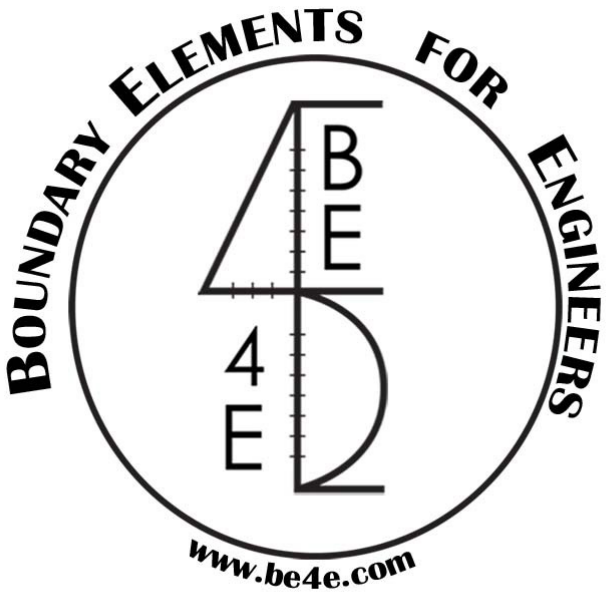


The PLDesign module

USER MANUAL

PLPAK Version 2.00
STRUCTURAL ANALYSIS SOFTWARE USING
THE BOUNDARY ELEMENTS METHOD

https://www.plpak.com
E-mail: plpak@be4e.com

Table of Contents

Introduction

In these Tutorials we are going to design a Hospital parts (A, B, C and D)

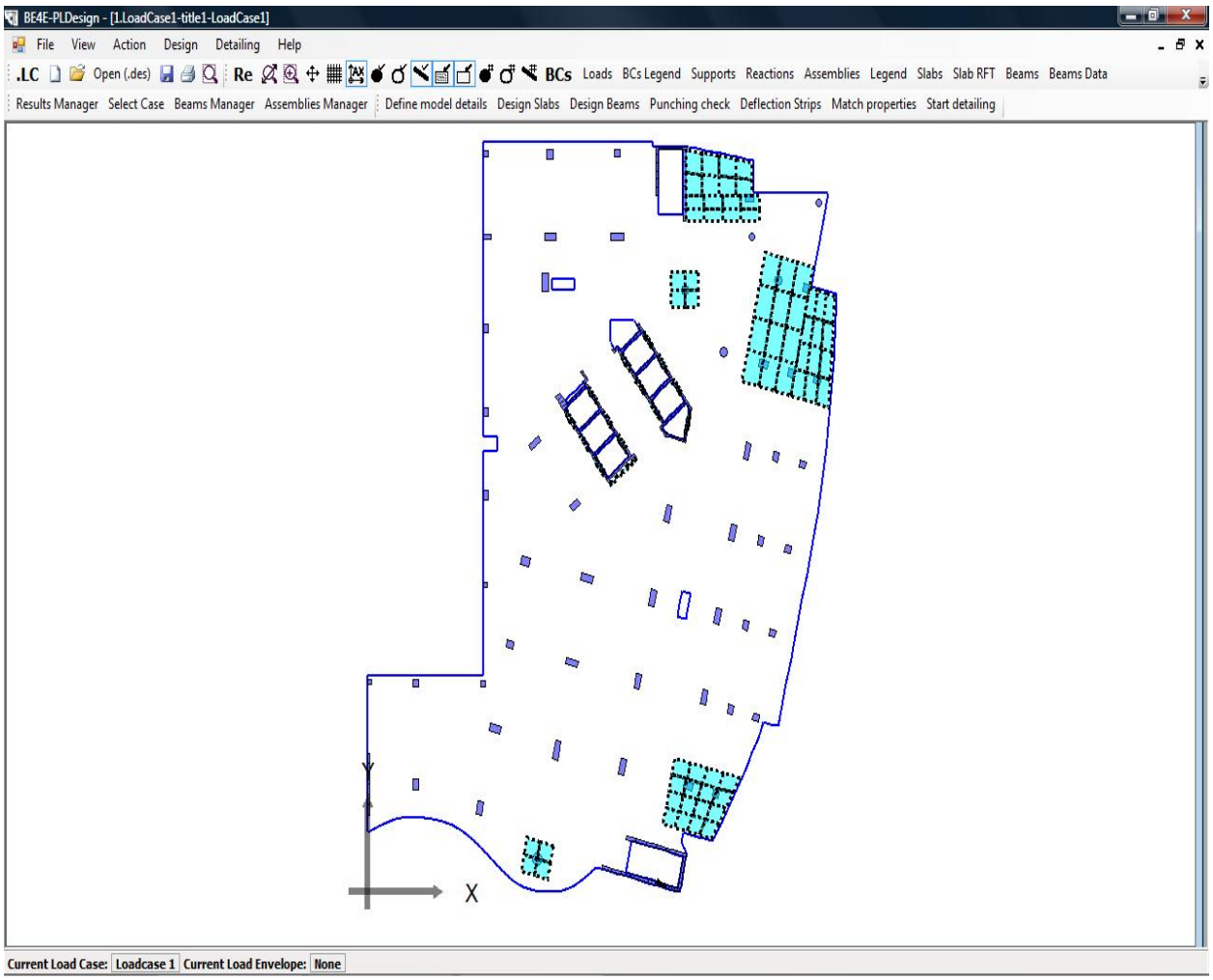
In Part (A) we are going to design Slabs as Main and Additional reinforcement.

In Part (B) we are going to design a strips & local contour loaded from PLPost.

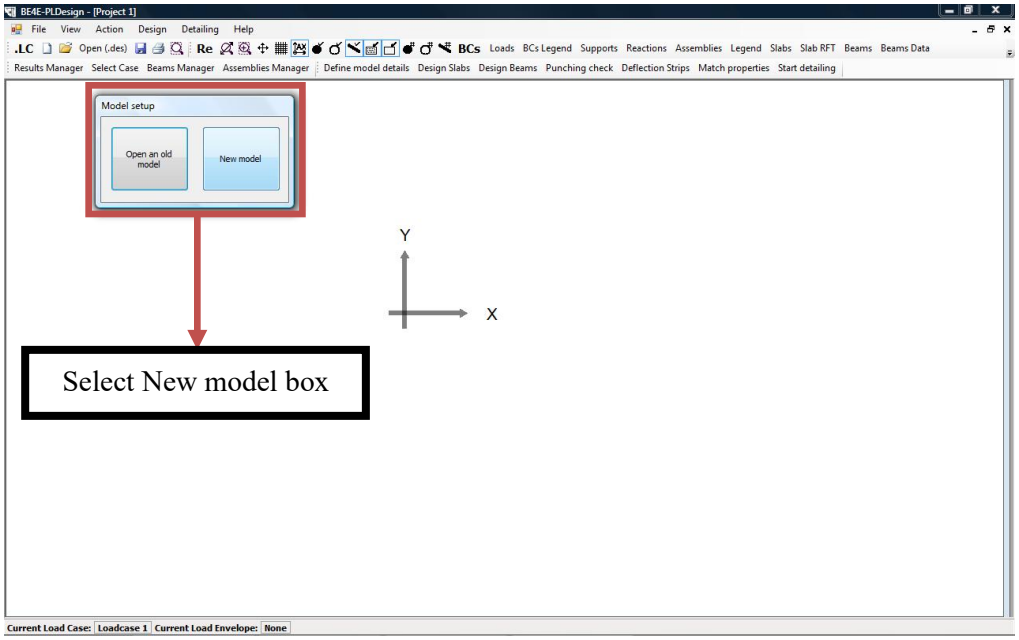
In Part (C) we are going to design Slabs as Strips based region.

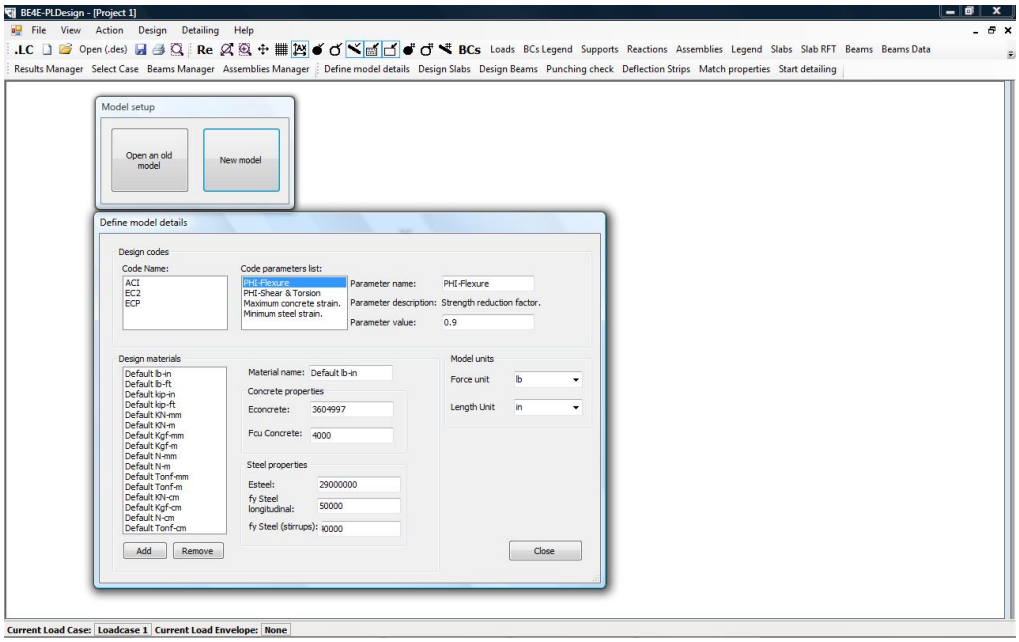
In Part (D) we are going to know how to design beams.

Part A – Slab design using main and additional reinforcement



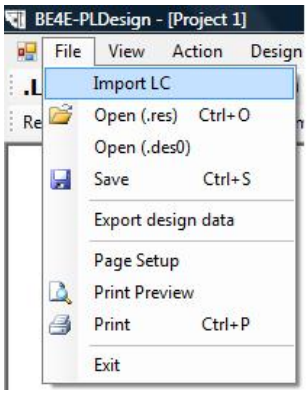
First Step Define Design Code, Units, Materials:

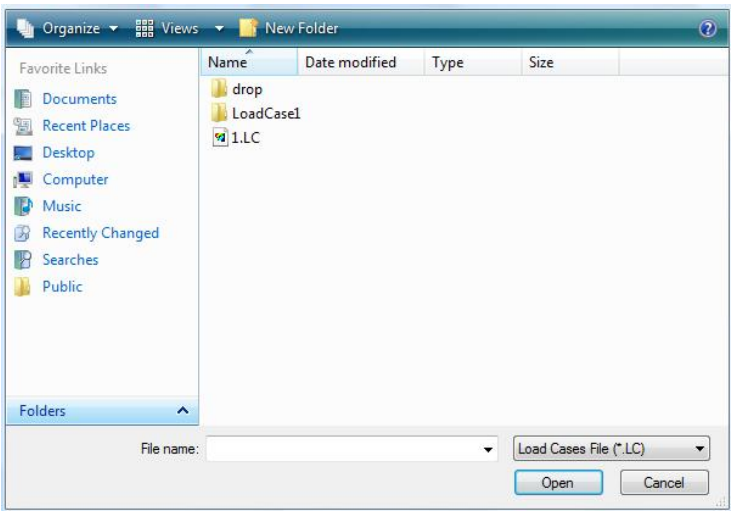




- From the Define model details choose the Code name & the Code parameters list.
- After determining the Design Code, Assign the force and length units.
- We can add/remove material properties from the design material part otherwise we can use the default one.

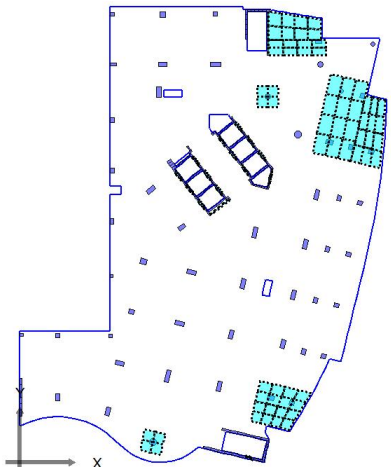
Second Step Load (.LC) file:





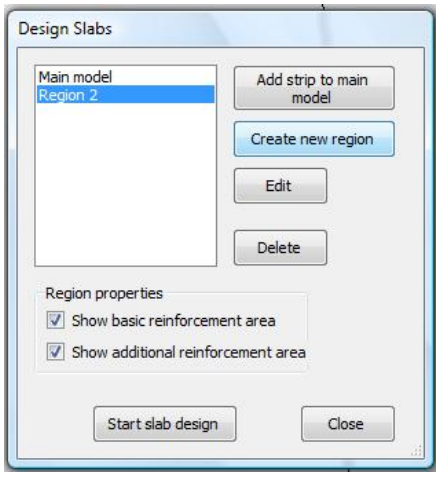
Open the file menu ⇨ Import .LC.

Determine the Load Cases file (.LC) then click open.

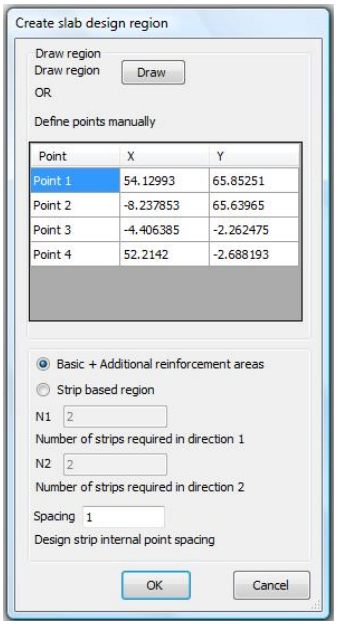


Third Step Design Slabs:

In part (A) we are going to design the Slab as Main reinforcement and additional one.

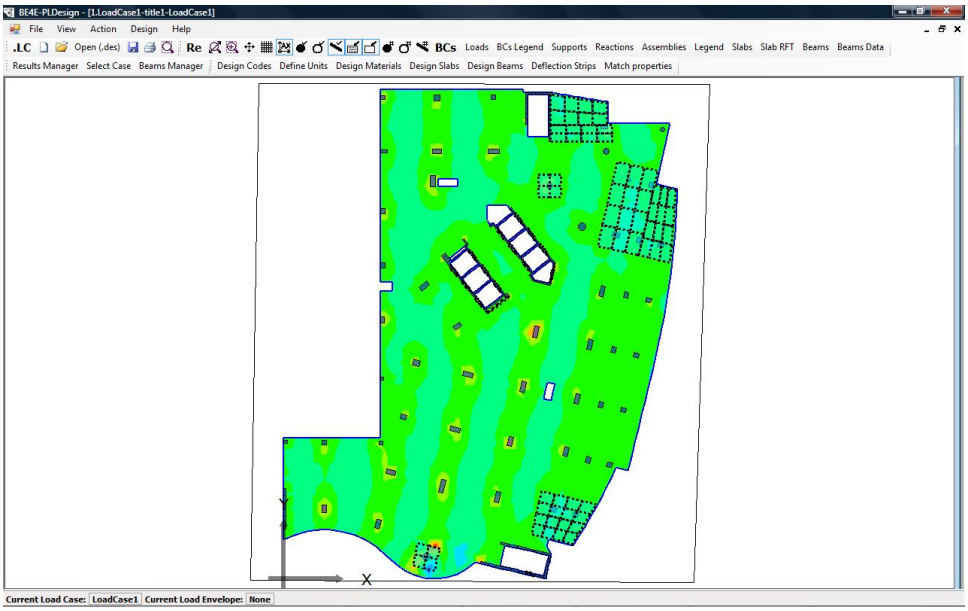


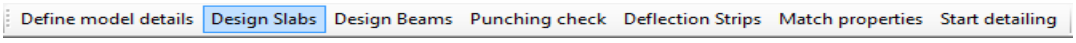
Select Design Slabs ⇨ Create new region ⇨ Select Basic + Additional reinforcement areas ⇨ Draw region

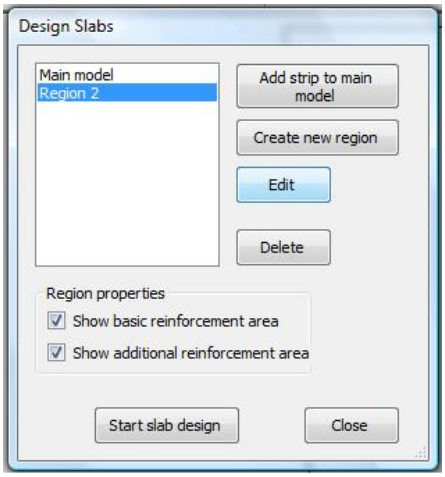


After Drawing the Region, determine the design strip internal point spacing then press OK

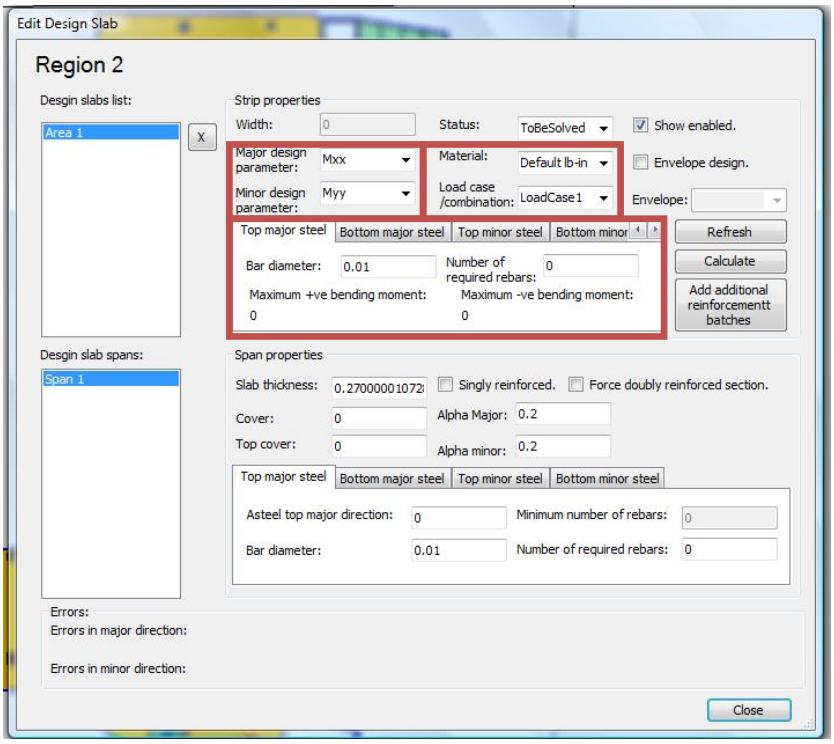
The PLDesign begin to solve the slab to get the straining action for the selected region





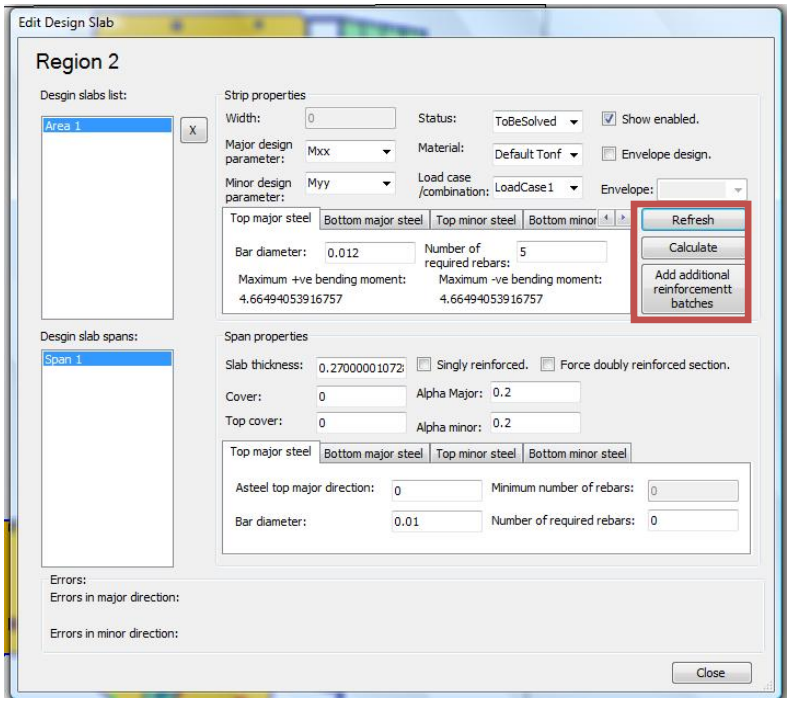


After solving the selected region, select the Design Slabs then press Edit tab to open edit design slab window.

