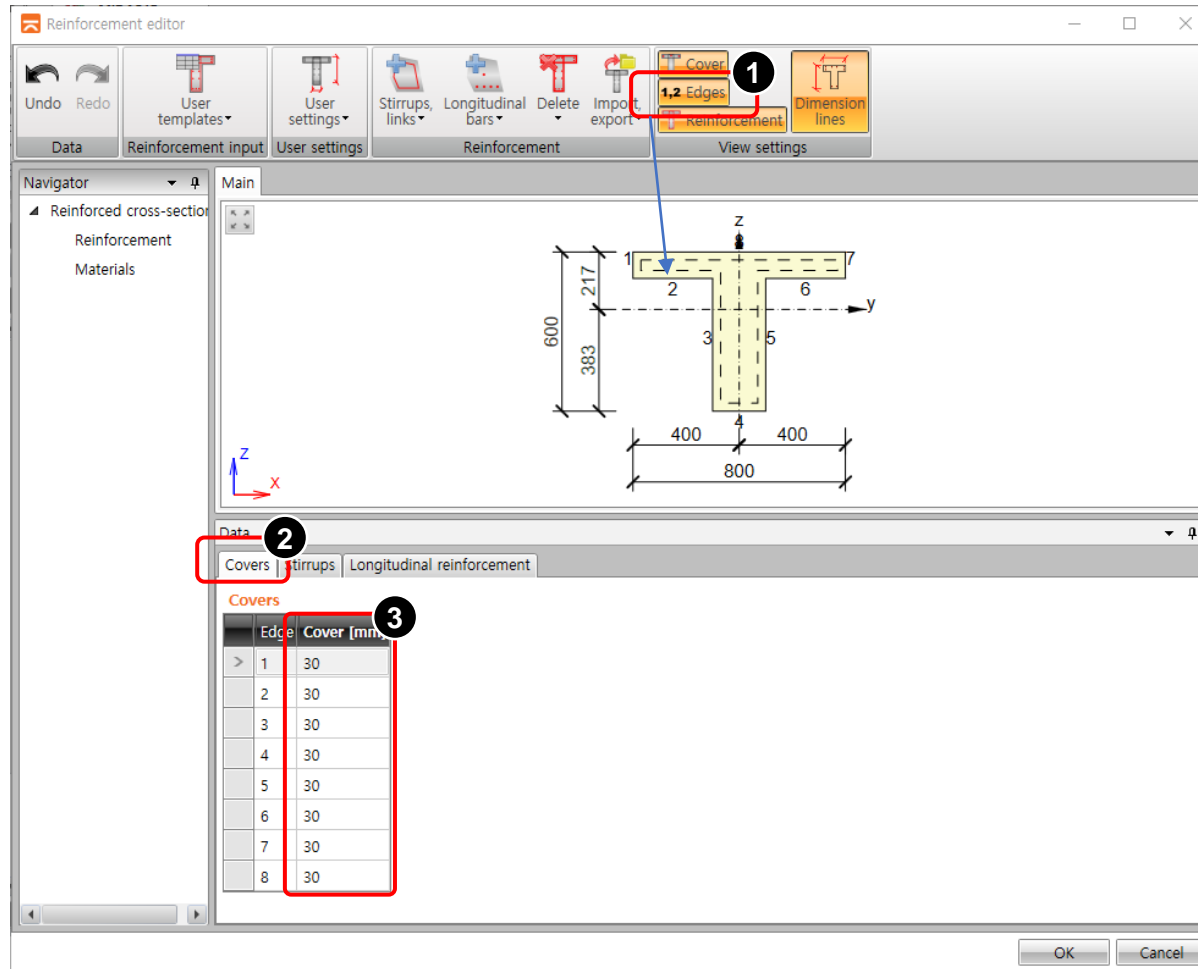
[RC Member Design]

- 1 Click the target section.
  - 2 Modify the design factors and click "OK".
  - 3 Click the target section.
- \* Repeat Step7~9 for the rest of the section to enter reinforcement information. .



