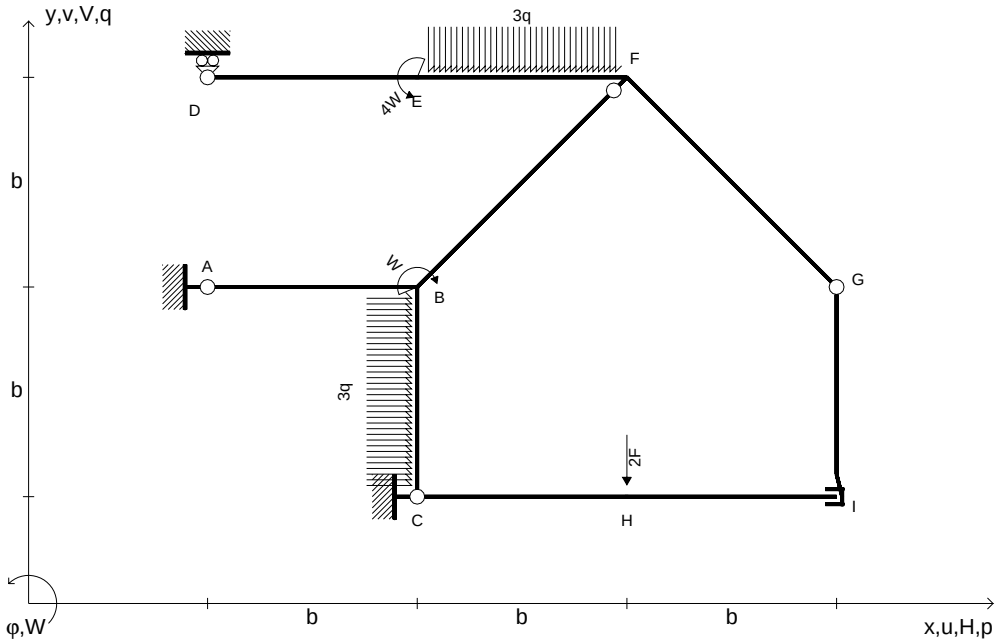


$V_H = -2F$ $p_{BC} = 3q = 3F/b$ $EJ_{AB} = EJ$ $EJ_{EF} = EJ$ $EJ_{CH} = EJ$

$W_B = -W = -Fb$ $q_{EF} = -3q = -3F/b$ $EJ_{BC} = EJ$ $EJ_{BF} = EJ$ $EJ_{HI} = EJ$

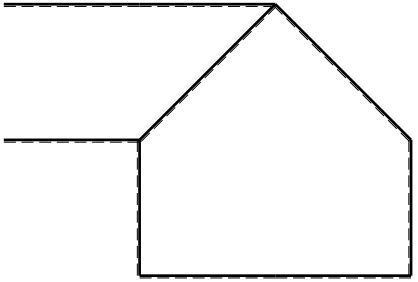
$W_E = 4W = 4Fb$ $\varphi_B = ?$ $EJ_{DE} = EJ$ $EJ_{FG} = EJ$ $EJ_{GI} = EJ$

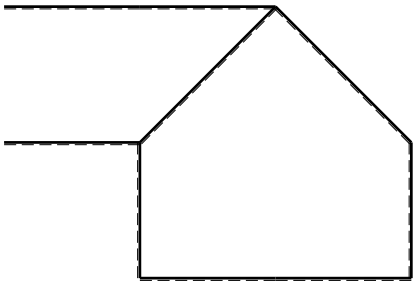
*Svolgere e riportare su questo foglio
l'analisi cinematica.
*Riportare le reazioni vincolari finali
in forma grafica e analitica.
*Riportare i diagrammi quotati
delle azioni interne.
*Risolvere con PLV e/o LE.
*Indicare chiaramente i sistemi di riferimento
adottati per le espressioni della linea elastica
*Rappresentare graficamente la deformata
*Allegare l'elaborato.
.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi quotati delle azioni interne nelle aste.
Esprimere la linea elastica delle aste. AB BC
Carichi di aste curve misurati in proiezione sugli assi x,y.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare la rotazione assoluta del nodo B

