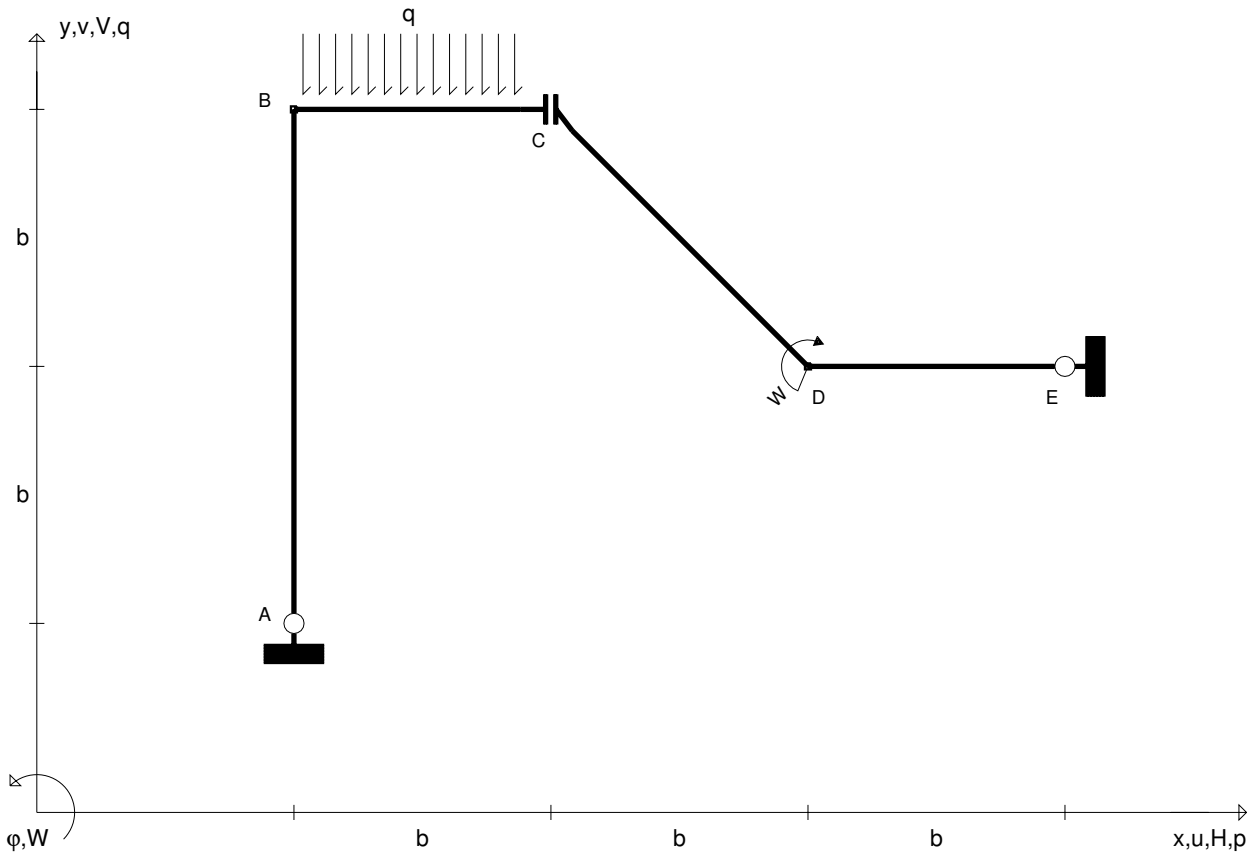
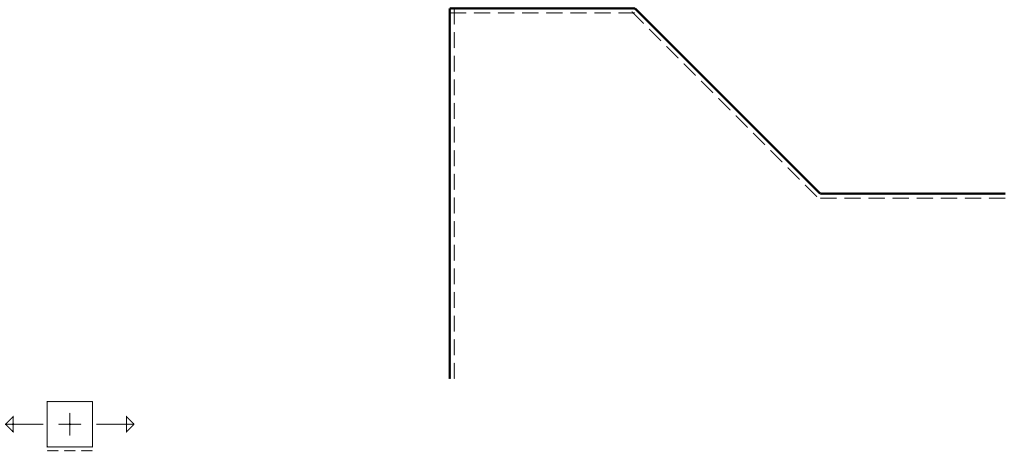
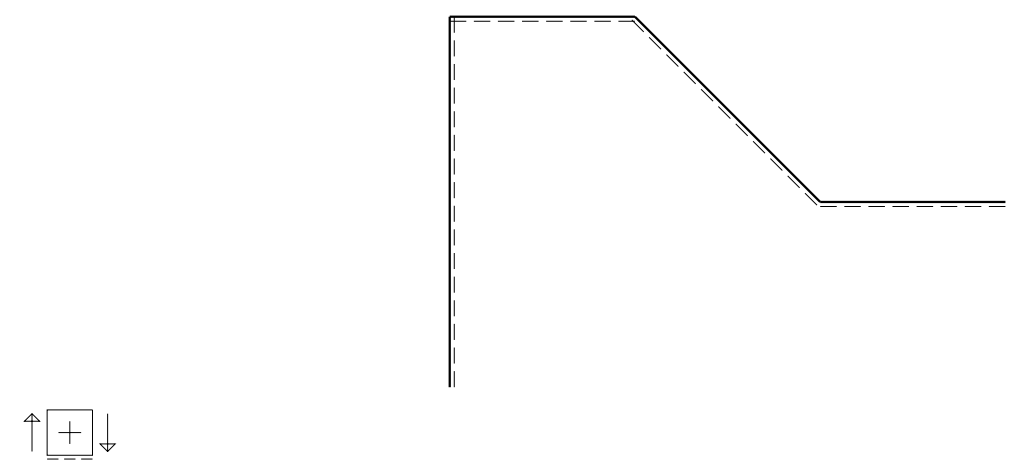