# Irregular RC Design

## Step 7.



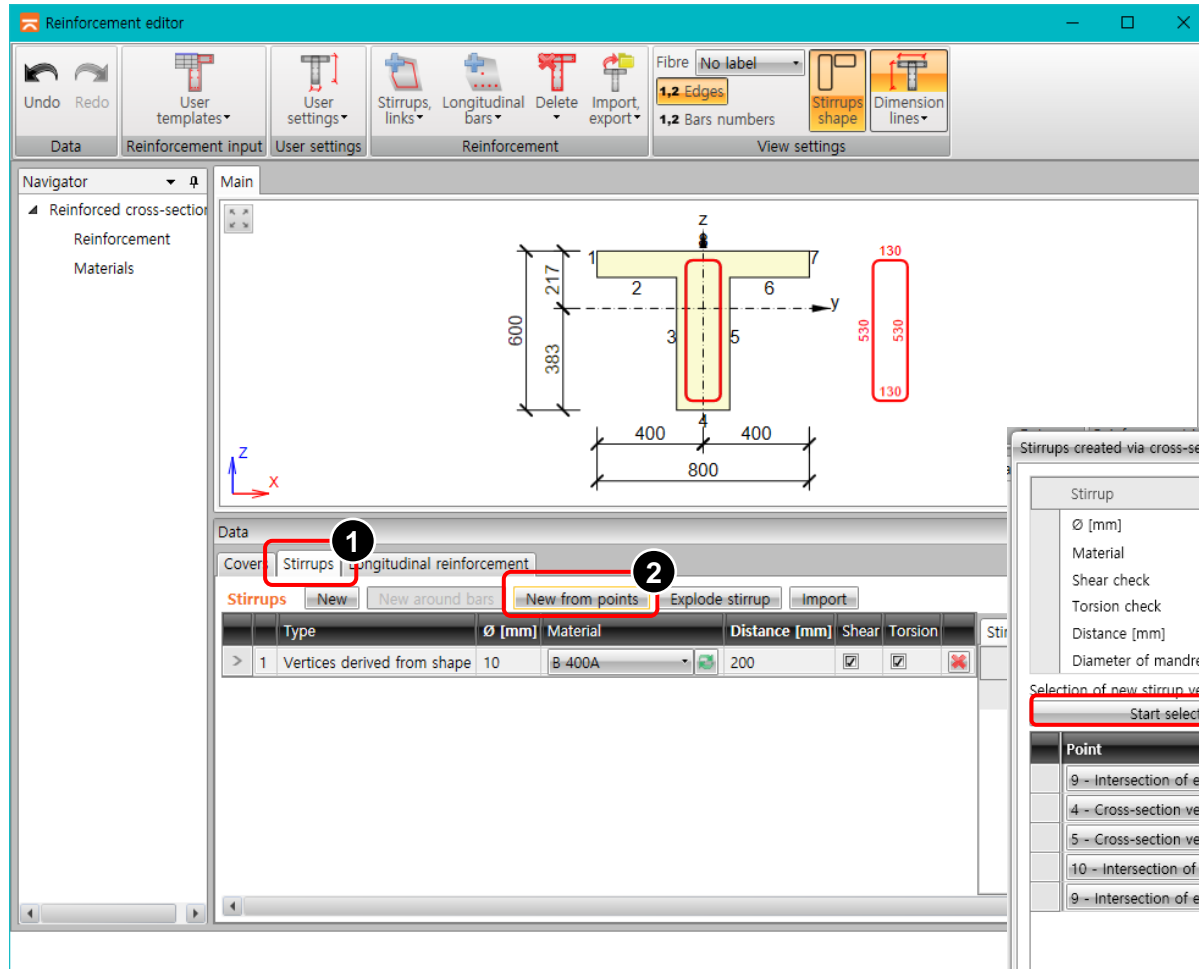
[RC Member Design]

- 1 Click "1.2 Edges" in View Settings.
- 2 Click "Cover" tap.
- 3 Modify the cover values in table.



