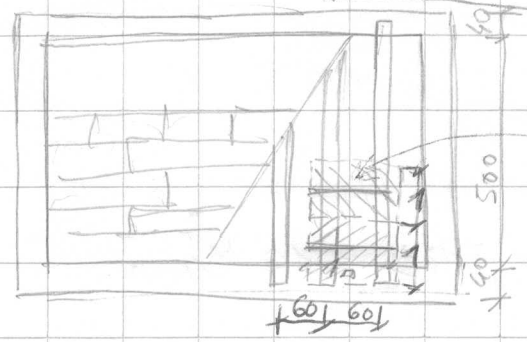
LE MONNIER
PAG. 116

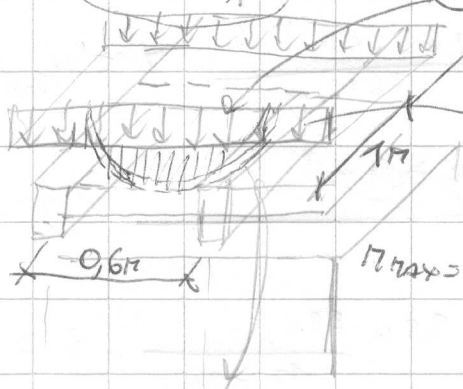
$E_{LEGNO} = 11000\ N/mm^2 \rightarrow E = 11000\ N/mm^2 = 1100000\ N/cm^2$

$\bar{\sigma}_{R\ LEGNO} = 10\ N/mm^2$; $\bar{\tau}_{MAX} = 1,2\ N/mm^2$



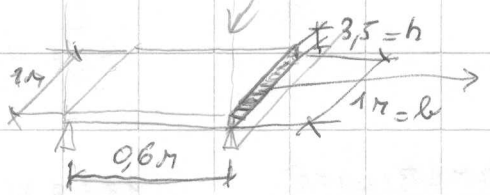
ASSITO CONTINUO SULLE TRAVI PRINCIPALI

CARICO TOTALE COMPRENSIVO DI TAVOLATO: $563\ daN/m^2 \times 1\ m = 563\ daN/m$ (A m/LINEARE)



$M_{MAX} = \frac{563\ daN/m \times 0,6^2\ m}{12} = 16,89\ daN\,m$

CALCOLO TAVOLATO



$W_{1/0} = \frac{b \times h^2}{6} = \frac{100\ cm \times 3,5^2\ cm}{6} = 204\ cm^3$

$\sigma_{MAX} = \frac{M_{MAX}}{W_{1/0}} = \frac{16890\ N\,cm}{204\ cm^3} = 82,79\ N/cm^2 = 0,83\ N/mm^2 < \bar{\sigma}_{R} = 10\ N/mm^2$

$T_{MAX} = \frac{q\,l}{2} = \frac{563\ daN/m \times 0,6\ m}{2} = 169\ daN$; $A = 100_{cm} \times 3,5_{cm} = 350\ cm^2$

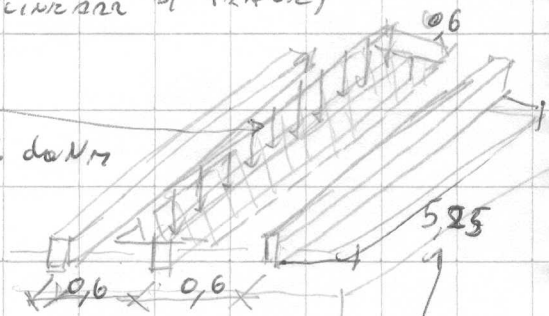
$\tau_{MAX} = 1,5 \times \frac{T}{b \cdot h} = 1,5 \times \frac{169\ daN}{350\ cm^2} = 0,72\ daN/cm^2 < \bar{\tau} = 1,2\ N/mm^2$

$0,0072\ daN/mm^2$

$0,072\ N/mm^2$

PROGETTIAMO LE TRAVI: CHE DEVONO ESSERE DISPOSTE A $i = 0,60\ m$

$q = 563\ daN/m^2 \times 0,6\ m = 337,8\ daN/m$ (A m/LINEARE DI TRAVE)



$M_{MAX} = \frac{q\,l_0^2}{8} = \frac{337,8\ daN/m \times 5,25^2\ m}{8} = 1164\ daN\,m$

$W = \frac{M_{MAX}}{\bar{\sigma}} = \frac{116400\ N\,cm}{1000\ N/cm^2} = 1164\ cm^3$

$l_{0\ CALCOLO} = 5,00 \times 1,05 = 5,25\ m$

PONENDO $b = 0,7\,h$; $W = \frac{b\,h^2}{6}$; $W = \frac{0,7\,h^3}{6}$

$h = \sqrt[3]{\frac{W \times 6}{0,7}} = \sqrt[3]{\frac{1164\ cm^3 \times 6}{0,7}} = 21,52\ cm$ ASSUNTO 24 cm

$b = 0,7\,h = 0,7 \times 24\ cm = 16,8 \simeq 17\ cm$ SI PRENDE 17 × 24 cm

$$W = \frac{17_{cm} \times 24^2_{cm}}{6} = 1632\ cm^3$$

$$\sigma_{MAX} = \frac{M_{max}}{W_{yy}} = \frac{1164000\ N\,cm}{1632\ cm^3} = 713\ N/_{cm^2} = 7{,}13\ N/_{mm^2} < 10\ N/_{mm^2}$$

VERIFICA A DEFORMABILITÀ $\quad T_{MAX} = \frac{q\,l}{2} = \frac{332{,}8\ daN/_{m} \times 5{,}25\ m}{2}$

$$\downarrow = 886{,}23\ daN$$

$$\tau_{MAX} = 1{,}5\ \frac{T}{A} = 1{,}5 \times \frac{886{,}23\ daN}{17_{cm} \times 24_{cm}} = 3{,}26\ daN/_{cm^2}$$

$$\downarrow$$

$$32{,}6\ N/_{cm^2} \rightarrow 0{,}326\ N/_{mm^2} < \bar{\tau} = 1{,}2\ N/_{mm^2}$$

VERIFICA A DEFORMABILITÀ $\quad 337{,}8\ N/_{m} = 33{,}8\ N/_{cm} \quad J = \frac{bh^3}{12} = \frac{12 \times 24^3}{12} = 1958{,}4\ cm^4$

$$f_{MAX} = \frac{5}{384} \times \frac{q\,l^4}{E\,J} = \frac{5}{384} \times \frac{33{,}8\ N/_{cm} \times 525^4_{cm}}{1160000\ N/_{cm^2} \times 1958{,}4\ cm^4} = 1{,}5\ cm$$

$$f_{LIM} = \frac{l_0}{200} = \frac{525\ cm}{200} = 2{,}62\ cm$$

$f_{MAX} = 1{,}5\ cm < f_{LIM} = 2{,}62\ cm$ OK!