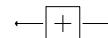


$$\begin{aligned} V_{BBC} &= ? \\ AB \quad y(x)EJ &= ? \\ BC \quad y(x)EJ &= ? \\ CD \quad y(x)EJ &= ? \end{aligned}$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

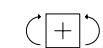
$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

Allungamento termico assegnato ε su asta CD.

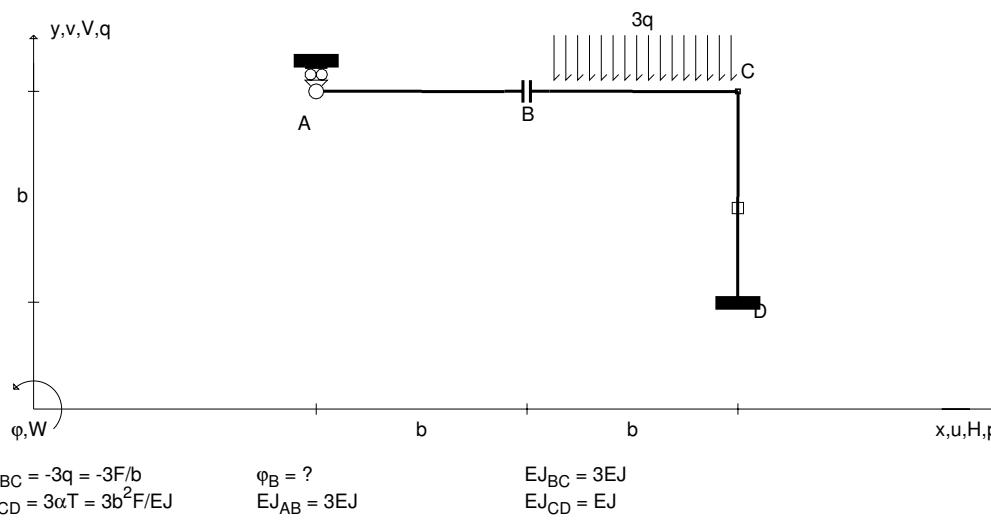
Calcolare lo spostamento verticale del nodo B su asta BC

Riportare la soluzione su questo foglio.

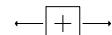
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$$\begin{aligned}\varphi_B &= \\ AB \quad y(x)EJ &= \\ BC \quad y(x)EJ &= \\ CD \quad y(x)EJ &= \end{aligned}$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

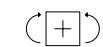
$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

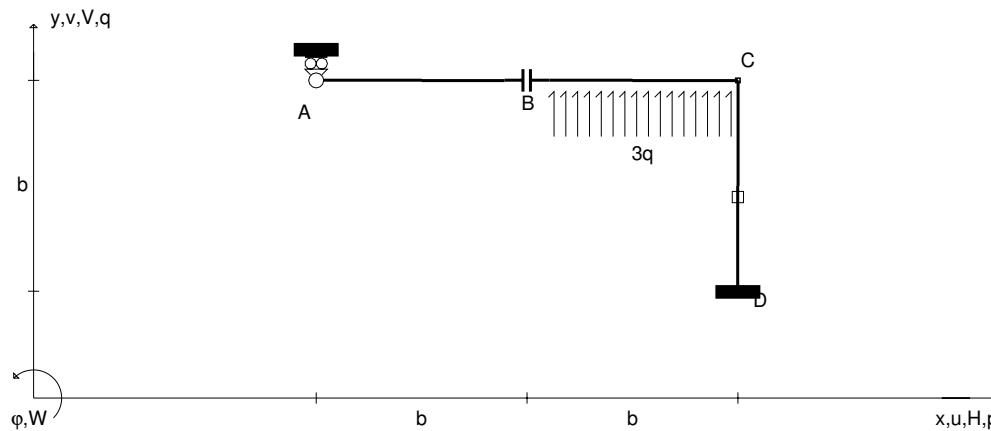
Allungamento termico assegnato ε su asta CD.

Calcolare la rotazione assoluta del nodo B

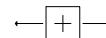
Riportare la soluzione su questo foglio.

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$$\begin{aligned} V_{BBC} &= ? \\ AB \quad y(x)EJ &= ? \\ BC \quad y(x)EJ &= ? \\ CD \quad y(x)EJ &= ? \end{aligned}$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

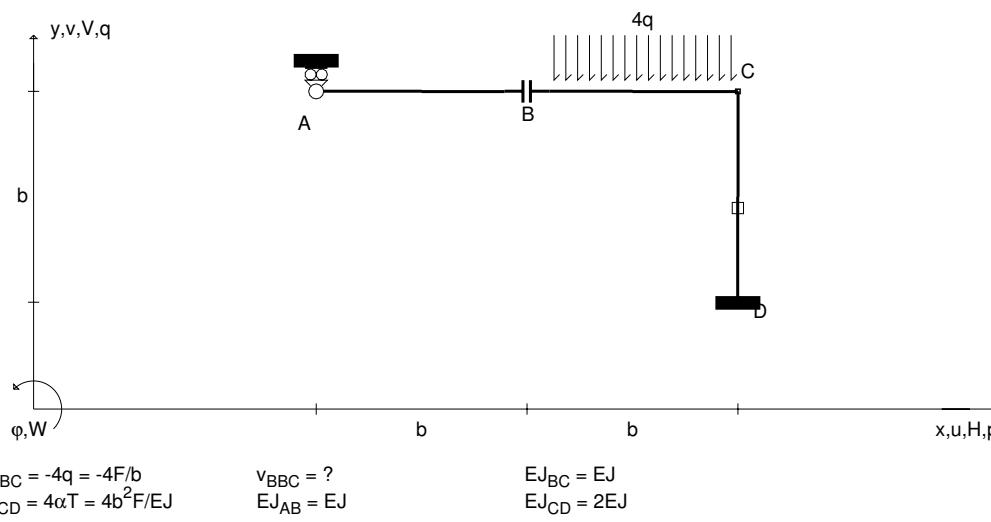
Allungamento termico assegnato ε su asta CD.

Calcolare lo spostamento verticale del nodo B su asta BC

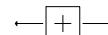
Riportare la soluzione su questo foglio.