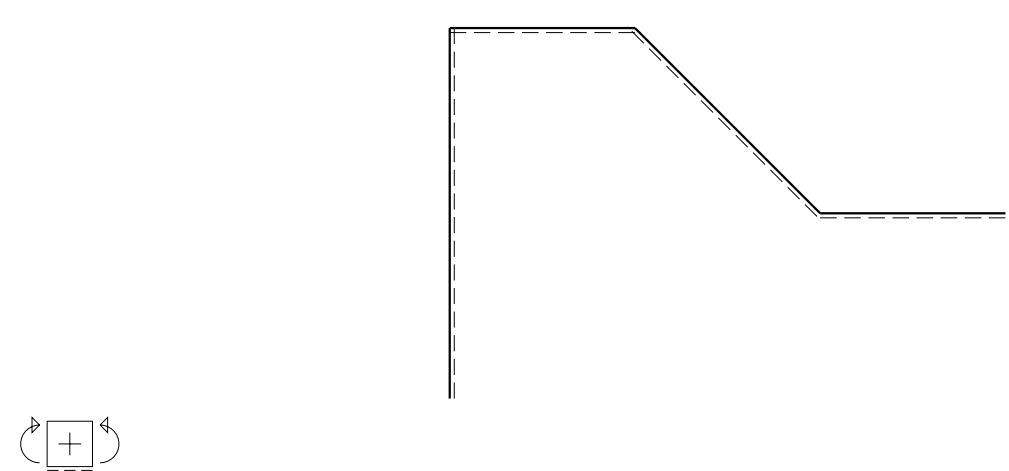
$W_D = -W = -Fb$ $EJ_{AB} = EJ$ $EJ_{CD} = EJ$

