

Scienza delle Costruzioni - Ingegneria Civile

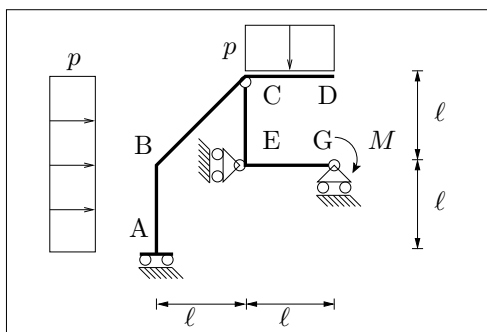
Prof. Angelo Luongo - 01/02/2010 -

SDC 9CFU: ES. 1, 2, 3; DURATA: 4 H

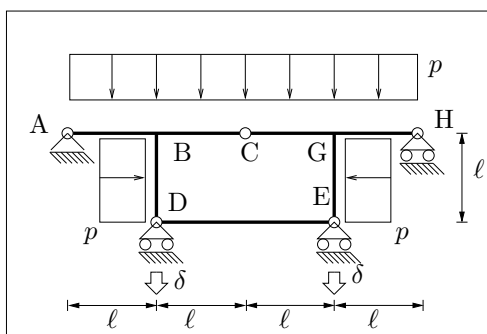
STATICA & SDC I 6CFU: ES. 1, 2; DURATA: 3 H

SDC II 6CFU: ES. 3; DURATA: 2 H

Esercizio 1: Scrivere e diagrammare le leggi di variazione delle caratteristiche di sollecitazione per la struttura in figura, nel caso in cui sia $\ell = 4$ m, $p = 20 \frac{\text{KN}}{\text{m}}$, $M = 20$ KNm. {Calcolare lo spostamento verticale della sezione in D, essendo $EI = 64000$ KNm² }¹.



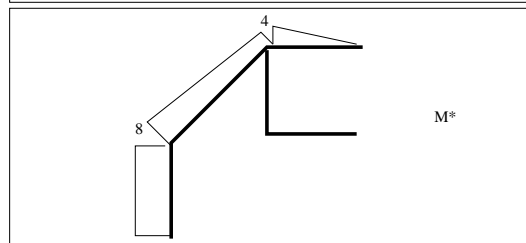
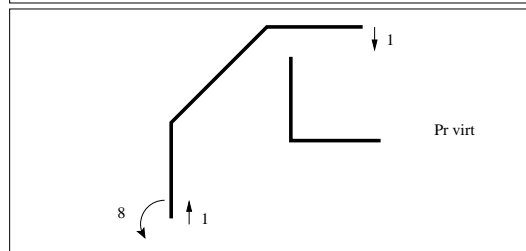
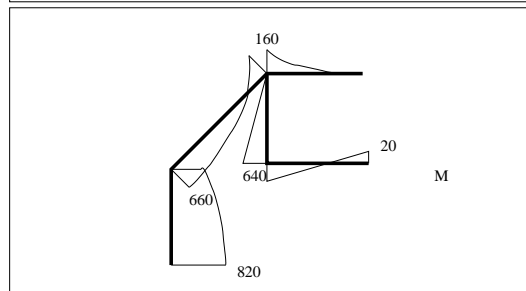
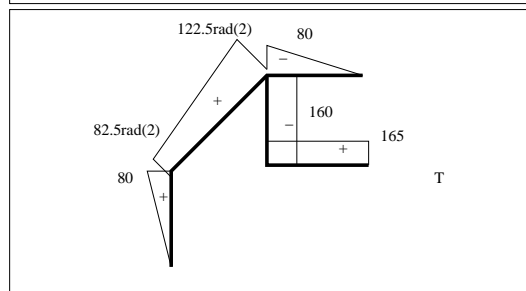
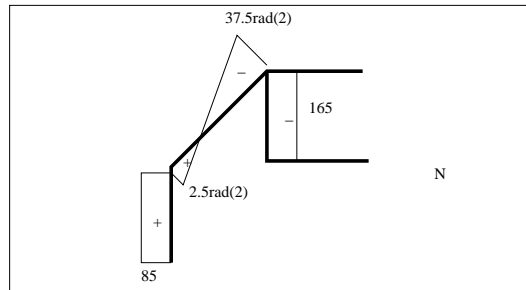
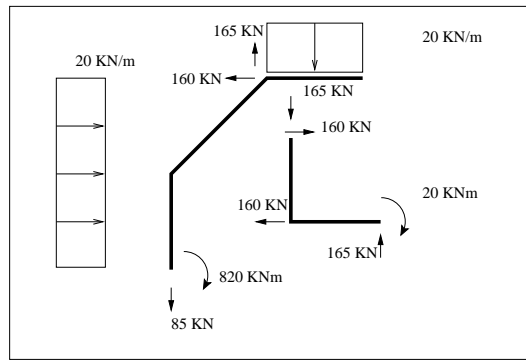
Esercizio 2: Diagrammare le caratteristiche di sollecitazione per la struttura in figura nel caso in cui sia $\ell = 4$ m, $p = 20 \frac{\text{KN}}{\text{m}}$, $EI = 6.4 \times 10^4$ KNm², $EA \rightarrow +\infty$, $\delta = 5$ cm.