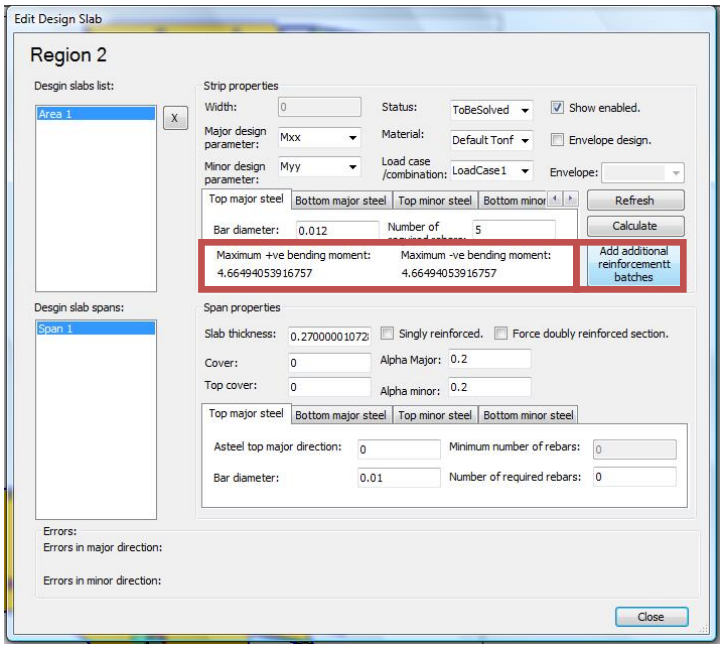


Select the Major design parameter, Minor design parameter, Material Properties, Load case/combination

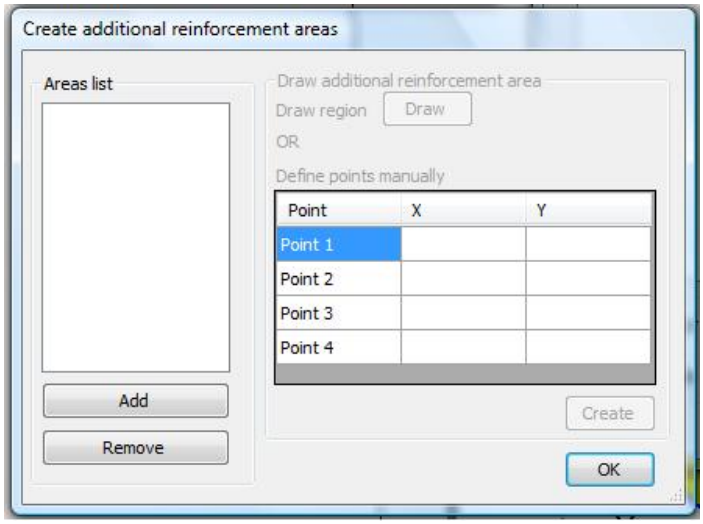
Then determine the bar diameter and the number of required rebar for Top major steel, Bottom major steel, Top minor steel & Bottom minor steel.



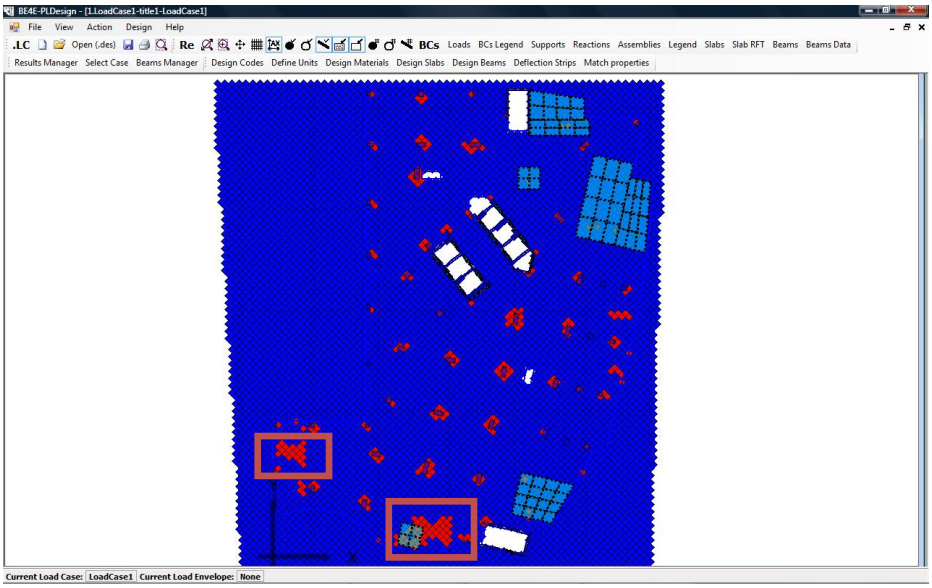
Press Calculate then refresh tab to get the maximum +ve/-ve bending moment values.



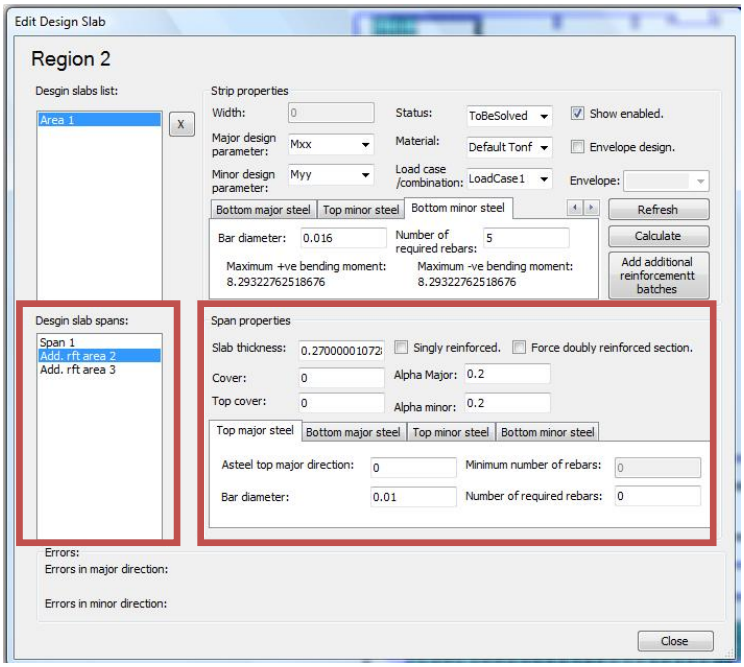
Select Add additional reinforcement batches.



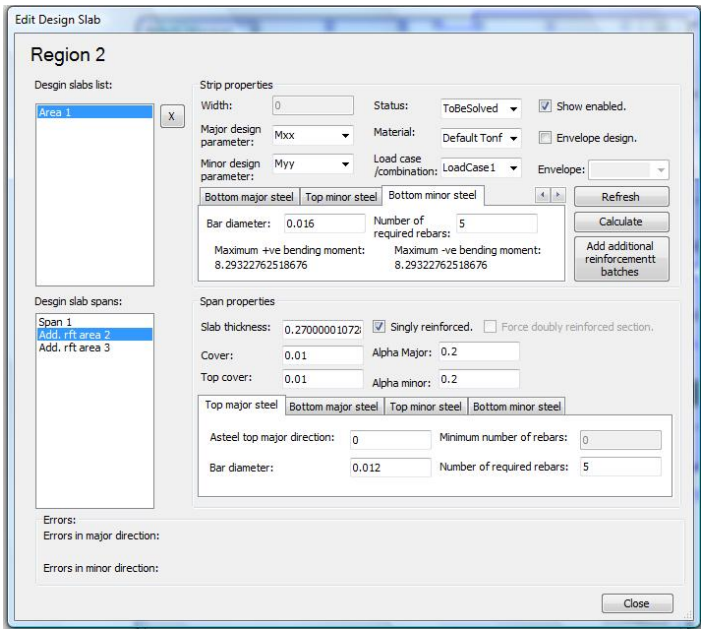
Create additional reinforcement areas is opened press on add to select the place of the additional reinforcement needed.



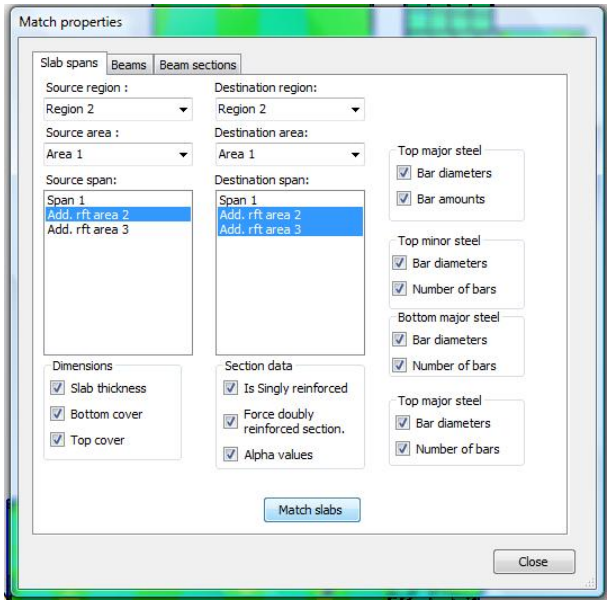
The entire blue region satisfies the basic reinforcement and the red regions need additional reinforcement.



Add. Rft area 2 and Add. Rft area 3, Select the top/bottom Cover, Asteel top major direction, bar diameter, number of required rebars.

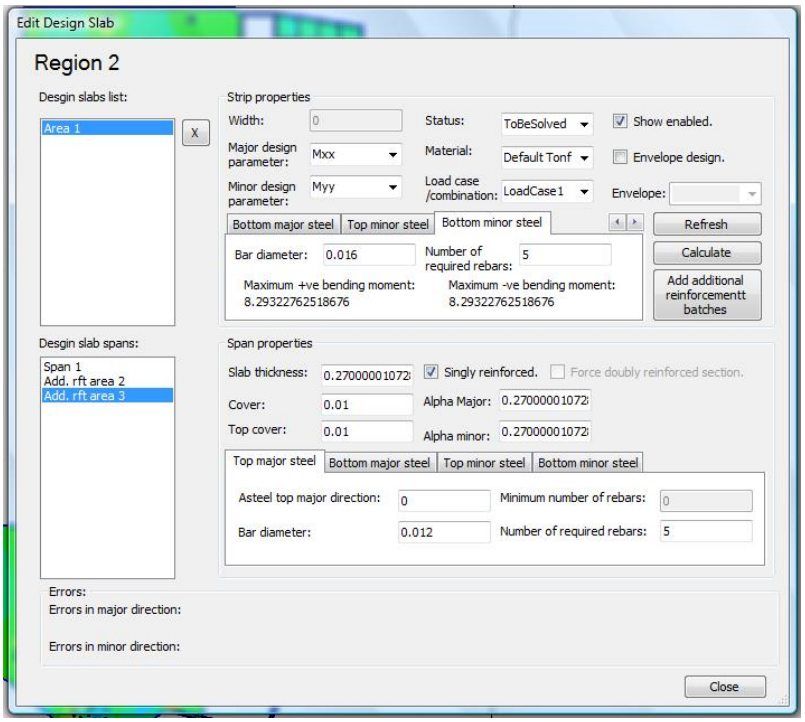


Instead of changing all the properties of all span properties. We can use Match properties

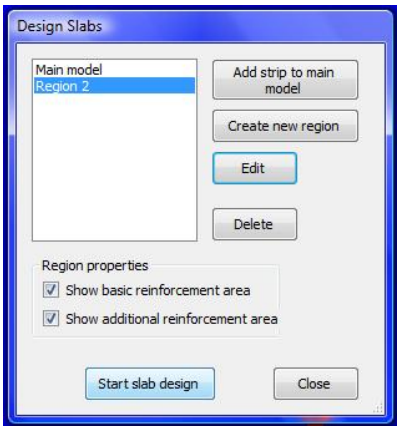


Select Slab Spans, Source region, Destination region, Source Span, Destination span.

Then click Match slabs

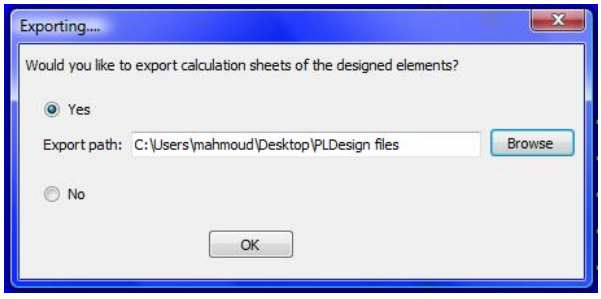


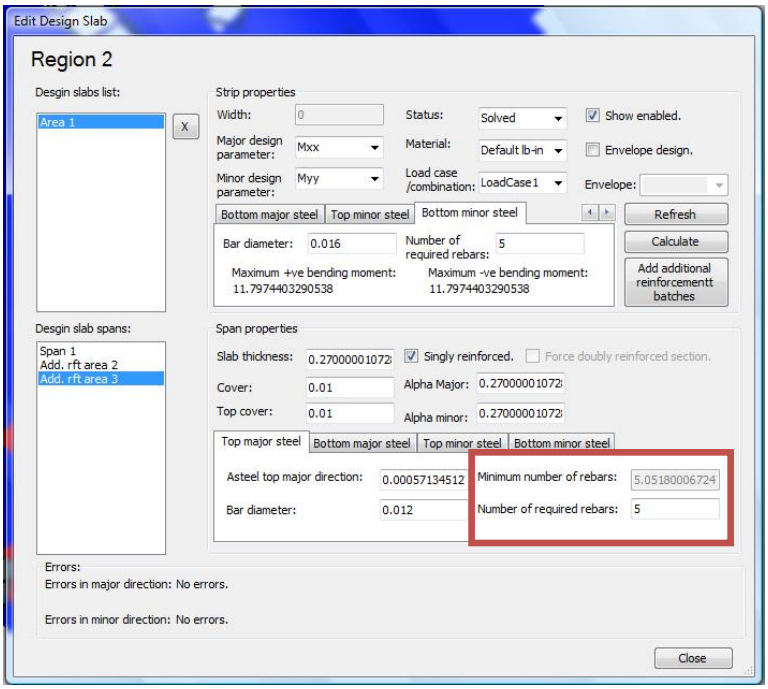
All Spans have changed their properties according to the Matched source.



Press on Start slab design to analyze the selected additional region.

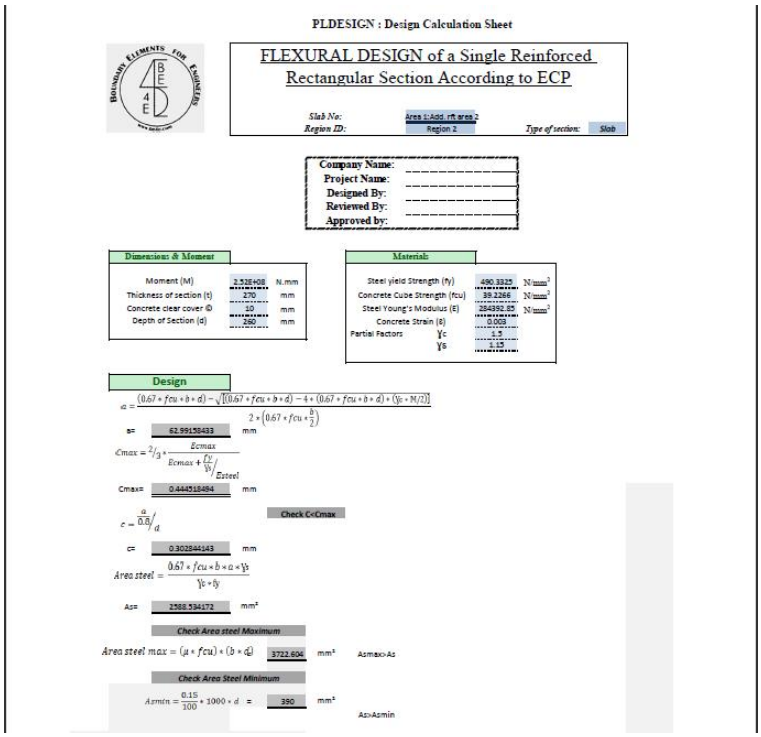
Then Export the calculation excels sheets.





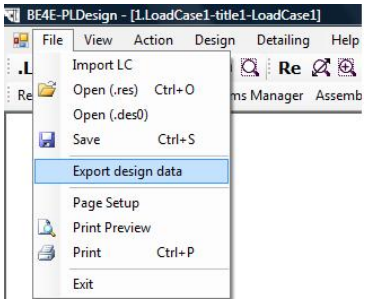
The Minimum number of rebars has been calculated and the Number of required rebars needs to be changed to satisfy the minimum requirement.

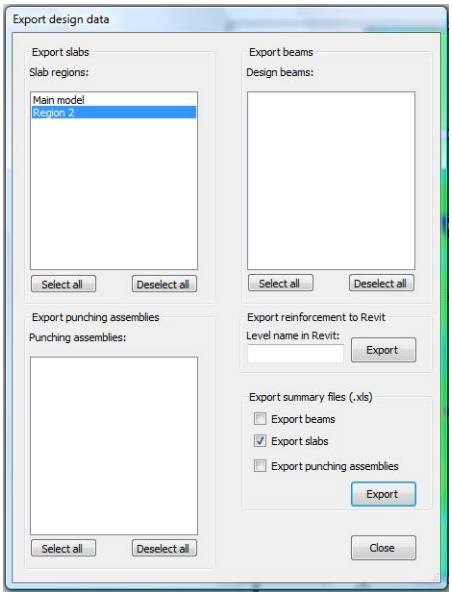
We can also see the exported excel files for each Additional reinforcement areas



Additional reinforcement area 2 (Mxx direction)

We can export the design data to be shown as excel sheet for all slab areas





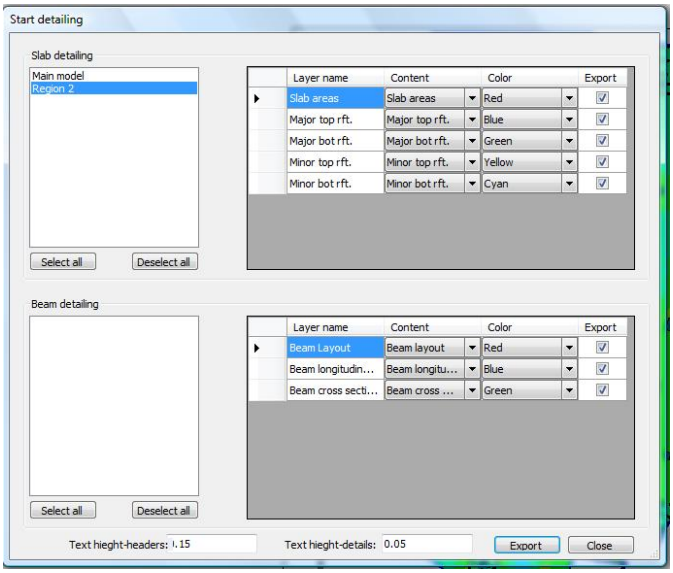
Press on Export design data from file menu then choose the slab region, mark on Export slabs then Export.

PLDESIGN : Slab reinforcement sheet

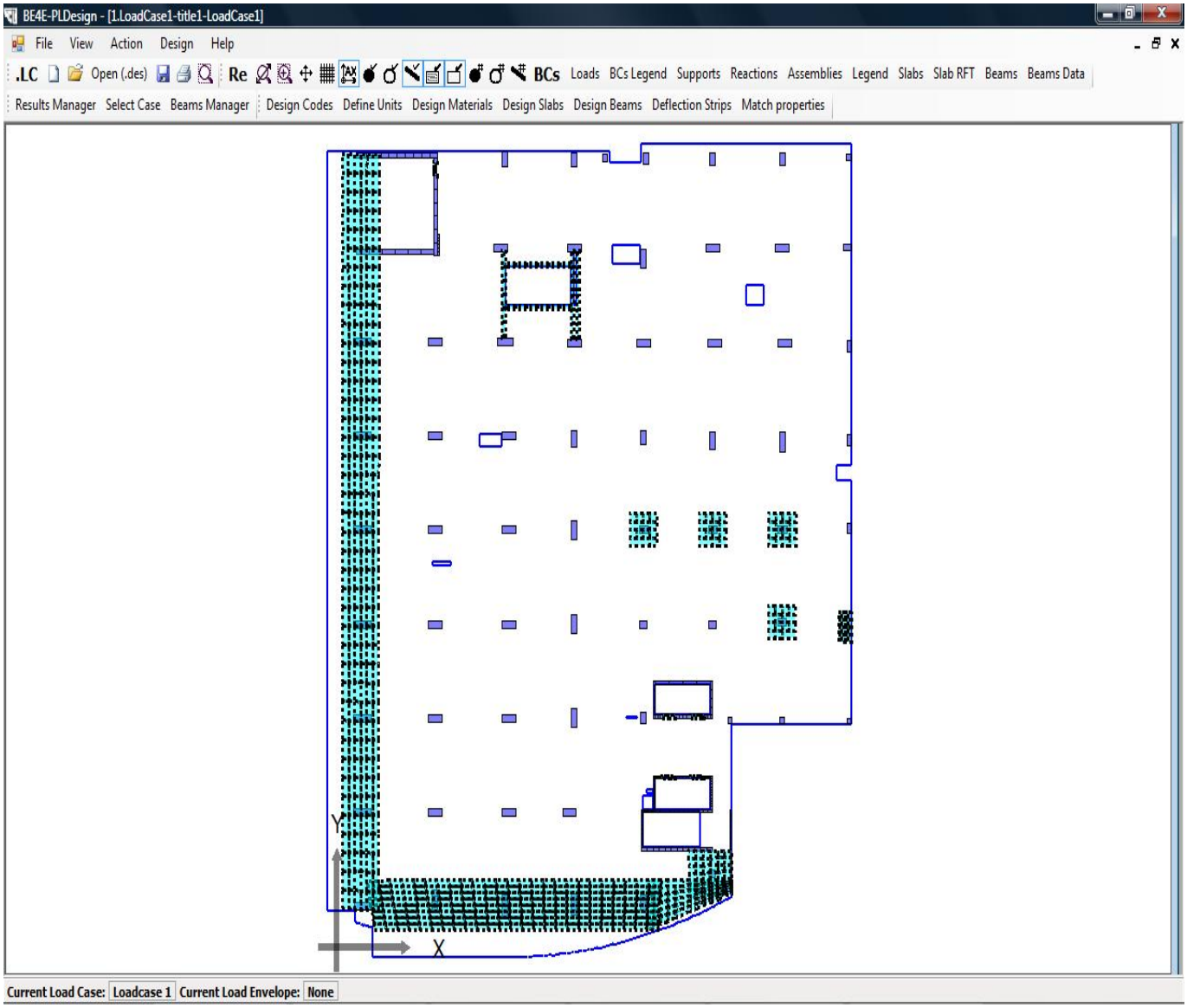
Company Name:
Project Name:
Designed By:
Reviewed By:
Approved by:

Region name	Area name	Major design moment	Strip name	Top major rft.	Bot. major rft.	Top minor rft.	Bot minor rft.
Region 2	Area 1	Mxx	Span 1	5 Φ 0.016	5 Φ 0.016	**5 Φ 0.016**	5 Φ 0.016
			Add. rft area 2	5 Φ 0.01	0 Φ 0.01	**5 Φ 0.01**	0 Φ 0.01
			Add. rft area 3	5 Φ 0.01	0 Φ 0.01	5 Φ 0.01	0 Φ 0.01

After design and export the calculation sheets, we are going to show the slab details from the detailing menu



Part B - Slab design using local strips and contour from the PLPost



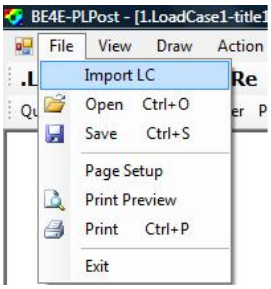
In Part (B), I need to design **a Certain Strip** in Y-direction=22.0 and show moment in X-direction (Mxx)

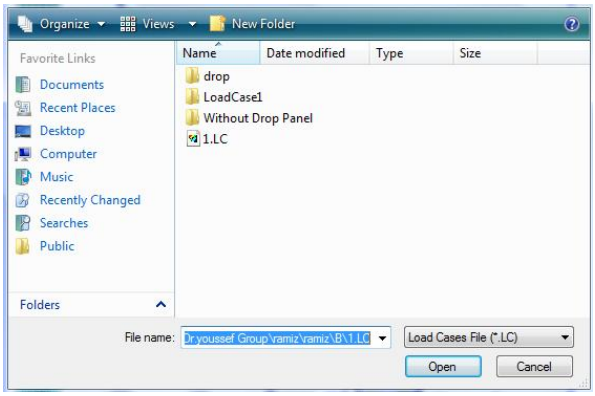
Then I need also **a Certain Contour** to be designed using PLDesign.

