

CEP. BRINDISI

ING. VITO GIORGIO COLIANNI

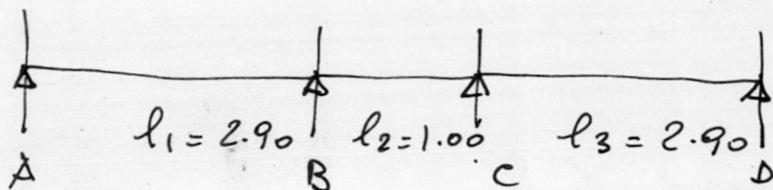
I. A. C. P.

Impresa: Federazione Consorzio Ravennate
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lotto 9°

Edificio A.

A) Calcolo delle piatte bande continue



carichi: su AB

trave	$0,20 \times 0,50 \times 2500 =$	250
solai	$2 \times \frac{4,50}{2} \times 700 =$	3150
totale	kg/m	3400

su BC

trave		250
solai	$\frac{4,50}{2} \times 700 =$	1575
"	$\frac{5,00}{2} \times 700 =$	1750
totale	kg/m	3575

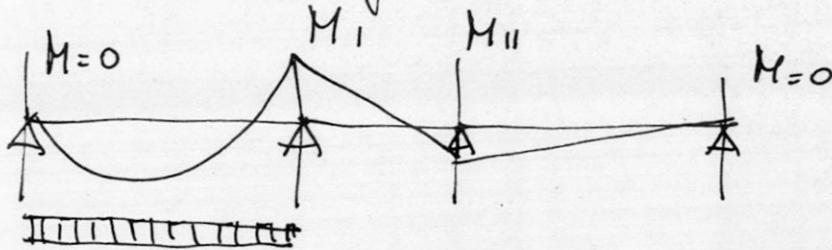
su CD

trave		250
solai	$4,50 \times 700 =$	1575
solai	$\frac{5,00}{2} \times 700 =$	1750
totale	kg/m	3575

la trave è continua con 3 campate su 4 appoggi con gli estremi fessati!

$$\begin{aligned}
 N &= 4(l_1 + l_2)(l_2 + l_3) - l_2^2 = \\
 &= 4(2.90 + 1.00)(2.90 + 1.00) - 1.00^2 = \\
 &= 60.
 \end{aligned}$$

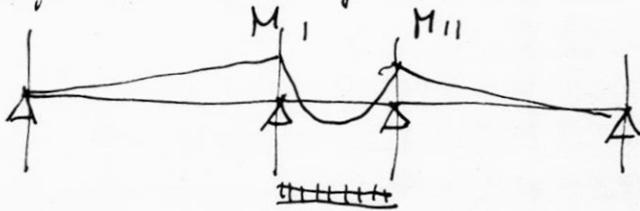
1^o) 1^a Campata Conica



$$M_1 = - \frac{3400 \cdot 2.9^3 (1.00 + 2.90)}{2 \times 60} = - 2652 \text{ kg}\cdot\text{m}$$

$$M_{11} = \frac{3400 \cdot 2.9^3 \times 2.90}{4 \times 60} = + 1001 \text{ kg}\cdot\text{m}$$

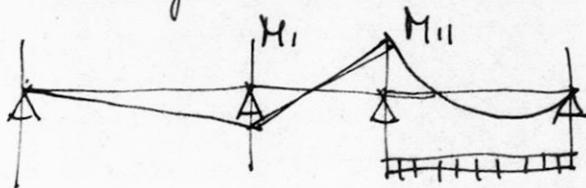
2^a) 2^a Campata Conica.



$$M_1 = - \frac{3575 \cdot 1^3 (2 \times 2.90 + 2.90)}{4 \times 60} = - 129$$

$$M_{11} = - \frac{3575 \cdot 1^3 (2 \times 2.90 + 2.90)}{4 \times 60} = - 129$$

3) 3^a Campata Conica.