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$$\begin{aligned} v_{BBC} &= ? \\ AB \quad y(x)EJ &= ? \\ BC \quad y(x)EJ &= ? \\ CD \quad y(x)EJ &= ? \end{aligned}$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

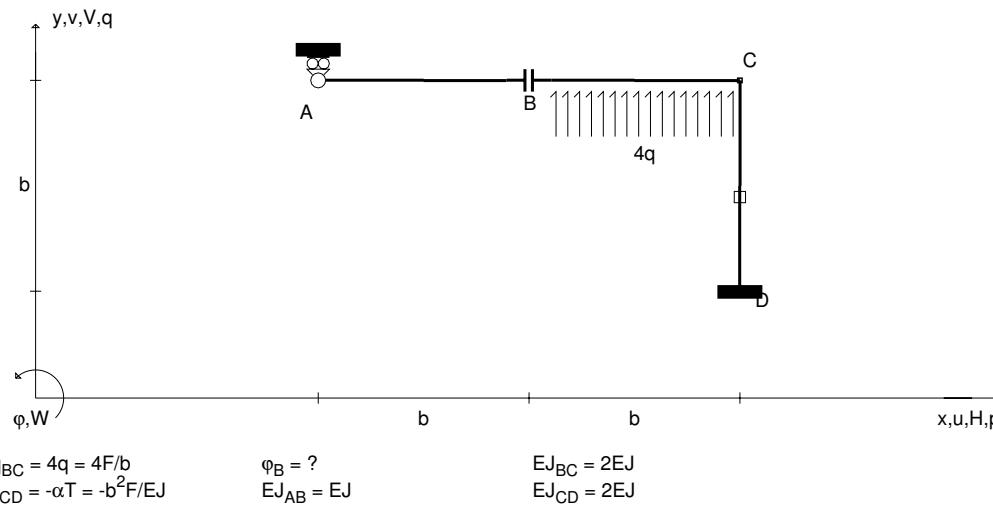
$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

Allungamento termico assegnato ε su asta CD.

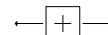
Calcolare lo spostamento verticale del nodo B su asta BC

Riportare la soluzione su questo foglio.

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$$\begin{aligned}\phi_B &= \\ AB \quad y(x)EJ &= \\ BC \quad y(x)EJ &= \\ CD \quad y(x)EJ &= \end{aligned}$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

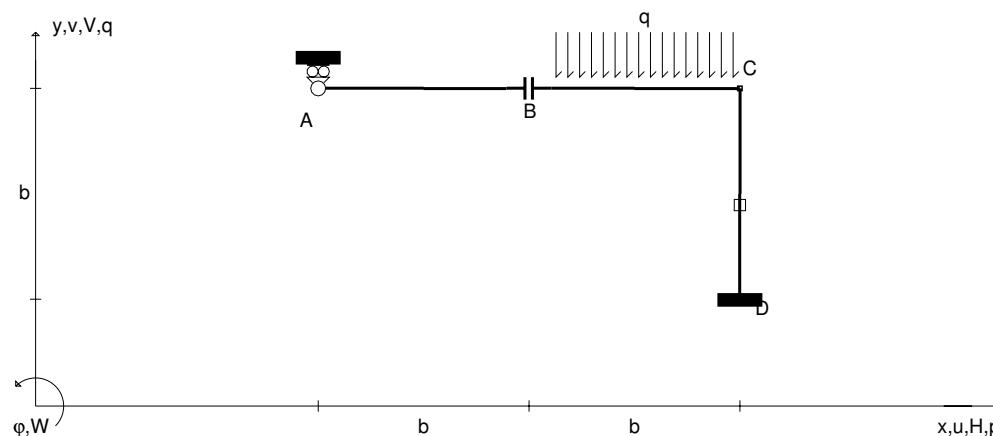
Allungamento termico assegnato ϵ su asta CD.

Calcolare la rotazione assoluta del nodo B

Riportare la soluzione su questo foglio.

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$$q_{BC} = -q = -F/b$$

$$\varepsilon_{CD} = \alpha T = b^2 F/EJ$$

$$v_{BBC} = ?$$

$$EJ_{AB} = 2EJ$$

$$EJ_{BC} = 2EJ$$

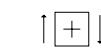
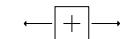
$$EJ_{CD} = 3EJ$$

$$v_{BBC} =$$

$$AB \quad y(x)EJ =$$

$$BC \quad y(x)EJ =$$

$$CD \quad y(x)EJ =$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

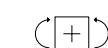
$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

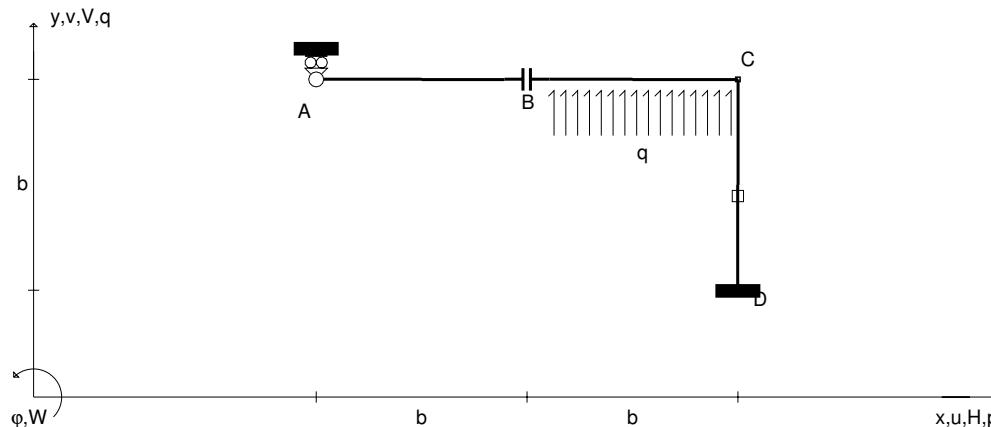
Allungamento termico assegnato ε su asta CD.

Calcolare lo spostamento verticale del nodo B su asta BC

Riportare la soluzione su questo foglio.

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$$q_{BC} = q = F/b$$

$$\varepsilon_{CD} = -2\alpha T = -2b^2 F/EJ$$

$$v_{BBC} = ?$$

$$EJ_{BC} = 3EJ$$

• BBC –
AB $y(x)EJ =$
BC $y(x)EJ =$
CD $y(x)EJ =$

Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

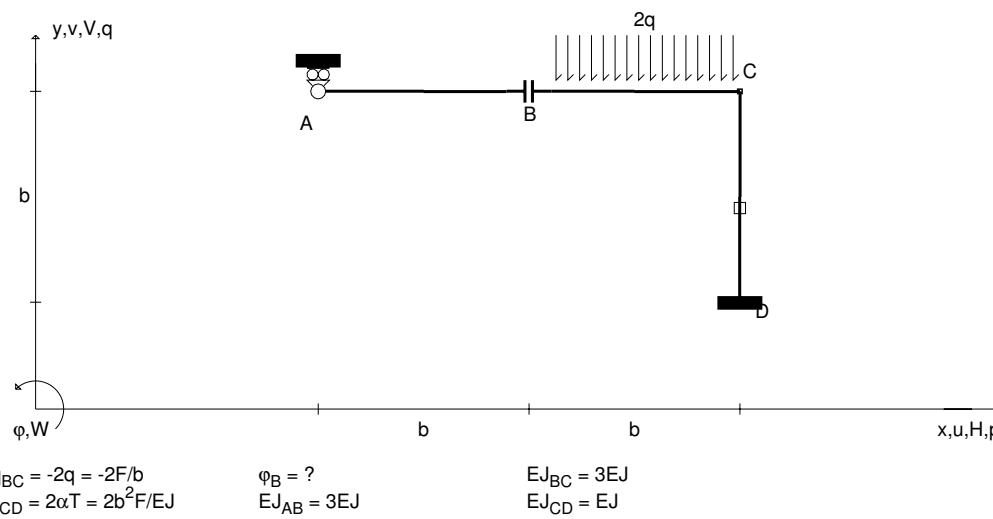
$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

Allungamento termico assegnato è su asta CD.