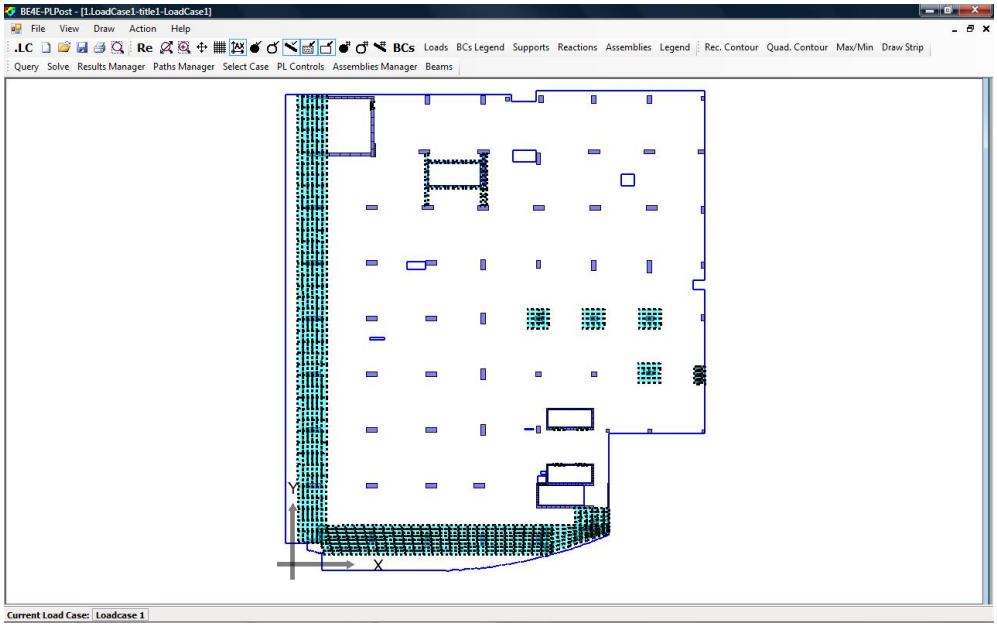
First Step Assign the Strips for design:

In this case we need to prepare the PLPost before using PLDesign.

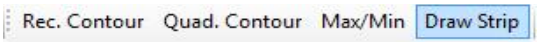
Open PLPost and import (.LC) file



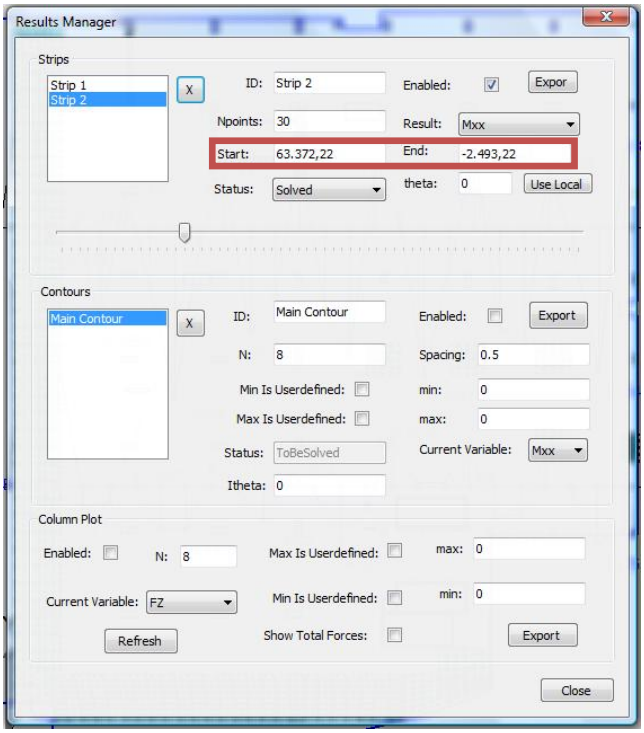




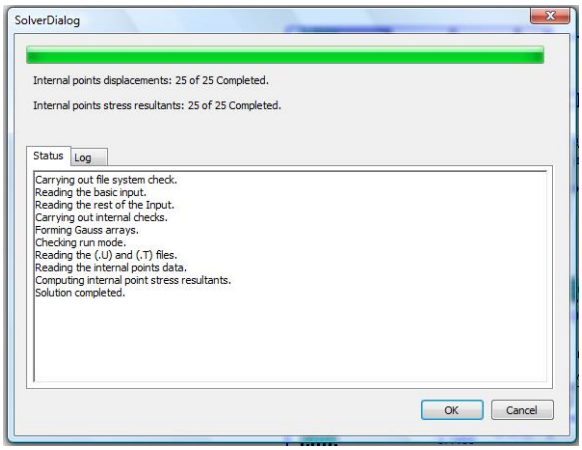
Select Draw Strip ⟹ Press Shift + Drag the mouse to draw a straight line



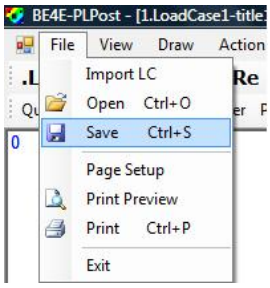
Select the Results Manager then change the coordinates of the start/end point of the strip to get achieve the strip needed for design.

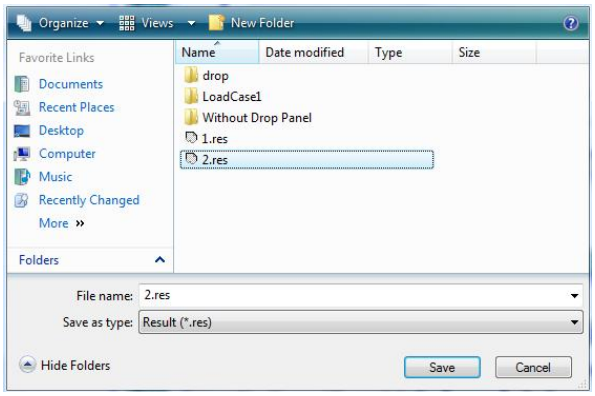


Press Solve to analyze the Strips



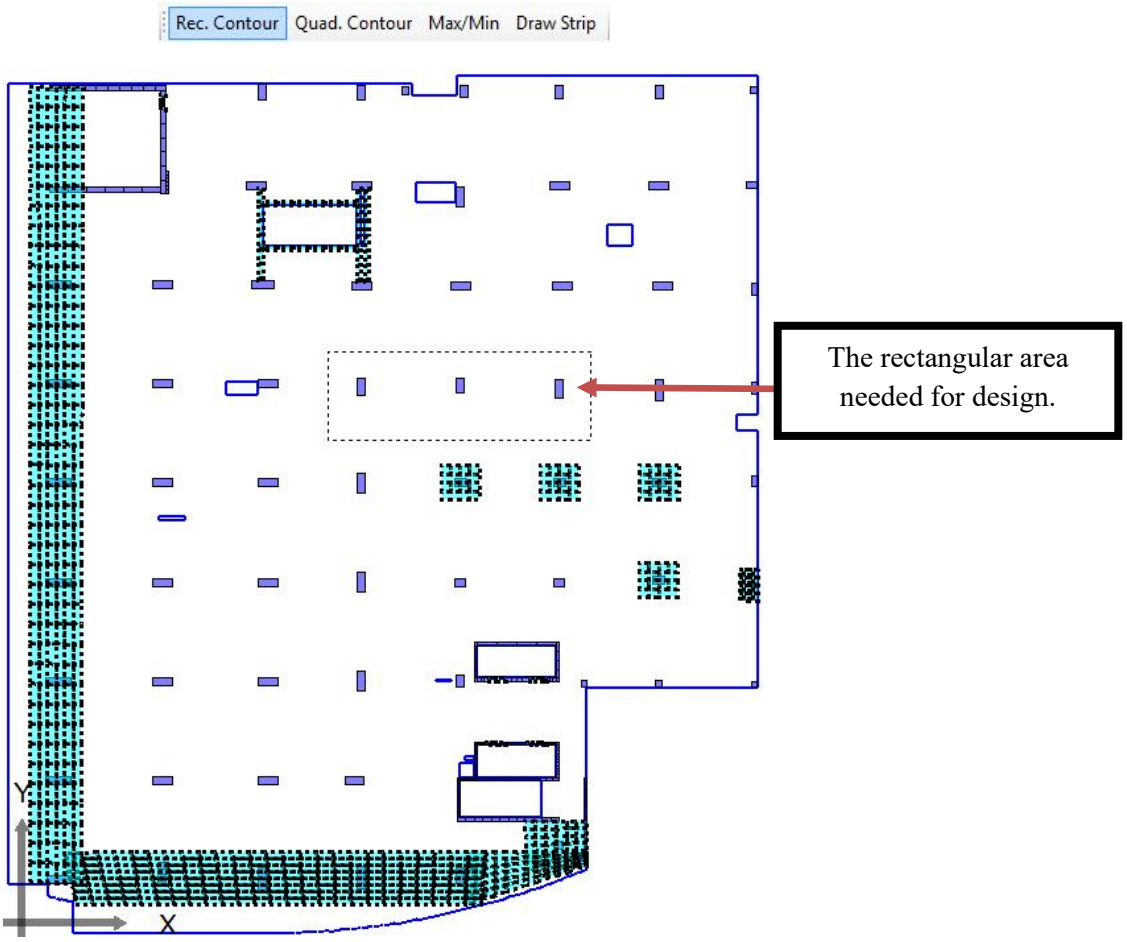
Now we are going to save the result analysis to call it from PLDesign.



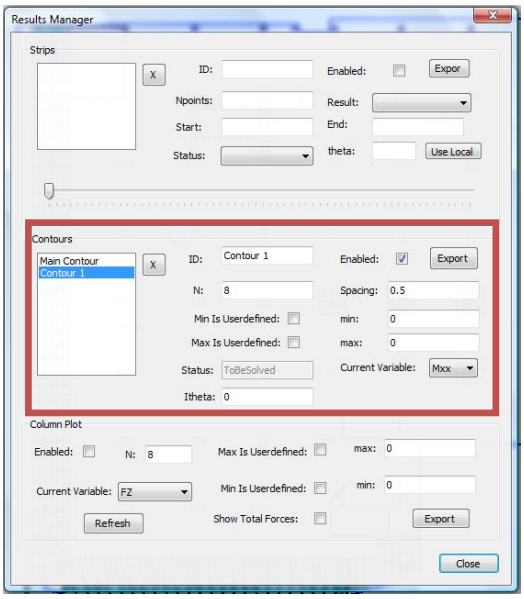


Second Step Assign the contour area for design:

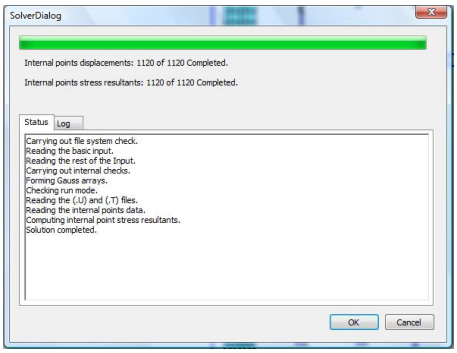
From the PLPost draw rectangular contour



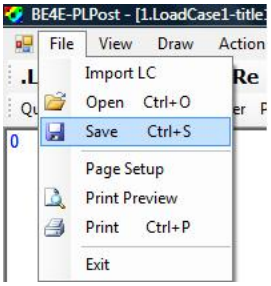
Select the Results Manager

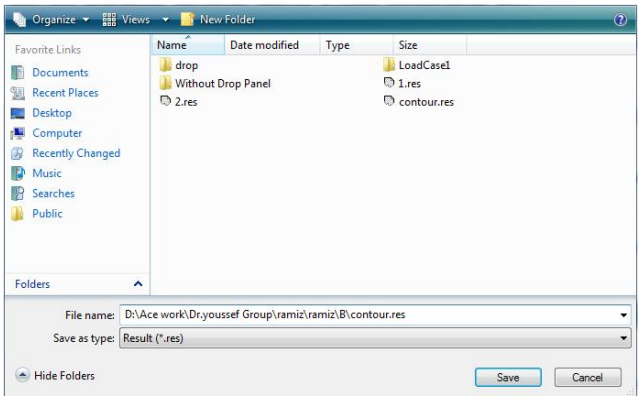


Press Solve to analyze the contour area

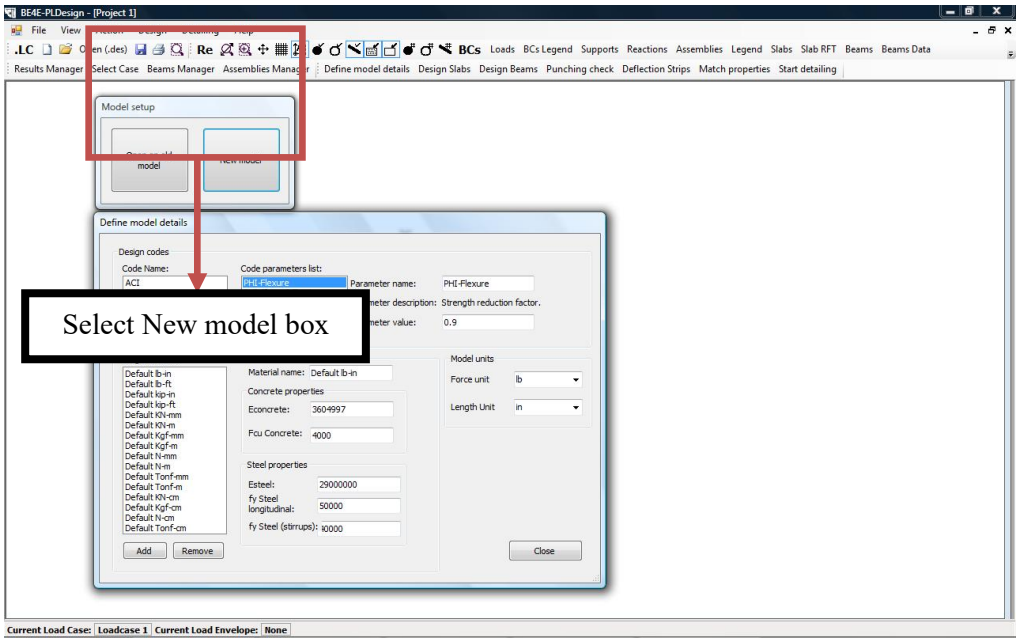


Now we are going to save the result analysis to call it from PLDesign.





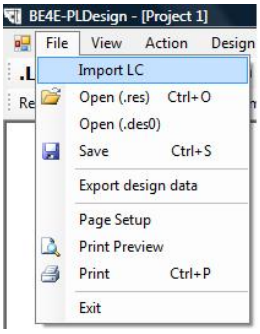
Third Step Define Design Code, Units, Materials:

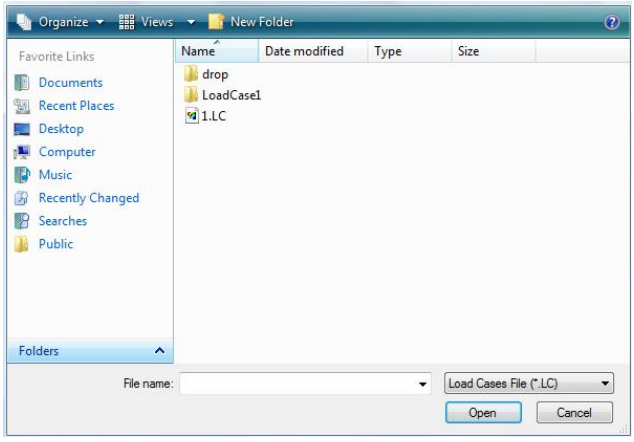


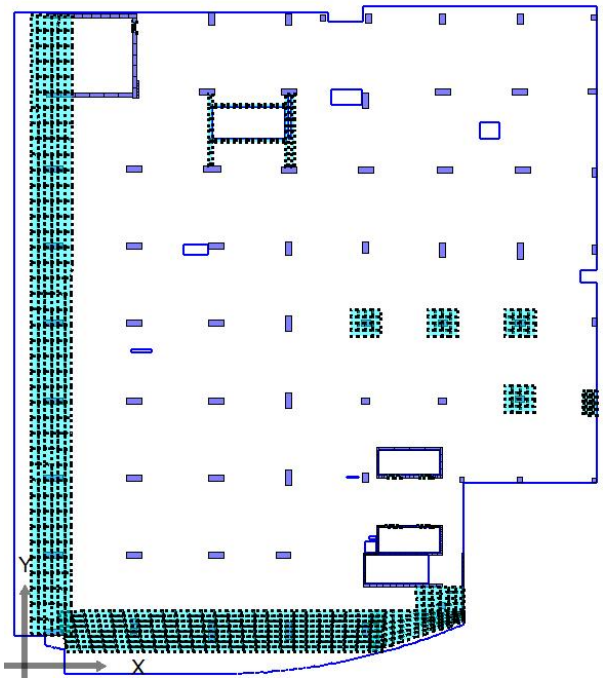
- From the Define model details choose the Code name & the Code parameters list.
- After determining the Design Code, Assign the force and length units.
- We can add/remove material properties from the design material part otherwise we can use the default one.

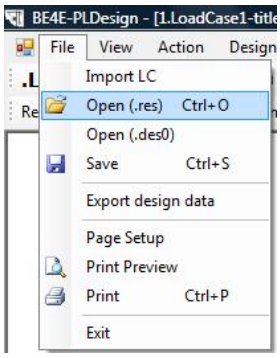
Forth Step Load the Strips in PLDesign:

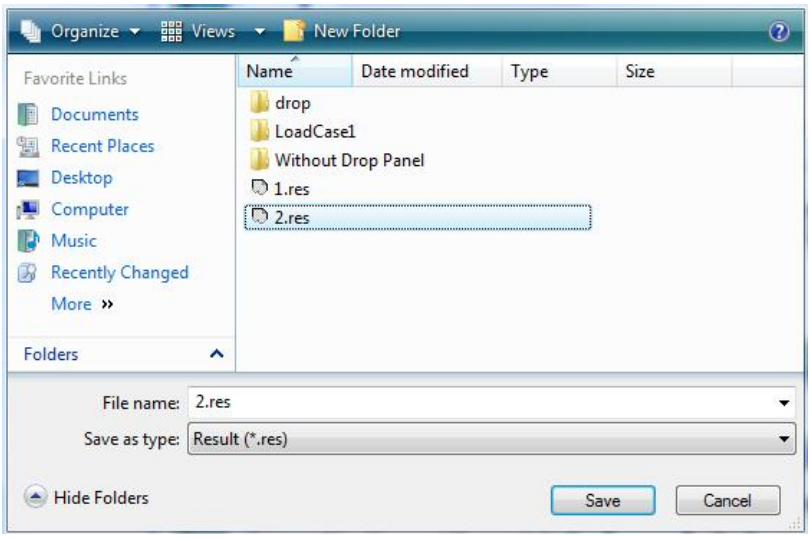
Open PLDesign Import Load Case file (.LC) then Open the result file (.res)

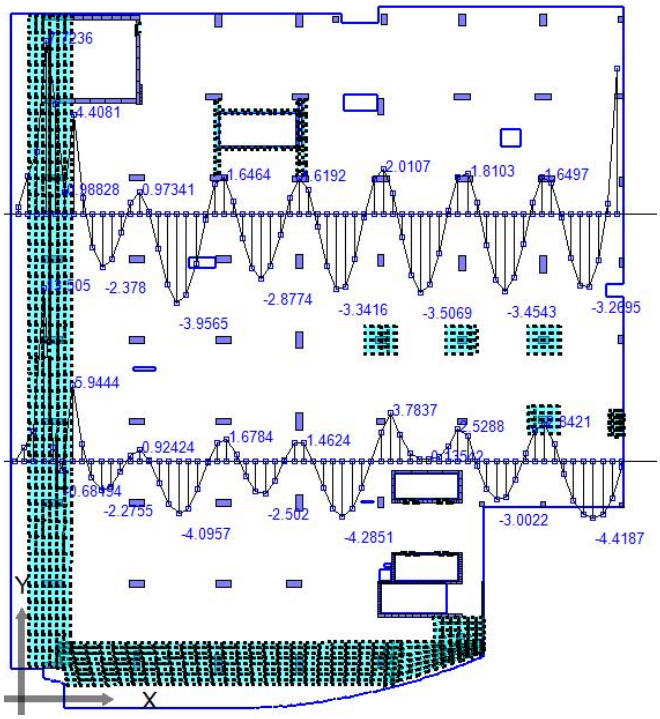





Y
X

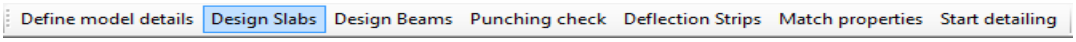

BE4E-PLDesign - [1.LoadCase1-title
File
View
Action
Design
Import LC
Open (.res) Ctrl+O
Open (.des0)
Save Ctrl+S
Export design data
Page Setup
Print Preview
Print Ctrl+P
Exit

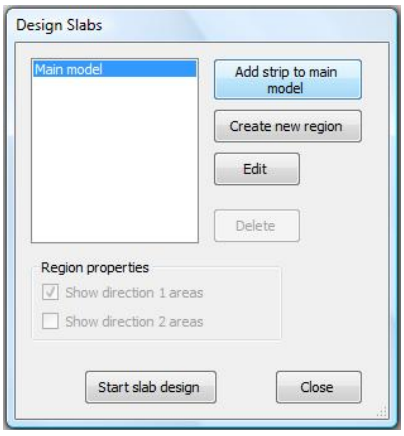

Organize
Views
New Folder
Favorite Links
Documents
Recent Places
Desktop
Computer
Music
Recently Changed
More
Folders
Name
Date modified
Type
Size
drop
LoadCase1
Without Drop Panel
1.res
2.res
File name: 2.res
Save as type: Result (*.res)
Hide Folders
Save
Cancel

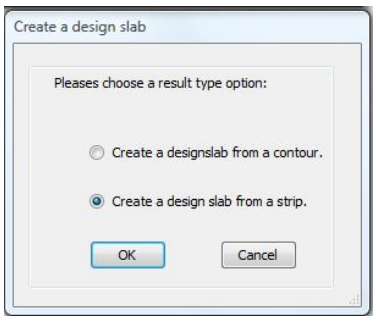


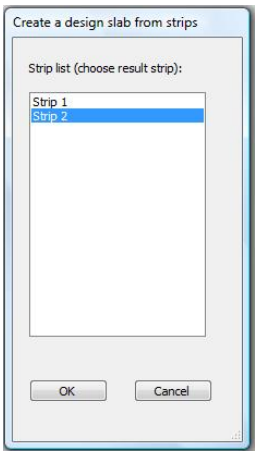
Fifth Step Design Slabs Strips:

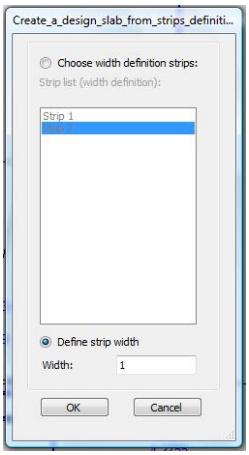
In part (B) we are going to design the Slab Strips from PLPost.