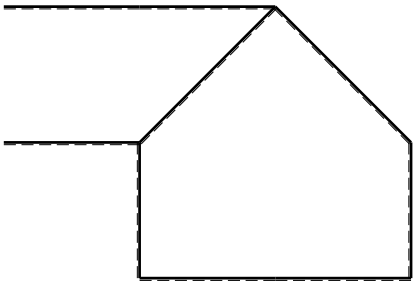
φ_B =
Indicare il verso del riferimento locale AB oppure BA

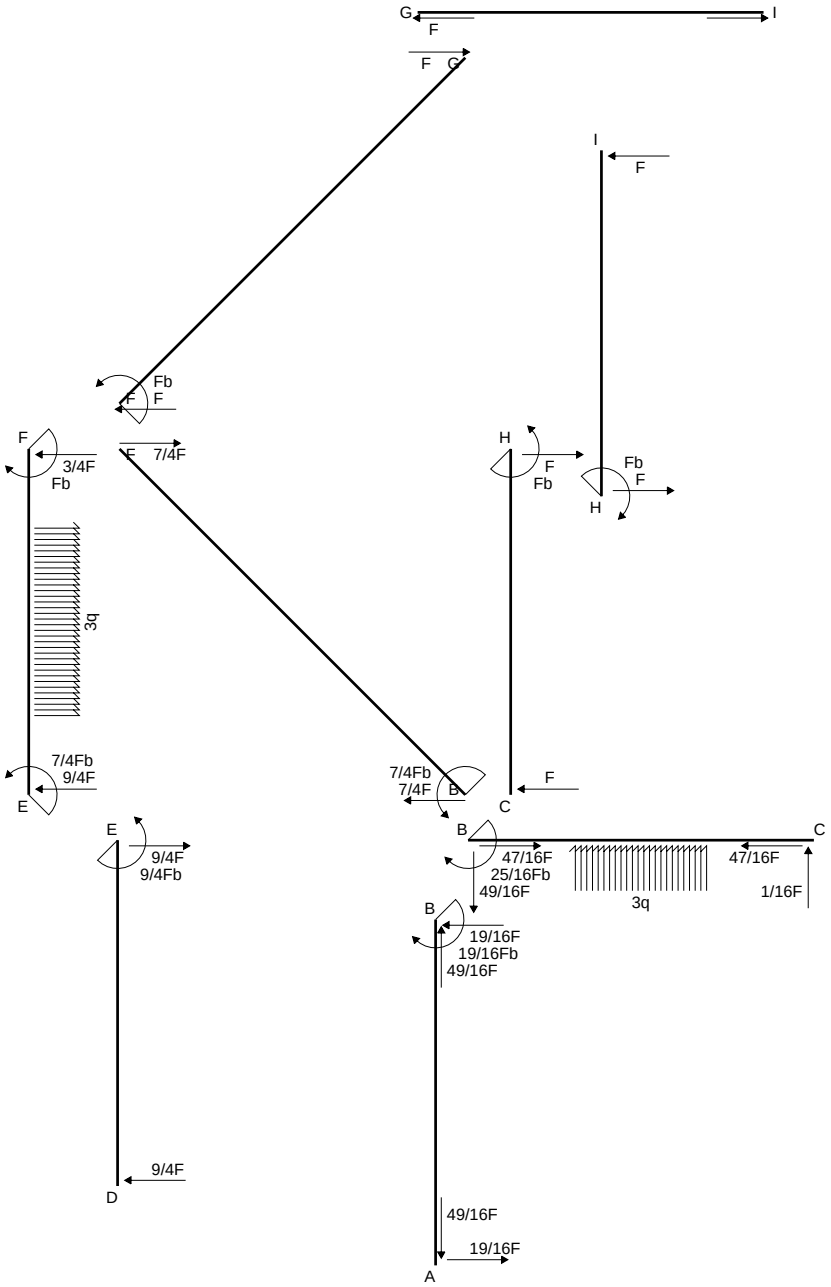
AB BA y(x)EJ=

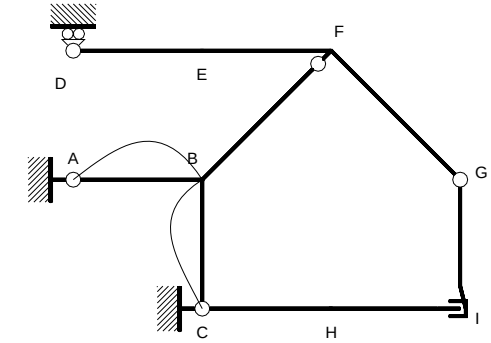
BC CB y(x)EJ=

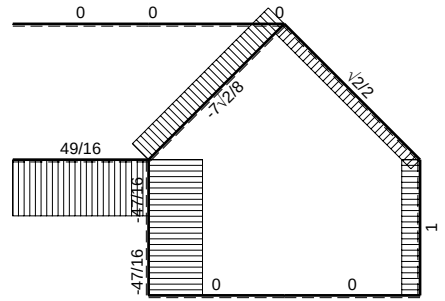






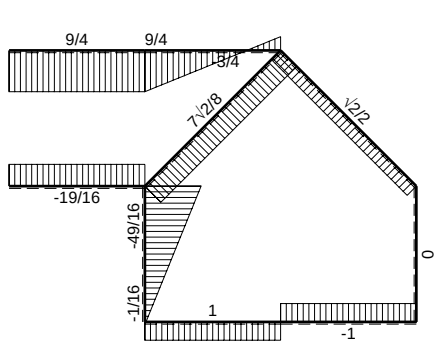


