

Calentamiento

Título nota

01/04/2015

C16/20 Min,

XE3 \rightarrow C25/30

$$f_{ck} = 25 \text{ MPa}$$

$$f_{cd} = d_c \frac{f_{ck}}{\gamma_c} = 0,85 \times \frac{25}{1,5} = 14,2 \text{ MPa}$$

$$f_{ctm} = 0,3 \sqrt[3]{\frac{f_{ck}^2}{\gamma_c}} = 0,3 \sqrt[3]{\frac{25^2}{1,5}} = 2,56 \text{ MPa}$$

$$f_{ek} = 0.7 f_{etm} = 0.7 \times 2.56 = 1.79 \text{ MPa}$$

$$f_{efk} = 1.2 f_{ek} = 1.2 \times 1.79 = 2.15 \text{ MPa}$$

$$E_{cm} = 22000 \left(\frac{f_{cm}}{10} \right)^{0.3} = 22000 \times 3.3^{0.3} = 31475 \text{ MPa}$$

$$f_{em} = f_{ek} + 8 = 2.5 + 8 = 33 \text{ MPa}$$

Aceiro

B450C

$$f_{yk} = 450 \text{ MPa}$$

$$f_{yd} = \frac{f_{yk}}{\gamma_s} = \frac{450}{1.15} = 391.3 \text{ MPa}$$

$$E_s = 200\,000 \text{ MPa}$$

ϕ_8 staffa

ϕ_{10} , ϕ_{14} , ϕ_{20}

ϕ $L_6 (40\phi)$

10 40 cm

14 56 cm

20 80 cm

DIMENSIONAMENTO DEI PILASTRI

Titolo nota

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n N_{ed}

6 3947.7

5 965.4

4 4133.1

3 1510.8

2 1888.5

1 2266.2

$$N_{ed} \leq A_c f_{cd} + A_s f_{yd}$$

$$\cancel{0.9} N_{ed} = A_c f_{cd}$$

$$\cancel{0.2} \cancel{0.9} N_{ed} = A_s f_{yd}$$

DIMENSIONAMENTO DEI PILASTRI

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n	N_{ed}	$A_c (cm^2)$
6	3947,7	266,0
5	4651,4	532,0
4	4133,1	498,0
3	1510,8	1064,0
2	1888,5	1330,0
1	2266,2	1596,0

$$A_c = \frac{N_{ed}}{f_{cd}} = \frac{3947,7}{14,2} \times 10^3$$

DIMENSIONAMENTO DEI PILASTRI

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n	N_{ed}	$A_c (cm^2)$	Section
6	3947.7	266.0	30x30 (900 cm ²)
5	965.4	532.0	30x30
4	4133.1	498.0	30x30
3	1510.8	1064.0	30x40 (1200 cm ²)
2	1888.5	1330.0	30x50 (1500 cm ²)
1	2266.2	1596.0	30x60 (1800 cm ²)

DIMENSIONAMENTO DEI PILASTRI

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n	N_{ed}	Section	A_s (cm ²)
6	377.7	30x30	1.93
5	765.4	30x30	3.86
4	1133.1	30x30	5.79
3	1510.8	30x40	7.72
2	1888.5	30x50	9.65
1	2266.2	30x60	11.58

$$A_s = \frac{0.2 N_{ed}}{f_{yd}}$$

$$\frac{0.2 \times 377.7 \times 10}{391.3}$$

DIMENSIONAMENTO DEI PILASTRI

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n	N _{ed}	Section	A _s (cm ²)	A _{s,min}	A _s ≥ 0,3% A _c
6	3947,7	30x30	1,93	<u>5,4</u>	0,3% A _c 0,6%
5	9651,4	30x30	3,86	<u>5,4</u>	
4	4133,1	30x30	<u>5,79</u>	5,4	
3	1510,8	30x40	<u>7,72</u>	7,2	
2	1888,5	30x50	<u>9,65</u>	9,0	
1	2266,2	30x60	<u>11,58</u>	10,8	

$$0,6 \times \frac{900}{100} = 5,4 \text{ cm}^2$$

DIMENSIONAMENTO DEI PILASTRI

Titolo nota

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n	N _{ed}	Section	A _s (cm ²)	A _{s,min}	forza
6	3947.7	30x30	1.93	<u>5.4</u>	4φ14 (5.6 m ²)
5	965.4	30x30	3.86	<u>5.4</u>	4φ14
4	4133.1	30x30	<u>5.79</u>	5.4	φ _e > 12 mm
3	1510.8	30x40	<u>7.72</u>	7.2	distante tra tre
2	1888.5	30x50	<u>9.65</u>	9.0	le forze
1	2266.2	30x60	<u>11.58</u>	10.8	< 20 25 cm

DIMENSIONAMENTO DEI PILASTRI

Titolo nota

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n	Ned	Section	$A_s (cm^2)$	$A_{s,min}$	Fora
6	3447.7	30x30	1.93	5.4	4φ14 (6,16)
5	4655.4	30x30	3.86	5.4	4φ14
4	4133.1	30x30	<u>5.79</u>	5.4	4φ14
3	1510.8	30x40	<u>7.72</u>	7.2	6φ14 (9.24)
2	1888.5	30x50	<u>9.65</u>	9.0	8φ14 (12.36)
1	2266.2	30x60	<u>11.58</u>	10.8	8φ14