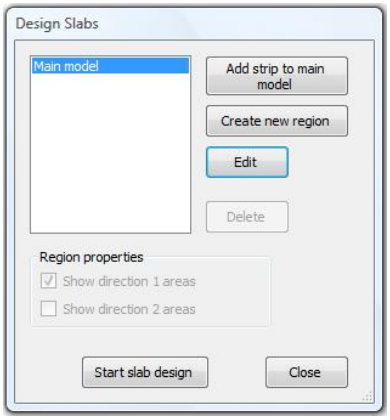


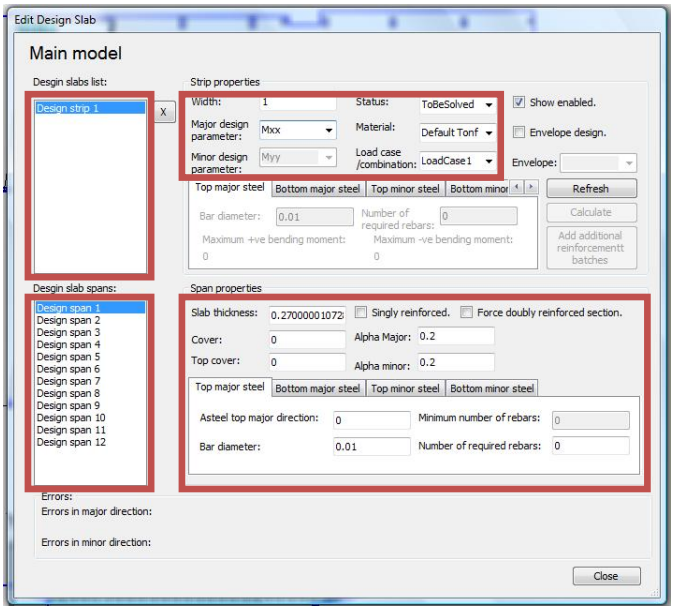




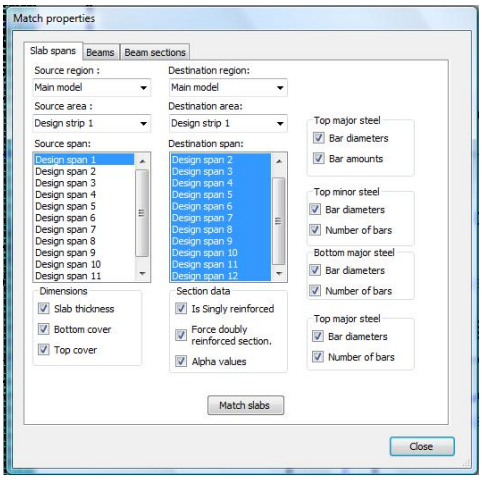


Select Design Slabs ⇨ Add strips to main model ⇨ Choose Create a design slab from a strip ⇨ Choose the result strip ⇨ Define strip width.

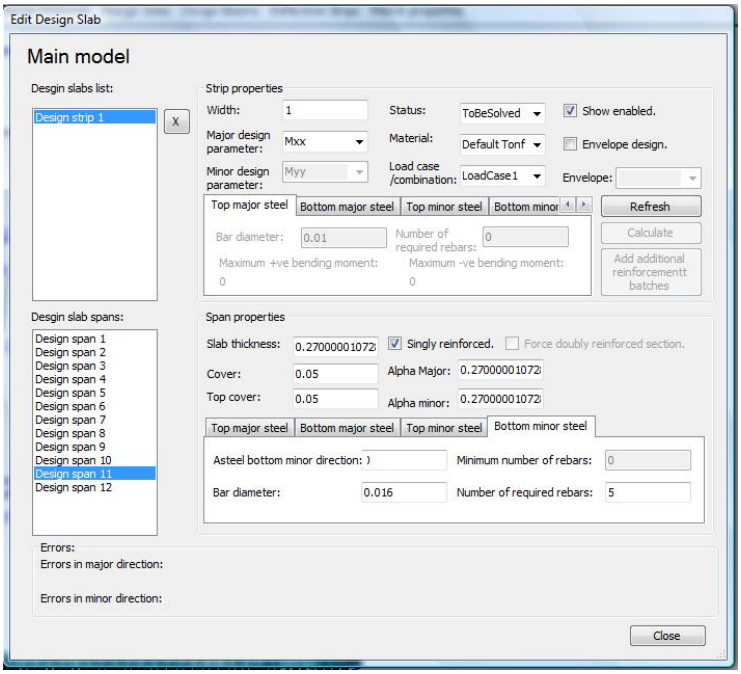


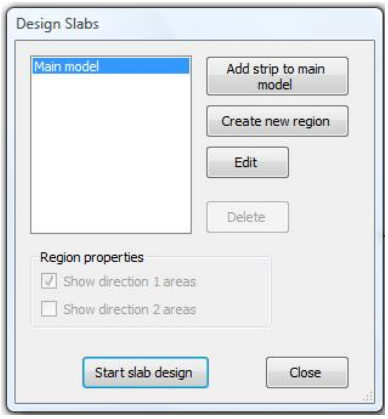


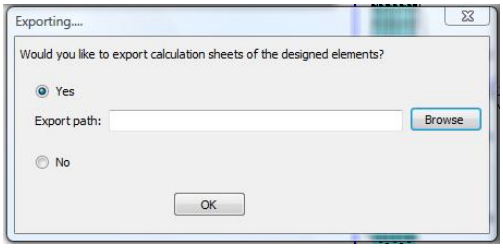
After defining strip width we need to edit the strip properties but we will find that each design strip contains a number of design spans according to the shape of moment so we have to make all design span the same by using Match properties

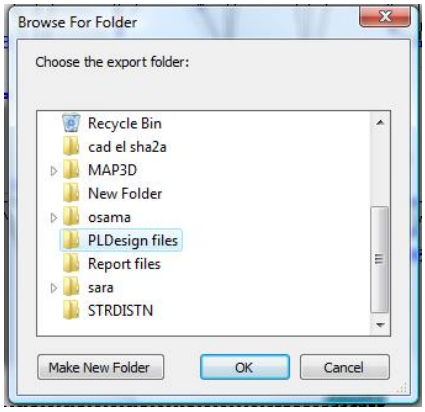


Check that all design span have been changed as the source span

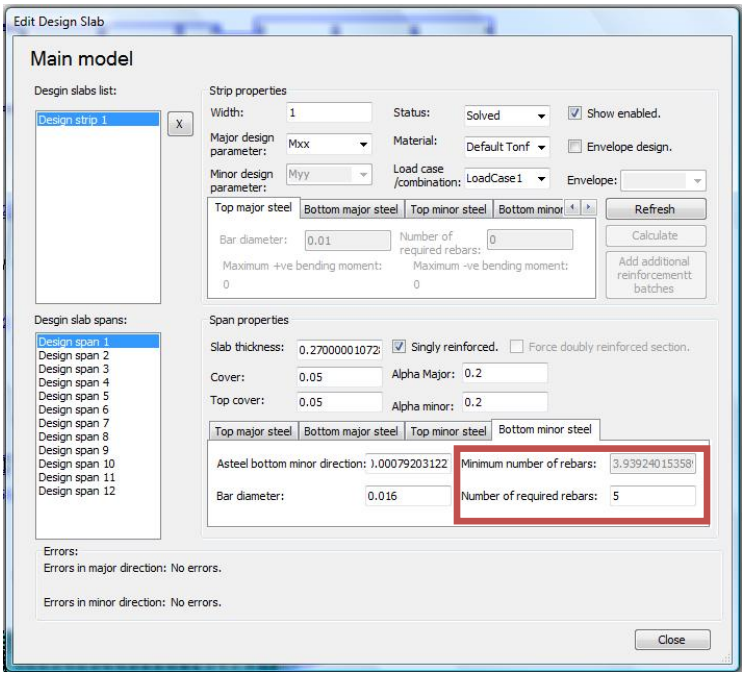




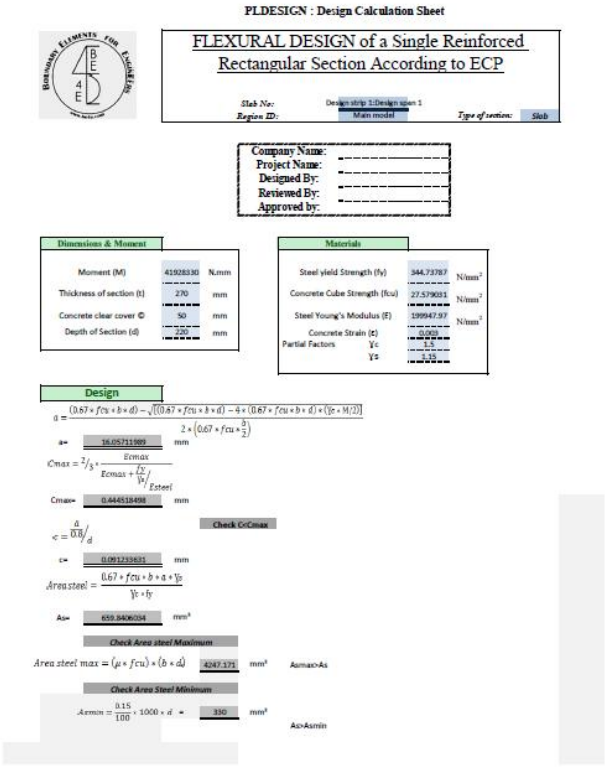




Start Slab design to see the reinforcement for each design span.



Each Design will show the minimum number of rebars for the selected diameter and show the export Excel sheets



PLDESIGN : Design Calculation Sheet

FLEXURAL DESIGN of a Single Reinforced Rectangular Section According to ECP

Slab No: Design strip 1:Design span 1
Region ID: Main model
Type of section: Slab

Company Name:
Project Name:
Designed By:
Reviewed By:
Approved by:

Dimensions & Moment

Moment (M)	41928330	N.mm
Thickness of section (t)	270	mm
Concrete clear cover ©	50	mm
Depth of Section (d)	220	mm

Materials

Steel yield Strength (fy)	344.73787	N/mm²
Concrete Cube Strength (fcu)	27.579031	N/mm²
Steel Young's Modulus (E)	199947.97	N/mm²
Concrete Strain (ε)	0.003	
Partial Factors γc	1.5	
γs	1.15	

Design

$$a = \frac{(0.67 * fcu * b * d) - \sqrt{[(0.67 * fcu * b * d) - 4 * (0.67 * fcu * b * d) * ((\gamma c * M)/2)]}}{2 * \left(0.67 * fcu * \frac{b}{2}\right)}$$

a= 16.05711989 mm

$$Cmax = {}^{2}/_{3} * \frac{Ecmax}{Ecmax + {}^{fy}/_{Esteel}}$$

Cmax= 0.444518498 mm

Check C<Cmax

$$c = {}^{0.8a}/_{d}$$

c= 0.097233631 mm

$$Area\,steel = \frac{0.67 * fcu * b * a * \gamma s}{\gamma c * fy}$$

As= 659.8406034 mm²

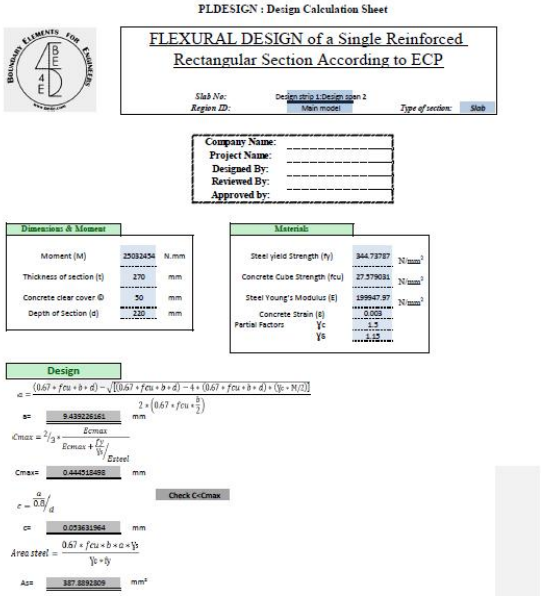
Check Area steel Maximum

$$Area\,steel\,max = (\mu * fcu) * (b * d)$$ 4247.171 mm² Asmax>As

Check Area Steel Minimum

$$Asmin = \frac{0.15}{100} * 1000 * d$$ = 330 mm² As>Asmin

Design span 1 (Mxx direction)



PLDESIGN : Design Calculation Sheet

FLEXURAL DESIGN of a Single Reinforced Rectangular Section According to ECP

Slab No: Design strip 1:Design span 2
Region ID: Main model
Type of section: Slab

Company Name:
Project Name:
Designed By:
Reviewed By:
Approved by:

Dimensions & Moment

Moment (M)	25032454	N.mm
Thickness of section (t)	270	mm
Concrete clear cover ©	50	mm
Depth of Section (d)	220	mm

Materials

Steel yield Strength (fy)	344.73787	N/mm²
Concrete Cube Strength (fcu)	27.579031	N/mm²
Steel Young's Modulus (E)	199947.97	N/mm²
Concrete Strain (ε)	0.003	
Partial Factors γc	1.5	
γs	1.15	

Design

$$a = \frac{(0.67 * fcu * b * d) - \sqrt{[(0.67 * fcu * b * d) - 4 * (0.67 * fcu * b * d) * ((\gamma c * M)/2)]}}{2 * \left(0.67 * fcu * \frac{b}{2}\right)}$$

a= 9.439226162 mm

$$Cmax = {}^{2}/_{3} * \frac{Ecmax}{Ecmax + {}^{fy}/_{Esteel}}$$

Cmax= 0.444518498 mm

Check C<Cmax

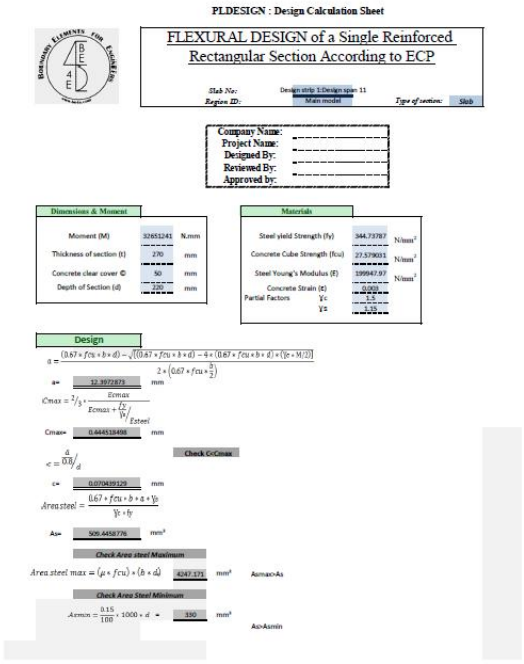
$$c = {}^{0.8a}/_{d}$$

c= 0.053631964 mm

$$Area\,steel = \frac{0.67 * fcu * b * a * \gamma s}{\gamma c * fy}$$

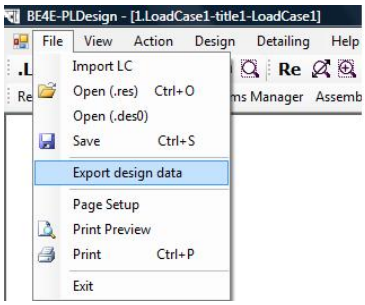
As= 387.8892809 mm²

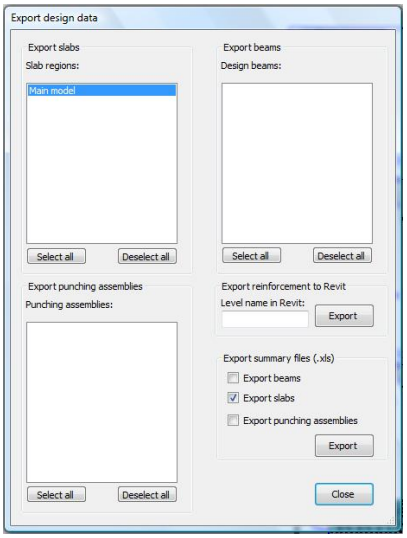
Design span 2 (Mxx direction)



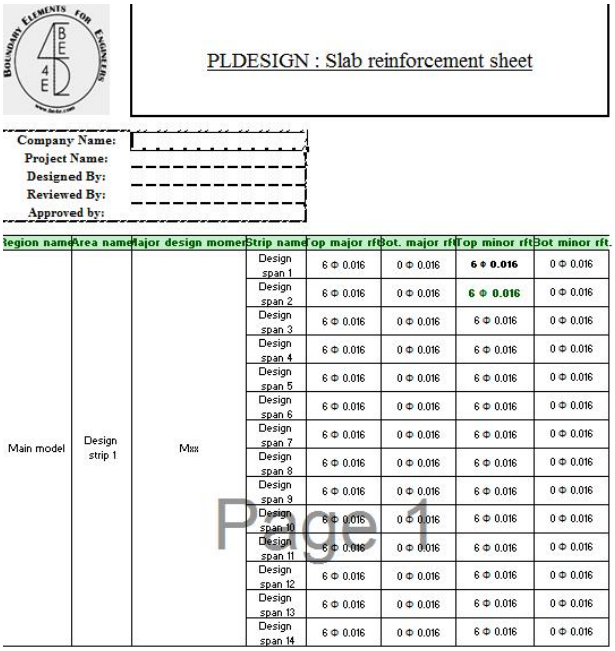
Design span 11 (Mxx direction)

We can export the design data to be shown as excel sheet for all slab areas





Press on Export design data from file menu then choose the slab region, mark on Export slabs then Export.



