



ISTITUTO AUTONOMO CASE POPOLARI DELLA PROVINCIA DI BRINDISI

GES.CA.L. - COSTRUZIONE DI 2 CASE PER LAVORATORI IN
FRANCAVILLA FONTANA (BRINDISI) PER COMPLESSIVI ALLOGGI

I8 - PROGRAMMA 57 - LEGGE 14/2/1963 N. 60

IMPRESA : Cpnsorzio Ravennate Cooperative Produzione e
Lavoro - Ravenna.

EDIFICIO B

Calcoli statici(II)

10. AGO. 1966

A.C.E.R. UFFICIO TECNICO
Dr. Ing. Zaccarelli Lamberto

Zaccarelli

Calcoli statici delle strutture in elevazione

Per le analisi dei carichi si rimanda al I° fascicolo.

Piani

Travata I-2-3 : $q = 1885 \text{ Kg/m.}$

$$M = 1885 \times 4,00^2 \times 0,0875 = 2650 - \text{Kgm.}$$

a) a quota I° solaio :

$$H = 50 \text{ cm.}$$

$$\sigma_c / \sigma_f = 42 / 1600$$

$$b = 30 \text{ cm.}$$

$$\begin{aligned} A_f &= 3,80 \text{ cm}^2 : 2 \phi 10 d + 2 \phi 12 p = \\ &= 3,83 \text{ cm}^2 \end{aligned}$$

$$\pi = 3800/30 \times 43 = 2,95 \text{ Kg/cm}^2$$

b) a quota 2° e 3° solaio

$$H = 20 \text{ cm.}$$

$$\sigma_c / \sigma_f = 65 / 1400$$

$$b = 70 \text{ cm.}$$

$$\begin{aligned} A_f &= 11,50 \text{ cm}^2 : 4 \phi 14 + 4 \phi 14 = \\ &= 12,32 \text{ cm}^2 \end{aligned}$$

$$A'_f = A_f / 2 = 5,75 \text{ cm}^2 : 4 \phi 14_d = 6,16 \text{ cm}^2$$

$$M_{3-3'} = 810 \times 2,50^2 \times 0,105 = 540 \text{ Kgm.}$$



$$H = 20 \text{ cm.}$$

$$b = 20 \text{ cm.} \quad 58/1600$$

$$A_f = 2,10 \text{ cm}^2 \quad 2 \phi 10 \text{ d} + 1 \phi 10 \text{ p.}$$

$$A'_f = 1,05 \text{ cm}^2 \quad 2 \phi 10 \text{ d}$$

$$\text{Travata } 1 - 4 - 7 - 10 \quad q = 3049 \text{ Kg/m.}$$

$$M_{1-4} = 3049 \times 3^2 \times 0,0875 = 2400 \text{ Kgm.}$$

$$H = 50 \text{ cm.} \quad \sigma_c / \sigma_f = 39/1600$$

$$b = 30 \text{ cm.} \quad A_f = 3,42 \text{ cm}^2 \quad : \quad 2 \phi 10 \text{ d} + (1 \phi 10 + 1 \phi 12)_p = 3,49 \text{ cm}^2$$

$$M_{4-7} = 3049 \times 2,85^2 \times 0,070 = 1750 \text{ Kgm.}$$

$$\sigma_c / \sigma_f = 33/1600$$

$$A_f = 2,50 \text{ cm}^2 \quad 2 \phi 10 \text{ d} + 1 \phi 12 \text{ p} = 2,70 \text{ cm}^2$$