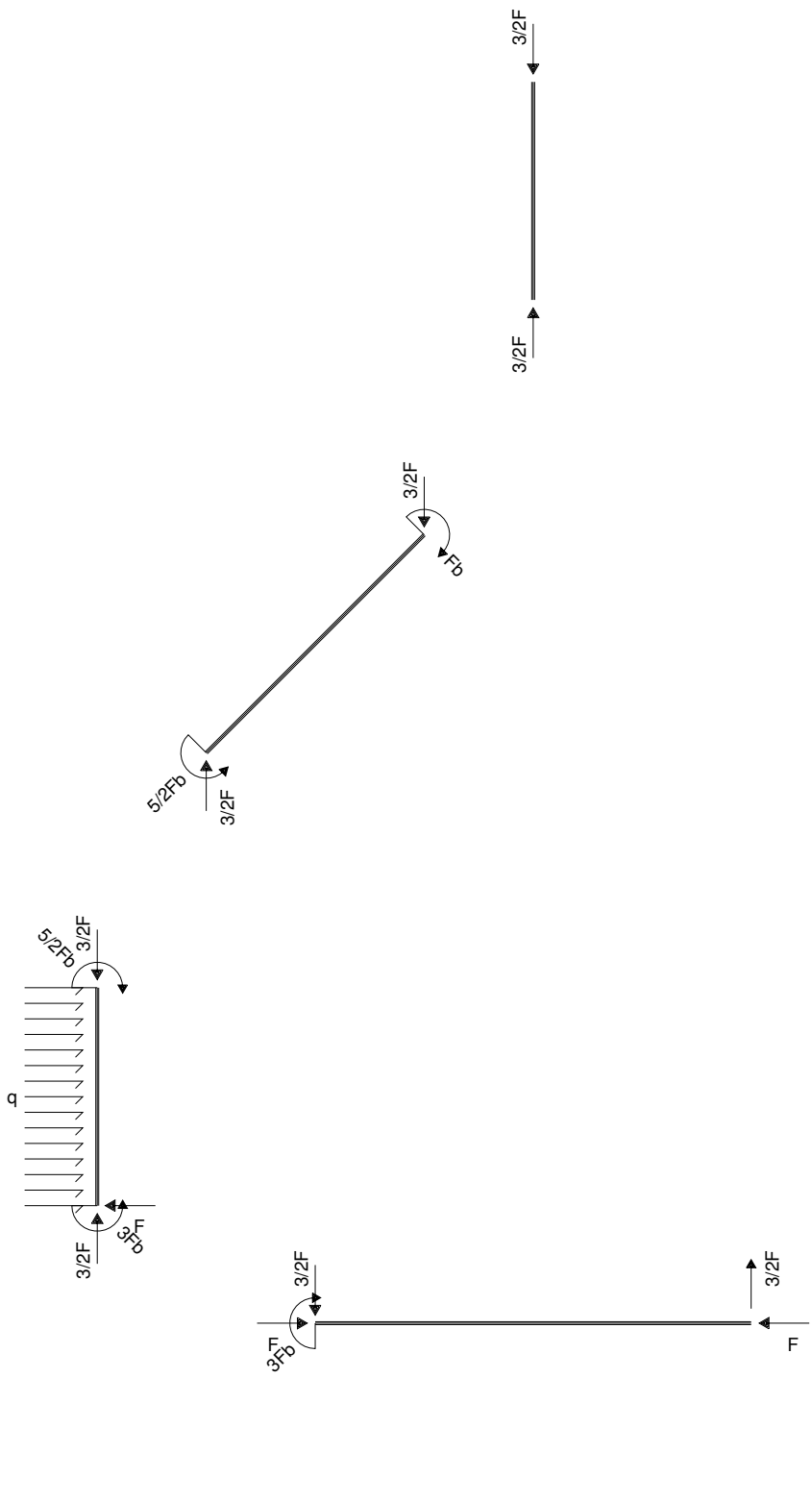
$q_{BC} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$