$$M_1 = \frac{3575 \times 2.90 \times 2.90^3}{4 \times 60} = +1053$$

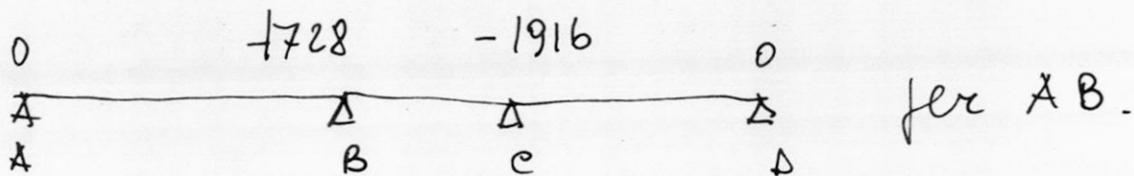
3

$$M_{II} = \frac{-3575 \times 2.9^3 (2.9 + 1.00)}{2 \times 60} = -2788$$

Riepilogo e somma degli effetti:

1° caso	-2652	+1001		1728	1916
2° caso	-129	-129			
3° caso	+1053	-2788			
	M_1	M_{II}	Σ	M_1	M_{II}

Dimensionamento a momento massimo.
momento positivo



$$\Delta = 1728 \quad pl = 3400 \times 2.90 = 9860$$

$$\frac{\Delta}{pl} = \frac{1728}{9860} = 0.17 \quad x = \frac{2.90}{2} - 0.17 = 1.28$$

$$\alpha = \frac{x}{e} = \frac{1.28}{2.90} = 0.44 \quad \beta = \frac{l-x}{e} = 0.56$$

$$M_0 = \frac{pl^2}{8} = \frac{3400 \times 2.9^2}{8} = 3574 \text{ kgm}$$

$$M_x = 3574 + 0.44 \times 1728 - 0 = 3574 - 760 = 2814.$$

per BC.

$$\Delta = 188 \quad pl = 3575 \times 1.00 = 3575 \quad \frac{\Delta}{pl} = 0.05$$

$$x = \frac{l}{2} - 0.05 = 0.50 - 0.05 = 0.45$$

$$\frac{x}{e} = 0.45 \quad \frac{l-x}{e} = 0.55$$

$$M_0 = \frac{pl^2}{8} = \frac{3575 \times 1}{8} = 446$$

4

$$M_x = 446 - 0.45 \times 1916 - 0.55 \times 1728 =$$

$$= 446 - 862 - 950 = -1366 \text{ negativa}$$

Trave tutta tesa nella parte superiore.

$$\text{per } eD \quad \Delta = 1916 \quad \mu = 3575 \times 2.90 = 10367$$

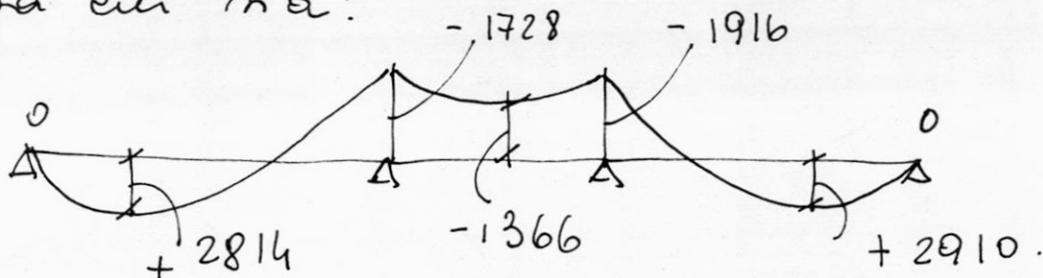
$$\frac{\Delta}{pl} = 0.18 \quad \frac{l}{2} - 0.18 = x = 1.27$$

$$\frac{1.27}{2.90} = \frac{x}{l} = 0.44 \quad \frac{l-x}{e} = 0.56$$

$$M_0 = \frac{3575 \times 2.9^2}{8} = 3753$$

$$M_x = 3753 - 0.44 \times 1916 - 0 = 3753 - 843 = 2910$$

Da cui si ha:



Calcoliamo la trave AB:

1728	50	3400	59	18	0.300	60	1400	DA. 0.75	0.262	7.73
2814	50	5628	95	18	0.240	70	1400	DA. 1/15	0.336	12.60

area compressa $\left| \begin{array}{l} 6.79 \\ 9.45 \end{array} \right|$

Sezione 20x50

$$\overbrace{\hspace{10em}}^{5\phi 16}$$

$$6\phi 16 + 1\phi 8 = 12.56 \text{ cm}^2$$

$$\overbrace{\hspace{10em}}^{6\phi 16 + 1\phi 8}$$

$$5\phi 16 = 10.05 \text{ "}$$

Toglio $R = f \frac{l}{2} = 4930$

$$\Delta = 172800 \quad \frac{\Delta}{e} = 595$$

$$T_A = 4930 - 595 = 4335$$

$$T_B = 4930 + 595 = 5525$$

$$X = 0,92bh = 0,92 \times 18 \times 50 = 828$$

$$t_B = 6.67 \quad \text{Adotteremo staffe } \phi 6 \text{ chiuse}$$

$$t_A = 5.23 \quad \text{a 2 braccia ogni 15 cm.}$$

$$t_{\text{assorbito}} = \frac{\cancel{828}}{\cancel{828}} = \frac{1400 \times 0,5}{50 \times 15} =$$

$$= \text{cioè: } \frac{\delta f s}{b \Delta x} = 1.06.$$

oliviere allora $t = 6.67 - 1.06 = 5.61 < 6$.
assorbito dal calcestruzzo.

Trave BC.

momento negativo max = 1916

$$M/b = 191600/50 = 3830 \quad \sqrt{3830} = 62$$

$$h = 18 \quad r = 18/62 = 0,290.$$

$$\sigma_f = 1400 \quad 0,75 \text{ D.A.} \quad \sigma_c = 65$$

$$F_f = 0,100286 \times 50 \times 62 = 8.86 \text{ area. tesa}$$

$$F'_f = 0,75 \times 8.86 = 6.64 \text{ area. compressa}$$

Sezione 20 x 30

$$\overbrace{4\phi 16 + 1\phi 12}$$

$$4\phi 16 + 1\phi 12 = 9.17$$

$$\overbrace{3\phi 16 + 1\phi 12}$$

$$3\phi 16 + 1\phi 12 = 7.16.$$

Taglio: $R = \frac{pl}{2} = 3575 \times \frac{1}{2} = 1787$

$0.92bh = 828 \cdot F_B = 1787 - 188 = 1599$

$A = 188 \quad \frac{A}{e} = 188 \quad T_c = 1787 + 188 = 1975$

$\tau = \frac{1975}{828} = 2.38 \cdot Kp/cm^2 < 6 -$

Staffe $\phi 6$ chiuse ogni 20 cm.

Trave c.d.

1916	50	3832	62	18	0,290	65	DA.075	1400	0,286		
2910	50	5820	77	18	0,233	70	DA 1/1	1400	0,336	12,93	9,70

$\overbrace{\hspace{10em}}^{5\phi 16}$

$5\phi 16 = 10.05$

$\underbrace{\hspace{10em}}_{6\phi 16 + 1\phi 12}$

$6\phi 16 + 1\phi 12 = 13.19$

Sezione 20 x 50

Taglio: $A = 1910 \quad \frac{A}{e} = 658$

$\frac{pl}{2} = 5183$

$T_c = 5183 + 658 = 5841 \quad \left. \begin{array}{l} T_c = 7.05 \\ T_D = 5183 - 658 = 4525 \\ T_D = 4.12 \end{array} \right\} 828$

Staffe $\phi 8$ chiuse ogni 15 cm.

$\tau_{max} = \frac{1400 \times 1.01}{50 \times 15} = 1.88.$

$\tau_{res} = 5.17$ e 2.24 . ammortato dal calcestruzzo -

Per l'ultimo piano il soletto
è alto cm 35.

Il carico risulta aumentato di $ky \cdot 437 -$
 $ky \cdot 250 = 187 \cdot ky$.

sulla 1^a campata: $3400 + 187 = 3587 \text{ ky/m}$
" 2^a e 3^a " $3575 + 187 = 3762 \cdot \text{ky/m}$.

i coefficienti dei momenti sono:

Trave AB. mezza $\frac{1}{10}$
appoggio B $\frac{1}{16.5}$

Trave BC. appoggio B $\frac{1}{20.6}$
mezza $\frac{1}{26}$
appoggio C $\frac{1}{18.6}$

Trave CD appoggio C $\frac{1}{15.7}$
mezza $\frac{1}{10.7}$.