PLDESIGN : Slab reinforcement sheet

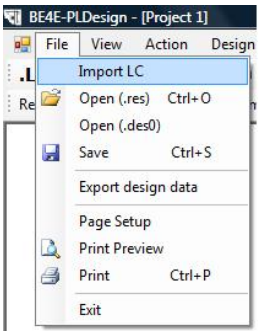
Company Name:	
Project Name:	
Designed By:	
Reviewed By:	
Approved by:	

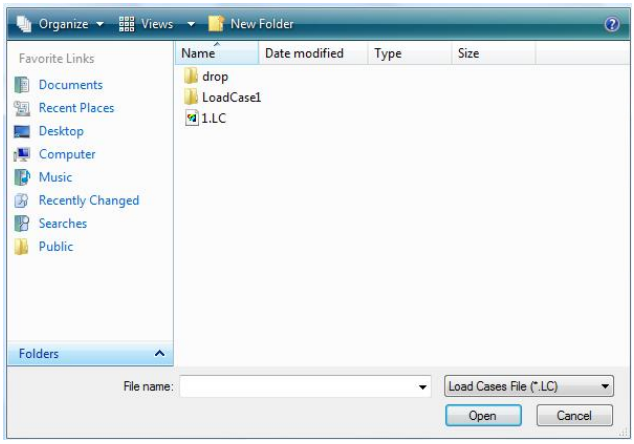
egion name	Area name	Major design momer	Strip name	op major rft	Bot. major rft	Top minor rft	Bot minor rft.
Main model	Design strip 1	Mxx	Design span 1	6 Φ 0.016	0 Φ 0.016	**6 Φ 0.016**	0 Φ 0.016
			Design span 2	6 Φ 0.016	0 Φ 0.016	**6 Φ 0.016**	0 Φ 0.016
			Design span 3	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 4	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 5	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 6	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 7	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 8	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 9	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 10	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 11	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 12	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 13	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016
			Design span 14	6 Φ 0.016	0 Φ 0.016	6 Φ 0.016	0 Φ 0.016

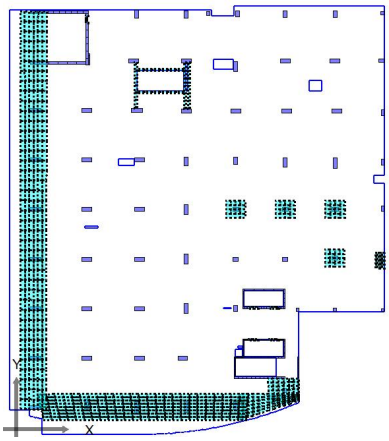
After design and export the calculation sheets, we are going to show the slab details from the detailing menu

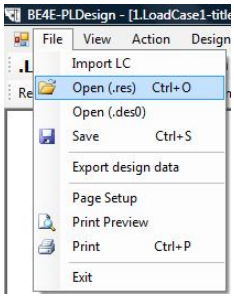
Sixth Step Load the Contour in PLDesign:

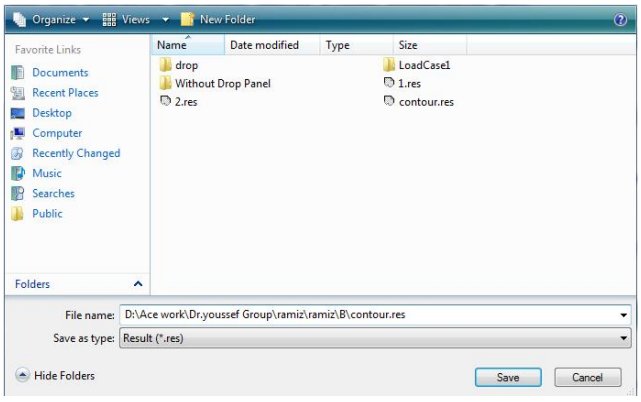
Open PLDesign Import Load Case file (.LC) then Open the result file (.res)

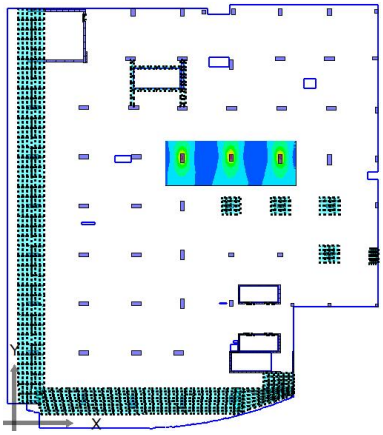






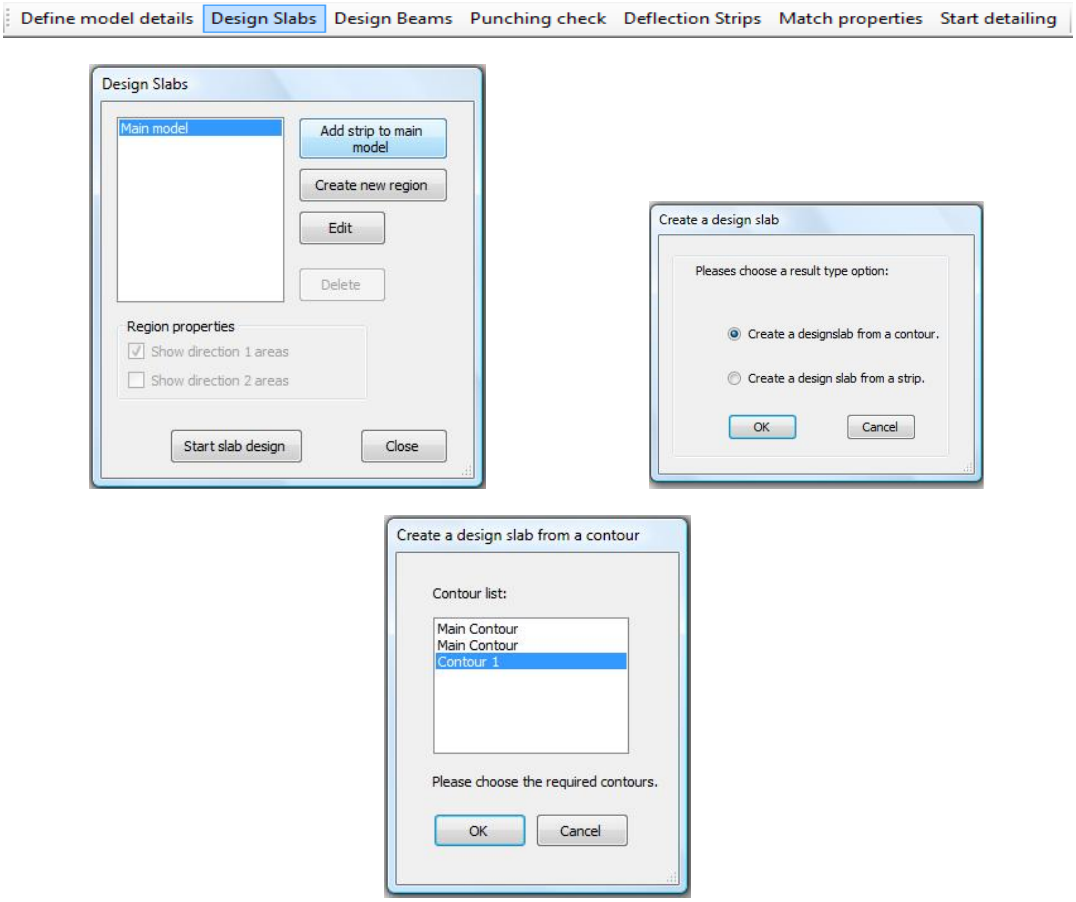




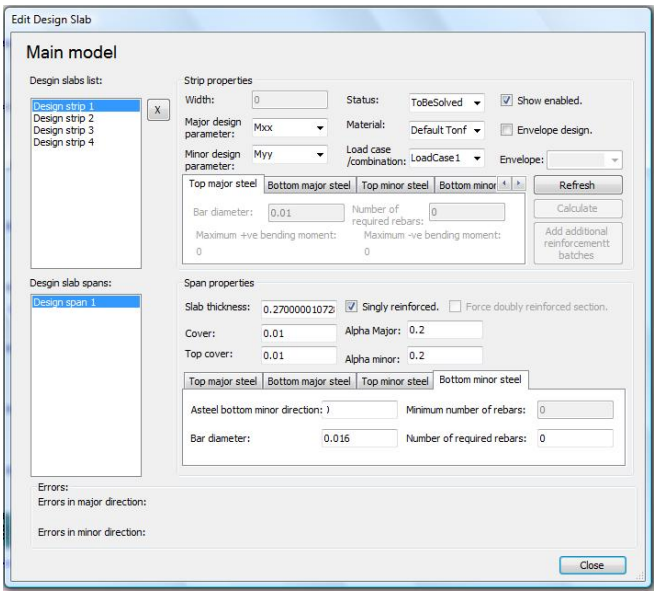


Seventh Step Design Slabs Contour:

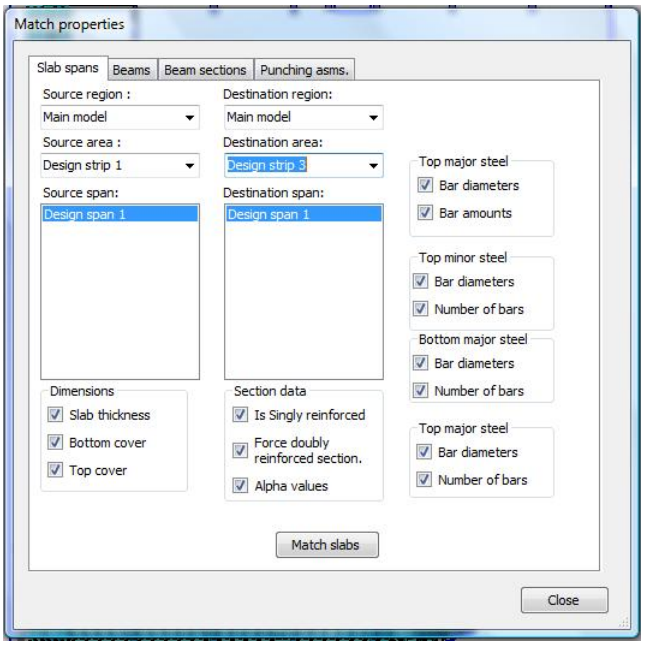
In part (B) we are going to design the Slab Strips from PLPost.



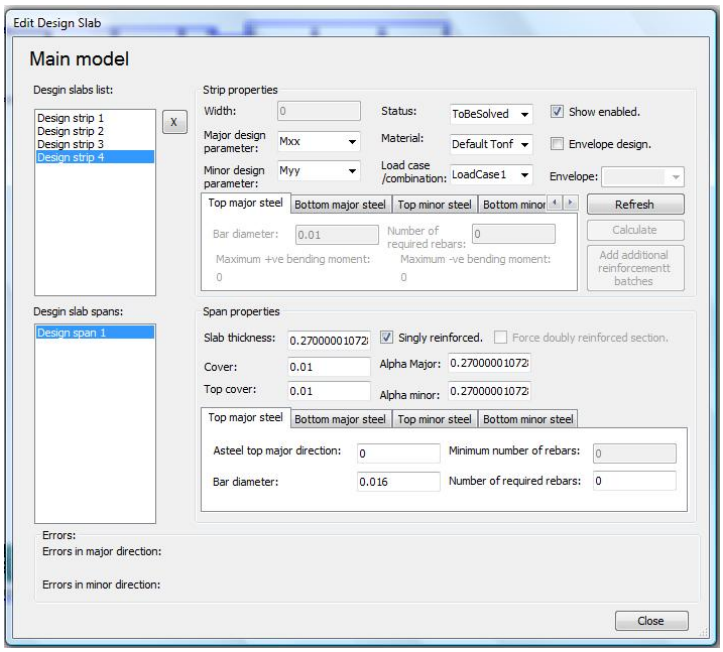
Select Design Slab ⟹ Add strips to main model ⟹ Choose Create a design slab from a contour ⟹ Choose the required contours

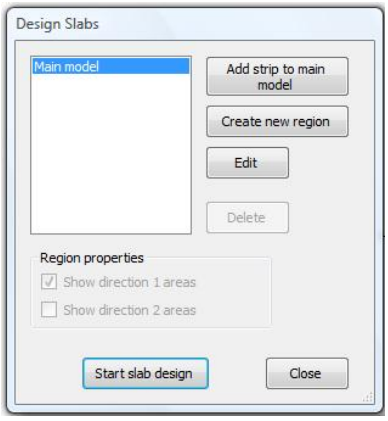


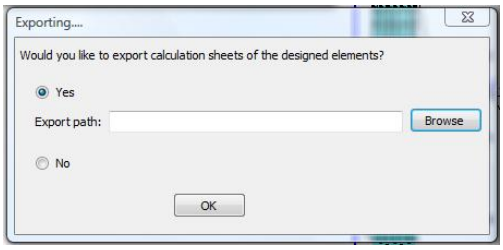
After defining the required contour we need to edit the design slab properties but we will find that each design strip contains a number of design spans according to the shape of moment so we have to make all design span the same by using Match properties

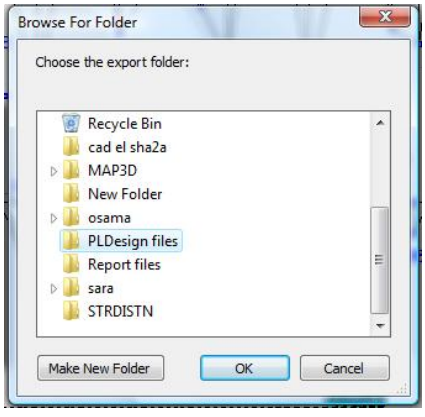


Check that all design span have been changed as the source span

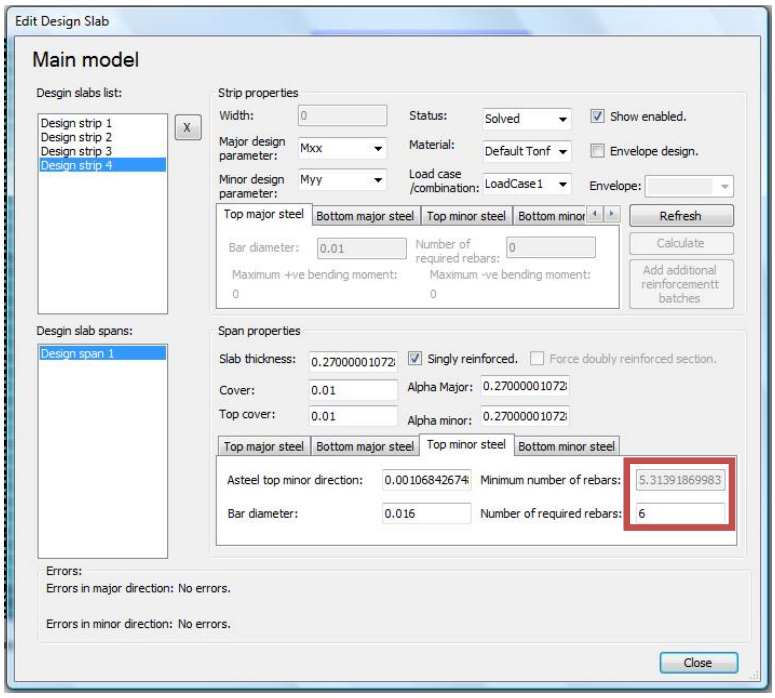






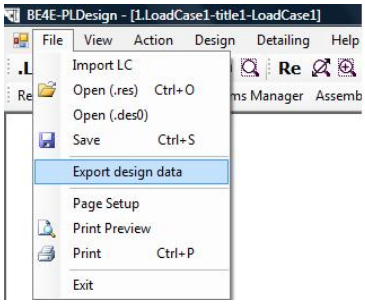


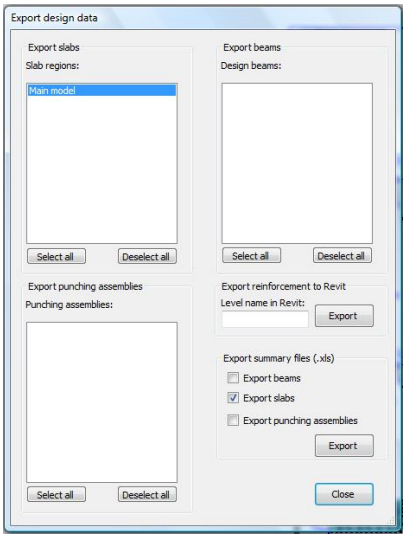
Start Slab design to see the reinforcement for each design span.



Each Design will show the minimum number of rebars for the selected diameter and show the export Excel sheets

We can export the design data to be shown as excel sheet for all slab areas





Press on Export design data from file menu then choose the slab region, mark on Export slabs then Export.

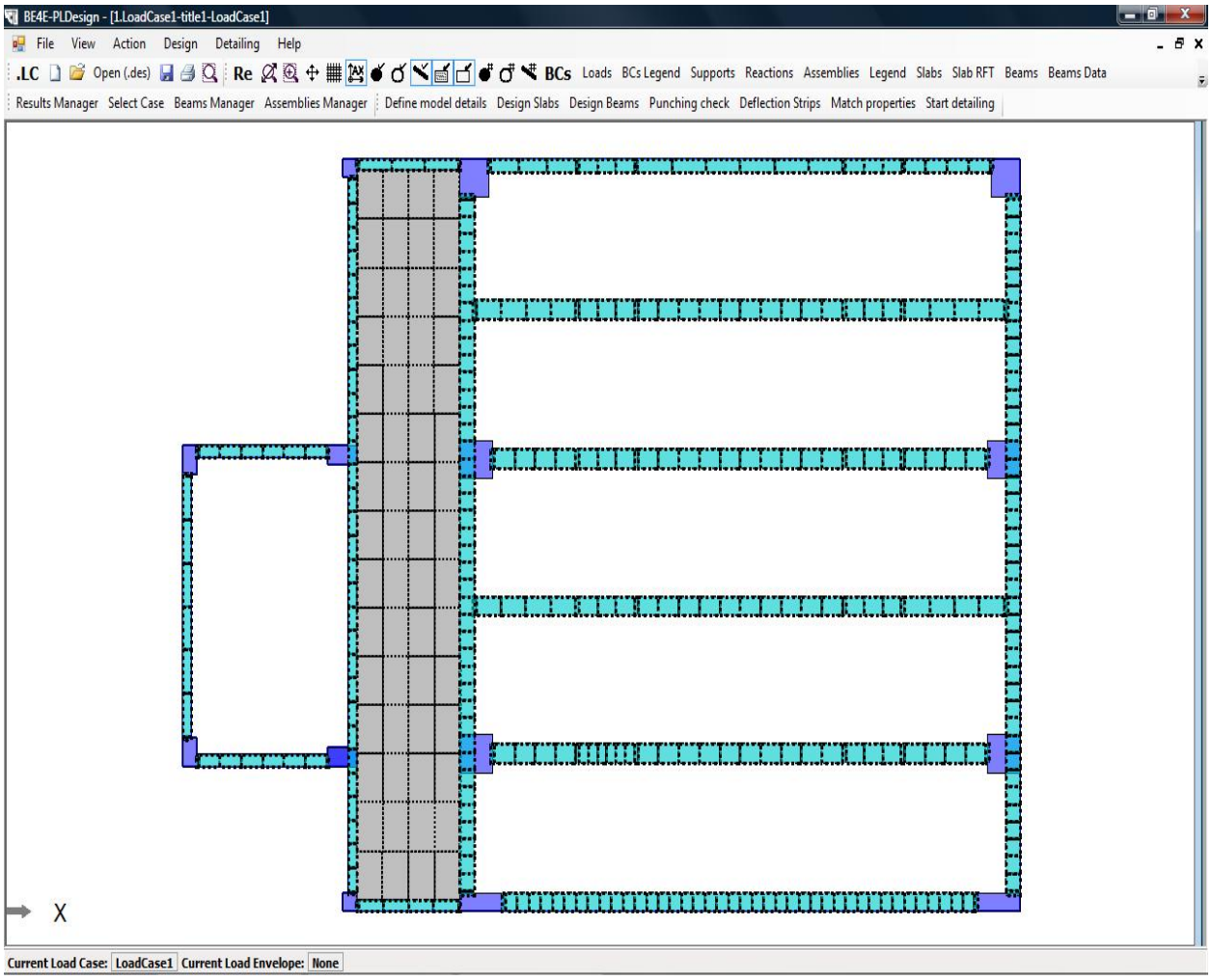
PLDESIGN : Slab reinforcement sheet

Company Name:
Project Name:
Designed By:
Reviewed By:
Approved by:

Region name	Area name	Major design moment	Strip name	Top major rft.	Bot. major rft.	Top minor rft.	Bot minor rft.
Main model	Design strip 1	Mxx	Design span 1	6 Φ 0.016	0 Φ 0.01	6 Φ 0.016	0 Φ 0.01
	Design strip 2	Mxx	Design span 1	6 Φ 0.016	0 Φ 0.01	6 Φ 0.016	0 Φ 0.01
	Design strip 3	Mxx	Design span 1	6 Φ 0.016	0 Φ 0.01	6 Φ 0.016	0 Φ 0.01
	Design strip 4	Mxx	Design span 1	6 Φ 0.016	0 Φ 0.01	6 Φ 0.016	0 Φ 0.01

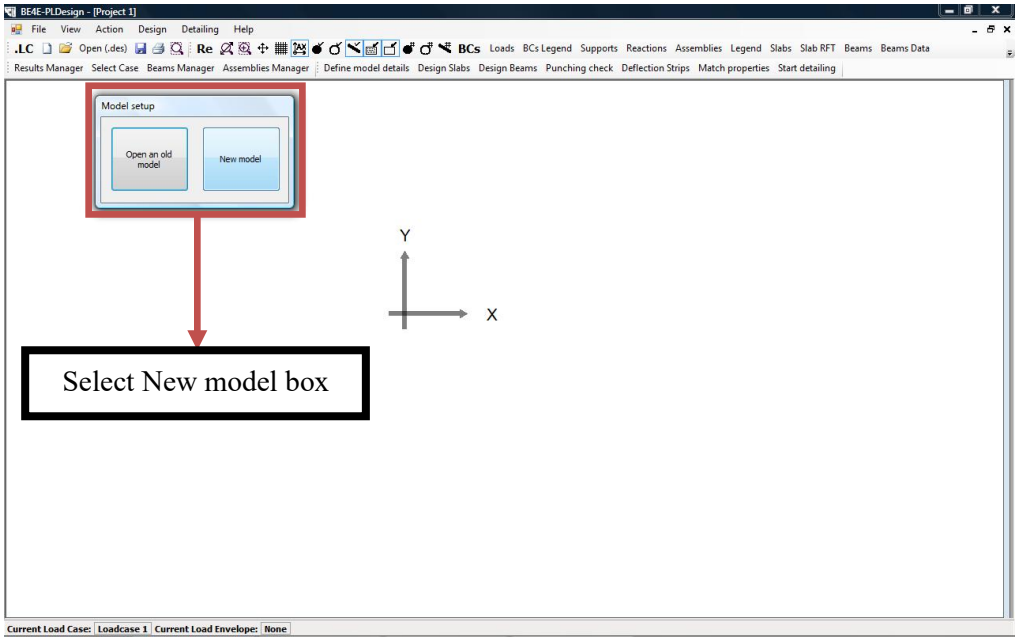
After design and export the calculation sheets, we are going to show the slab details from the detailing menu

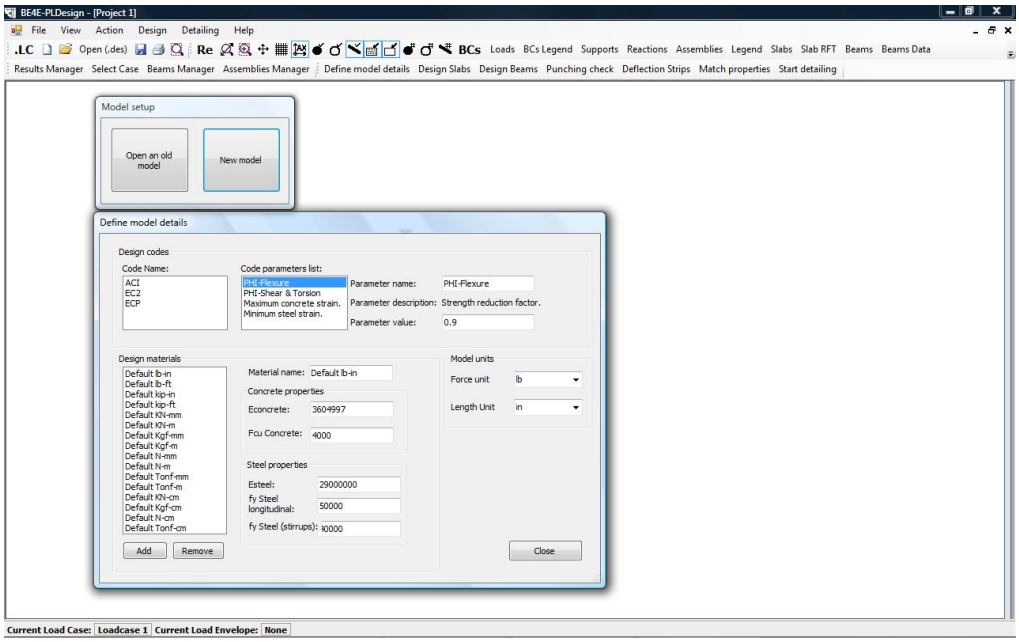
Part C – Strip based slab design



In part (C) we are using PLDesign for designing Strips based design which is similar as designing solid slabs.

