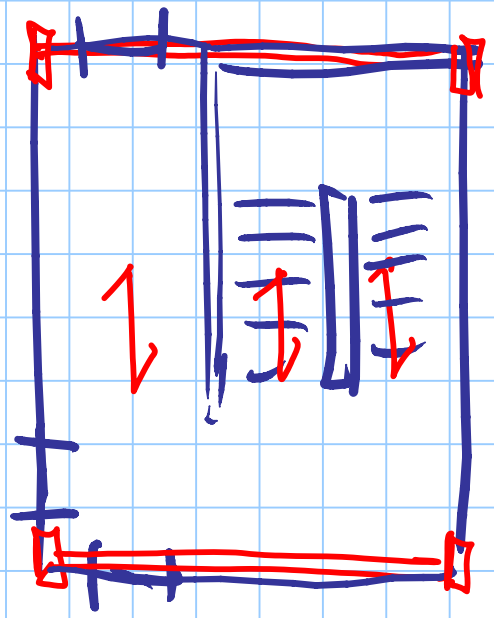
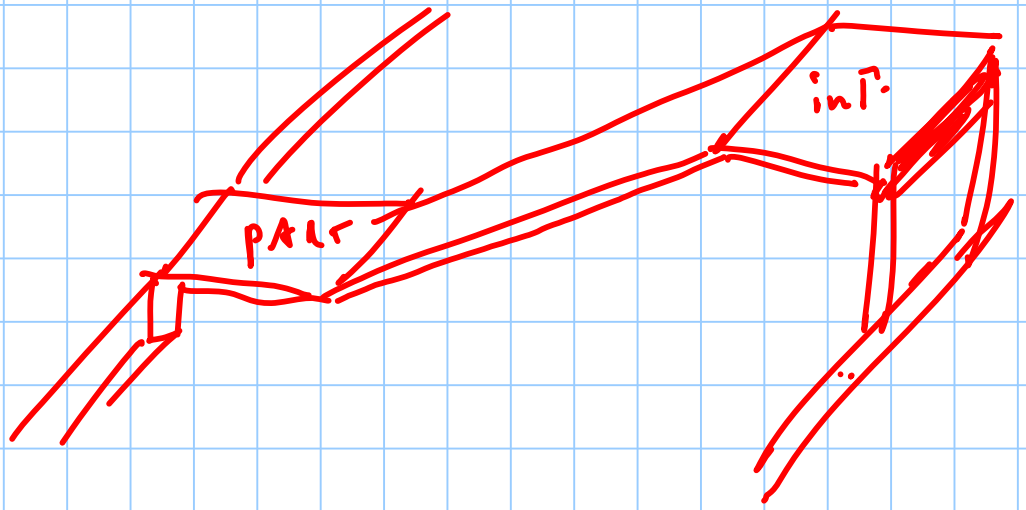
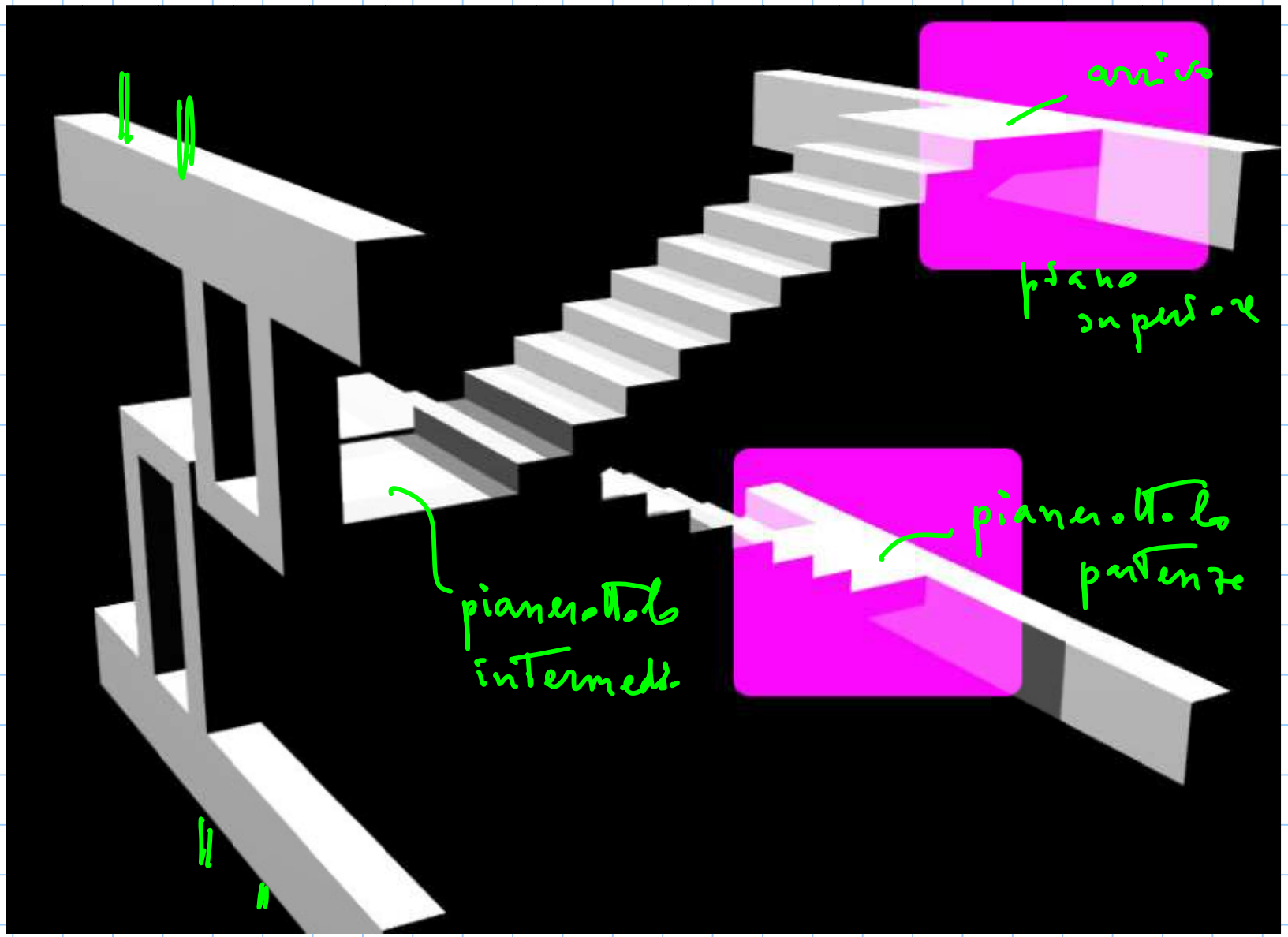
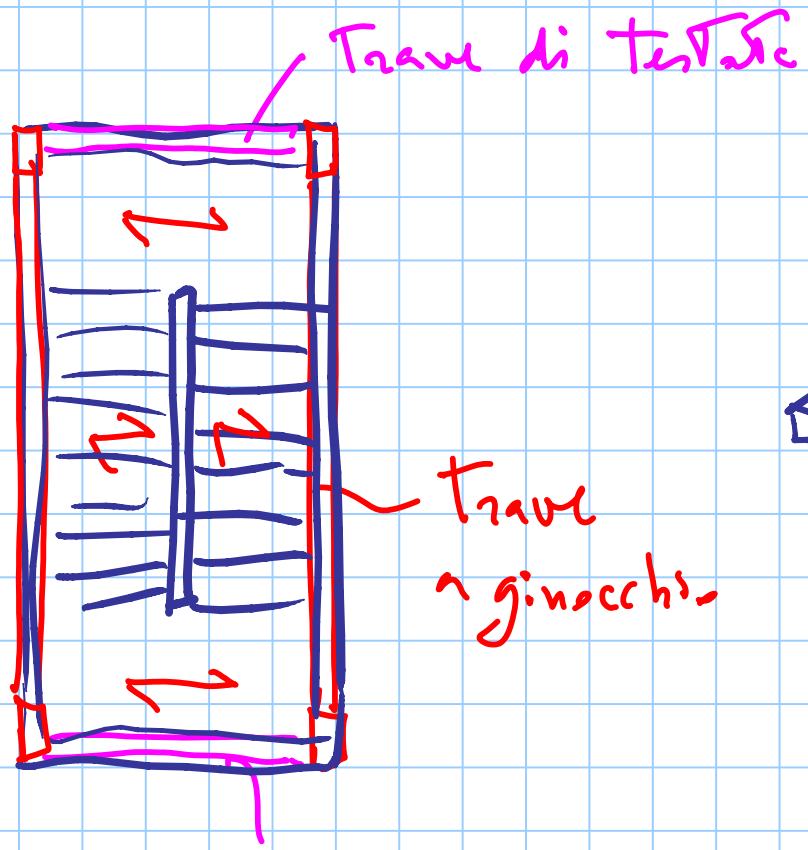
Titolo nota 04/06/2013