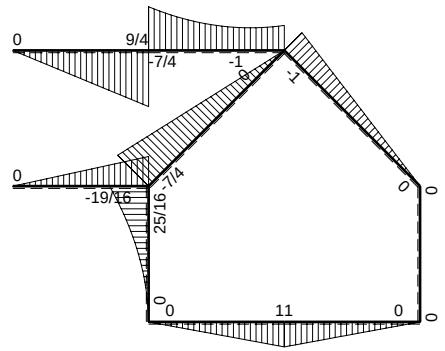




$\vdash$ 0.15 Fb^3/EJ

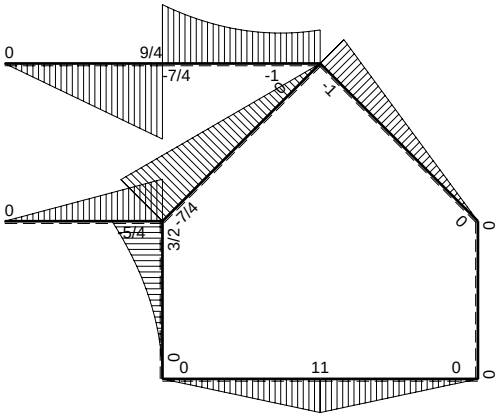
$\leftarrow \boxplus \rightarrow$ F



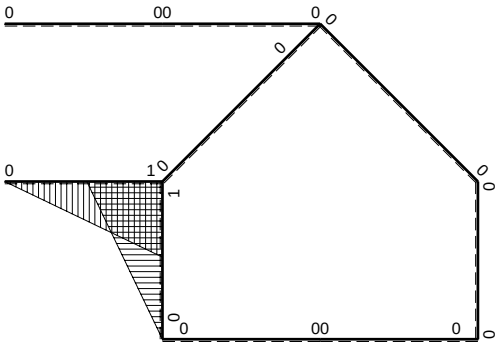


$\uparrow \boxplus \downarrow$ F

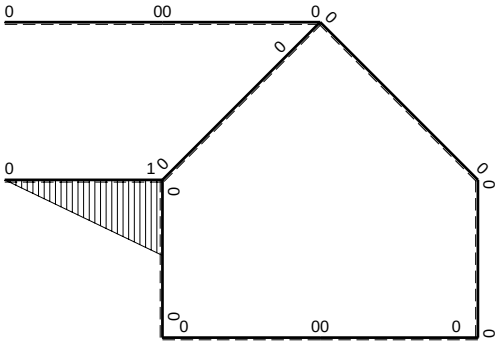
$\circlearrowleft \boxplus \circlearrowright$ Fb