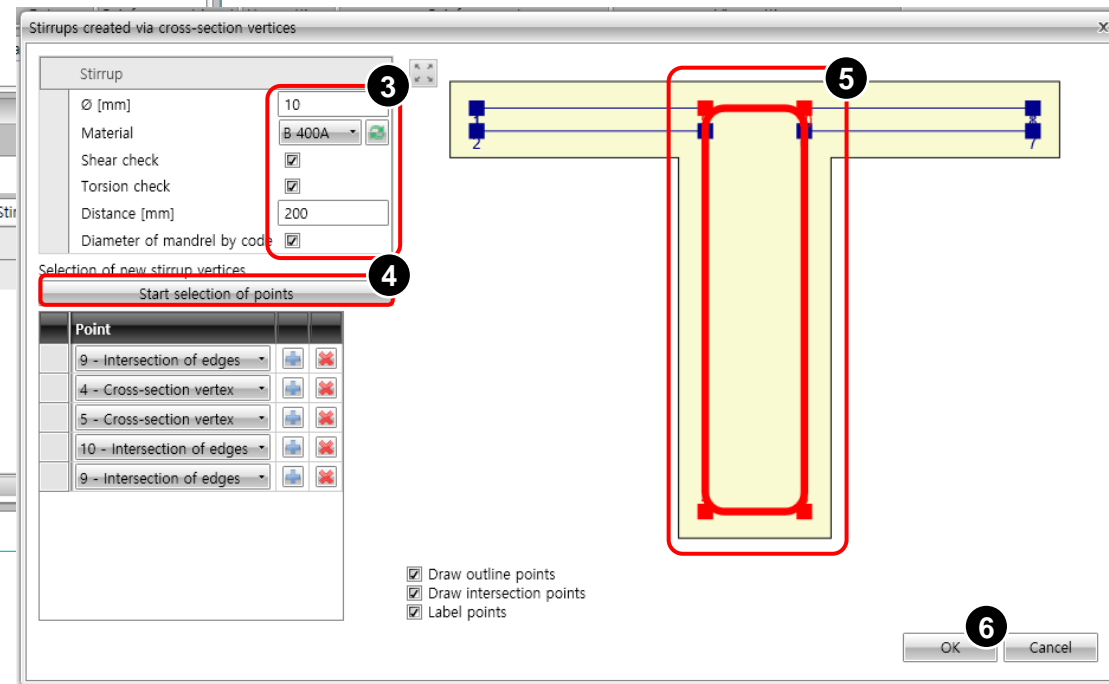
# Irregular RC Design

## Step 8.



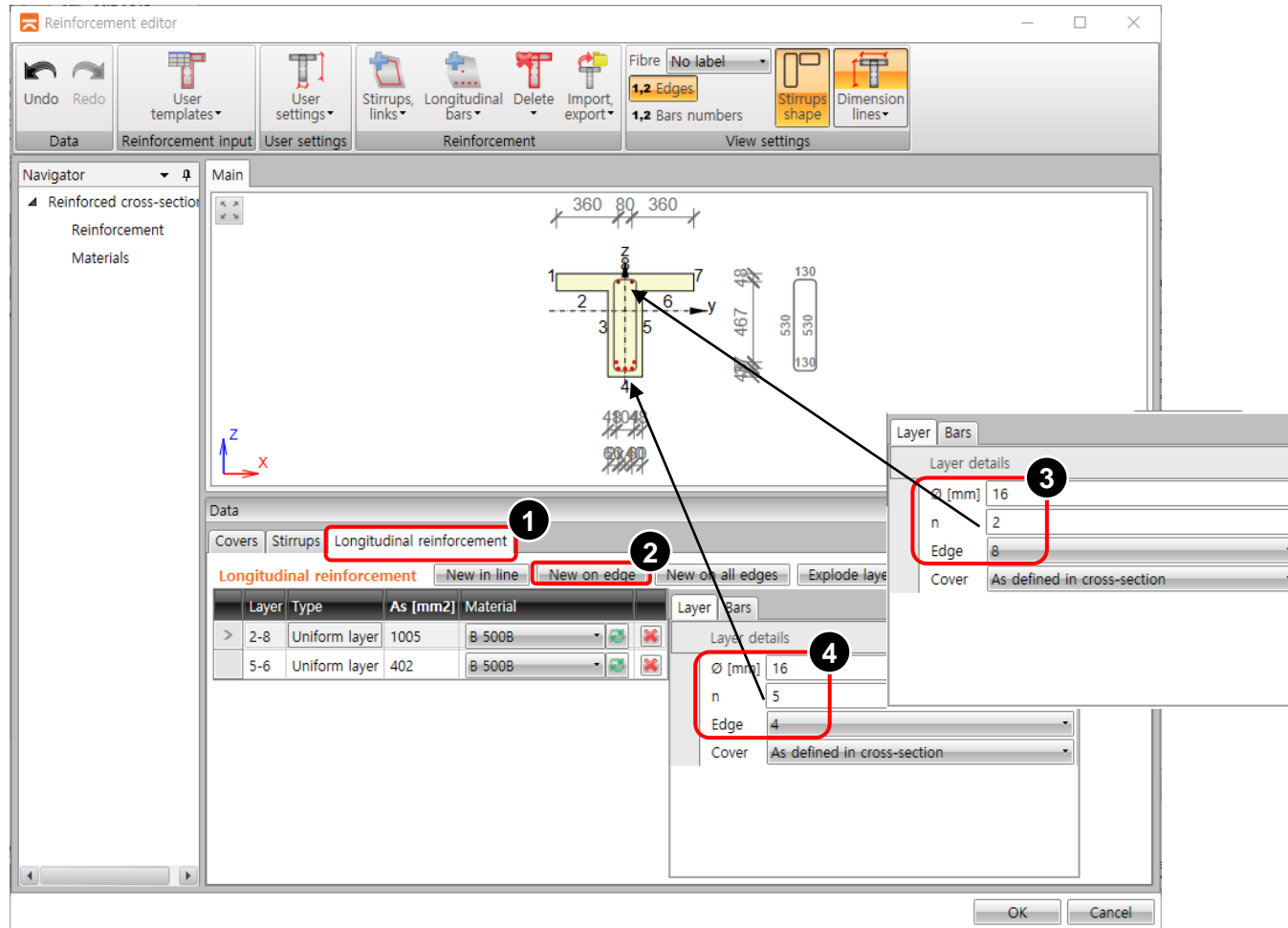
[RC Member Design]