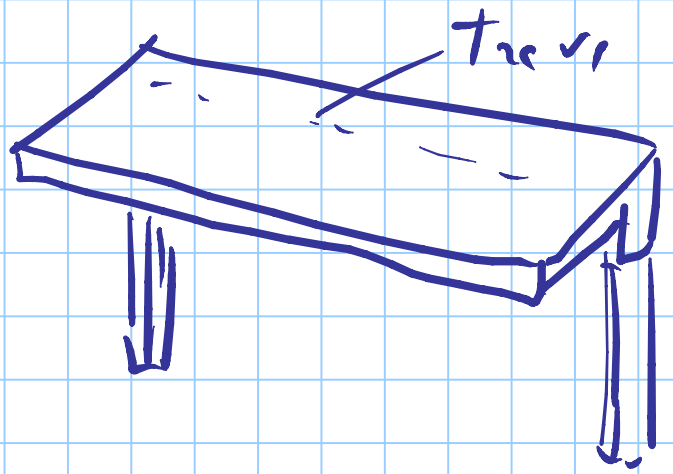



arrivo
piano superiore
pianerottolo intermedio
pianerottolo partenza

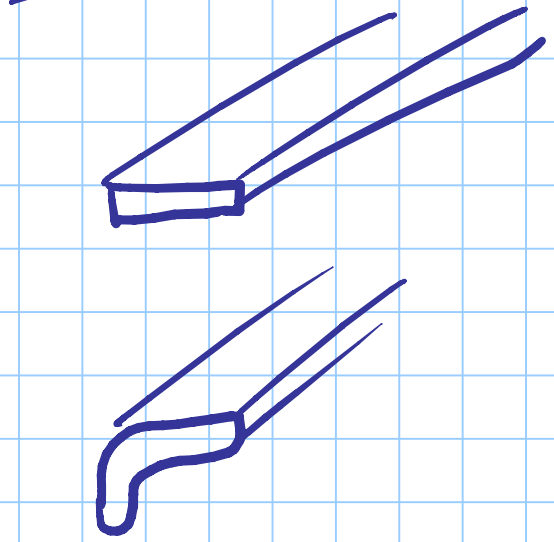
SCALA CON TRAVE A GINOCCHIO E SCALINI A SBALZO