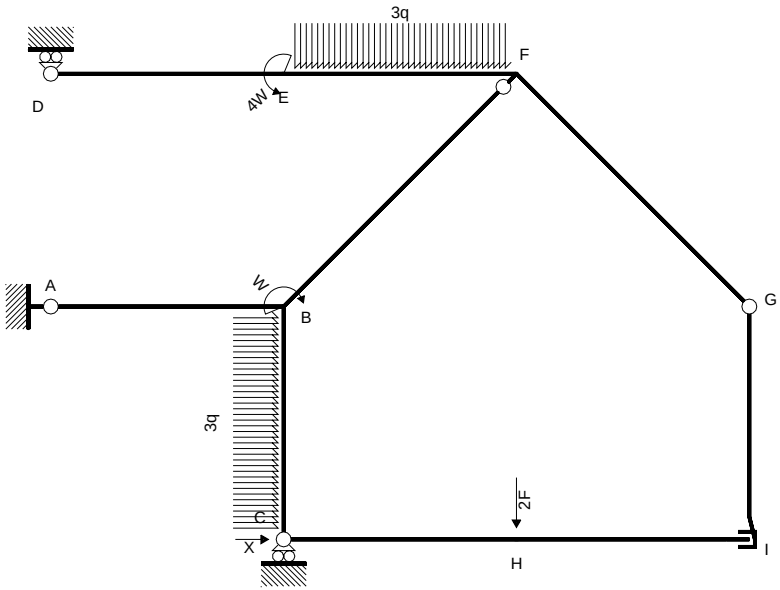
Azione flettente M_o



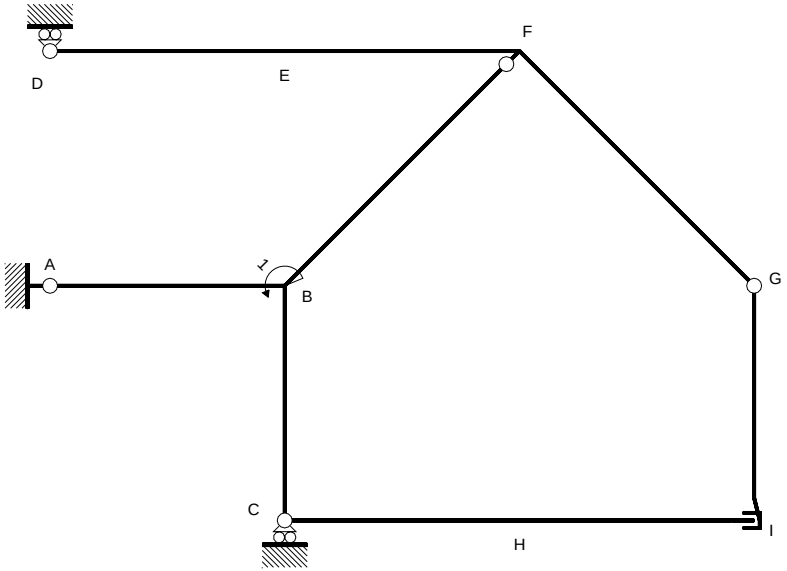
Azione flettente M_X



Azione flettente M_1



Calcolo iperstatico



Calcolo spostamenti

REAZIONI IPERSTATICHE

$X = H_C$

DETERMINAZIONE DELLA DEFORMATA ELASTICA
Costanti di integrazione: φ_{AB} K_{AB} φ_{BC} K_{BC}

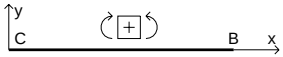
Relazioni di congruenza
$y'_{AB}(b) - y'_{BC}(0) = 0$
$y_{AB}(0) = 0$
$y_{AB}(b) = 0$
$y_{BC}(0) = 0$
$y_{BC}(b) = 0$