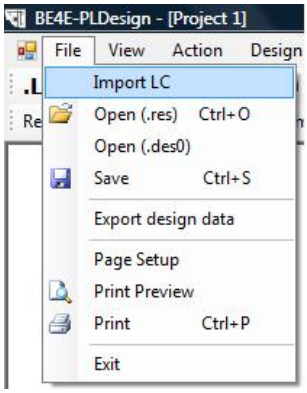
First Step Define Design Code, Units, Materials:

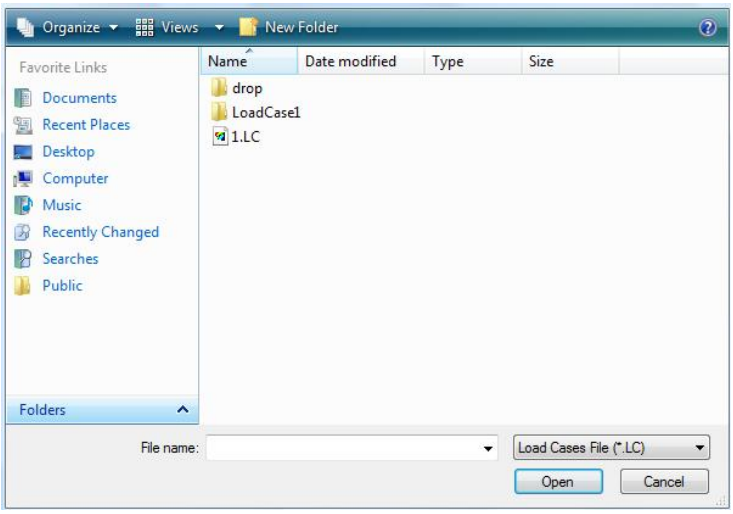




- From the Define model details choose the Code name & the Code parameters list.
- After determining the Design Code, Assign the force and length units.
- We can add/remove material properties from the design material part otherwise we can use the default one.

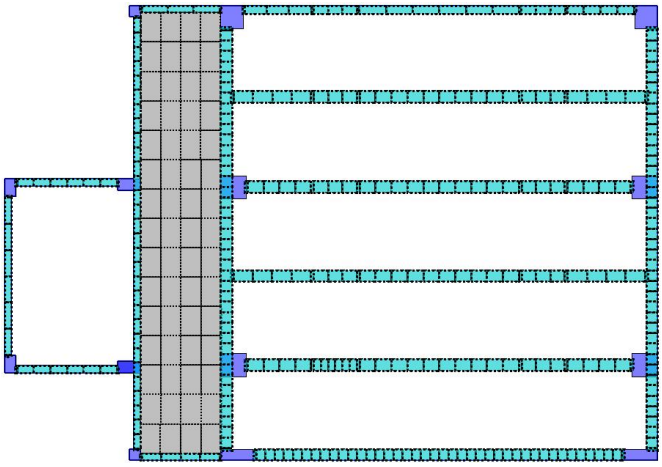
Second Step Load (.LC) file:





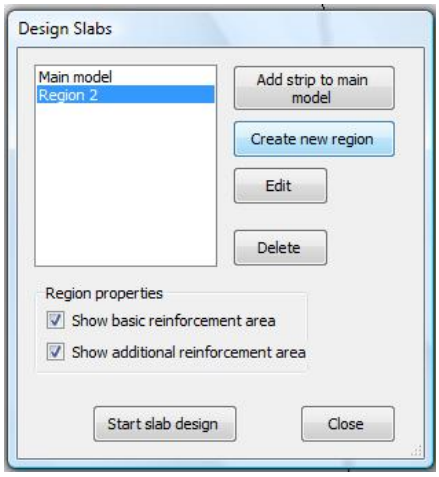
Open the file menu ⟹ Import .LC.

Determine the Load Cases file (.LC) then click open.

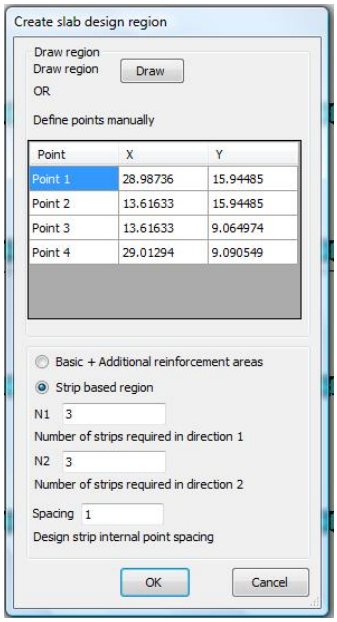


Third Step Design Slabs:

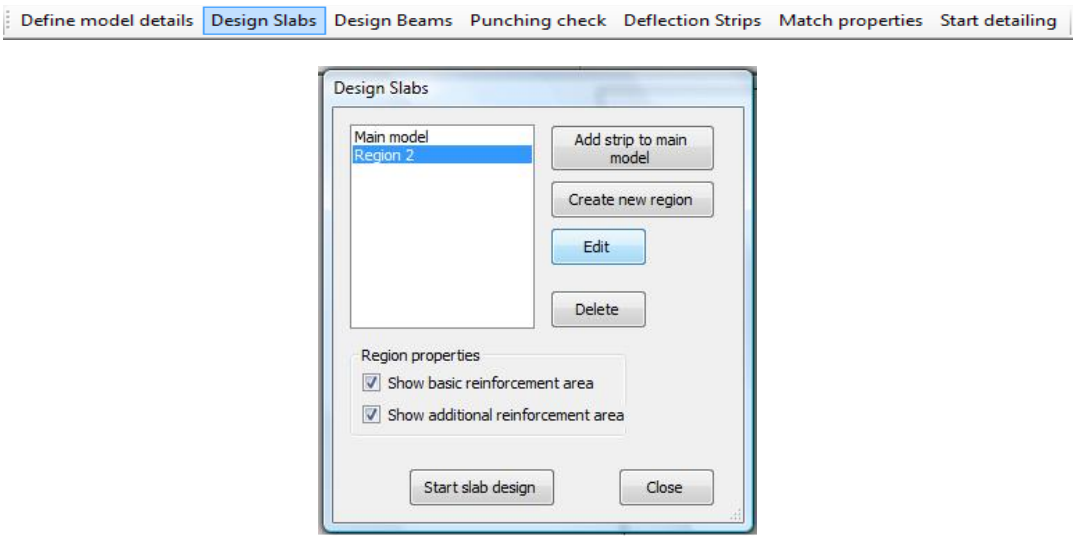
In part (C) we are going to design the Slab as strip based design.



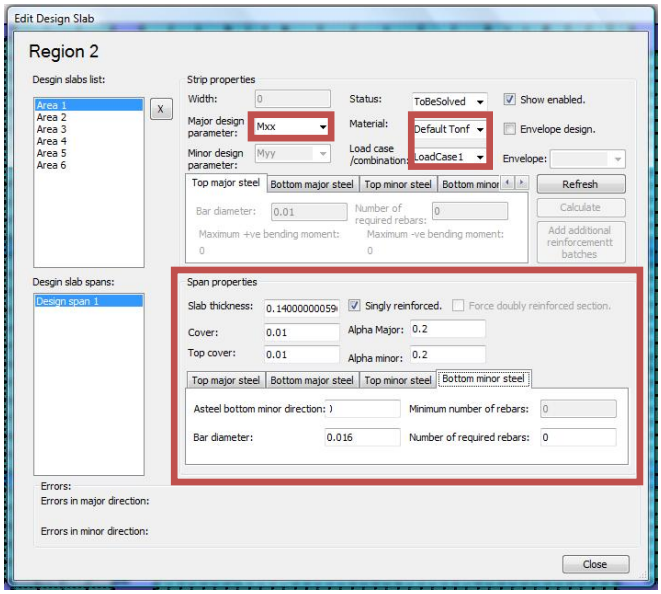
Select Design Slabs ⇨ Create new region ⇨ Select Strip based design ⇨ Draw region



After Drawing the Region, determine the design strip internal point spacing then press OK

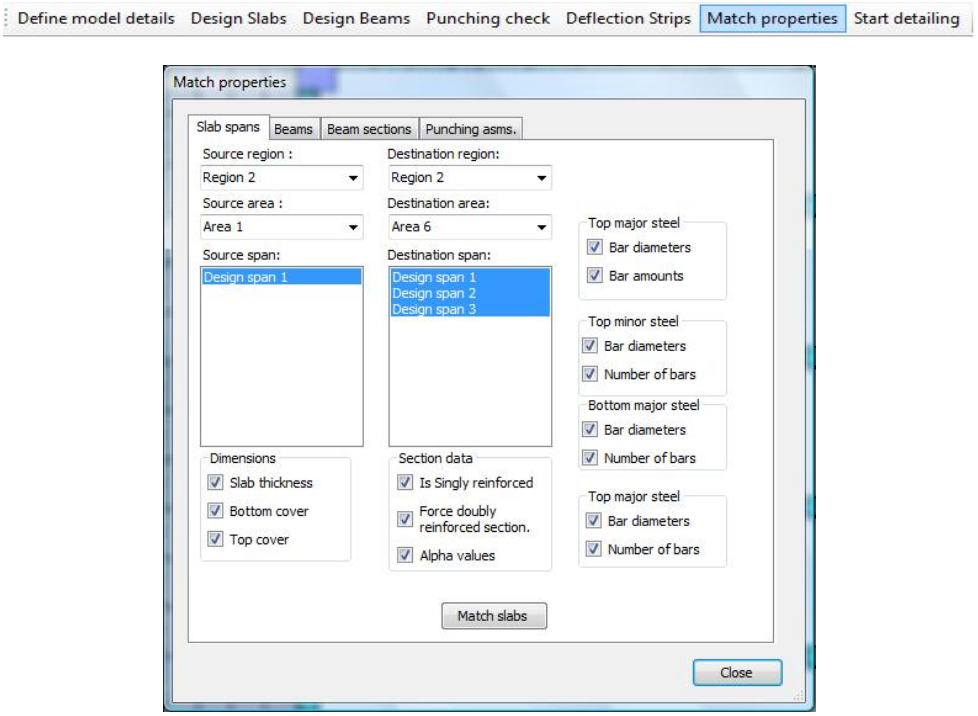


Select the Design Slabs then press Edit tab to open edit design slab window.



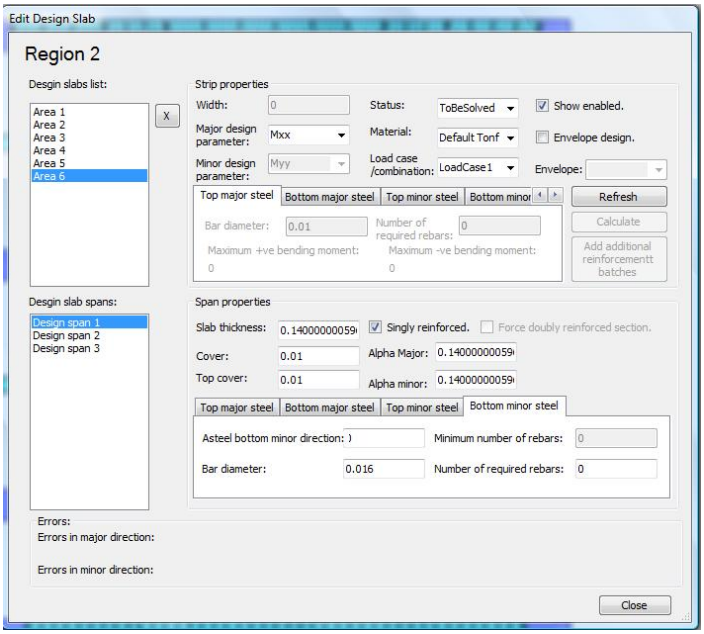
Select the Major design parameter, Load case/combination, then determine the cover, the top cover, the bar diameter and the number of required rebar for Top major steel, Bottom major steel, Top minor steel & Bottom minor steel.

Instead of changing all the properties of all spans. We can use Match properties

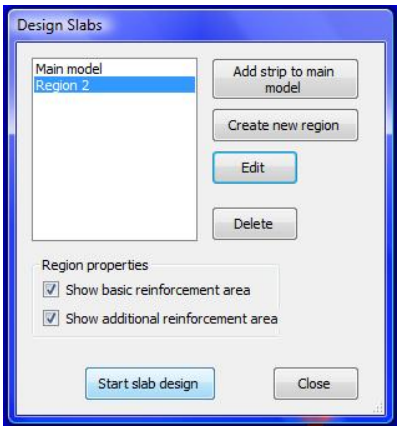


Select Slab Spans, Source region, Destination region, Source Span, Destination span.

Then click Match slabs

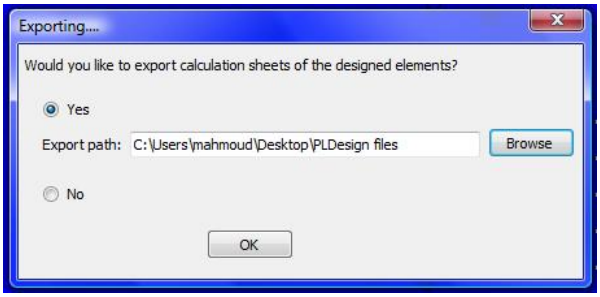


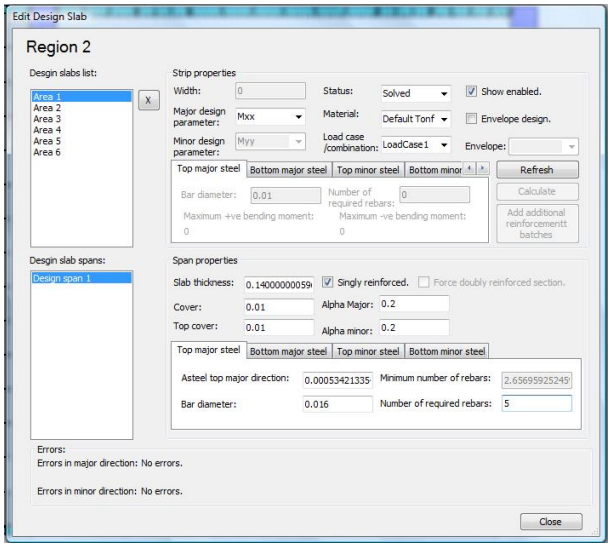
All Spans have changed their properties according to the Matched source.



Press on Start slab design to analyze the selected additional region.

Then Export the calculation excels sheets.

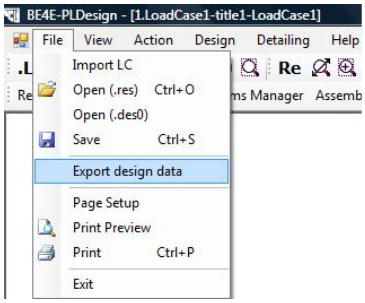


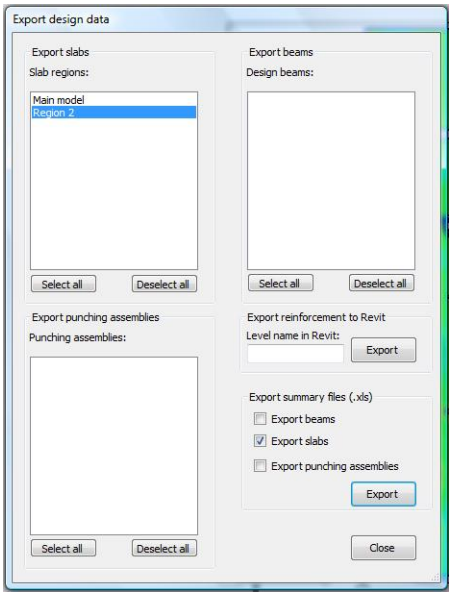


The Minimum number of rebars has been calculated and the Number of required rebars needs to be changed to satisfy the minimum requirement.

We can also see the exported excel files for each Additional reinforcement areas

We can export the design data to be shown as excel sheet for all slab areas





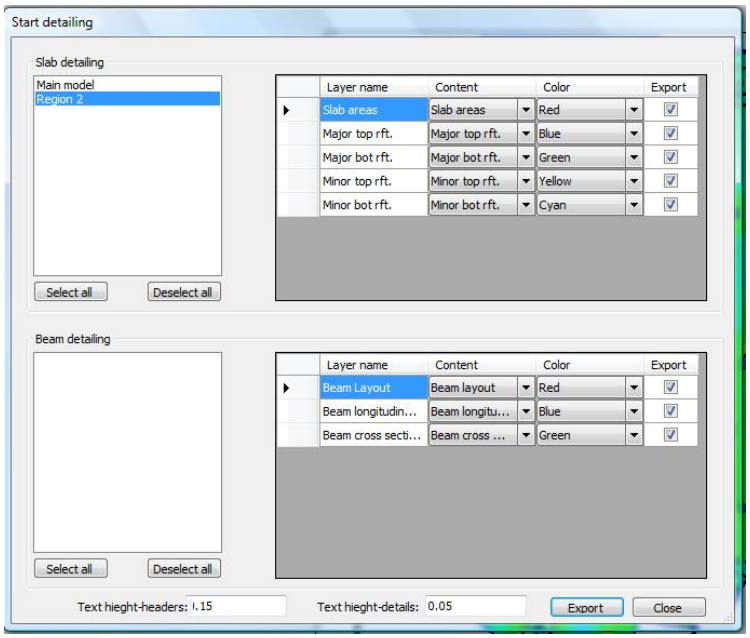
Press on Export design data from file menu then choose the slab region, mark on Export slabs then Export.