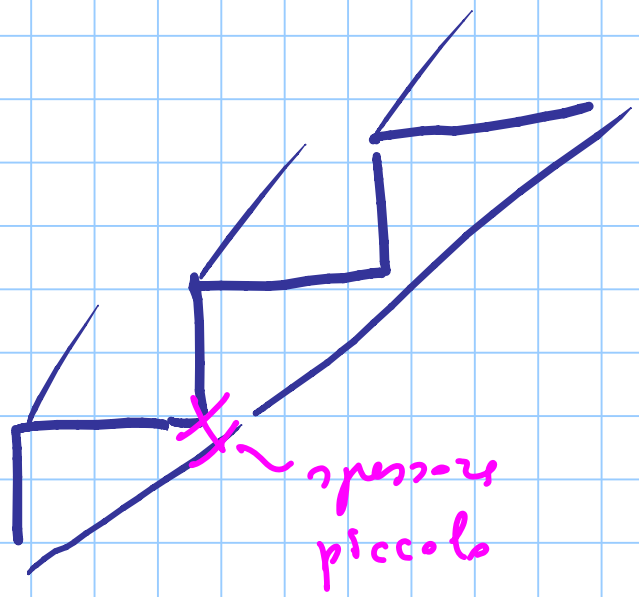


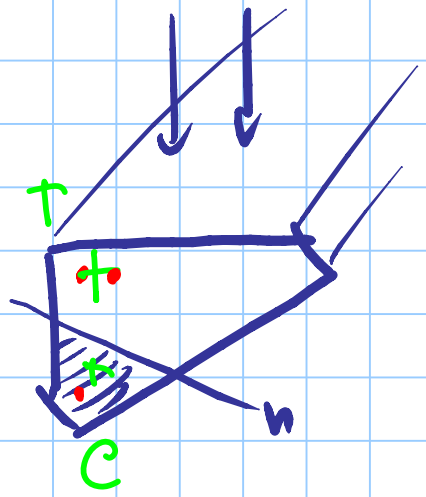
PENSILINA

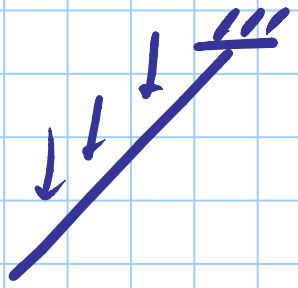


SCALINI

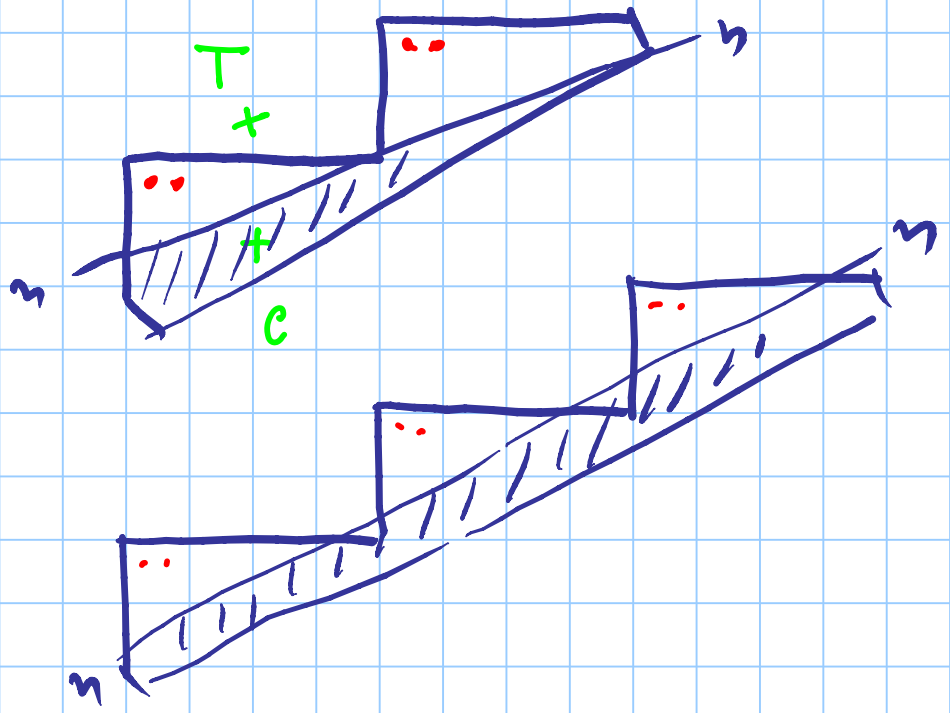


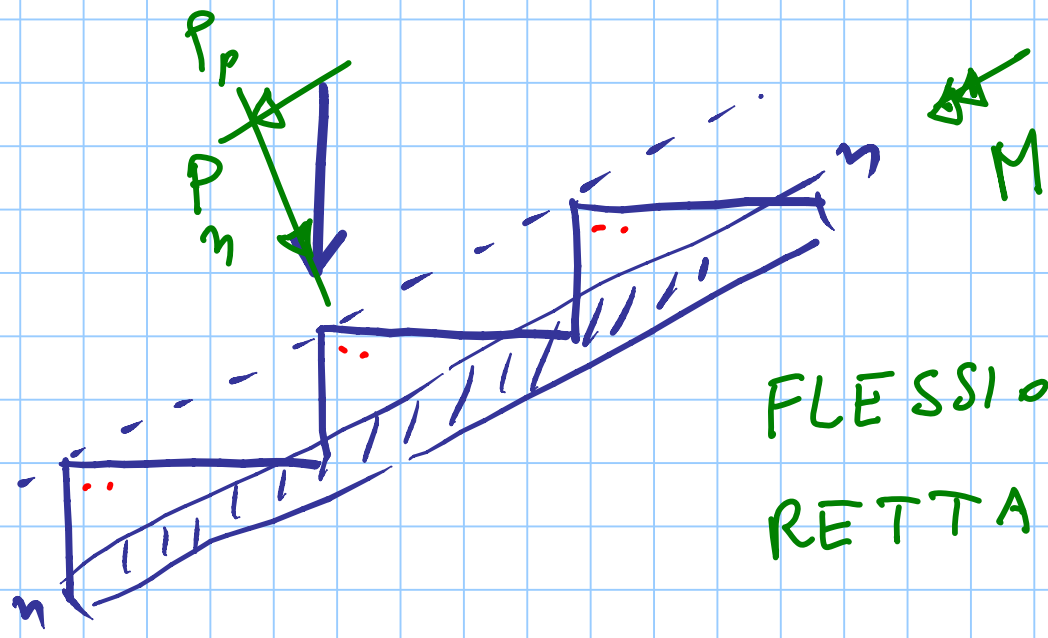




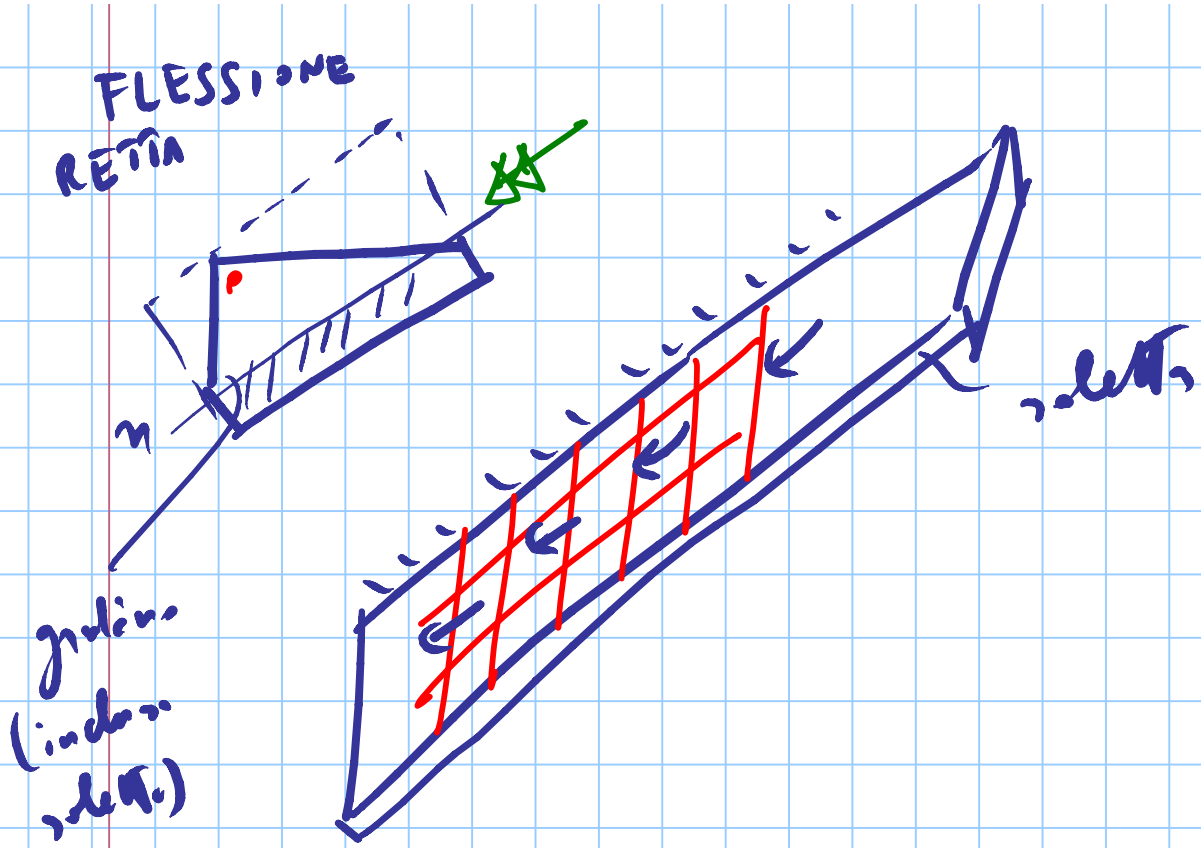


FLESSIONE
DEVIATA





FLESSIONE RETTA



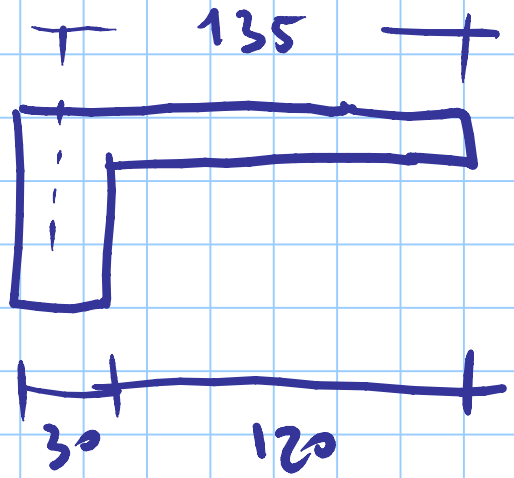
LASTRA

incastrata

ESEMPIO NUMERICO

$g_k = 5.0\ kN/m^2$ $\quad g_1 = 6.5\ kN/m^2$

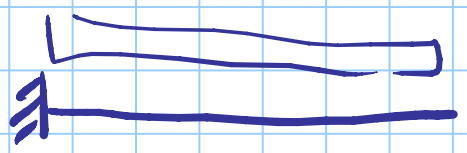
$q_k = 4.0\ kN/m^2$ $\quad q_1 = 6.0\ kN/m^2$