- 1 Click "Stirrups" tap.
- 2 Click "New from points" button.
- 3 Modify the stirrup information.
- 4 Click Modify the design members.
- 5 Click the target points in the section window.
- 6 Click "OK".



# Irregular RC Design

## Step 9.

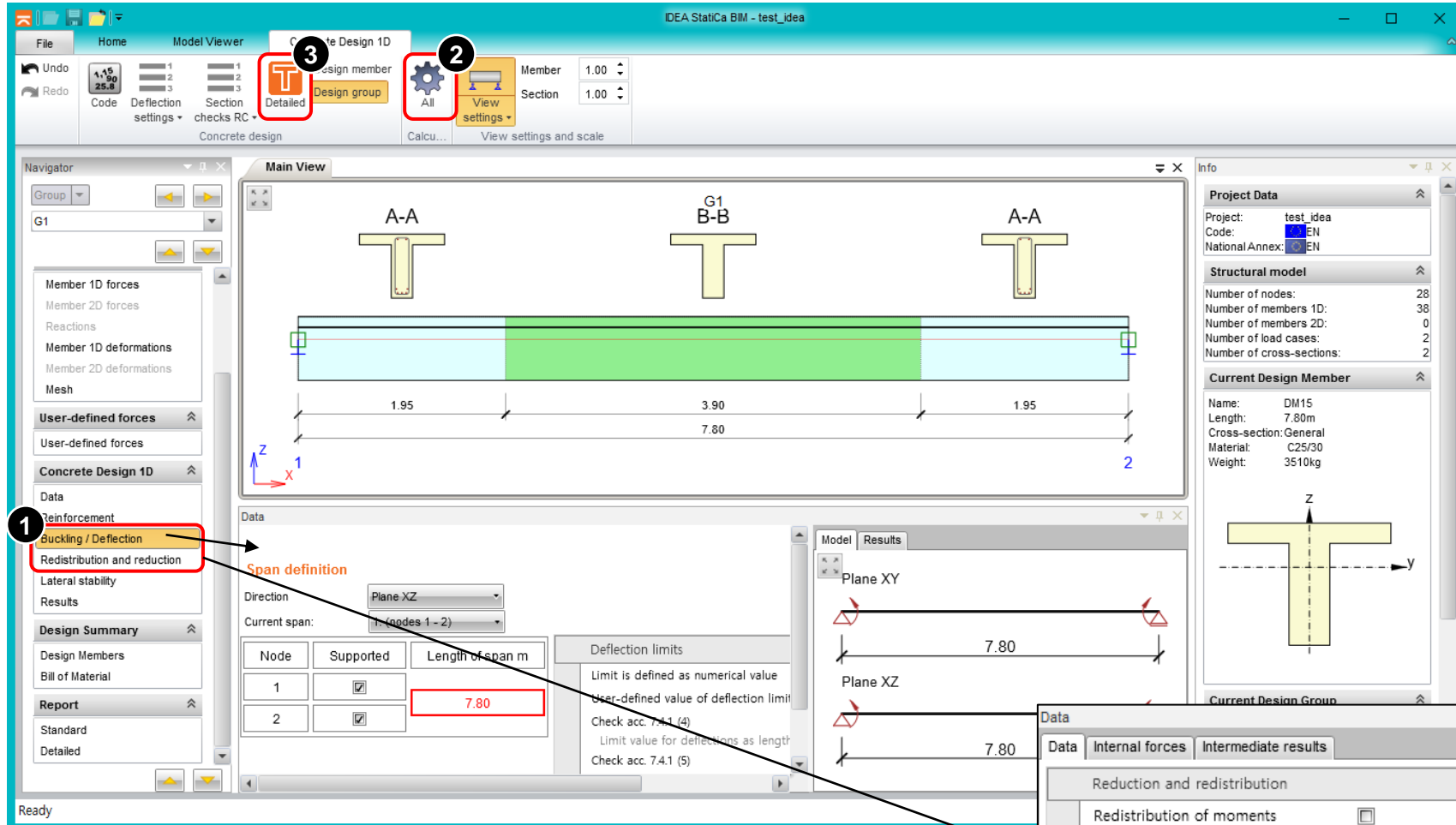


[RC Member Design]

- 1 Click "Longitudinal reinforcement" tap.
- 2 Click "New on edge" button.
- 3 Modify the size and number of rebar and edge number for the top position.
- 4 Click "New on edge" button..
- 5 Modify the size and number of rebar and edge number for the bottom position.
- 6 Click "OK".

# Irregular RC Design

## Step 10.



[RC Member Design]

- 1 Define the condition of "Buckling/Deflection" and "Redistribution and reduction".
- 2 Click "All" in Calculations.
- 3 Click "Detailed".

# Irregular RC Design

## Step 11.

[RC Member Design]

- 1 Click “Result”.
- 2 Select the result tap
- 3 Check the design result.

FileHomeView

UnitsApplicationCodeProject data

Settings

Concrete: C30 Reinforcement: B500c 20% cover 100% Positive 100% Positive

Concrete: C30 Reinforcement: B500c 20% cover 100% Positive 100% Positive

Extreme

Section

Components labelCalculation

Navigator

Current Section

A-A (0.00 - 1.95m)

Current Extreme