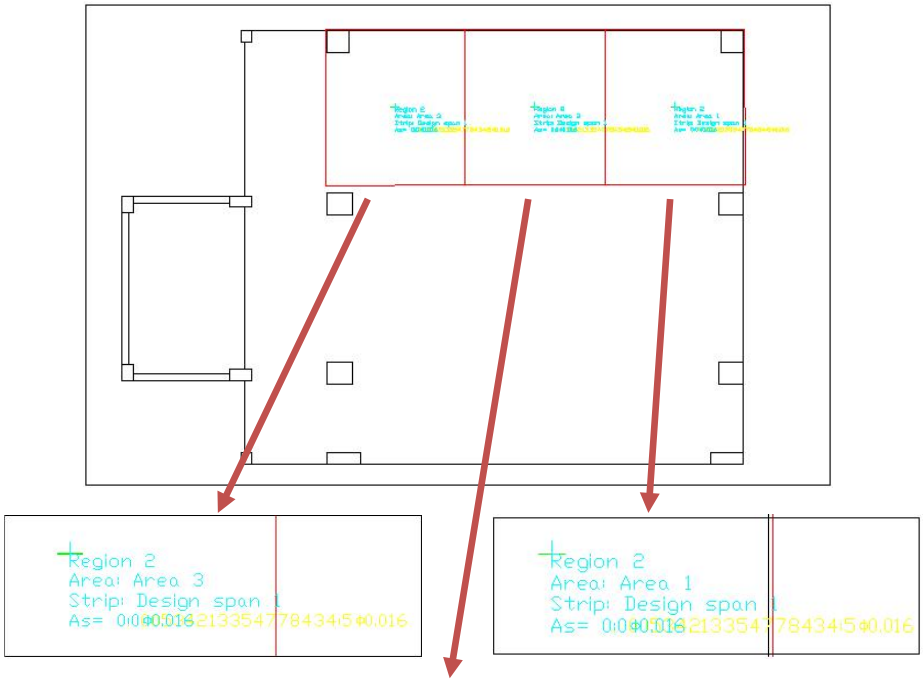
PLDESIGN : Slab reinforcement sheet

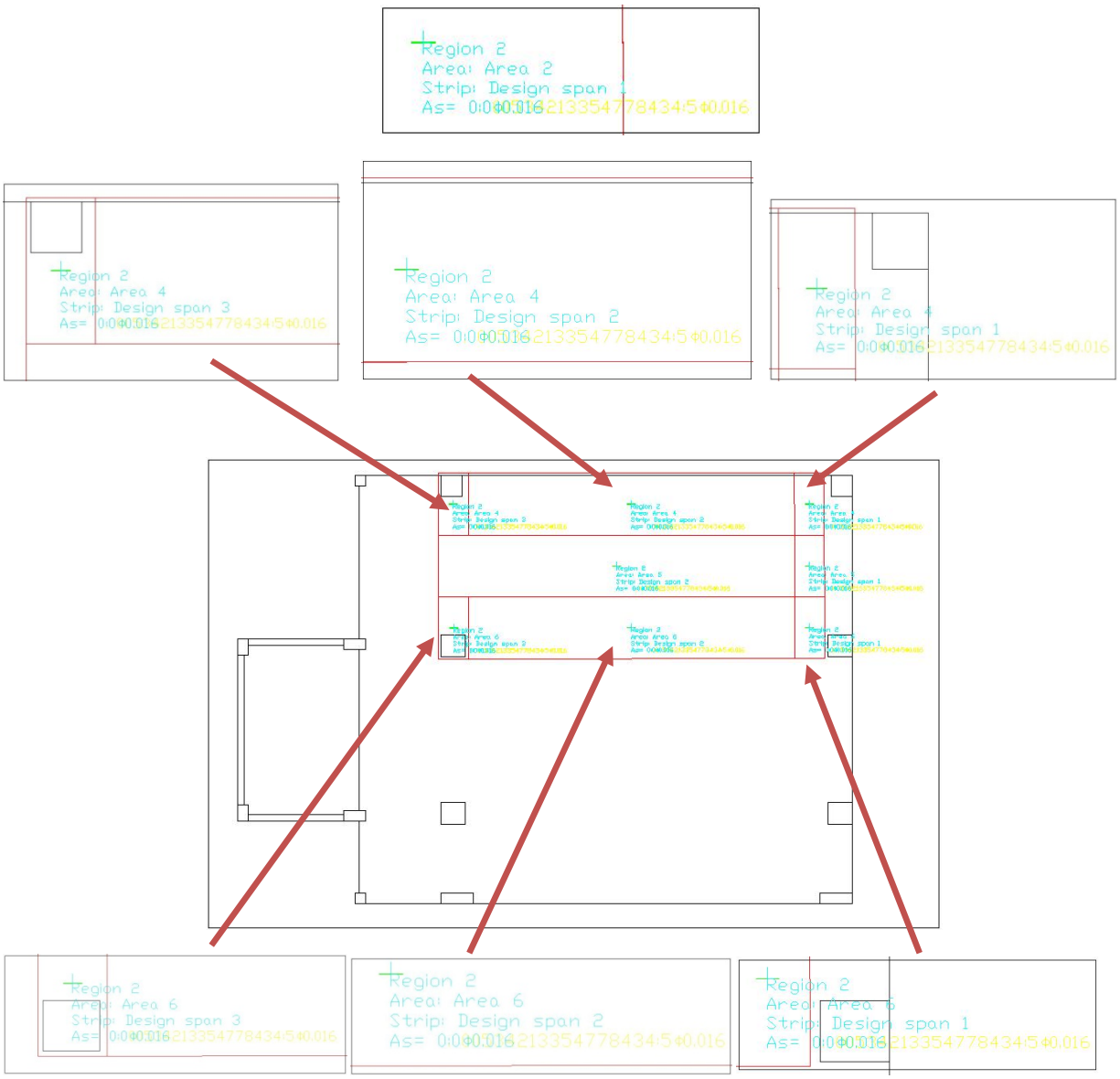
Company Name:
Project Name:
Designed By:
Reviewed By:
Approved by:

Region name	Area name	Major design moment	Strip name	Top major rft.	Bot. major rft.	Top minor rft.	Bot minor rft.
Region 2	Area 1	Mxx	Design span 1	5 Φ 0.016	0 Φ 0.016	**5 Φ 0.016**	0 Φ 0.016
	Area 2	Mxx	Design span 1	5 Φ 0.016	0 Φ 0.016	**5 Φ 0.016**	0 Φ 0.016
	Area 3	Mxx	Design span 1	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
	Area 4	Mxx	Design span 1	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
			Design span 2	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
			Design span 3	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
	Area 5	Mxx	Design span 1	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
			Design span 2	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
	Area 6	Mxx	Design span 1	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
			Design span 2	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016
			Design span 3	5 Φ 0.016	0 Φ 0.016	5 Φ 0.016	0 Φ 0.016

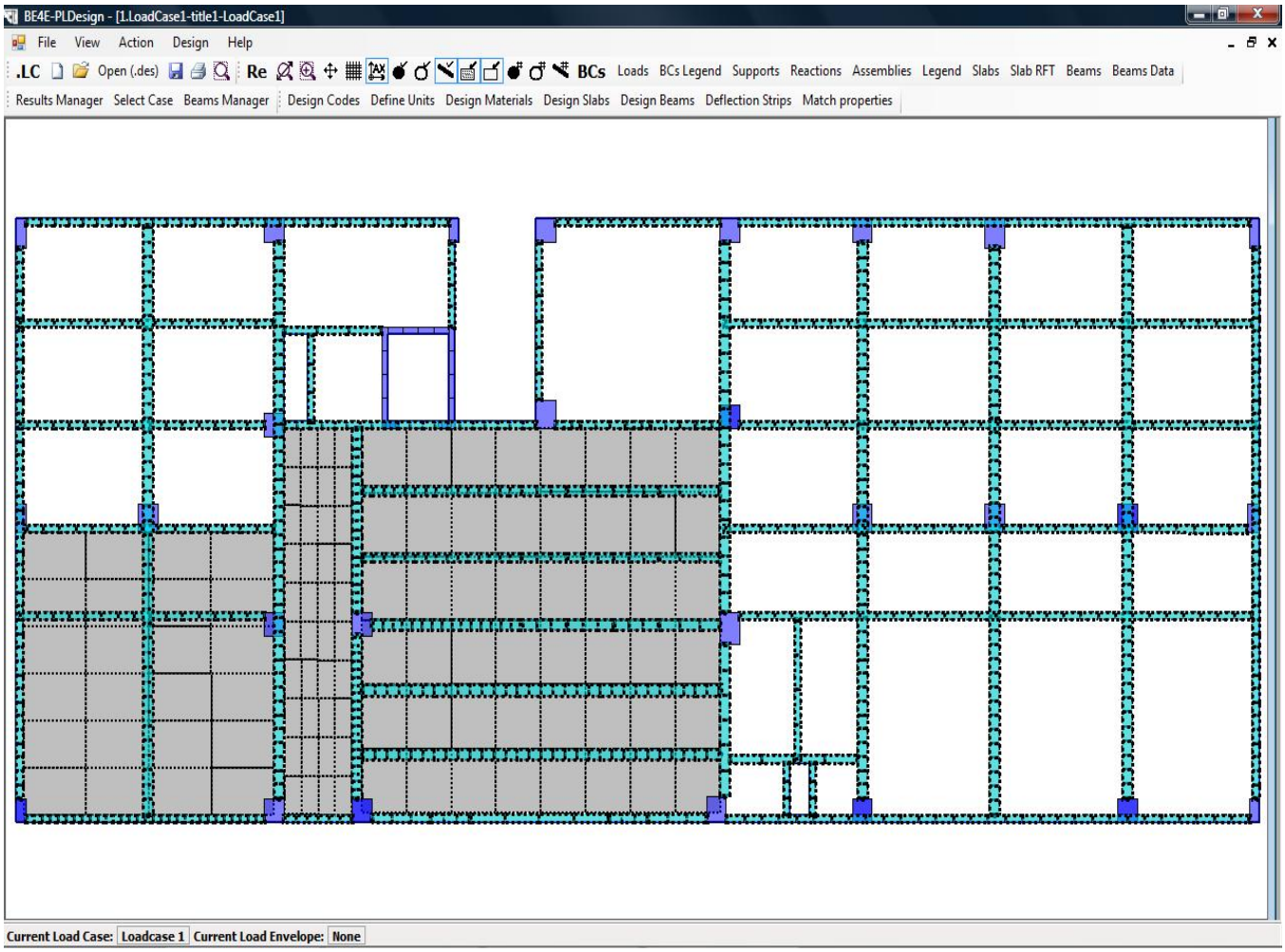
After design and export the calculation sheets, we are going to show the slab details from the detailing menu






Region 2
Area: Area 2
Strip: Design span 1
Region 2
Area: Area 4
Strip: Design span 3
Region 2
Area: Area 4
Strip: Design span 2
Region 2
Area: Area 4
Strip: Design span 1
Region 2
Area: Area 6
Strip: Design span 3
Region 2
Area: Area 6
Strip: Design span 2
Region 2
Area: Area 6
Strip: Design span 1

Part D – Beam design

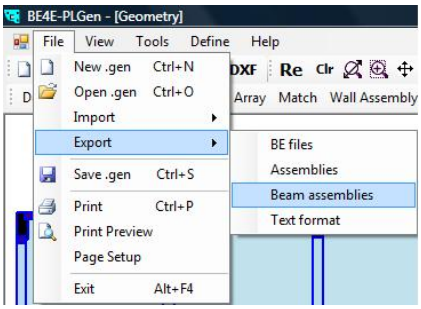


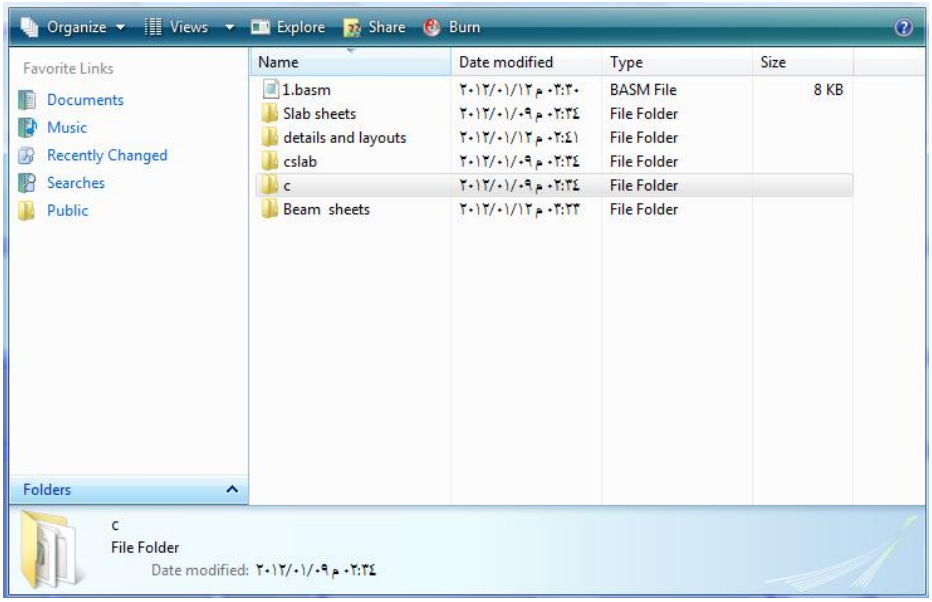
In Part (D) we are going to know how to design beams using PLDesign.

First Step Load beam file (.basm) for design:

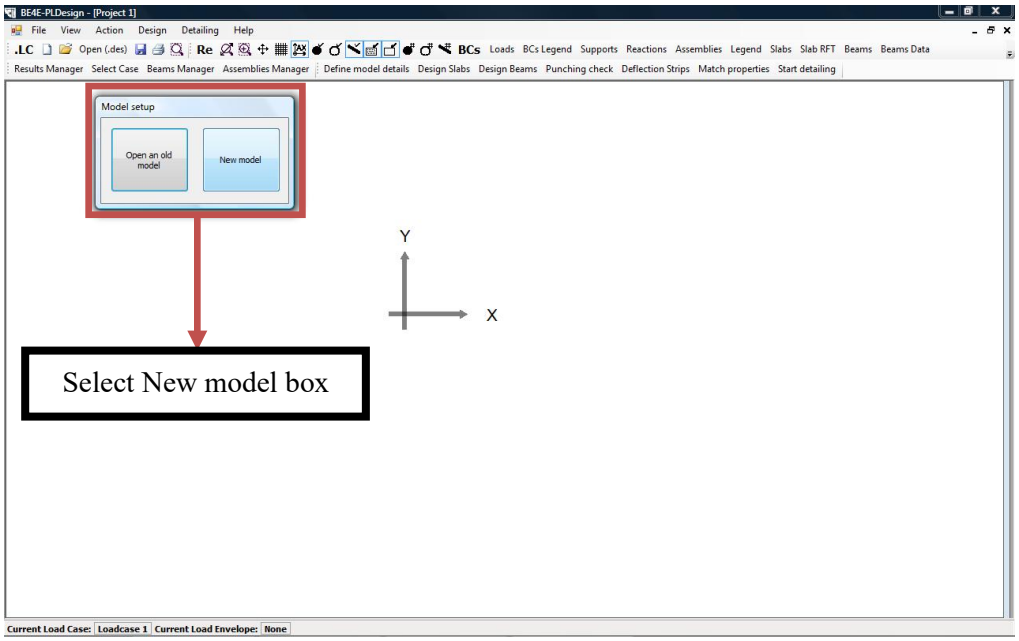
In this case we need to prepare the PLGen before using PLDesign.

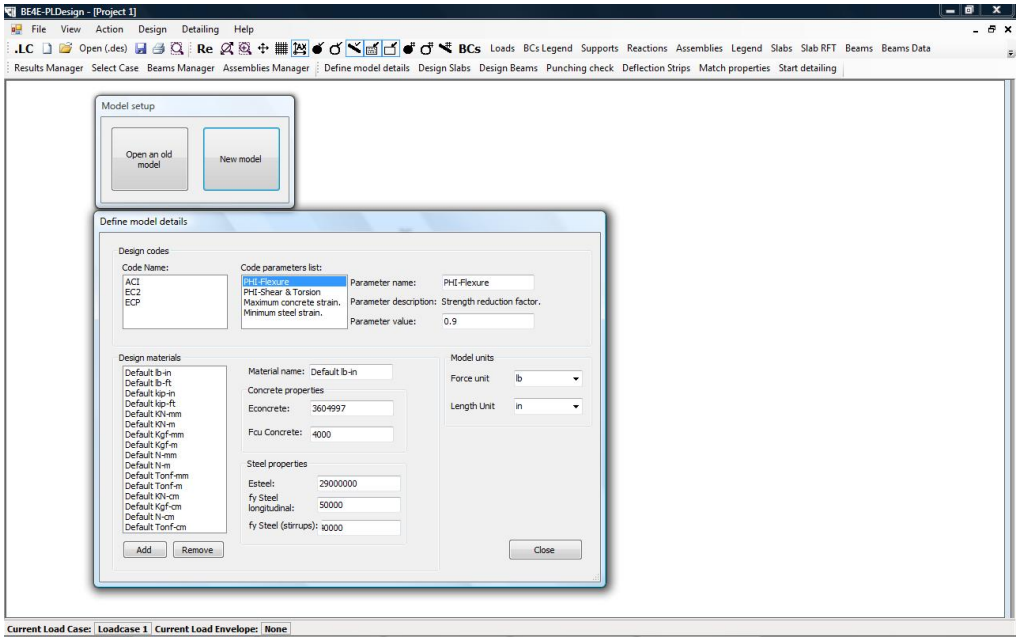
Open PLGen and Export beam assemblies





Second Step Define Design Code, Units, Materials:

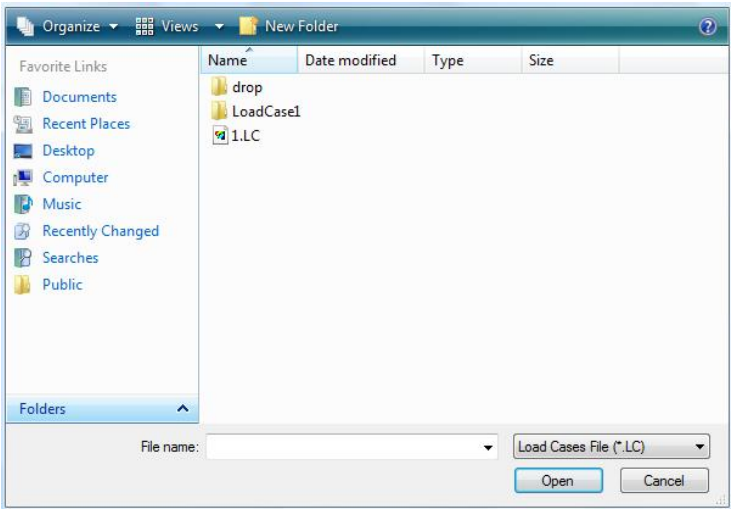




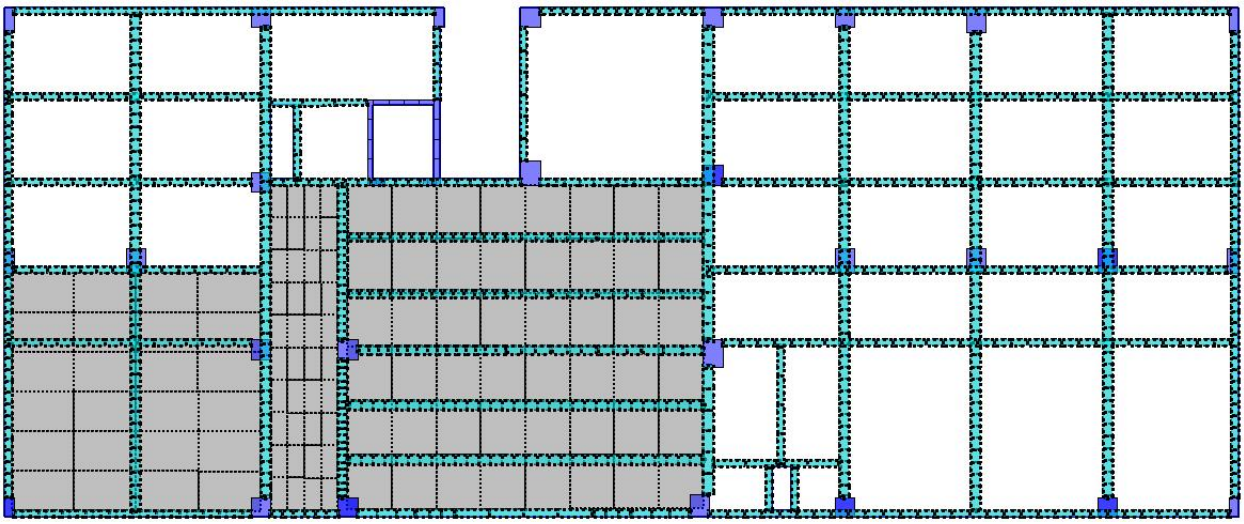
- From the Define model details choose the Code name & the Code parameters list.
- After determining the Design Code, Assign the force and length units.
- We can add/remove material properties from the design material part otherwise we can use the default one.

Third Step Load (.LC) file:

Automatically window opens to choose the (.LC) file needed to design.

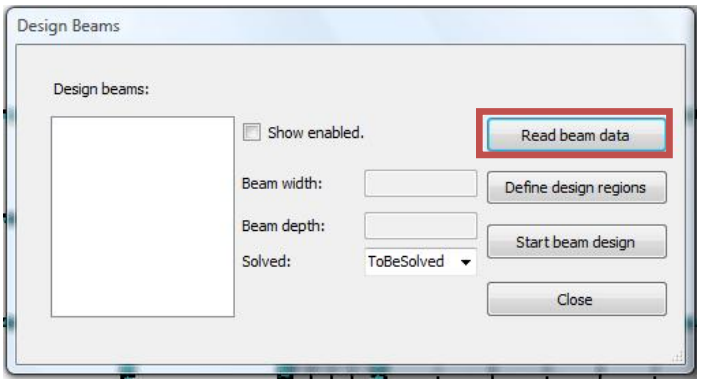


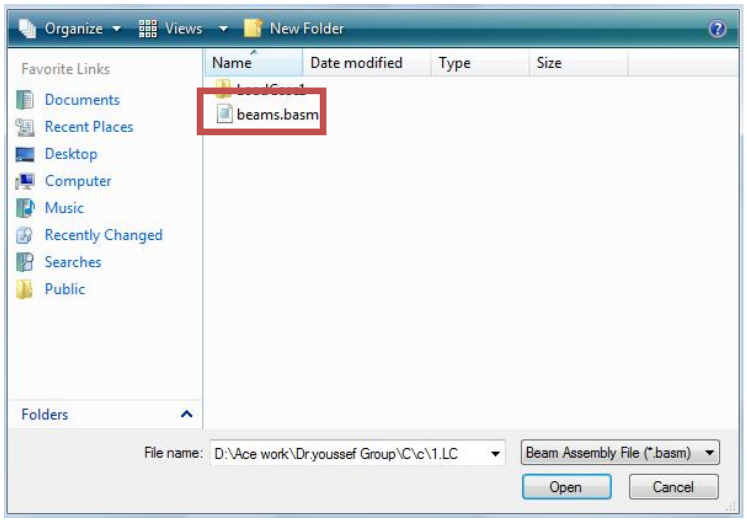
Determine the Load Cases file (.LC) then click open.

