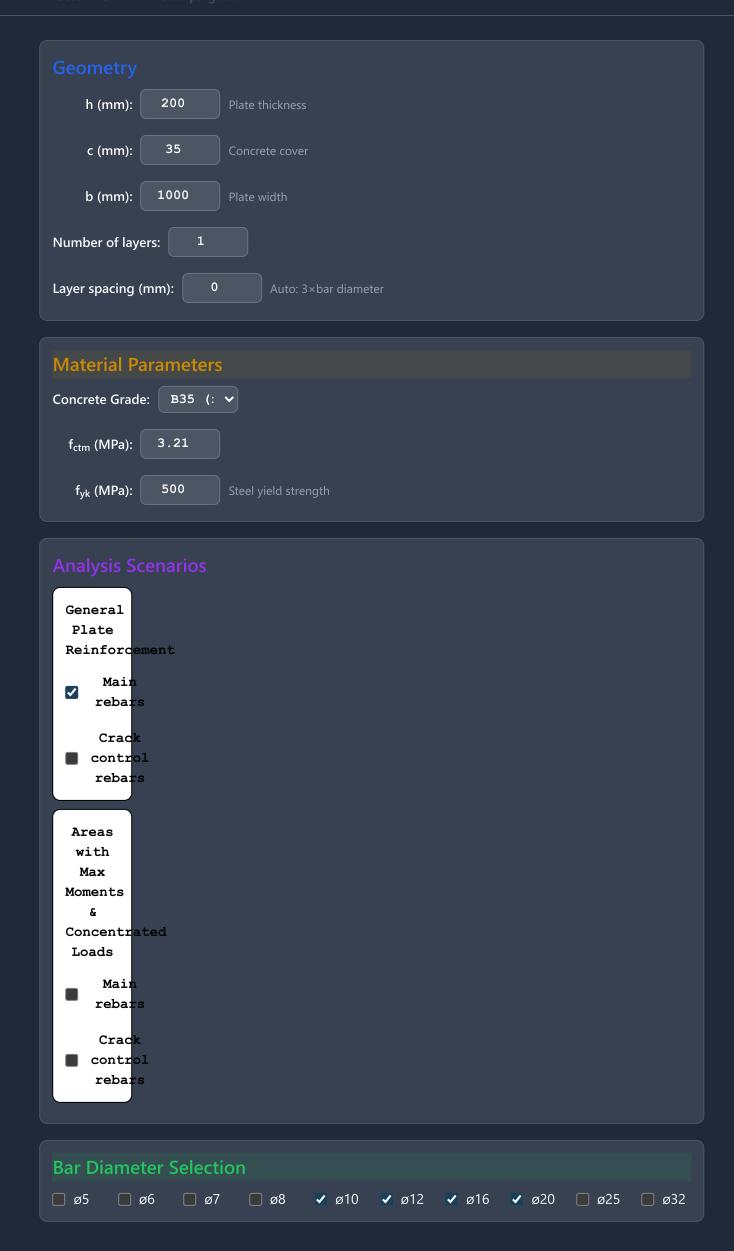
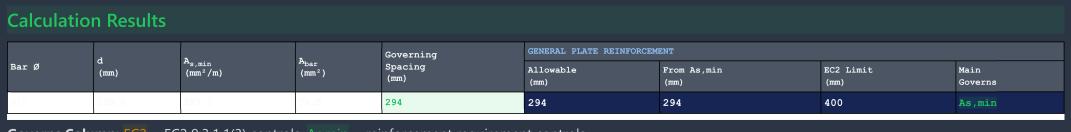
# **Concrete Minimum Reinforcement Calculator**

Calculate minimum reinforcement according to EC2 and other standards

Plates Beams Columns Guly på grunn





#### Structural Engineering Calculator

Bar Ø	d (mm)	A <sub>s,min</sub> (mm <sup>2</sup> /m)	A <sub>bar</sub> (mm²)	Governing Spacing (mm)	GENERAL PLATE REINFORCEMENT			
					Allowable (mm)	From As,min (mm)	EC2 Limit (mm)	Main Governs
ø12	159.0	265.4	113.1	400	400	426	400	EC2
ø16	157.0	262.1	201.1	400	400	767	400	EC2
ø20	155.0	258.7	314.2	400	400	1214	400	EC2

#### **Max Moments & Concentrated Loads**

- Main:  $min(2h, 250mm) = min(2 \times 100, 250) = 250mm$
- Crack control:  $min(3h, 400mm) = min(3 \times 67, 400) = 400mm$

# Input

### Parameters

h: fctm

200 3.21

mm MPa

 $(plate_k:$ 

thic 15100s)

MPa c:

35 Analysis

scenarios:

(con Greateral

cover)

b: Mair

1000

(plate

width)

Number

of

layers:

1

## Calculation

### Formulas

### Effective

depth:

d = h

- c -

φ/2 -

 $(n_{layers} -$ 

1) ×

layer\_spacing

Minimum

reinforcement (EC2-

1-1

9.2.1.1)

 $A_{s,min}$ 

max(0.26

× b ×

d × f<sub>ctm</sub> /

 $f_{yk}$ ,

0.0013

× b ×

d)

Bar area:

 $A_{bar} =$ 

п×

(φ/2)<sup>2</sup>

Maximum

spacing:

C<sub>c,max</sub> = Abar

× b /

 $A_{s,min}$ 

Structural Engineering Calculator

```
Maximum
Spacing
Requirements
 (EC2
9.3.1.1(3))
International
Guideline
(Eurocode
 2):
Rules:
General
areas:
Main =
min(3h,
400mm),
 Crack
control
min(3.5h,
450mm)
Concentrated
loads:
Main =
min(2h,
250mm),
 Crack
control
min(3h,
400mm)
```

Free structural engineering calculator by Magnus Fjeld Olsen

Based on Eurocode 2 (EC2) standards

### Note on Norwegian Standards:

The maximum spacing requirements shown in this calculator follow EC2 9.3.1.1(3) from the international guideline. These requirements are identical to those specified in the Norwegian National Annex to Eurocode 2.