$\cos 26° \simeq 0.9$

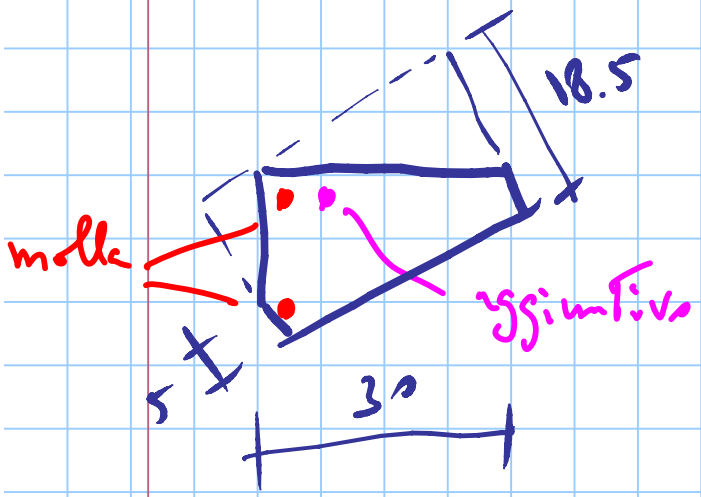
$(g_1 + q_1)\cos 26° = 11.3\ kN/m^2$

Striscia di 1 m



$q = 11.3\ kN/m$

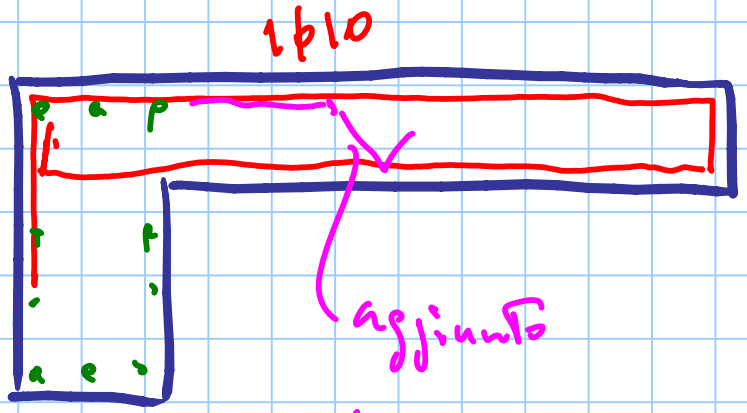
$$M = \frac{q l^2}{2} = 10.3\ kNm$$



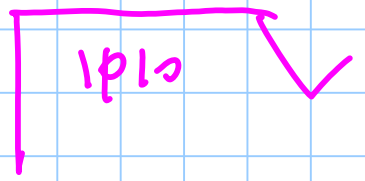
$d = 16$ $\qquad A_s = \dfrac{M}{0.9\, d\, f_{y1}} = 1.83 \text{ cm}^2/\text{m}$

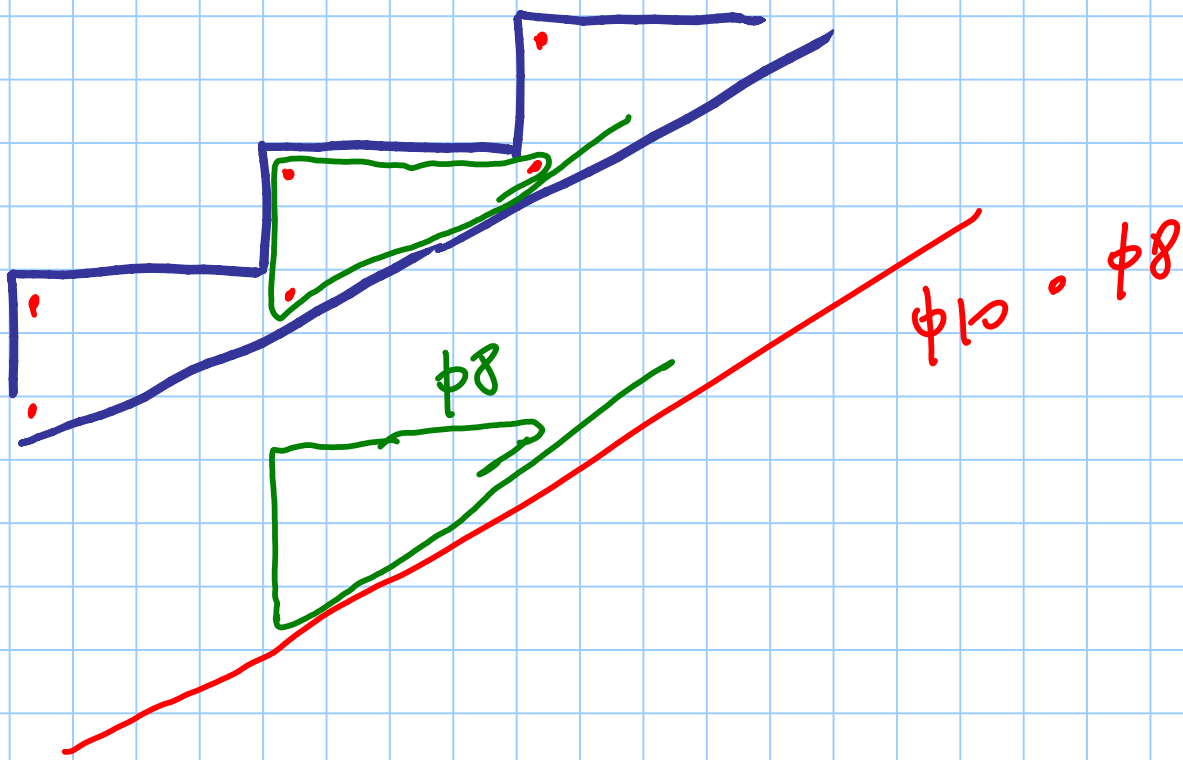
per un gradino $\qquad A_s = 1.83 \times 0.30 = 0.55 \text{ cm}^2$