$$M_{7-10} = 3049 \times 3,95^2 \times 0,00875 = 4150 \text{ Kgm.}$$

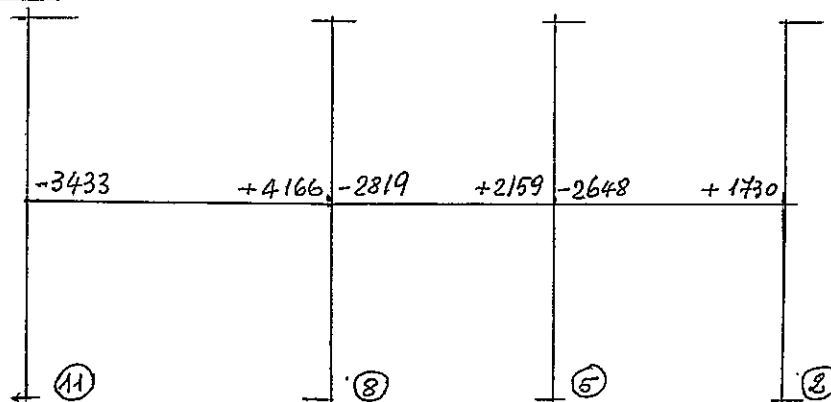
$$\sigma_c / \sigma_f = 54/1600$$

$$A_f = 6,05 \text{ cm}^2 \quad 2 \phi 14 \text{ d} + 2 \phi 14 \text{ p} = 6,16 \text{ cm}^2$$

$$\tau = 6100 / 30 \times 43 = 4,75 \text{ Kg/cm}^2 < 6 \text{ Kg/cm}^2$$

Travata 2 - 5 - 8 - II

Calcoliamo col metodo di Cross il telaio parziale costituito dalla travata e dai pilastri immediatamente inferiori e superiori.

RisultatoCampata II - 8

$$T_{mx} = 3000 \times 3,95/2 + (4166 - 3433) / 4,25 = 5900 + 733/4,25 = 6078 \text{ Kg.}$$

$$M_{mx} = 6078^2 / 2 \times 3000 - 4166 \times 0,66 = 6156 - 2780 = 3370 \text{ Kgm.}$$

$$H = 20 \text{ cm.}$$

$$\sigma_c / \sigma_f = 60 / 1400$$

$$b = 100 \text{ cm.}$$

$$A_f = 14,50 \text{ cm}^2 : (2\phi 14 + 2\phi 16)_d + 4\phi 16_p = 15,14 \text{ cm}^2$$

$$A'_f = 7,52 \text{ cm}^2 : 2\phi 14 + 2\phi 16 = 7,10 \text{ cm}^2$$

$$S = 35000 \text{ Kg.}$$

$$4\phi 16 \text{ piegati a } 45^\circ : 8,04 \times 1600 \times 1,41 = 18000 \text{ Kg.}$$

$$12\phi 6 \text{ 2 br.: } 12 \times 0,57 \times 1600 = 11000 \text{ "}$$

$$7 \text{ " " } 7 \times 0,57 \times 1600 = 6300 \text{ "}$$

$$35300 \text{ Kg.}$$

Mensola II :

$$- M = 3620 \times 0,75^2 / 2 = 1050 \text{ Kgm.}$$

$$\begin{aligned} \text{A) } \underline{1^\circ \text{ solaio}} : H &= 50 \text{ cm.} & \sigma_c < 30 & \sigma_f = 1600 \text{ Kg/cm}^2 \\ b &= 30 \text{ cm.} & A_f &= 1,47 \text{ cm}^2 : 4\phi I6 + 2 \phi I4 \end{aligned}$$

$$\tau = 2720 / 30 \times 43 = 2,10 \text{ Kg/cm}^2$$

$$\text{B) } \underline{2^\circ \text{ e } 3^\circ \text{ solaio}} : H = 20 \text{ cm.}$$

$$b = 50 \text{ cm.} \quad 50 / 1600$$

$$A_f = 4 \text{ cm}^2 : 4 \phi I6 + 2 \phi I4$$

$$A'_f = 0,5 \quad A_f = 2 \text{ cm}^2 \quad 2\phi I6 = 4,02 \text{ cm}^2$$

$$\tau = 2720 / 30 \times 16,5 = 5,5 \text{ Kg/cm}^2$$

Campata 8 - 5

$$T_{mx} = 3000 \times 1,43 + (2819 - 2159) / 3,15 = 4290 + 210 = 4500 \text{ Kg.}$$

$$M_{mx} = 4500^2 / 2 \times 3000 - 2819 \times 0,66 = 3400 - 1870 = 1530 \text{ Kgm.}$$

$$\sigma_c / \sigma_f = 45 / 1600$$

$$A_f = 5,80 \text{ cm}^2 : 4 \phi I0 d + 2 \phi I4 p.$$

$$A'_f = 0,25 \quad A_f = 1,5 \text{ cm}^2 \quad 4 \phi 8 = 2 \text{ cm}^2$$

S C A L ARampe (soletta a sbalzo)

