

Carchi verticali

$J_A + q_d$

sotto vento
N

$q_{k,1} + \psi_0 q_{k,s}$	6	121.0
$q_{k,1}$	5	287.5
$q_{k,1}$	4	453.8
	3	620.2
	2	786.6
	1	953.0

carchi verticali

da vento
maximo

sotto

	41.33
124.0	165.3
206.7	372.0
285.3	661.3
372.0	1033.3
413.3	1446.6

vent₀ principal
 N_{Ed} max

6	41.3}	
5	124.0	165.3
4	206.7	372.0
3	289.3	661.3
2	372.0	1033.3
1	413.3	1446.6

caricis verticali
 con ψ_0
 $g_d + \psi_0 \cdot q_d$

104.7	$g_d + q_{int}(\psi_0) + q_s(\psi_0)$
267.0	$g_d + q \cdot \psi_0$
389.3	$g_d + q \cdot \psi_0$
531.6	
673.5	
816.2	

vent. secondaria
 $\times 0.6$

6	41.33	$\times 0.6$	= 24.8
5	165.3	$\times 0.6$	= 99.2
4	372.0	"	= ecc.
3	661.3	"	
2	1033.3	"	
1	1446.6	"	

carichi verticali
 principali

121.0	$g_1 + q_{11} + \psi_1 q_{12}$
287.5	$g_1 + q_1$
453.8	
620.2	
786.6	
953.0	

in questo esempio

gd+ψ0 qd	vento principale	
N	N vento	N tot
104.7	41.3	146.0
247.0	165.3	412.3
389.6	372.0	761.6
531.6	661.3	1192.9
673.9	1033.3	1707.2
816.2	1446.6	2262.8
vento secondario		
N	0.6 vento	N tot
121.0	24.8	145.8
287.4	99.2	386.6
453.8	223.2	677.0
620.2	396.8	1017.0
786.6	620.0	1406.6
953.0	868.0	1821.0

} questi sono maggiori

	valori caratteristici:			gk + qk	gd + qd	gd + ψ0 qd			
g1k	peso proprio	1.95	kN/m2				kN/m2		
g1k	pavimento, massetto, ecc.		kN/m2						
g2k	incidenza tramezzi		kN/m2						
qk	carico variabile		kN/m2						
	valori caratteristici:			gk + qk	gd + qd	gd + ψ0 qd			
g1k	peso proprio	1.95	kN/m2	7.28	10.11	8.73	kN/m2	neve	qsh = 1.85
g1k	pavimento, massetto, ecc.	2.08	kN/m2					vert	2.00
qk	carico variabile	3.25	kN/m2						
	valori caratteristici:								
g1k	peso proprio		kN/m						
	valori caratteristici:			gk	gd				
g1k	peso proprio		kN/m						
er le colonne									
	valori caratteristici:			gk	gd				
g1k	peso proprio		kN						
	valori caratteristici:			gk	gd				
g1k	peso proprio		kN						
	valori caratteristici:			gk	gd				
g1k	peso proprio		kN						
ndarie									

$$1.95 + 2.08 + 3.25$$

$$(1.95 + 2.08) \times 1.3 + 3.25 \times 1.5$$

con max. dei due carichi variabili secondari

$$1.85 \times 0.5 + 2.00 \times 0.7$$

$$1.85 + 2.00 \times 0.7$$

$$(1.95 + 2.08) \times 1.3 + 2.33 \times 1.5$$

TRAVE PRINCIPALE

già visti i carichi (lezion 20/11)

$$F_{g_n} + F_{q_n} = 89.57 \text{ KN}$$

perché $g_n = 3.88 \text{ KN/m}^2$ $\times \text{area} = 6.20 \times 2.40 = 14.88 \text{ m}^2$

$$\begin{array}{r} q_n = 2.00 \text{ KN/m}^2 \\ \hline 5.88 \dots \end{array}$$

$$87.49$$

più p.p. $0.4 \text{ KN/m} \times 6.20 \text{ m}$

$$2.48$$

$$\hline 89.57$$

Note:

di cui variabili $2.00 \times 14.88 = 29.76 \text{ KN}$

quindi 60.21 KN permanenti

di questi $g_1 = 42.35 \text{ KN}$
 $g_2 = 17.86 \text{ KN}$

in cui g_2
tremasse

$$F_{g1} + F_{q1} = 42.35 \times 1.3 + 17.86 \times 1.5 + 29.76 \times 1.5 = 126.48 \text{ kN}$$

forza	$F_{g,k} =$	60.21	kN	$F_{g,k} + F_{q,k} =$	89.97	kN
concentrata	$F_{q,k} =$	29.76	kN	$F_{g,d} + F_{q,d} =$	126.48	kN