4 ϕ 14

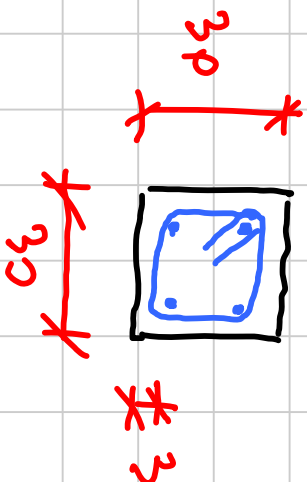
30x30

armature dimension

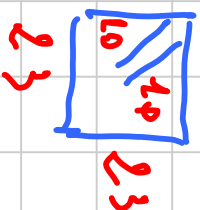
ϕ 8

30x30 T: h A

30x30 f: h B



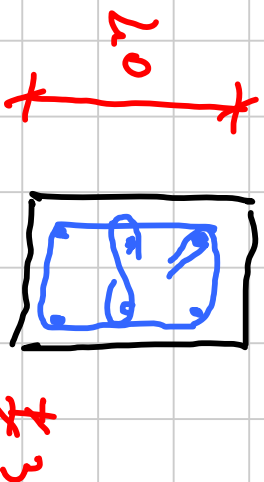
$L_f = 112 \text{ cm}$



6 ϕ 14

30x30

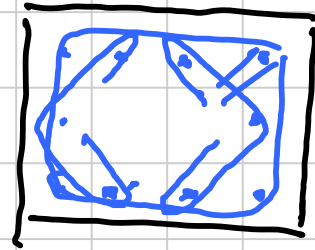
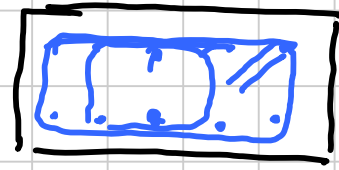
ϕ 8



$L_f = 122 \text{ cm}$



$L_f = 13 \text{ cm}$



NIC08

$$S \leq 12 \phi_{min,lon}$$

$$S \leq 12 \times 1.4 = 16.8 \text{ cm} \leftarrow$$

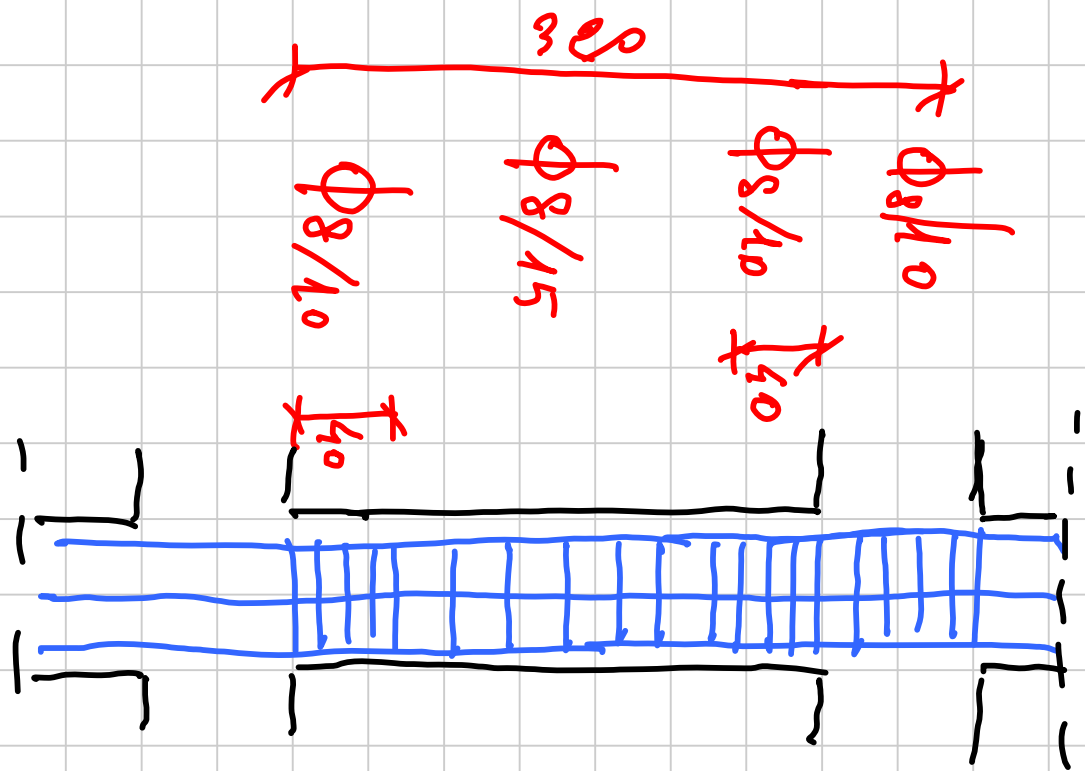
EC2

$$S \leq 20 \phi_{min,lon} = 20 \times 1.4 = 28 \text{ cm}$$

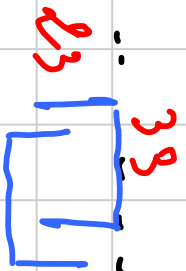
$$S \leq 0.6 \times 20 \phi_{min,lon} = 0.6 \times 20 \times 1.4 = 16.8 \text{ cm}$$