$a = 16,5 \text{ cm.}$

$b = 30 \text{ cm.}$

$q = 875 \text{ Kg/m}^2 \quad = 28^\circ - 50' \quad \text{cord.} = 0,876$

$q' = 875 \times 0,876 = 770 \text{ Kg/m.} \quad Q' = 20 \text{ Kg.}$

$M = 770 \times 1,20^2 / 2 + 20 \times 1,20 = 550 + 24 = 574 \text{ Kgm.}$

$H = 10 \text{ cm.} \quad \sigma_c / \sigma_f = 53/1400 \text{ Kg/cm}^2$

$h = 8,5 \text{ cm.} \quad A_f = 5,30 \text{ cm}^2 / \text{m} \quad 5 \phi 12 / \text{m}$

$b = 100 \text{ cm.} \quad A'_f = 2,65 \text{ cm}^2 / \text{m} \quad 5 \phi 8 / \text{m}$

$\tau = 950 / 770 = 1,24 \text{ Kg/cm}^2$

Trave a ginocchio 3-6

$q = 1860 \text{ Kg/m.}$

a) flessione

$M = 1860 \times 3^2,00 / 10 = 1760 \text{ Kgm.}$

$H = 60 \text{ cm.}$

$\sigma_c / \sigma_f = 33/1400$

$b = 20 \text{ cm.}$

$A_f = 2,50 \text{ cm}^2$



b) taglio : $T = 2800 \text{ Kg.}$

$$t = 2800/20 \times 53 = 2,64 \text{ Kg/cm}^2$$

c) torsione

$$m_{\text{torc. corrente}} = 574 \text{ Kg/m}$$

$$M_{\text{torc. mx}} = \left((574 + \frac{574 \times 1.60}{3.00}) \times 0.50 \right) \times 1.40 = 615 \text{ Kgm.}$$

$$\tau_{\text{mx}} = 3,754 \times 61500 / 60 \times 400 = 9 \text{ Kg/cm}^2$$

$$N = (56 \times 16) \times 2 = 144$$

$$F = 56 \times 16 = 896$$

$$S_{f1} = 61500 \times 144 / 2 \times 1400 \times 896 = 3,54 \text{ cm}^2$$

$$A_f = 3,54/8 = 0,45$$

$$2 \phi 8 \times 4$$

$$S_{fs} = 61500 / 2 \times 1400 \times 896 = 0,0246 \text{ cm}^2 / \text{cm}$$

$$\text{Con } \phi 6 : = 0,28 / 0,0246 = 11,40 \text{ cm}$$

$$\text{Con } \phi 8 : = 0,50 / 0,0246 = 20 \text{ cm.}$$

Pianerottolo di riposo

$$q = 712 \text{ Kg/m}^2$$

$$M = 712 \times 2,50^2 \times 0,105 = 470 \text{ Kgm.}$$

$$H = 20 \text{ cm.}$$

$$\sigma_f = 1600$$

$$b = 100 \text{ cm.}$$

$$\sigma_c < 30$$

$$i = 40 \text{ cm.}$$

$$A_f = 1.90 \text{ cm}^2 / 100 = 0,76 / 40 = 1\phi 8 + 1\phi 6 / 40$$

Trave a ginocchio 6-9

$$q = 3270 \text{ Kg/m.}$$

a) flessione :

$$M = 3270 \times 2,85^2 = 2330 \text{ Kgm.}$$

$$H = 50 \text{ cm.}$$

$$\sigma_c / \sigma_f = 46,5 / 1400$$

$$b = 20 \text{ cm.}$$

$$A_f = 3,90 \text{ cm}^2 : 2 \phi 14 \text{ a} + 2\phi 12 \text{ p.}$$

b) taglio : $T = 4660 \text{ Kg.}$ $\tau = 4660 / 20 \times 43 = 5,44 \text{ Kg/cm}^2$