Per cui si hanno i seguenti momenti:

Trave AB appoggio A. $M = 0$
mezza $\frac{1}{10} 3587 \times 2.9^2 = 3016 \text{ kgm}$

~~Trave AB~~ appoggio B. $\frac{1}{16.5} 3762 \times 2.9^2 = 1828 \text{ "}$

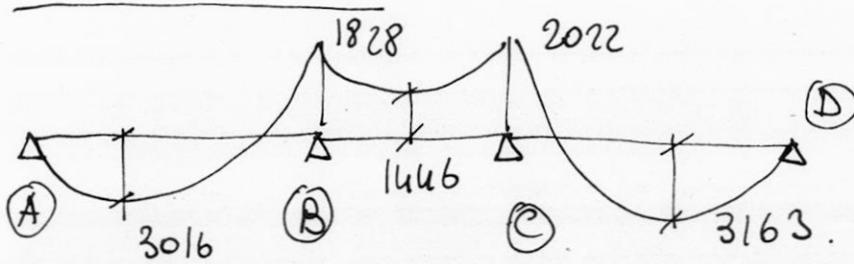
Trave BC appoggio B. $\frac{1}{20.6} 3762 \times 1^2 = 1826 -$

mezza $\frac{1}{26} 3762 \times 1^2 = 1446 -$

appoggio C $\frac{1}{18.6} 3762 \times 1^2 = 2022 -$

Trave cD. appoggio C $\frac{1}{15.7} 3762 \times 2.9^2 = 2015$ (8)

mezzani $\frac{1}{10} 3762 \times 2.9^2 = 3163$

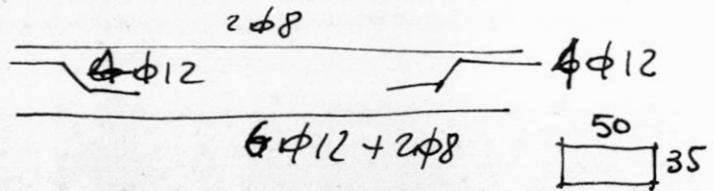


Trave AB. $h = 35$

3016	50	6032	78	25	33	0.423	48	1400	As	0.185	7.21
1828	50	3656	61	"	"	0.540	36	"	As	0.142	4.33

$4\phi 12 = 4.52 \text{ cm}^2$

$6\phi 12 + 2\phi 8 = 7.80 \text{ cm}^2$



$T = 5831 \quad X = 0.926h = 1518 \quad \tau = 3.84 < 6$

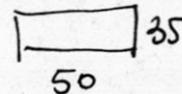
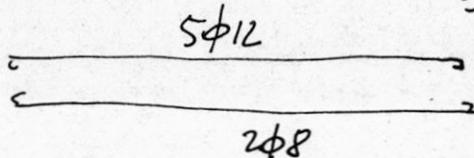
Trave BC

mom. max 2022. $b = 50 \quad m/b = 4066 \quad \sqrt{V} = 64$

$33/64 = 0.515 \quad \sigma_c = 38 \quad \sigma_f = 1400 \quad \tau = 0.00149$

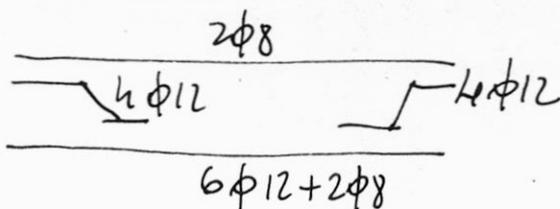
$F_f = 4.76$

$5\phi 12 = 5.66 \text{ cm}^2$



Trave cD.

2022	50	4066	64	35	33	0.515	38	1400	0.149	4.76
3163	50	6326	80	35	33	0.412	49	1400	0.188	7.52



$6\phi 12 + 2\phi 8 = 7.80$

$2\phi 8 + 4\phi 12 = 5.53$

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