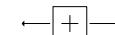
Calcolare lo spostamento verticale del nodo

Riportare la soluzione su questo foglio.

+



$$\begin{aligned}\phi_B &= ? \\ AB \quad y(x)EJ &= ? \\ BC \quad y(x)EJ &= ? \\ CD \quad y(x)EJ &= ?\end{aligned}$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

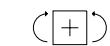
$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

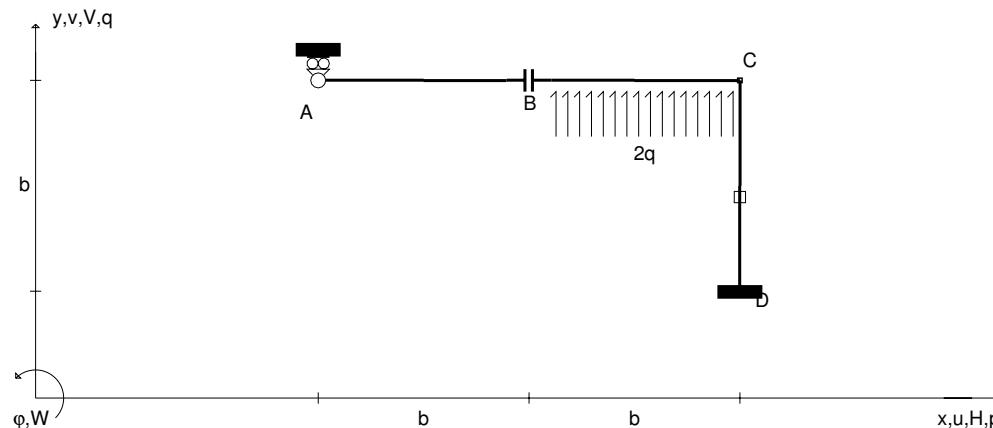
Allungamento termico assegnato ϵ su asta CD.

Calcolare la rotazione assoluta del nodo B

Riportare la soluzione su questo foglio.

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$$q_{BC} = 2q = 2F/b$$

$$\varepsilon_{CD} = -3\alpha T = -3b^2 F/EJ$$

$$v_{BBC} = ?$$

$$EJ_{BC} = EJ$$

$$EJ_{CD} = EJ$$

$v_{BBC} =$
AB $y(x)EJ =$
BC $y(x)EJ =$
CD $y(x)EJ =$

Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

Allungamento termico assegnato ϵ su asta CD.

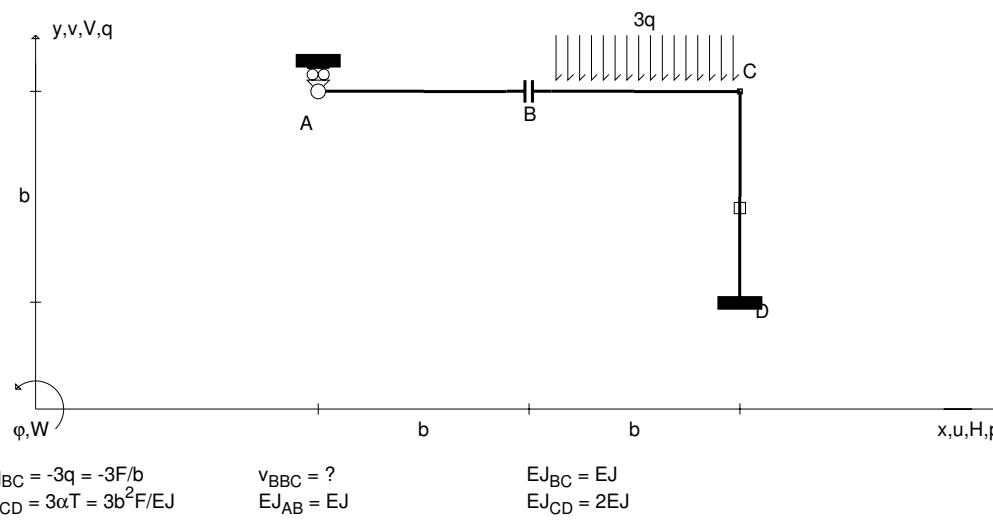
Calcolare lo spostamento verticale del nodo B s

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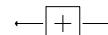
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$$\begin{aligned} v_{BBC} &= ? \\ AB \quad y(x)EJ &= \\ BC \quad y(x)EJ &= \\ CD \quad y(x)EJ &= \end{aligned}$$



Carichi e deformazioni date hanno verso efficace in disegno.

Calcolare reazioni vincolari della struttura e delle aste.

Tracciare i diagrammi delle azioni interne nelle aste.

Esprimere la linea elastica delle aste.

$J_{YZ} - x_{YZ} - \vartheta_{YZ}$ riferimento locale asta YZ con origine in Y

Allungamento termico assegnato ϵ su asta CD.

Calcolare lo spostamento verticale del nodo B su asta BC

Riportare la soluzione su questo foglio.

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REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = -2F \quad W_D = Fb$$

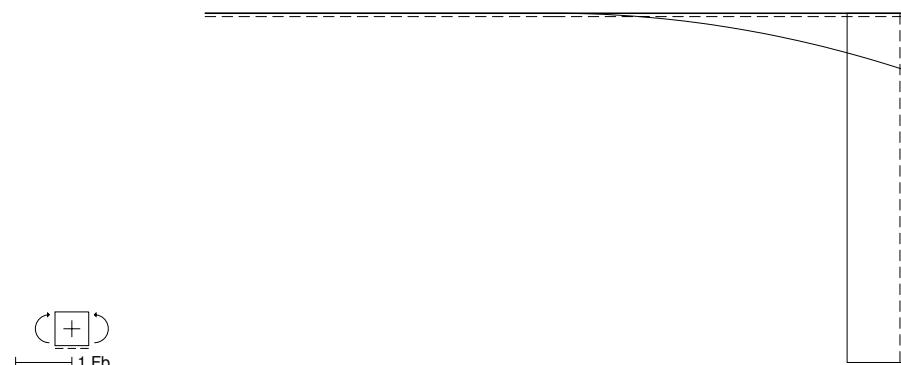
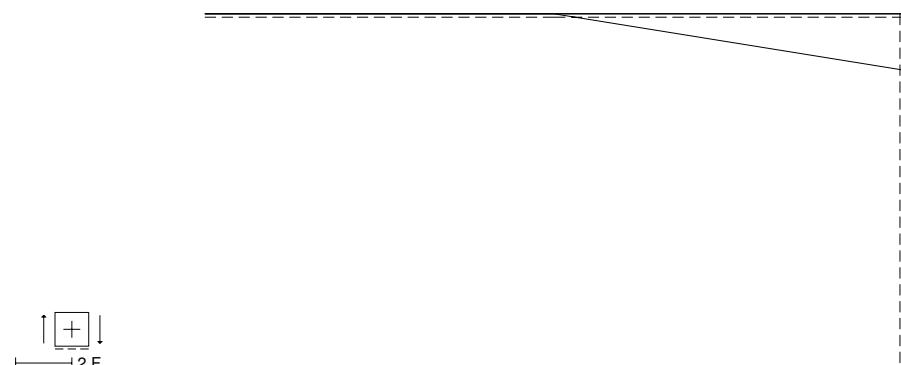
$$\begin{array}{lll} H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\ V_{AB} = 0 & V_{BC} = 0 & V_{CD} = 2F \\ W_{AB} = 0 & W_{BC} = 0 & W_{CD} = -Fb \\ H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\ V_{BA} = 0 & V_{CB} = -2F & V_{DC} = -2F \\ W_{BA} = 0 & W_{CB} = Fb & W_{DC} = Fb \end{array}$$