cLCB4(2) - not filled - not filled -

Current Section & Extreme

Cross-section

Design Member

Internal Forces

Reinforcement

Calculation Control

Results

Report

Project Summary

Sections

Design Members

Reinforced Cross-Sections

Materials

IDEA StatiCa RCS(64bit) - test\_idea

Reinforced cross-section: A-A

Concrete: C25/30  
Age: 28.0 d  
Reinforcement:  
2ø16 (402mm²) (B 500B), z = 169 mm  
2ø16 (402mm²) (B 500B), z = -298 mm  
3ø16 (603mm²) (B 500B), z = -335 mm  
Stirrups:  
ø10 (B 400A) - 200 mm  
Cover:  
Other edges: 30 mm

Data

Overall

Capacity N-M-M

Shear

Torsion

Interaction

Stress Limitation

Crack Width

Detailing

Overall

Governing type of check	N <sub>Ed</sub> [kN]	M <sub>Ed,y</sub> [kNm]	M <sub>Ed,z</sub> [kNm]	V <sub>Ed</sub> [kN]	T <sub>Ed</sub> [kNm]	Value [%]	Check
Detailing	0.0	8.4	0.0			133.5	Not OK
Type of check	N <sub>Ed</sub> [kN]	M <sub>Ed,y</sub> [kNm]	M <sub>Ed,z</sub> [kNm]	V <sub>Ed</sub> [kN]	T <sub>Ed</sub> [kNm]	Value [%]	Check
Capacity N-M-M	0.0	8.4	0.0			3.5	OK
Shear	0.0			2.9	0.0	2.3	OK
Torsion					0.0	0.0	OK
Interaction	0.0	8.4	0.0	2.9	0.0	4.2	OK
Stress Limitation	0.0	0.0	0.0			0.0	Not done
Crack Width	0.0	0.0	0.0			0.0	Not done
Detailing	0.0	8.4	0.0			133.5	Not OK