basta 1 ϕ 10

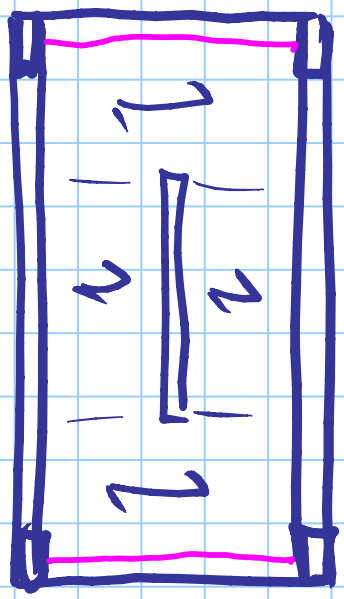


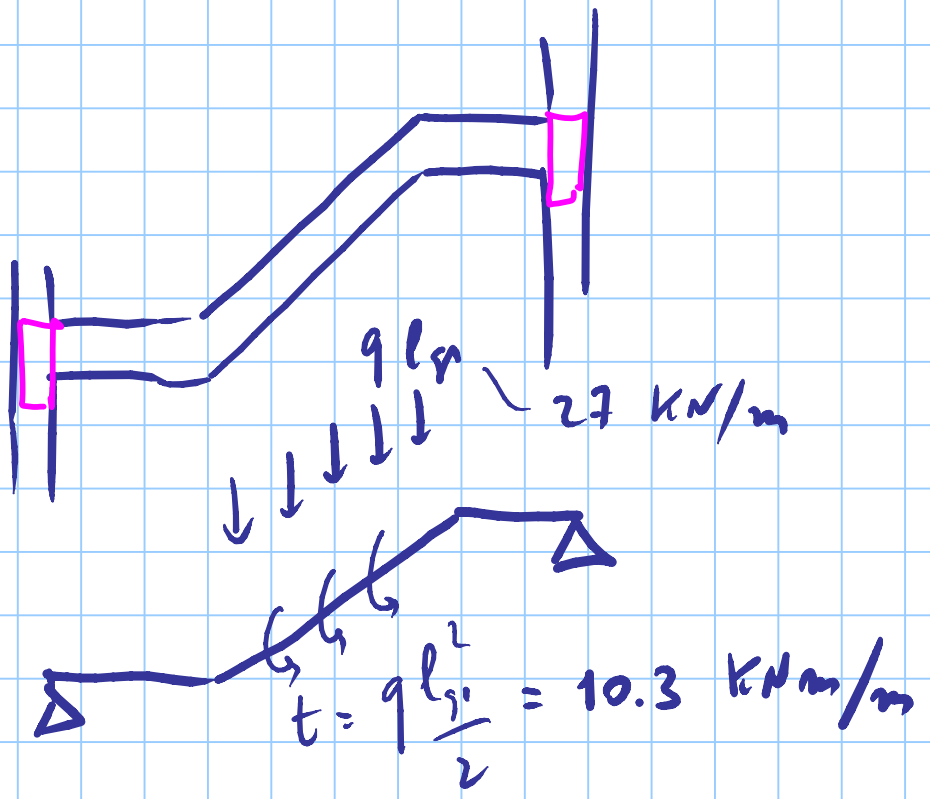
aggiungere eventualmente




ϕ8
ϕ10 • ϕ8

TRAVE A GINOCCHIO





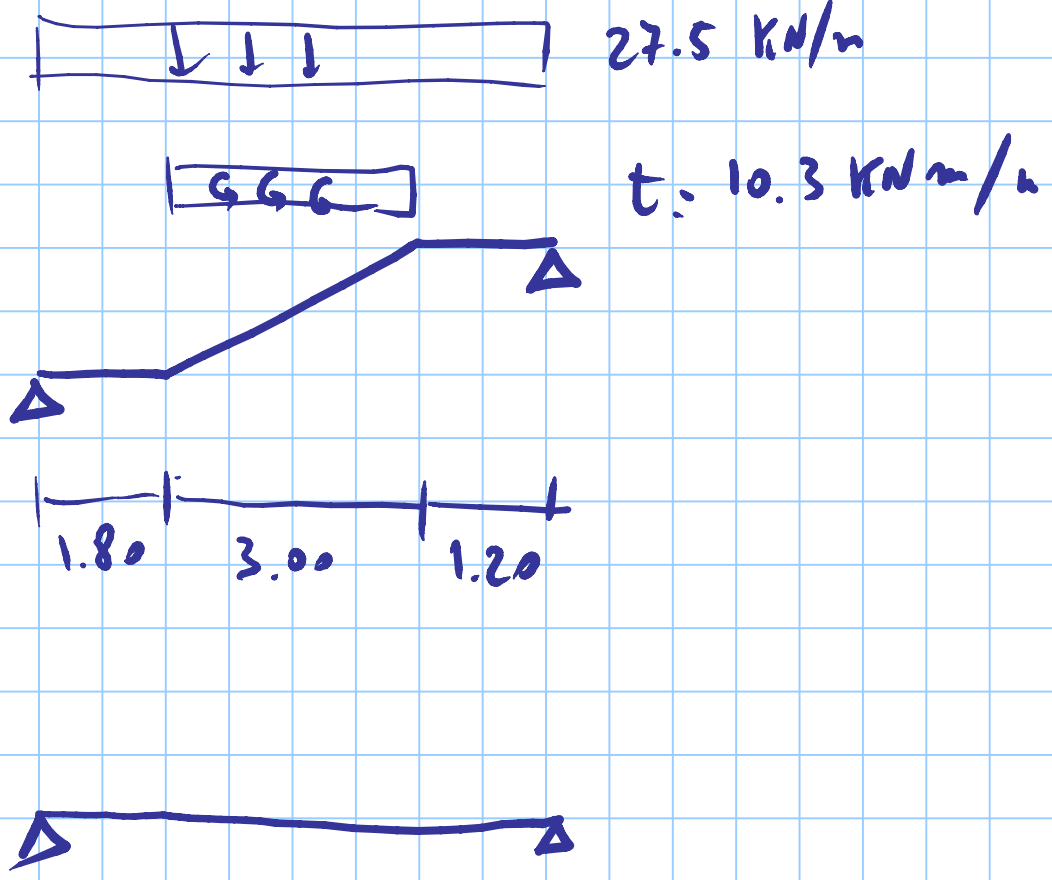
ANALISI DEI CARICHI - TRAVE a ginocchi

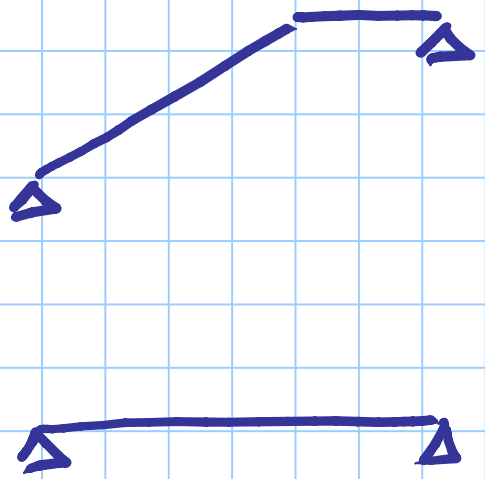
$g_1 + q_1$

scalini	1.20 m	× 12.5	=	15.0 KN/m
p.p. Trave				4.5 KN/m
tampon.				8.0 KN/m
				27.5 KN/m