Esercizio 3: Verrà aggiunto in seguito.

¹Domanda riservata agli studenti di Statica & SdC I 6cfu

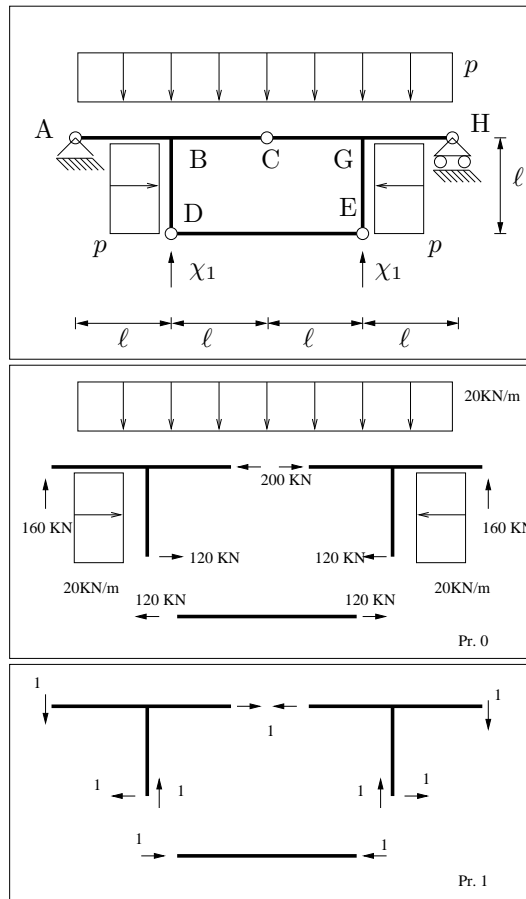
Esercizio 1:



	N	T	M	M*
AB	85	20x	820 - 10x ²	-8
BC	2.5√2 - 10x	82.5√2 + 10x	660 - 82.5√2x - 5x ²	-8 + √2/2x
DC	0	-20x	10x ²	x
CE	-165	-160	160x	0
GE	0	165	20 - 165x	0

$$1v_B = \frac{1}{EI} \int_{\mathcal{D}} MM^* dx = -0.54 \text{ m}$$

Esercizio 2:



	M_0	M'_1
AB	$160x - 10x^2$	$-x$
CB	$10x^2$	0
DB	$-120x - 10x^2$	x

$$\eta_{11} = \frac{2\ell^3}{3EI} = \frac{1}{1500}$$

$$\eta_{10} = -\frac{7p\ell^4}{6EI} = -\frac{7}{75}$$

$$\bar{\eta}_1 = \delta = 0.05$$

$$\chi_1 = 65\text{KN}$$