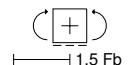
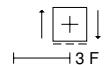
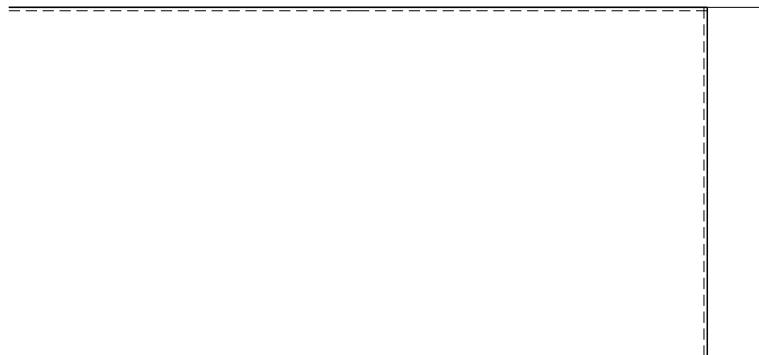
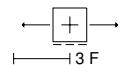
SPOSTAMENTI ASSOLUTI

$$v_B = -31/12(Fb^3/EJ)$$

DEFORMATA (coordinate locali)

$$\begin{array}{l} AB \quad y(x)EJ = -4/9xFb^2 \\ BC \quad y(x)EJ = -31/12Fb^3 - 4/9xFb^2 + 1/36x^4q \\ CD \quad y(x)EJ = 1/6Fb^3 - 1/3xFb^2 + 1/6x^2Fb \end{array}$$





REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = 3F \quad W_D = -3/2Fb$$

$$\begin{aligned} H_{AB} &= 0 & H_{BC} &= 0 & H_{CD} &= 0 \\ V_{AB} &= 0 & V_{BC} &= 0 & V_{CD} &= -3F \\ W_{AB} &= 0 & W_{BC} &= 0 & W_{CD} &= 3/2Fb \\ H_{BA} &= 0 & H_{CB} &= 0 & H_{DC} &= 0 \\ V_{BA} &= 0 & V_{CB} &= 3F & V_{DC} &= 3F \\ W_{BA} &= 0 & W_{CB} &= -3/2Fb & W_{DC} &= -3/2Fb \end{aligned}$$

SPOSTAMENTI ASSOLUTI

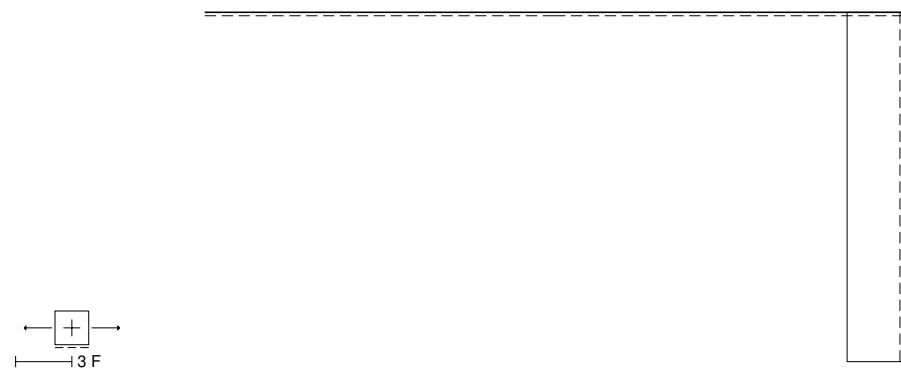
$$\phi_B = 5/3(Fb^2/EJ)$$

DEFORMATA (coordinate locali)

$$AB \quad y(x)EJ = 5/3xFb^2$$

$$BC \quad y(x)EJ = 11/8Fb^3 + 5/3xFb^2 - 1/24x^4 q$$

$$CD \quad y(x)EJ = -3/4Fb^3 + 3/2xFb^2 - 3/4x^2 Fb$$



REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = -3F \quad W_D = 3/2Fb$$

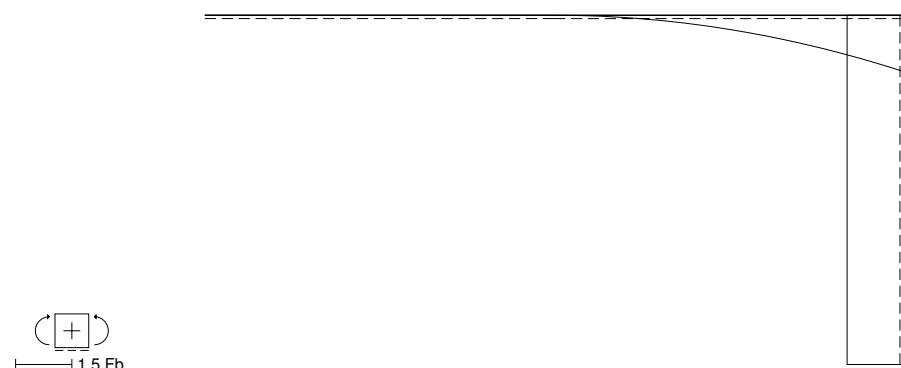
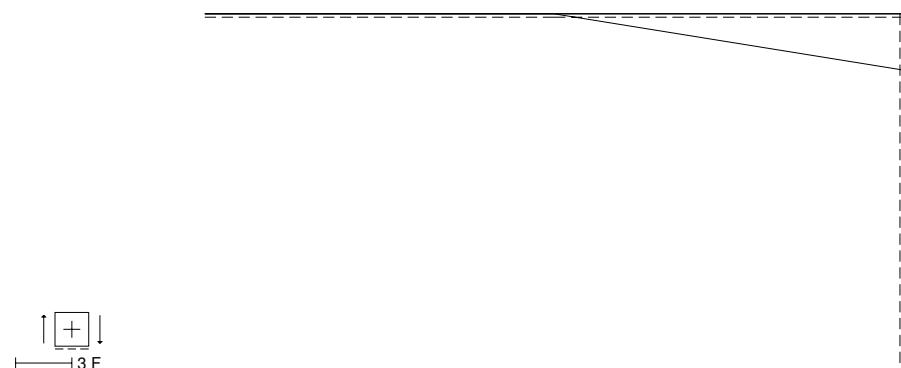
$$\begin{array}{lll} H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\ V_{AB} = 0 & V_{BC} = 0 & V_{CD} = 3F \\ W_{AB} = 0 & W_{BC} = 0 & W_{CD} = -3/2Fb \\ H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\ V_{BA} = 0 & V_{CB} = -3F & V_{DC} = -3F \\ W_{BA} = 0 & W_{CB} = 3/2Fb & W_{DC} = 3/2Fb \end{array}$$