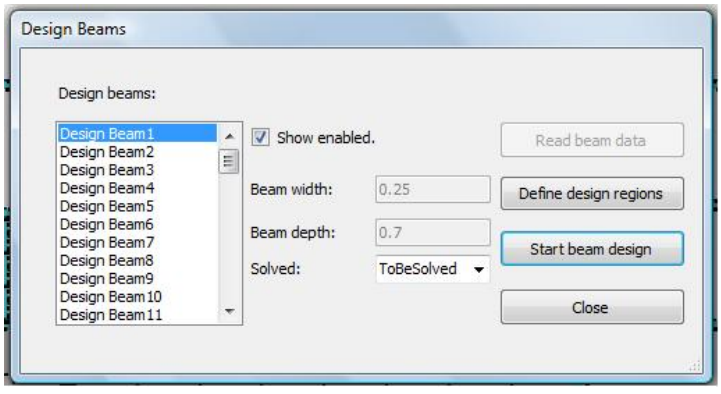


Forth Step Design beams:

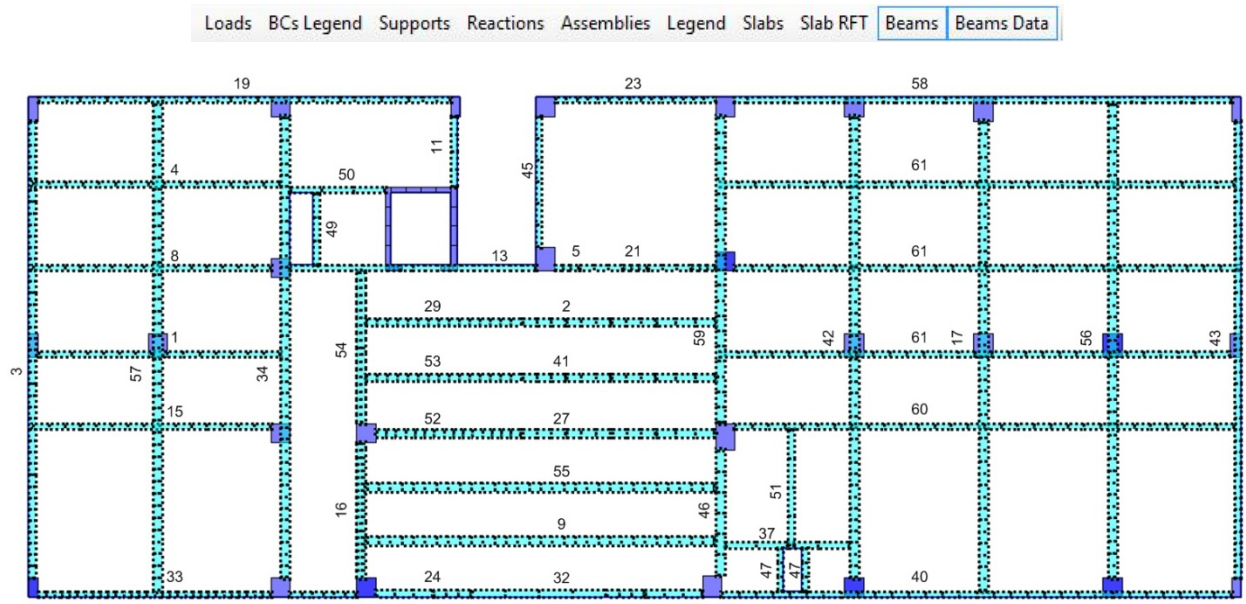
Select Design Beams then read beam data ⟹ open (.basm) file



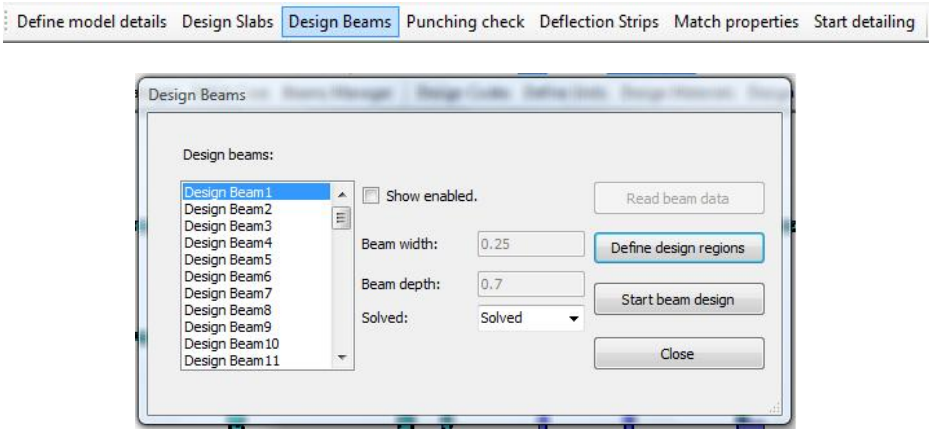




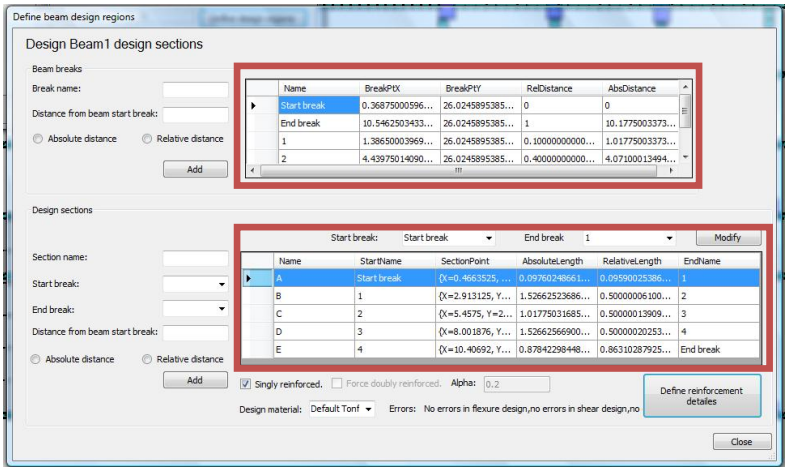
Before Assign reinforcement we should see the beam numbers, beams start & beams end breaks.



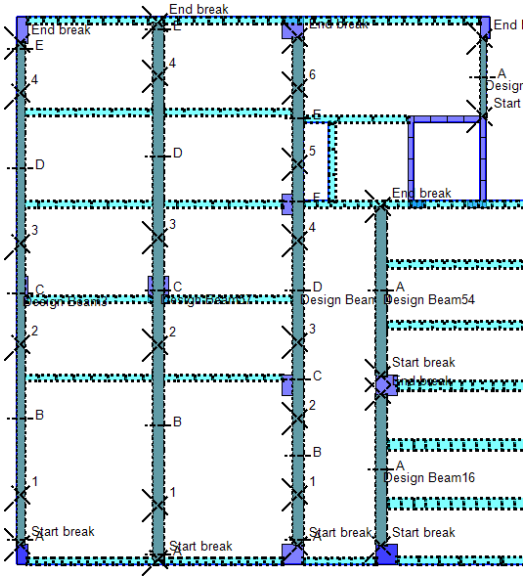
Now we have to open design beam then define beam region

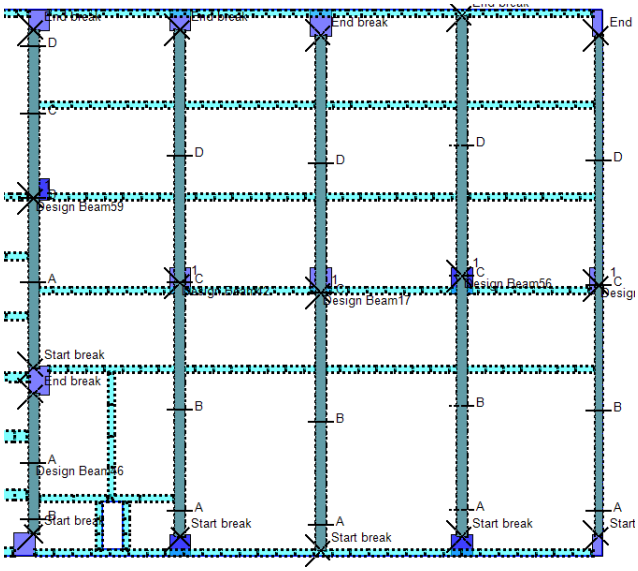


Each Design beam contains Start/End break but in case of continuous beams we will need to define the beam at each support by naming beam breaks and write its distance from the start break either Absolute or Relative.



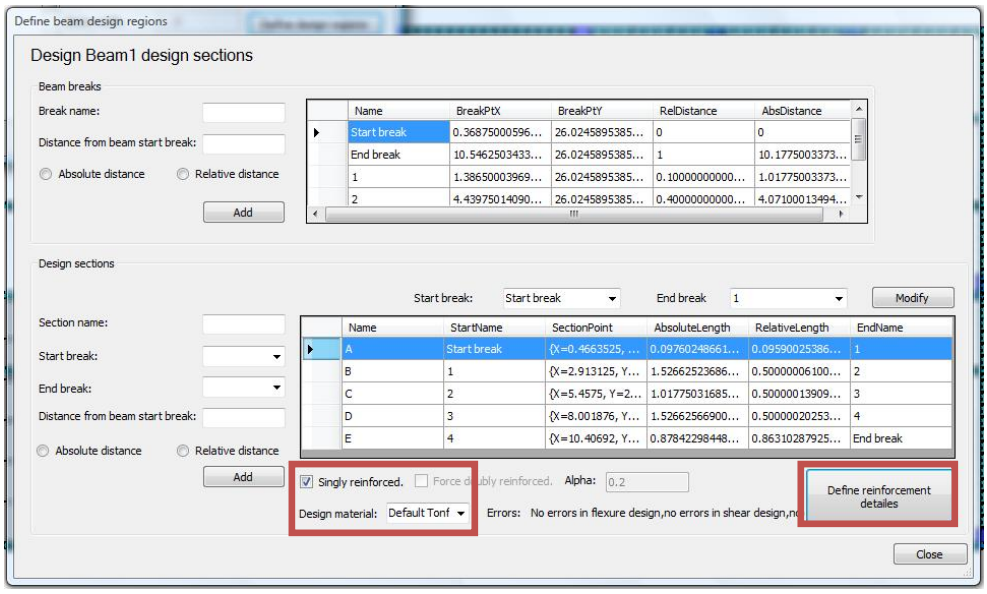
We need to design on the max. Bending moment at the mid spans of the beams so we have name Design sections, Showing it Start/End breaks and Show its distance from start break either Absolute or Relative distance.

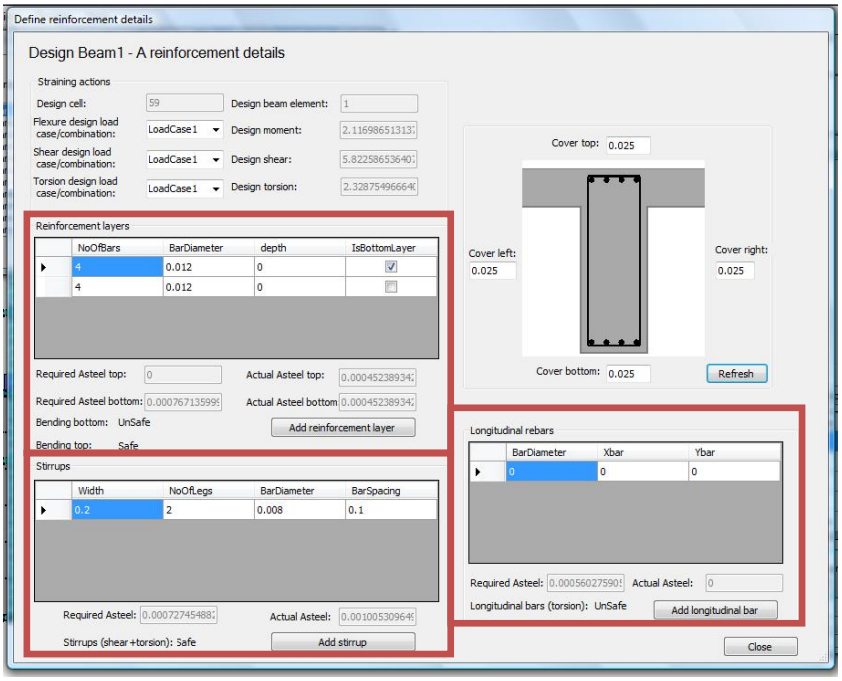




In this step we are going to define the reinforcement details

Determine the reinforcement if it is singly/doubly reinforcement & the design material then press on define the reinforcement details tab.

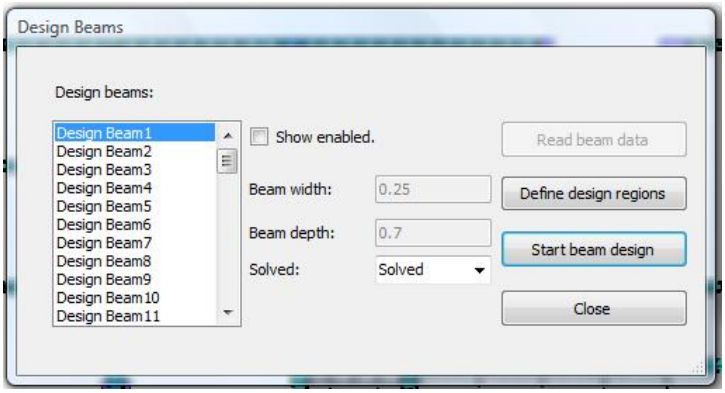


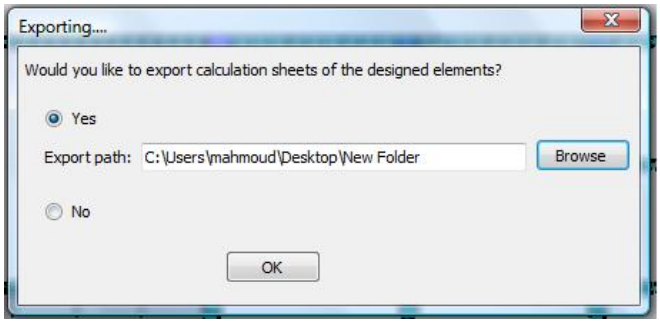


Insert the Number of bars, Bar diameter, Depth for flexure reinforcement

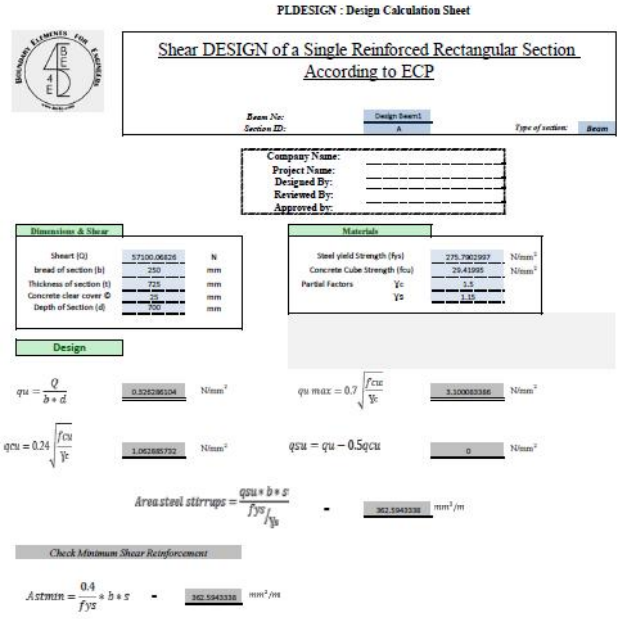
The width, Number of legs, Bar diameter, Spacing for stirrups

& the bar diameter, Xbar, Ybar for longitudinal bar

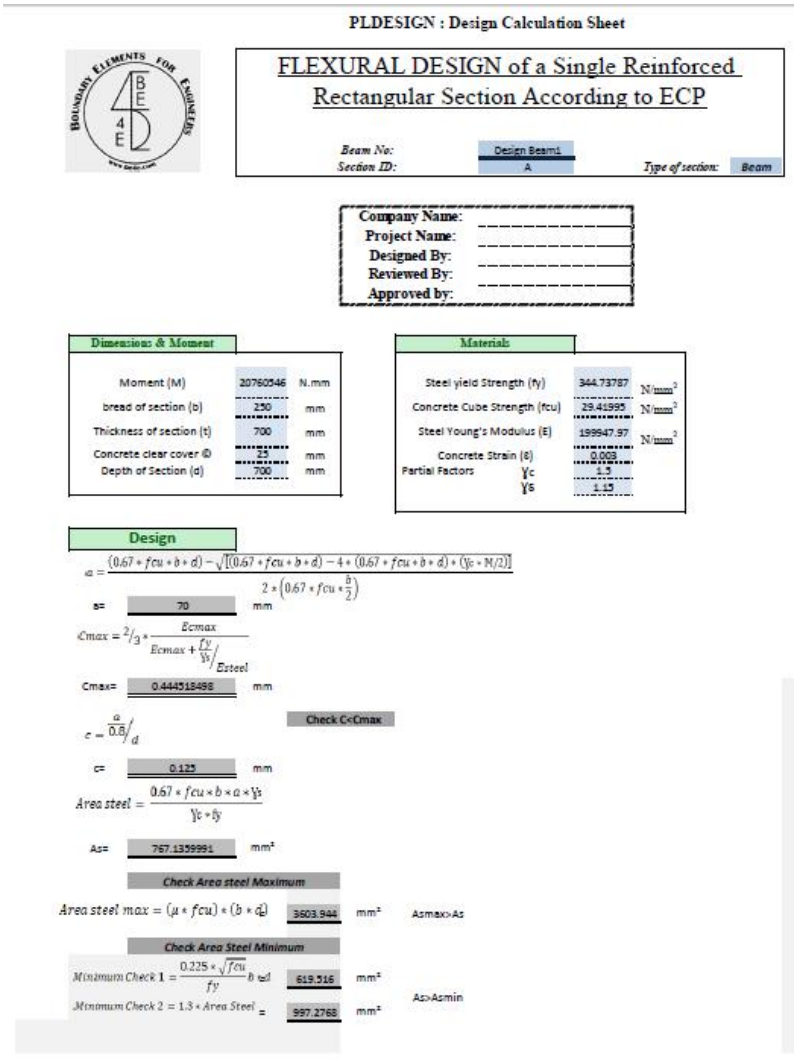




Start beam design & Export calculation sheets for designed element.



Shear Design for Design Beam 1 Section A



PLDESIGN : Design Calculation Sheet

FLEXURAL DESIGN of a Single Reinforced Rectangular Section According to ECP

Beam No: Design Beam1
Section ID: A
Type of section: Beam

Company Name:
Project Name:
Designed By:
Reviewed By:
Approved by:

Dimension & Moment

Moment (M)	20760546	N.mm
bread of section (b)	250	mm
Thickness of section (t)	700	mm
Concrete clear cover ©	25	mm
Depth of Section (d)	700	mm

Materials

Steel yield Strength (fy)	344.73787	N/mm²
Concrete Cube Strength (fcu)	29.41995	N/mm²
Steel Young's Modulus (E)	199947.97	N/mm²
Concrete Strain (ε)	0.003	
Partial Factors γc	1.5	
γs	1.15	

Design

$$a = \frac{(0.67 * fcu * b * d) - \sqrt{[(0.67 * fcu * b * d) - 4 * (0.67 * fcu * b * d) * (\gamma c * M/2)]}}{2 * \left(0.67 * fcu * \frac{b}{2}\right)}$$

a= 70 mm

$$Cmax = {}^{2}/_{3} * \frac{Ecmax}{Ecmax + {}^{fy}/_{\gamma s}/_{Esteel}}$$

Cmax= 0.444513498 mm

Check C<Cmax

$$c = {}^{a}/_{0.8}/_{d}$$

c= 0.125 mm

$$Area\ steel = \frac{0.67 * fcu * b * a * \gamma s}{\gamma c * fy}$$

As= 767.1359991 mm²

Check Area steel Maximum

$Area\ steel\ max = (\mu * fcu) * (b * d)$ 3603.944 mm² Asmax>As

Check Area Steel Minimum

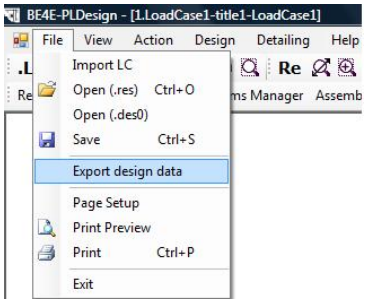
$Minimum\ Check\ 1 = \frac{0.225 * \sqrt{fcu}}{fy} b * d$ 619.516 mm²

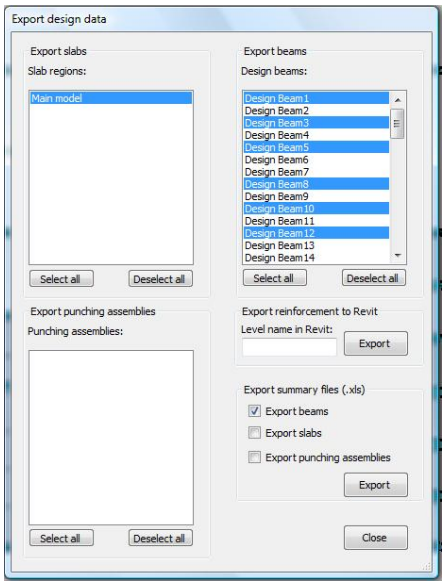
$Minimum\ Check\ 2 = 1.3 * Area\ Steel$ = 997.2768 mm²

As>Asmin

Flexure Design for Design Beam 1 Section A

We can export the design data to be shown as excel sheet for beams details





Press on Export design data from file menu then choose the Design beams, mark on Export beams then Export.

PLDESIGN : Beam reinforcement sheet

Company Name:	
Project Name:	
Designed By:	
Reviewed By:	
Approved by:	

Beam name	Beam size	Beam section	Flexure reinforcement	Stirrups	Longitudinal steel
Design Beam1	0.25 X 0.7	A	Top (2 Φ 0.012) Bot (4 Φ 0.016)	2L Φ 0.008 @ 0.125	Φ 0.016 @ (0.0392,0.233) Φ 0.016 @ (0.0392,0.466) Φ 0.016 @ (0.217,0.233) Φ 0.016 @ (0.217,0.466)
		B	Top (2 Φ 0.012) Bot (4 Φ 0.016)	2L Φ 0.008 @ 0.125	Φ 0.016 @ (0.0392,0.233) Φ 0.016 @ (0.0392,0.466) Φ 0.016 @ (0.217,0.233) Φ 0.016 @ (0.217,0.466)
		C	Top (4 Φ 0.016) Bot (2 Φ 0.012)	2L Φ 0.008 @ 0.125	Φ 0.016 @ (0.0392,0.233) Φ 0.016 @ (0.0392,0.466) Φ 0.016 @ (0.217,0.233) Φ 0.016 @ (0.217,0.466)

After design and export the calculation sheets, we are going to show the slab details from the detailing menu