carico distribuito

$$g_k = 0.6 \text{ kN/m}$$

$$g_1 = 0.78 \text{ kN/m}$$

per la trave
di bordo

$$F_{gk} = 30.10 \text{ kN}$$

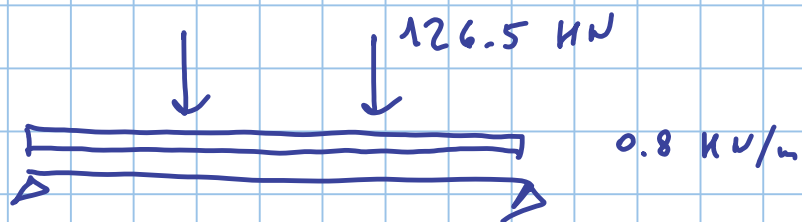
$$F_{qk} = 14.88 \text{ kN}$$

$$g_k = 0.6 + 7.2 \overset{\text{Temp.}}{\leftarrow} = 7.8 \text{ kN/m}$$

$$g_1 = 10.14 \text{ kN/m}$$

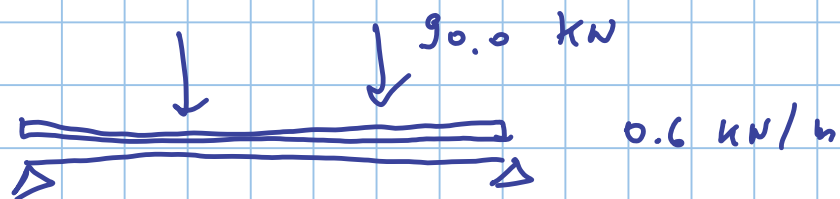
TRAVE PRINCIPALE INTERNA

SLU



SLE

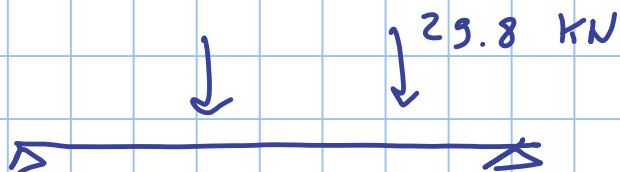
$g_k + q_k$

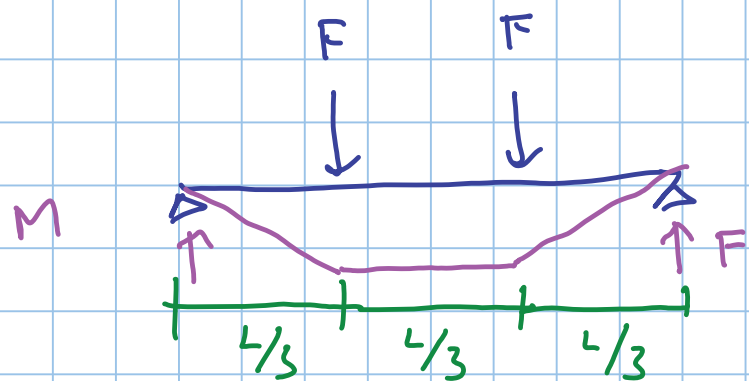


più condizioni
rispetto a SLE q_k

SLE

q_k



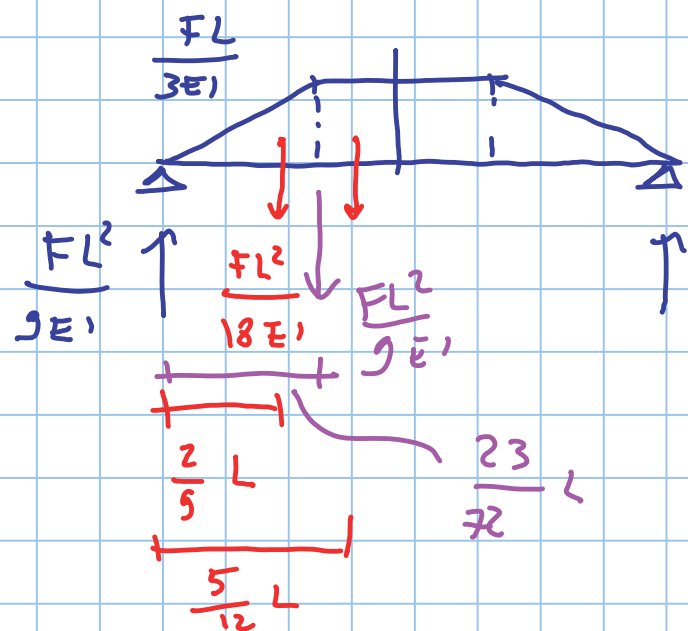


$$M_{\max} = \frac{FL}{3}$$

+



$$M_{\max} = \frac{qL^2}{8}$$



$$q_{r.t.} = \frac{FL}{3EI} \cdot \frac{2}{3}L$$

$$\frac{1}{2} \left(\frac{2}{9} + \frac{5}{12} \right) = \frac{1}{2} \frac{8 + 15}{36} = \frac{23}{72}$$

$$M = \frac{FL^2}{9EI} \cdot \frac{23}{72} L = \frac{23}{648} \frac{FL^3}{EI}$$

$$M_{EA} = \frac{F_{EA} L}{3} + \frac{q_{EA} L^2}{8} \Rightarrow W_M$$

$$f = \frac{23}{648} \frac{F L^3}{EI} + \frac{5}{384} \frac{q L^4}{EI} \approx \frac{L}{\gamma} \Rightarrow I$$

$$I \geq \frac{\gamma}{E} \left[\frac{23}{648} F L^2 + \frac{5}{384} q L^3 \right]$$