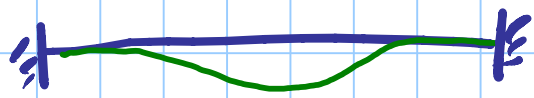
eventualmente:

diversificare carico gradini da carico pianerottolo

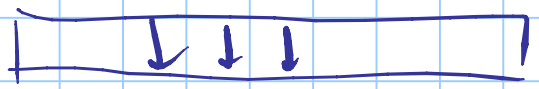

27.5 KN/m
t: 10.3 KN m/u
1.80
3.00
1.20



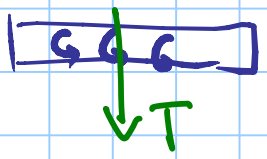
≈ equivalenti



NON sono equivalenti



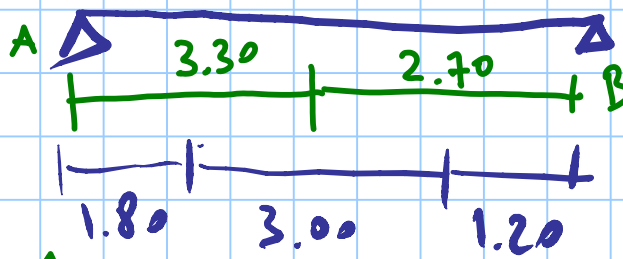
27.5 kN/m



t: 10.3 kN m/m

$T = 10.3 \times 3.00 =$

$= 30.9\ kN_m$

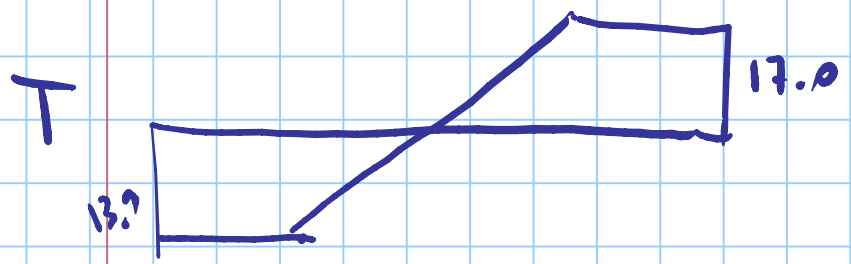


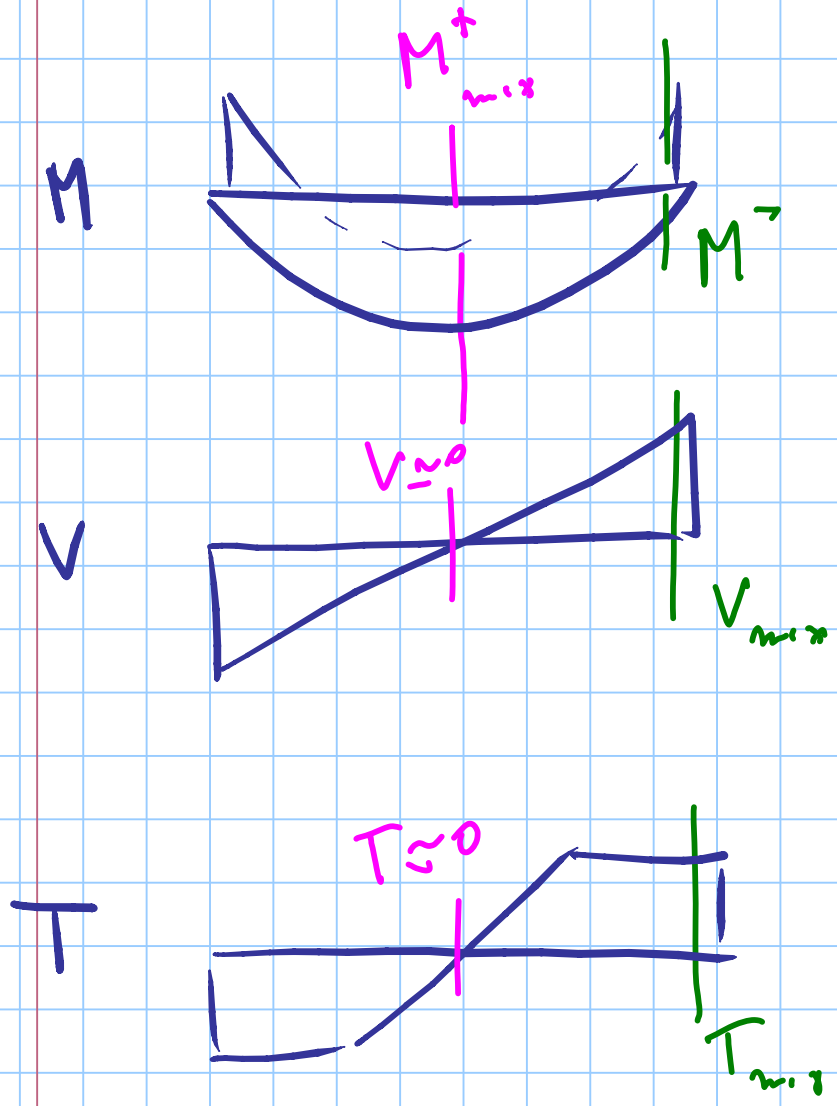
~ vincolo torsionale

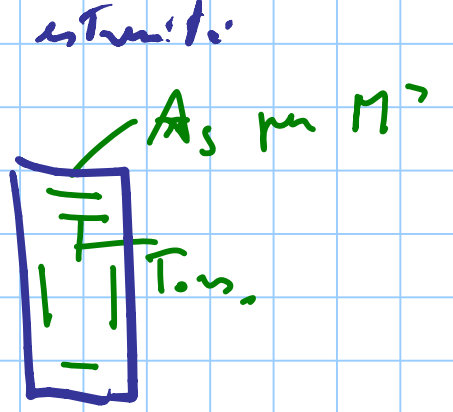
T_A

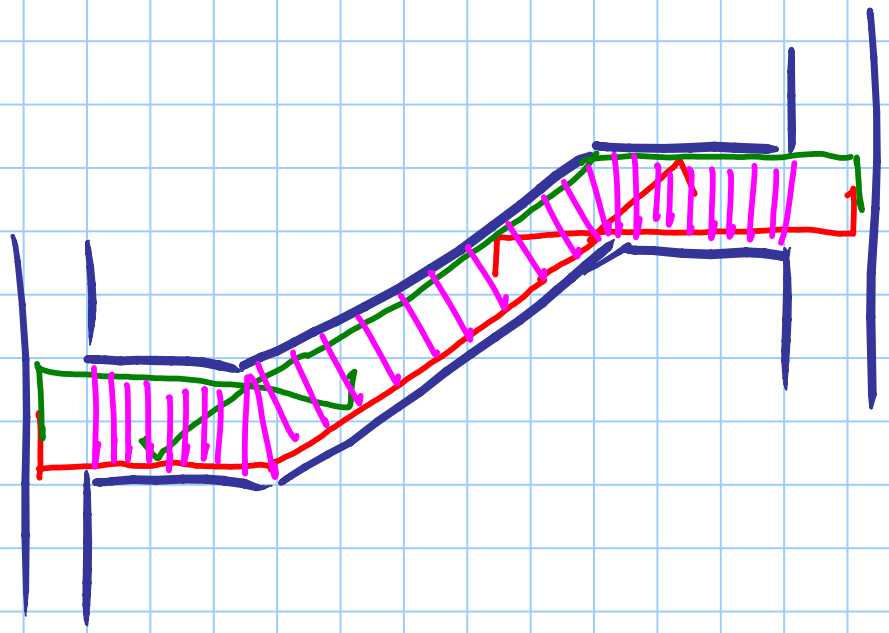
$T_B = 17.0$

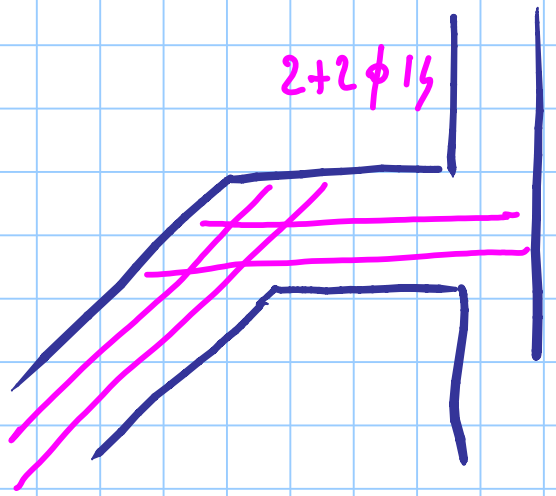
$30.9 \times \frac{2.70}{6.00} = 13.9\ kN_m$