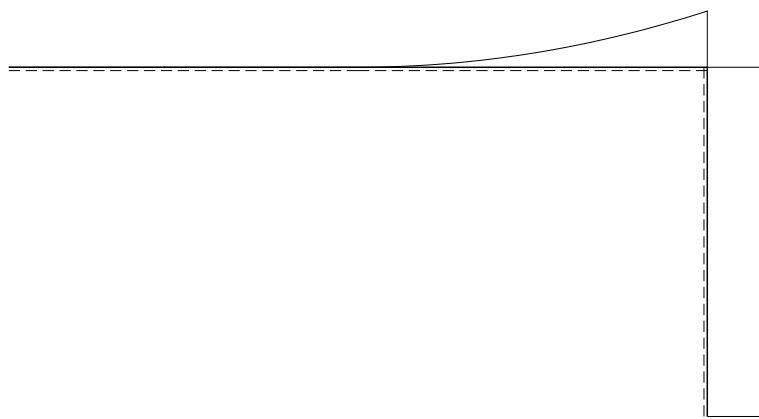
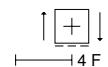
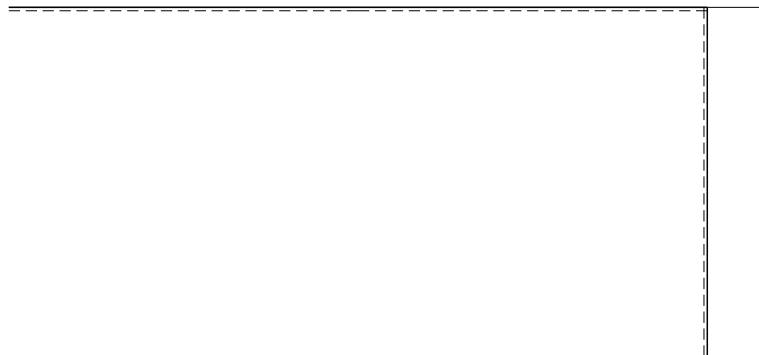
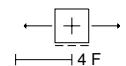
SPOSTAMENTI ASSOLUTI

$$v_B = -17/8(Fb^3/EJ)$$

DEFORMATA (coordinate locali)

$$\begin{array}{l} AB \quad y(x)EJ = -2xFb^2 \\ BC \quad y(x)EJ = -17/8Fb^3 - 2xFb^2 + 1/8x^4q \\ CD \quad y(x)EJ = 3/4Fb^3 - 3/2xFb^2 + 3/4x^2Fb \end{array}$$





REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = 4F \quad W_D = -2Fb$$

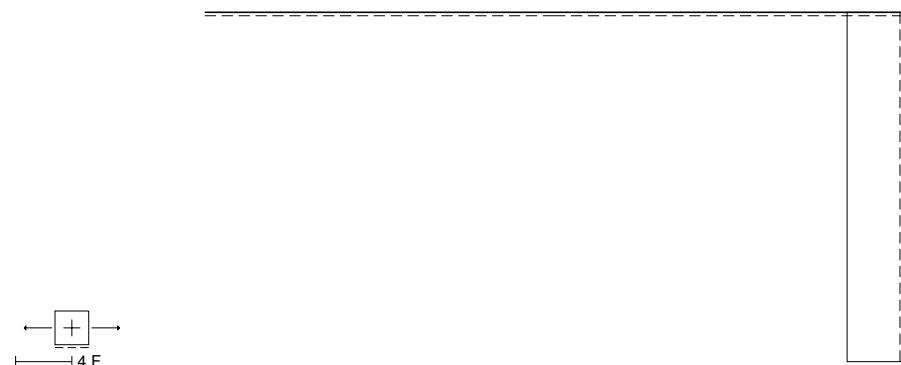
$$\begin{array}{lll} H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\ V_{AB} = 0 & V_{BC} = 0 & V_{CD} = -4F \\ W_{AB} = 0 & W_{BC} = 0 & W_{CD} = 2Fb \\ H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\ V_{BA} = 0 & V_{CB} = 4F & V_{DC} = 4F \\ W_{BA} = 0 & W_{CB} = -2Fb & W_{DC} = -2Fb \end{array}$$

SPOSTAMENTI ASSOLUTI

$$v_B = 5/2(Fb^3/EJ)$$

DEFORMATA (coordinate locali)

$$\begin{array}{l} AB \ y(x)EJ = 5/3xFb^2 \\ BC \ y(x)EJ = 5/2Fb^3 + 5/3xFb^2 - 1/6x^4q \\ CD \ y(x)EJ = -1/2Fb^3 + xFb^2 - 1/2x^2Fb \end{array}$$



REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = -4F \quad W_D = 2Fb$$

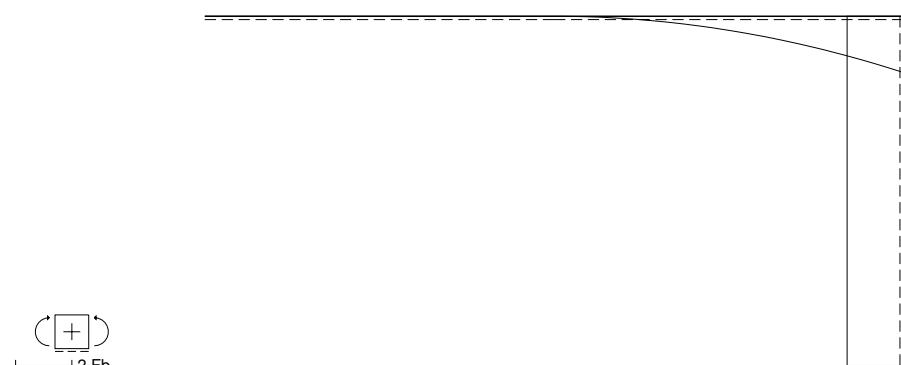
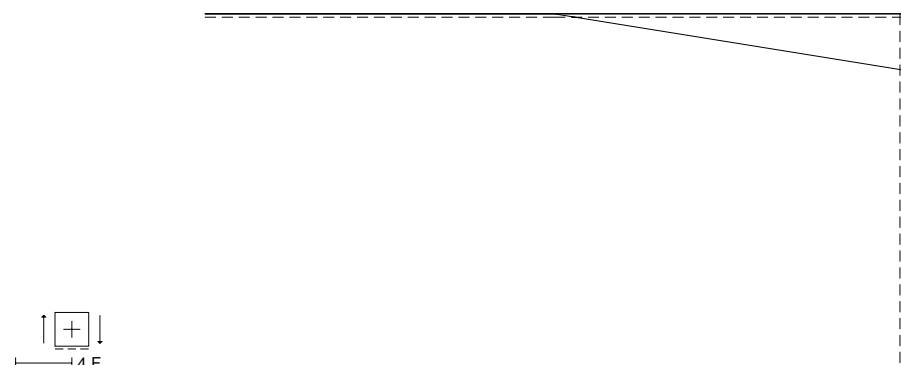
$$\begin{array}{lll} H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\ V_{AB} = 0 & V_{BC} = 0 & V_{CD} = 4F \\ W_{AB} = 0 & W_{BC} = 0 & W_{CD} = -2Fb \\ H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\ V_{BA} = 0 & V_{CB} = -4F & V_{DC} = -4F \\ W_{BA} = 0 & W_{CB} = 2Fb & W_{DC} = 2Fb \end{array}$$