Limit value of the exploitation of the cross-section: 100.0 %

Nonconformity

Nonconformities

⚠

Shear is resisted by concrete, shear reinforcement is required according to detailing provisions, see 6.2.2

ⓘ

Characteristic compressive cylinder strength of concrete f<sub>ck</sub> at 28 days exceeds or does not reach the values recommended in clause 3.1.2 (102)

⚠

Loads for neither characteristics nor quasi-permanent combination have been input. Check of stress limitation for these combinations according to clause 7.2 has not been done.

⚠

Loads for quasi-permanent combination have not been input. Check of crack width according to clause 7.3.4 has not been done.

✖

The condition for maximal spacing of longitudinal reinforcement acc. to clause 9.2.3 (4) is not satisfactory

Project Data

Project:

test\_idea

Code:

EN 1992-1-1, EN 1992-2

National Annex:

EN

Design Working Life:

50 years

Import status:

Info...

Current section and extreme

Section:

A-A (0.00 - 1.95m)

Extreme:

cLCB4(2) - not filled - not filled -

Design Member:

G1

Member Type:

Beam

Exposure Class:

XC3, XD1

Current section check

Current section status:

✖

Current extreme status:

✖

Check	Value	Status
Capacity N-M-M	3.5	✓
Shear	2.3	✓
Torsion	0.0	✓
Interaction	4.2	✓
Stress Limitation	0.0	?
Crack Width	0.0	?
Detailing	133.5	✖

Current extreme forces

ULS

N [kN]

0.0

M<sub>y</sub> [kNm]

8.4

M<sub>z</sub> [kNm]

0.0

V<sub>y</sub> [kN]

0.0

V<sub>z</sub> [kN]

2.9

T [kNm]

0.0

Calculation duration: 0 min, 0 s, 0 ms

# Irregular RC Design

IDEA StatiCa RCS (64bit) - test\_idea

File Home View

Units Application Code Project data All

Settings Calculation Report Print

Table of contents

- 1 Project data
- 2 Brief summary of results of sectional checks
- 3 Sectional checks
  - 3.1 Section A-A (0.00 - 1.95m)
  - 3.2 Section B-B (1.95 - 5.85m)
  - 3.3 Section A-A (5.85 - 7.80m)
- 4 Symbols explanations
- 5 List of design members
- 6 List of reinforced sections
- 7 List of used materials

Project data

Project title test\_idea

Author --- Not Defined ---

Date of creation 5/20/2021

Version 20.1.5544.1

National code

National code EN 1992-1-1:2014-12

EN 1992-2:2008-07

Design working life 50 years

Duration of report generation: 0 min, 1 s, 75 ms

[RC Member Design]

- 1 Click "Design Members".
- 2 Select the reporting type.
- 3 Select the design content.
- 4 Check the design result in the report.
- 5 Export the report to the document of other formats.

3.2 Section B-B (1.95 - 5.85m)

3.2.1 Brief summary of results of extremes in section

Extreme name	Time [d]	Value [%]	Result status
cLCB1(1) - not filled - not filled - not filled	28.0	133.5	X
cLCB1(1) - not filled - not filled - not filled	28.0	133.5	X
cLCB1(1) - not filled - not filled - not filled	28.0	133.5	X
cLCB4(2) - not filled - not filled - not filled	28.0	133.5	X
cLCB1(1) - not filled - not filled - not filled	28.0	133.5	X

3.2.2 Critical extreme cLCB1(1) - not filled - not filled - not filled

Design member	G1
Reinforced cross-section	B-B

Concrete: C25/30  
Age: 28.0 d  
Reinforcement: 2x10 (402mm<sup>2</sup>) (B 500B), z = 169 mm  
3x15 (603mm<sup>2</sup>) (B 500B), z = -296 mm  
3x15 (603mm<sup>2</sup>) (B 500B), z = -335 mm  
Stirrups: ø10 (B 400A) - 200 mm  
Cover: Other edges: 30 mm

**Thank you.**