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c) Torsione :

$$M_{\text{tors mx}} : ((574 + 574 \times \frac{1,75}{2,85} \times 0,5) \times 1,10 = 508 \text{ Kgm.}$$

$$t_{\text{mx}} = 3,88 \times 50800 / 50 \times 400 = 9,85 \text{ Kg/cm}^2$$

$$N = (46 + 16) \times 2 = 124 \quad F = 46 \times 16 = 735 \text{ cm}^2$$

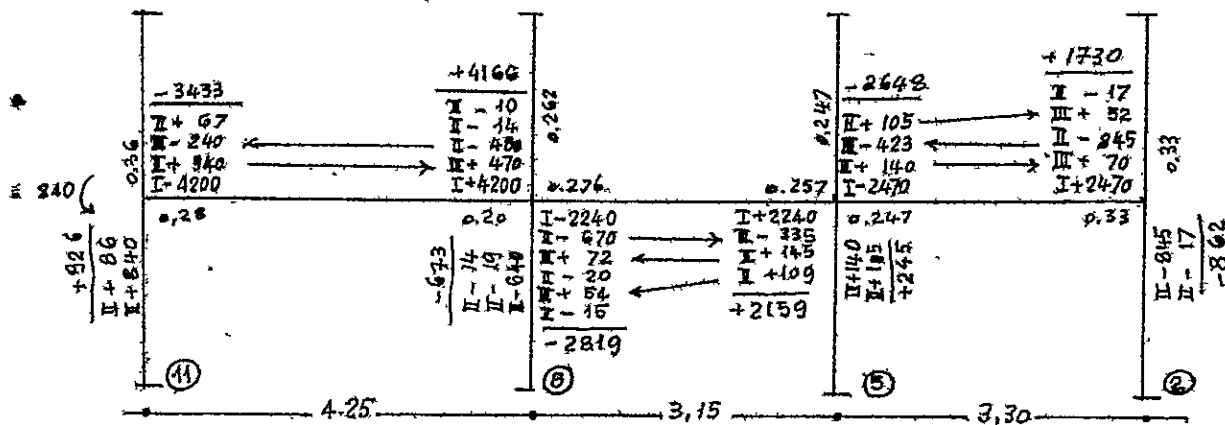
$$S_{f1} = 50800 \times 124 / 2 \times 1400 \times 735 = 3,07 \text{ cm}^2$$

$$A_f = 3,07 / 6 = 0,501 \text{ cm}^2 \quad 2 \phi 8 \times 3$$

$$S_{fs} = 50800 / 2 \times 1400 \times 735 = 0,0247 \text{ cm}^2 / \text{cm}$$

$$\text{Con } \phi 8 : = 0,50 / 0,0247 = 20 \text{ cm.}$$

A. C. L. /
Dr. Ing. Zaccarelli Lamberto



$$I_{1-8} = 3000 \times 3.95 \times 4.25 / 12 = 4200 \text{ kgm} ; I_{2-5} = 3000 \times 2.85 \times 3.15 / 12 = 2240 \text{ kgm} ; I_{5-2} = 3000 \times 3 \times 3.3 / 12 = 2470 \text{ kgm}$$

$$J_p = 67500 (30 \times 30) \quad W_p / 4z = 67500 / 330 = 200$$

$$J_{1-8} = 66'600 (20 \times 100) \quad W_b / 4z = 154$$

$$J_{8-5} = " \quad " \quad W = 210$$

$$J_{5-2} = " \quad " \quad W = 200$$

Coefficienti di ripartizione :

$$\text{nodo 1: } 200 / (200 \times 2 + 154) = 0.36 ; 154 / 554 = 0.28$$

$$\text{nodo 8: } 200 / 764 = 0.262 ; 210 / 764 = 0.276 ; 154 / 764 = 0.200$$

$$\text{nodo 5: } 200 / 810 = 0.247 ; 210 / 810 = 0.257 ;$$

$$\text{nodo 2: } 200 / 600 = 0.33$$