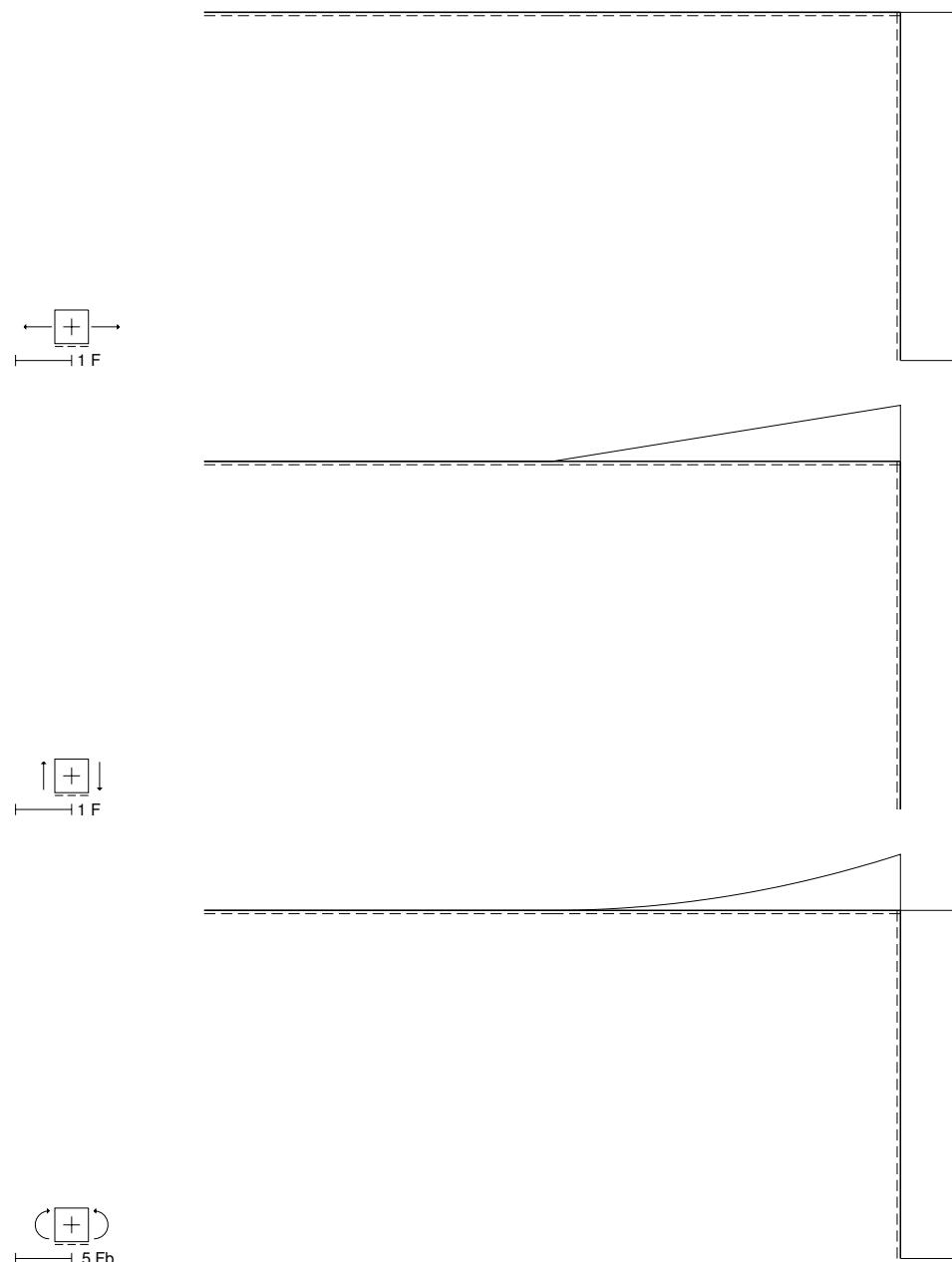
SPOSTAMENTI ASSOLUTI

$$\varphi_B = -4/3(Fb^2/EJ)$$

DEFORMATA (coordinate locali)

$$\begin{array}{l} AB \ y(x)EJ = -4/3x Fb^2 \\ BC \ y(x)EJ = 1/4 Fb^3 - 4/3x Fb^2 + 1/12x^4 q \\ CD \ y(x)EJ = 1/2 Fb^3 - x Fb^2 + 1/2x^2 Fb \end{array}$$





REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = F \quad W_D = -1/2Fb$$

$$\begin{aligned}
 H_{AB} &= 0 & H_{BC} &= 0 & H_{CD} &= 0 \\
 V_{AB} &= 0 & V_{BC} &= 0 & V_{CD} &= -F \\
 W_{AB} &= 0 & W_{BC} &= 0 & W_{CD} &= 1/2Fb \\
 H_{BA} &= 0 & H_{CB} &= 0 & H_{DC} &= 0 \\
 V_{BA} &= 0 & V_{CB} &= F & V_{DC} &= F \\
 W_{BA} &= 0 & W_{CB} &= -1/2Fb & W_{DC} &= -1/2Fb
 \end{aligned}$$

SPOSTAMENTI ASSOLUTI

$$v_B = 37/48(Fb^3/EJ)$$

DEFORMATA (coordinate locali)

$$\begin{aligned}
 AB \quad y(x)EJ &= 1/4x Fb^2 \\
 BC \quad y(x)EJ &= 37/48 Fb^3 + 1/4x Fb^2 - 1/48x^4 q \\
 CD \quad y(x)EJ &= -1/12 Fb^3 + 1/6x Fb^2 - 1/12x^2 Fb
 \end{aligned}$$

REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = -F \quad W_D = 1/2Fb$$

$$\begin{array}{lll} H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\ V_{AB} = 0 & V_{BC} = 0 & V_{CD} = F \\ W_{AB} = 0 & W_{BC} = 0 & W_{CD} = -1/2Fb \\ H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\ V_{BA} = 0 & V_{CB} = -F & V_{DC} = -F \\ W_{BA} = 0 & W_{CB} = 1/2Fb & W_{DC} = 1/2Fb \end{array}$$