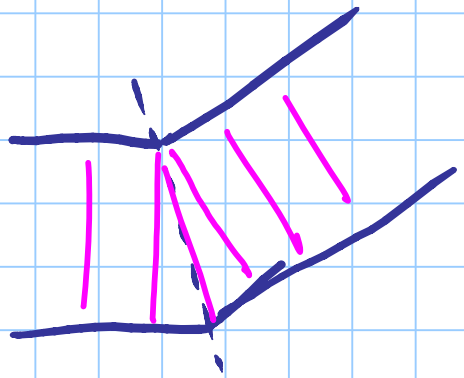


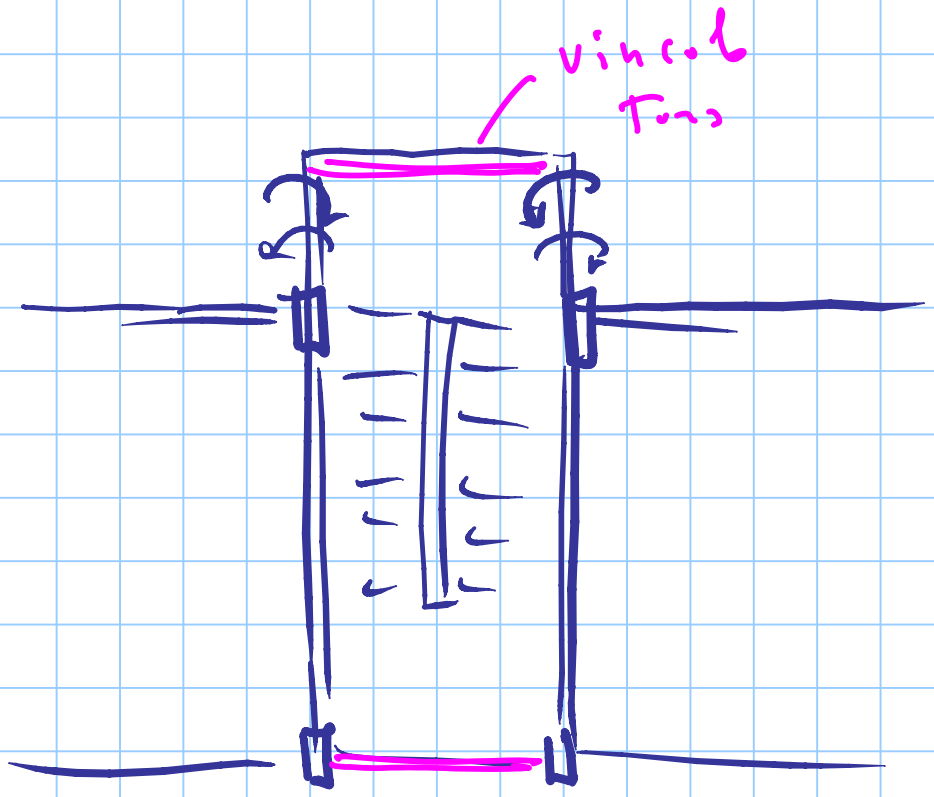

M
M^+_{max}
M^-
V
$V \simeq 0$
V_{max}
T
$T \simeq 0$
T_{max}


estremità
A_s per M^-
T
Tors.