Verso effettivo dei carichi riportato nel disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
Esprimere le funzioni delle azioni interne nelle aste.
Calcolare spostamento e rotazione di tutti i nodi.
u_A v_A φ_A spostamento assoluto del nodo A.
J_{AB} x_{AB} ϑ_{AB} riferimento locale asta AB con origine in A.
<> ESAME 15/01/2019 - APPELLO 01 - IPERSTATICA
<>
<> Struttura 1: Iperstatica Testo 1
<>

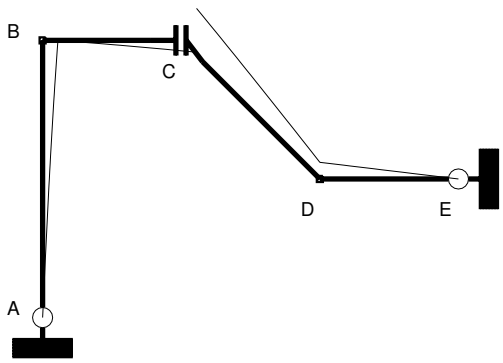


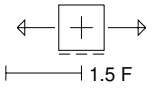


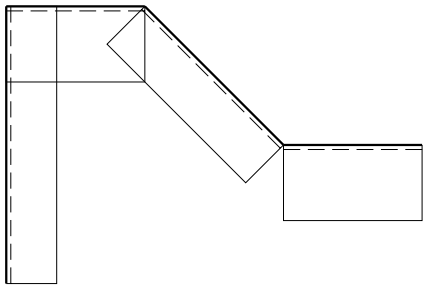


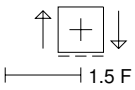

3/2F
3/2F
3/2F
Fb
5/2Fb
3/2F
5/2Fb
3/2F
q
3Fb
F
3/2F
3/2F
3Fb
F
F

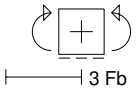
60 Fb^3/EJ

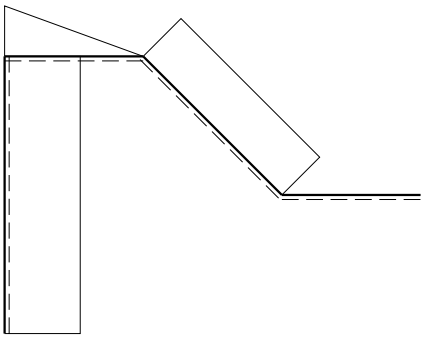


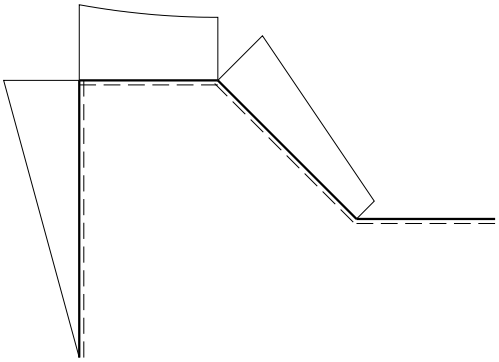












REAZIONI

$H_A = (W/b) +1/2qb = 3/2F$
$V_A = qb = F$
$H_E = -(W/b) -1/2qb = -3/2F$
$V_E = 0$