SPOSTAMENTI ASSOLUTI

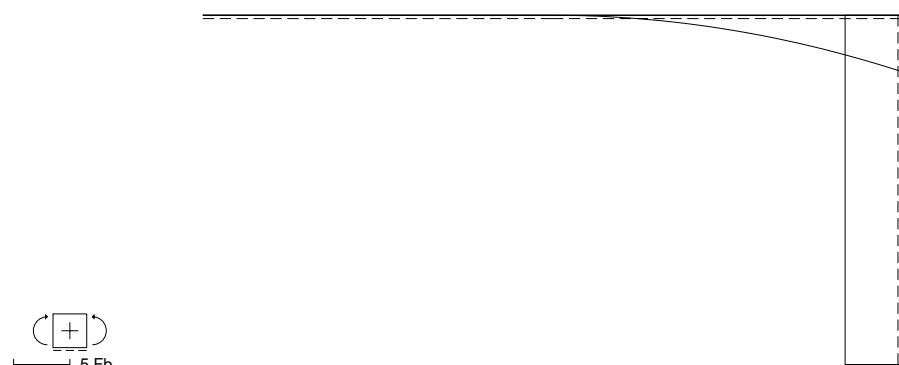
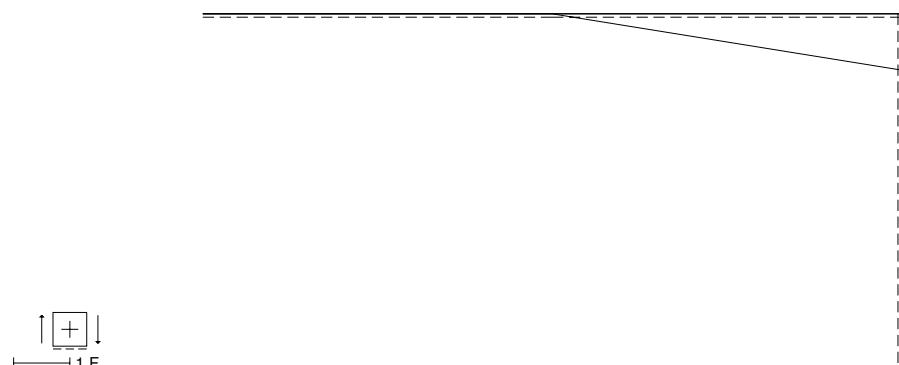
$$v_B = -43/24(Fb^3/EJ)$$

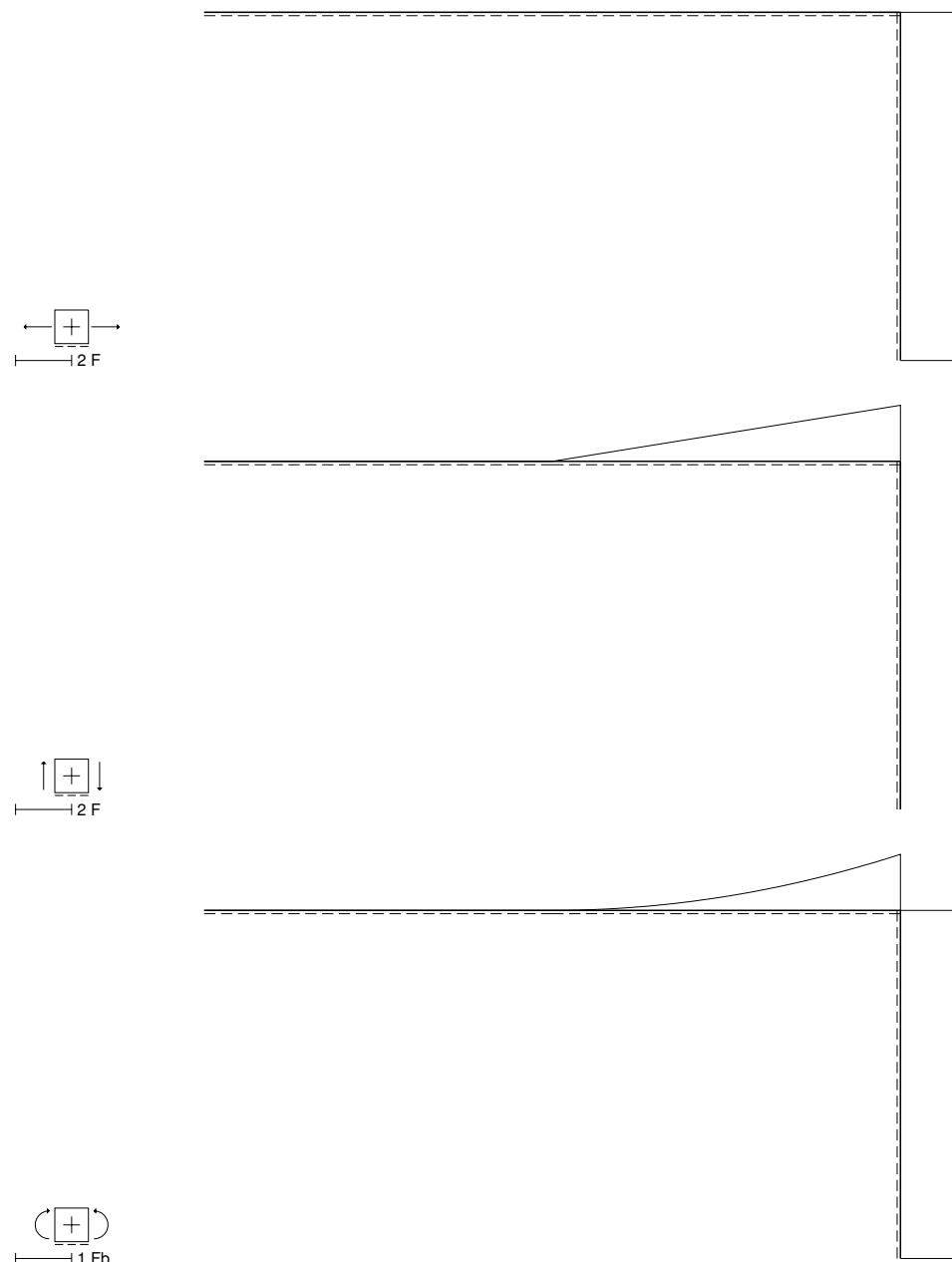
DEFORMATA (coordinate locali)

$$AB \quad y(x)EJ = -2/9xFb^2$$

$$BC \quad y(x)EJ = -43/24Fb^3 - 2/9xFb^2 + 1/72x^4 q$$

$$CD \quad y(x)EJ = 1/12Fb^3 - 1/6xFb^2 + 1/12x^2 Fb$$





REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = 2F \quad W_D = -Fb$$

$$\begin{array}{lll}
 H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\
 V_{AB} = 0 & V_{BC} = 0 & V_{CD} = -2F \\
 W_{AB} = 0 & W_{BC} = 0 & W_{CD} = Fb \\
 H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\
 V_{BA} = 0 & V_{CB} = 2F & V_{DC} = 2F \\
 W_{BA} = 0 & W_{CB} = -Fb & W_{DC} = -Fb
 \end{array}$$