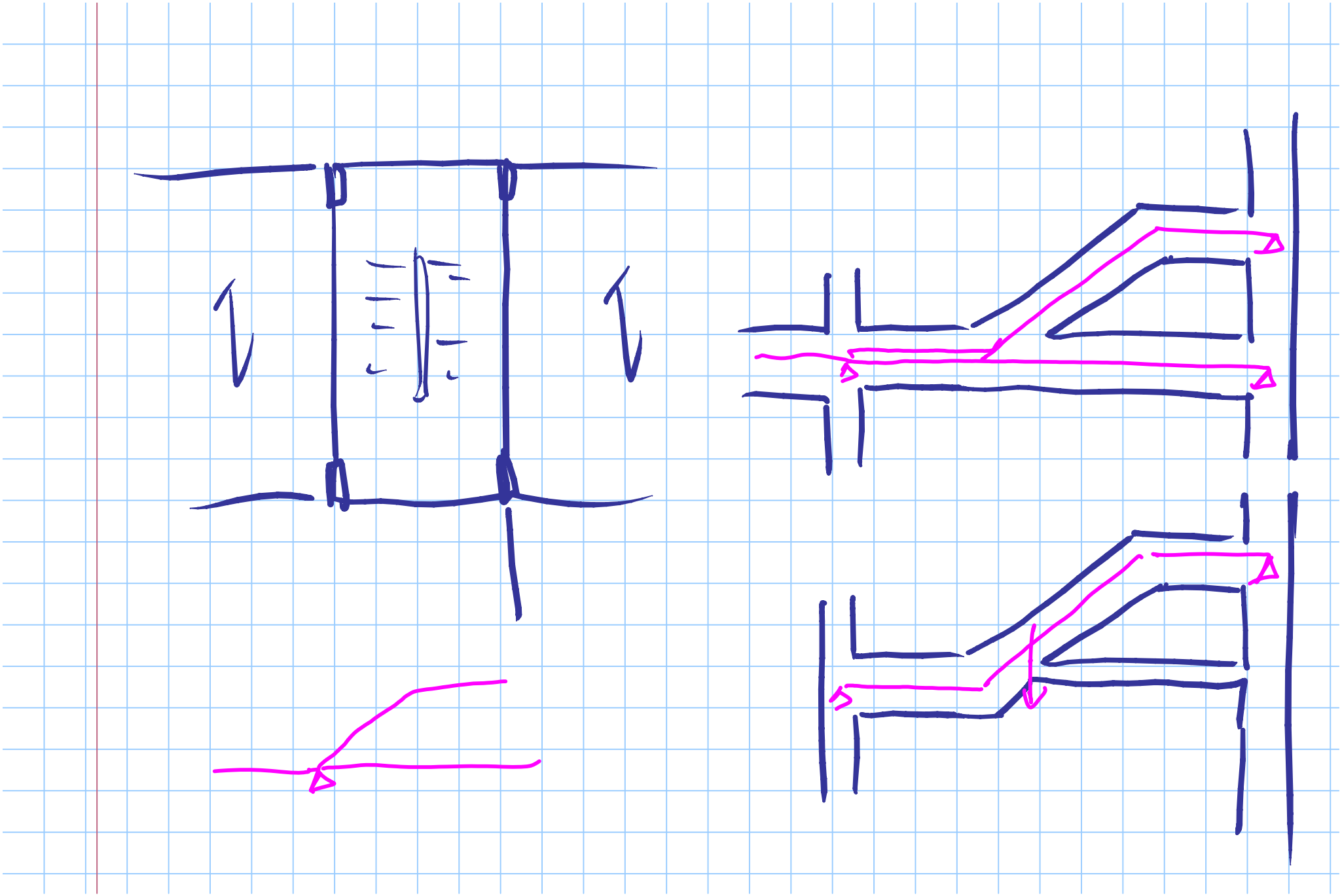


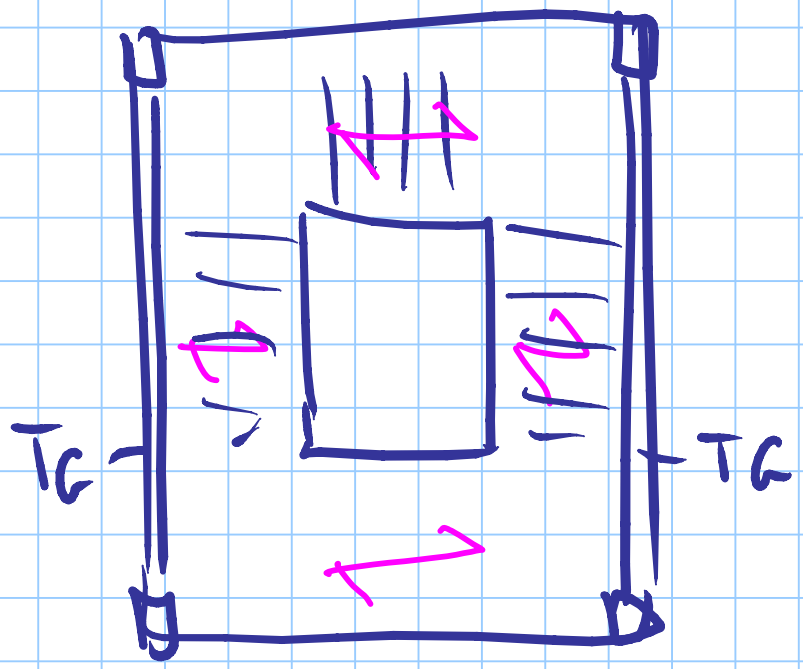

2+2 ϕ 14

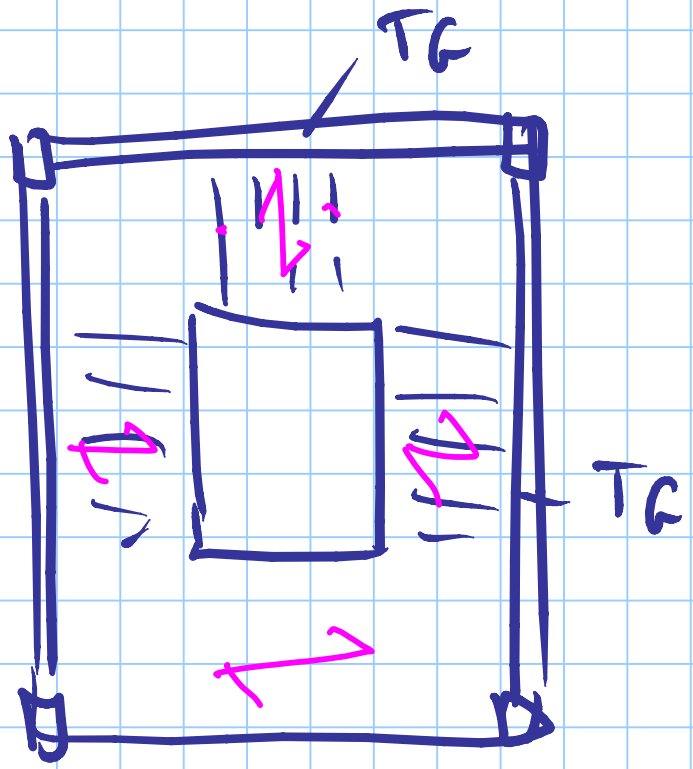


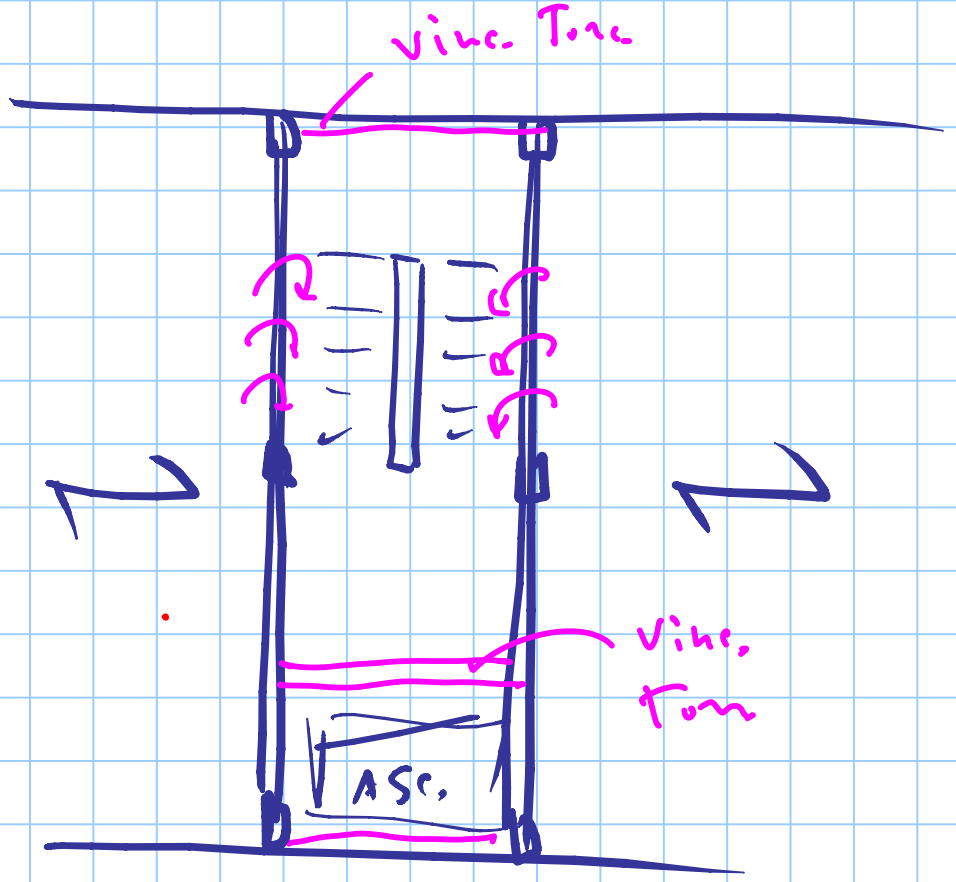

vincol
Tens


TRA. FIN.
vinc.
Tens.
vinc.
Tens.




TG
TG


TG
TG


vinc. Tetto
vinc. Tom
Asc.