$H_{AB} = (W/b) +1/2qb = 3/2F$
$V_{AB} = qb = F$
$W_{AB} = 0$
$H_{BA} = -(W/b) -1/2qb = -3/2F$
$V_{BA} = -qb = -F$
$W_{BA} = -2W -qb^2 = -3Fb$

$H_{BC} = (W/b) +1/2qb = 3/2F$
$V_{BC} = qb = F$
$W_{BC} = 2W +qb^2 = 3Fb$
$H_{CB} = -(W/b) -1/2qb = -3/2F$
$V_{CB} = 0$
$W_{CB} = -2W -1/2qb^2 = -5/2Fb$

$H_{CD} = (W/b) +1/2qb = 3/2F$
$V_{CD} = 0$
$W_{CD} = 2W +1/2qb^2 = 5/2Fb$
$H_{DC} = -(W/b) -1/2qb = -3/2F$
$V_{DC} = 0$
$W_{DC} = -W = -Fb$

$H_{DE} = (W/b) +1/2qb = 3/2F$
$V_{DE} = 0$
$W_{DE} = 0$
$H_{ED} = -(W/b) -1/2qb = -3/2F$
$V_{ED} = 0$
$W_{ED} = 0$

SPOSTAMENTI NODALI

$u_A = 0$
$v_A = 0$
$\varphi_{AAB} = -(16+5\sqrt{2})/6(Wb/EJ) -(6+\sqrt{2})/6(qb^3/EJ) = -(11+3\sqrt{2})/3(Fb^2/EJ)$

$u_B = (20+5\sqrt{2})/3(Wb^2/EJ) +(8+\sqrt{2})/3(qb^4/EJ) = (28+6\sqrt{2})/3(Fb^3/EJ)$
$v_B = 0$
$\varphi_B = -(28+5\sqrt{2})/6(Wb/EJ) -(12+\sqrt{2})/6(qb^3/EJ) = -(20+3\sqrt{2})/3(Fb^2/EJ)$

$u_C = (20+5\sqrt{2})/3(Wb^2/EJ) +(8+\sqrt{2})/3(qb^4/EJ) = (28+6\sqrt{2})/3(Fb^3/EJ)$
$v_{CCD} = (40+12\sqrt{2})/3(Wb^2/EJ) +(64+9\sqrt{2})/12(qb^4/EJ) = (224+57\sqrt{2})/12(Fb^3/EJ)$
$\varphi_C = -(40+5\sqrt{2})/6(Wb/EJ) -(16+\sqrt{2})/6(qb^3/EJ) = -(28+3\sqrt{2})/3(Fb^2/EJ)$

$u_D = 0$
$v_D = (20+7\sqrt{2})/3(Wb^2/EJ) +(32+5\sqrt{2})/12(qb^4/EJ) = (112+33\sqrt{2})/12(Fb^3/EJ)$
$\varphi_D = -(20+7\sqrt{2})/3(Wb/EJ) -(32+5\sqrt{2})/12(qb^3/EJ) = -(112+33\sqrt{2})/12(Fb^2/EJ)$

$u_E = 0$
$v_E = 0$
$\varphi_{EED} = -(20+7\sqrt{2})/3(Wb/EJ) -(32+5\sqrt{2})/12(qb^3/EJ) = -(112+33\sqrt{2})/12(Fb^2/EJ)$

AZIONI INTERNE (coordinate locali)

$N_{AB} = -F$
$T_{AB} = -3/2F$
$M_{AB} = -3/2Fx$

$N_{BC} = -3/2F$
$T_{BC} = F -qx$
$M_{BC} = -3Fb +Fx -1/2qx^2$

$N_{CD} = -3\sqrt{2}/4F$
$T_{CD} = 3\sqrt{2}/4F$
$M_{CD} = -5/2Fb +3\sqrt{2}/4Fx$

N_{DE} = -3/2F
T_{DE} = 0
M_{DE} = 0