SPOSTAMENTI ASSOLUTI

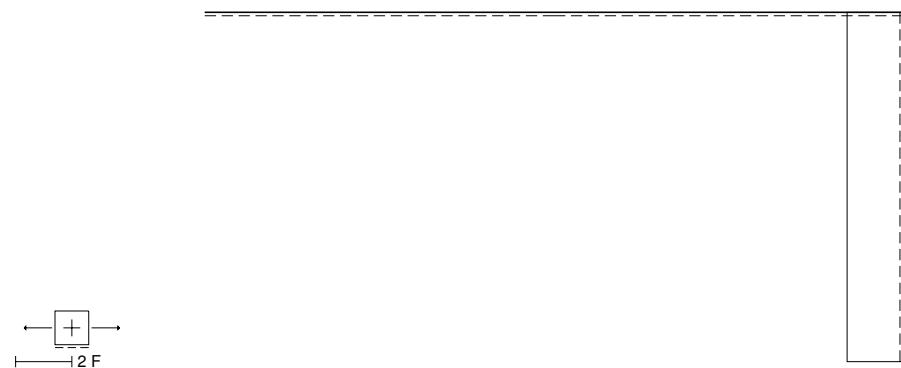
$$\phi_B = 10/9(Fb^2/EJ)$$

DEFORMATA (coordinate locali)

$$AB \quad y(x)EJ = 10/9xFb^2$$

$$BC \quad y(x)EJ = 11/12Fb^3 + 10/9xFb^2 - 1/36x^4 q$$

$$CD \quad y(x)EJ = -1/2Fb^3 + xFb^2 - 1/2x^2Fb$$



REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = -2F \quad W_D = Fb$$

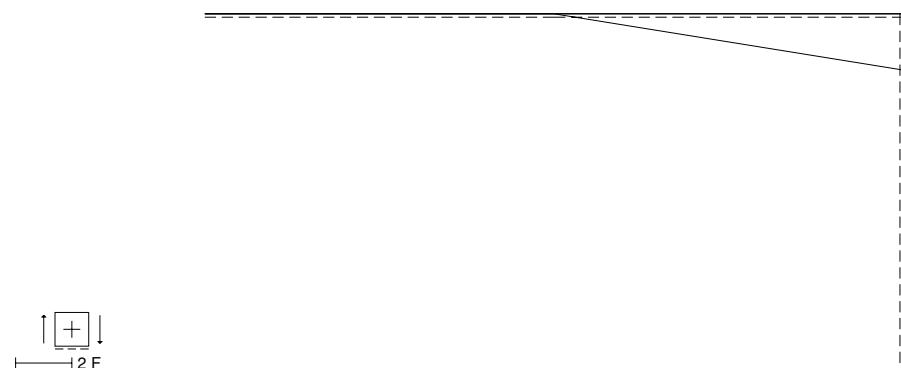
$$\begin{array}{lll} H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\ V_{AB} = 0 & V_{BC} = 0 & V_{CD} = 2F \\ W_{AB} = 0 & W_{BC} = 0 & W_{CD} = -Fb \\ H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\ V_{BA} = 0 & V_{CB} = -2F & V_{DC} = -2F \\ W_{BA} = 0 & W_{CB} = Fb & W_{DC} = Fb \end{array}$$

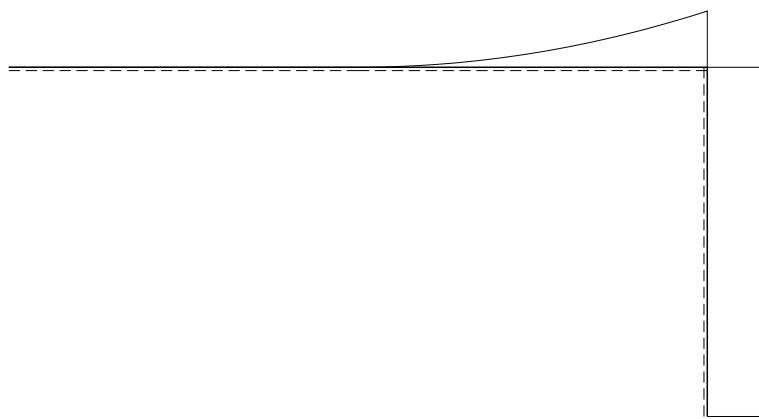
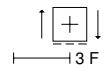
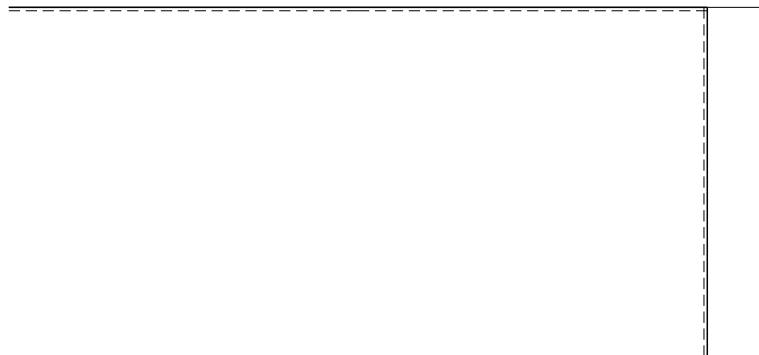
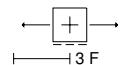
SPOSTAMENTI ASSOLUTI

$$v_B = -7/4(Fb^3/EJ)$$

DEFORMATA (coordinate locali)

$$\begin{array}{l} AB \quad y(x)EJ = -4/3xFb^2 \\ BC \quad y(x)EJ = -7/4Fb^3 - 4/3xFb^2 + 1/12x^4q \\ CD \quad y(x)EJ = 1/2Fb^3 - xFb^2 + 1/2x^2Fb \end{array}$$





REAZIONI

$$V_A = 0 \quad H_D = 0 \quad V_D = 3F \quad W_D = -3/2Fb$$

$$\begin{array}{lll} H_{AB} = 0 & H_{BC} = 0 & H_{CD} = 0 \\ V_{AB} = 0 & V_{BC} = 0 & V_{CD} = -3F \\ W_{AB} = 0 & W_{BC} = 0 & W_{CD} = 3/2Fb \\ H_{BA} = 0 & H_{CB} = 0 & H_{DC} = 0 \\ V_{BA} = 0 & V_{CB} = 3F & V_{DC} = 3F \\ W_{BA} = 0 & W_{CB} = -3/2Fb & W_{DC} = -3/2Fb \end{array}$$

SPOSTAMENTI ASSOLUTI

$$v_B = 15/8(Fb^3/EJ)$$

DEFORMATA (coordinate locali)

$$\begin{array}{l} AB \ y(x)EJ = 5/4xFb^2 \\ BC \ y(x)EJ = 15/8Fb^3 + 5/4xFb^2 - 1/8x^4q \\ CD \ y(x)EJ = -3/8Fb^3 + 3/4xFb^2 - 3/8x^2Fb \end{array}$$