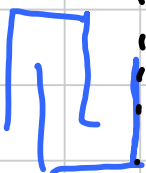
1:20



30x40



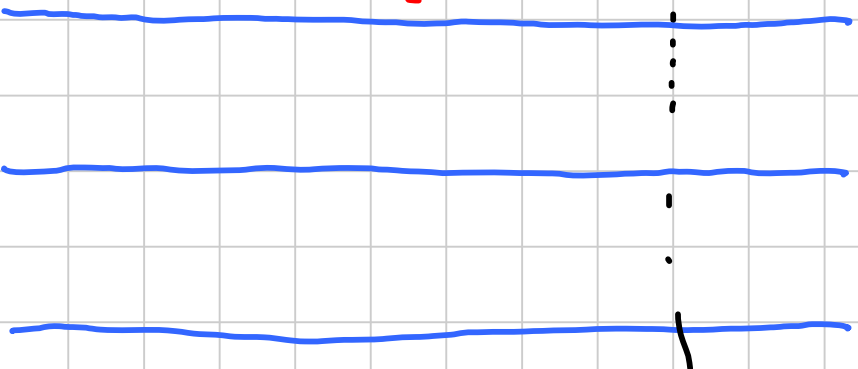
$L_e = 9.6 \text{ m}$
 $\phi 8$

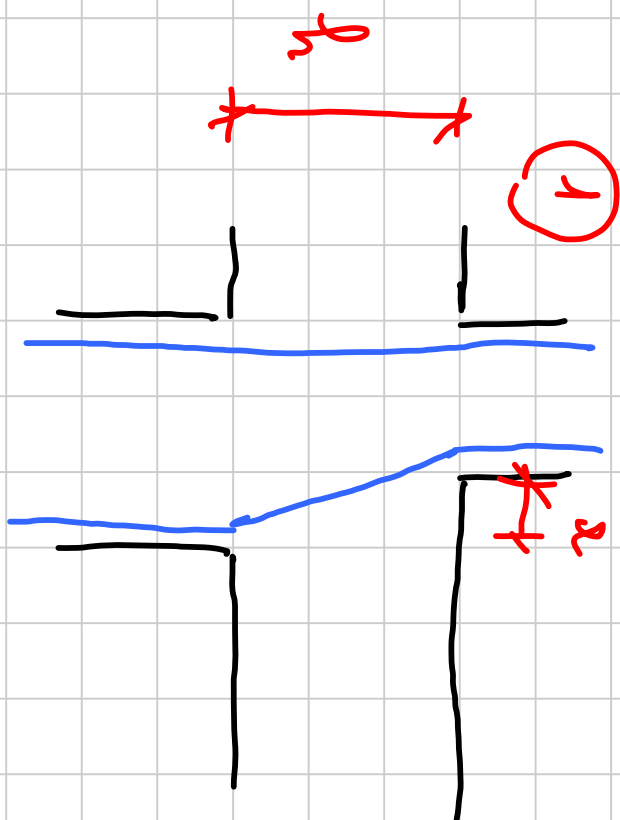


2 $\phi 14$

$L_e = 400$

80



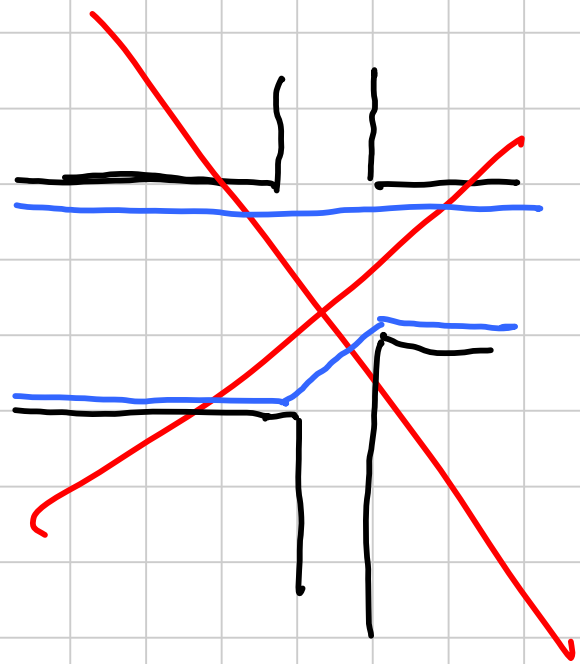


$$\frac{s}{2} < \frac{1}{5}$$

(1)

$$\frac{s}{2} > \frac{1}{5}$$

(2)



$$\frac{s}{2}$$

$$\frac{s}{2}$$

(2)

$$\frac{s}{2}$$