$M_{AB} = -5/4Fx +Xx$
$EJy''_{AB} = -5/4Fx +Xx$
$EJy'_{AB} = -5/8Fx^2 +1/2Xx^2 +EJ\varphi_{AB}$
$EJy_{AB} = -5/24Fx^3 +1/6Xx^3 +EJ\varphi_{AB}x +EJK_{AB}$

$M_{BA} = -5/4Fx +5/4Fb +Xx -Xb$
$EJy''_{BA} = -5/4Fx +5/4Fb +Xx -Xb$
$EJy'_{BA} = -5/8Fx^2 +5/4Fbx +1/2Xx^2 -Xbx +EJ\varphi_{BA}$
$EJy_{BA} = -5/24Fx^3 +5/8Fbx^2 +1/6Xx^3 -1/2Xbx^2 +EJ\varphi_{BA}x +EJK_{BA}$

$M_{BC} = -3Fx +3/2Fb +3/2qx^2 -Xx +Xb$
$EJy''_{BC} = -3Fx +3/2Fb +3/2qx^2 -Xx +Xb$
$EJy'_{BC} = -3/2Fx^2 +3/2Fbx +1/2qx^3 -1/2Xx^2 +Xbx +EJ\varphi_{BC}$
$EJy_{BC} = -1/2Fx^3 +3/4Fbx^2 +1/8qx^4 -1/6Xx^3 +1/2Xbx^2 +EJ\varphi_{BC}x +EJK_{BC}$

$M_{CB} = -3/2qx^2 -Xx$
$EJy''_{CB} = -3/2qx^2 -Xx$
$EJy'_{CB} = -1/2qx^3 -1/2Xx^2 +EJ\varphi_{CB}$
$EJy_{CB} = -1/8qx^4 -1/6Xx^3 +EJ\varphi_{CB}x +EJK_{CB}$



Condizioni al contorno

$$\begin{array}{c} \\ y'_{BA} \\ y_{AB} \\ y_{BA} \\ y_{BC} \\ y_{CB} \end{array} \begin{bmatrix} \varphi_{AB}b & K_{AB} & \varphi_{BC}b & K_{BC} & Xb^3/EJ \\ 1 & 0 & -1 & 0 & 1/2 \\ 0 & 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1/6 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 & 1/3 \end{bmatrix} = \begin{bmatrix} Fb^3/EJ \\ 5/8 \\ 0 \\ 5/24 \\ 0 \\ -3/8 \end{bmatrix}$$

Soluzione

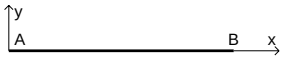
$$\begin{bmatrix} \varphi_{AB}b \\ K_{AB} \\ \varphi_{BC}b \\ K_{BC} \\ Xb^3/EJ \end{bmatrix} = \begin{bmatrix} Fb^3/EJ \\ 19/96 \\ 0 \\ -19/48 \\ 0 \\ 1/16 \end{bmatrix}$$

$K_{BA} = 0$ $\varphi_{BA} = -19/48Fb^2/EJ$

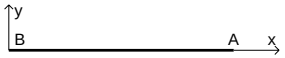
$K_{CB} = 0$ $\varphi_{CB} = 13/96Fb^2/EJ$

DEFORMATA (coordinate locali)

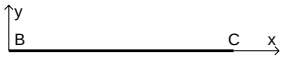
AB $y(x)EJ = 19/96xFb^2 -19/96x^3F$



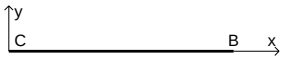
BA $y(x)EJ = -19/48xFb^2 +19/32x^2Fb -19/96x^3F$



BC $y(x)EJ = -19/48xFb^2 +25/32x^2Fb -49/96x^3F +1/8x^4q$



CB $y(x)EJ = 13/96xFb^2 -1/96x^3F -1/8x^4q$



SPOSTAMENTI ASSOLUTI
$\varphi_B = -19/48(Fb^2/EJ)$