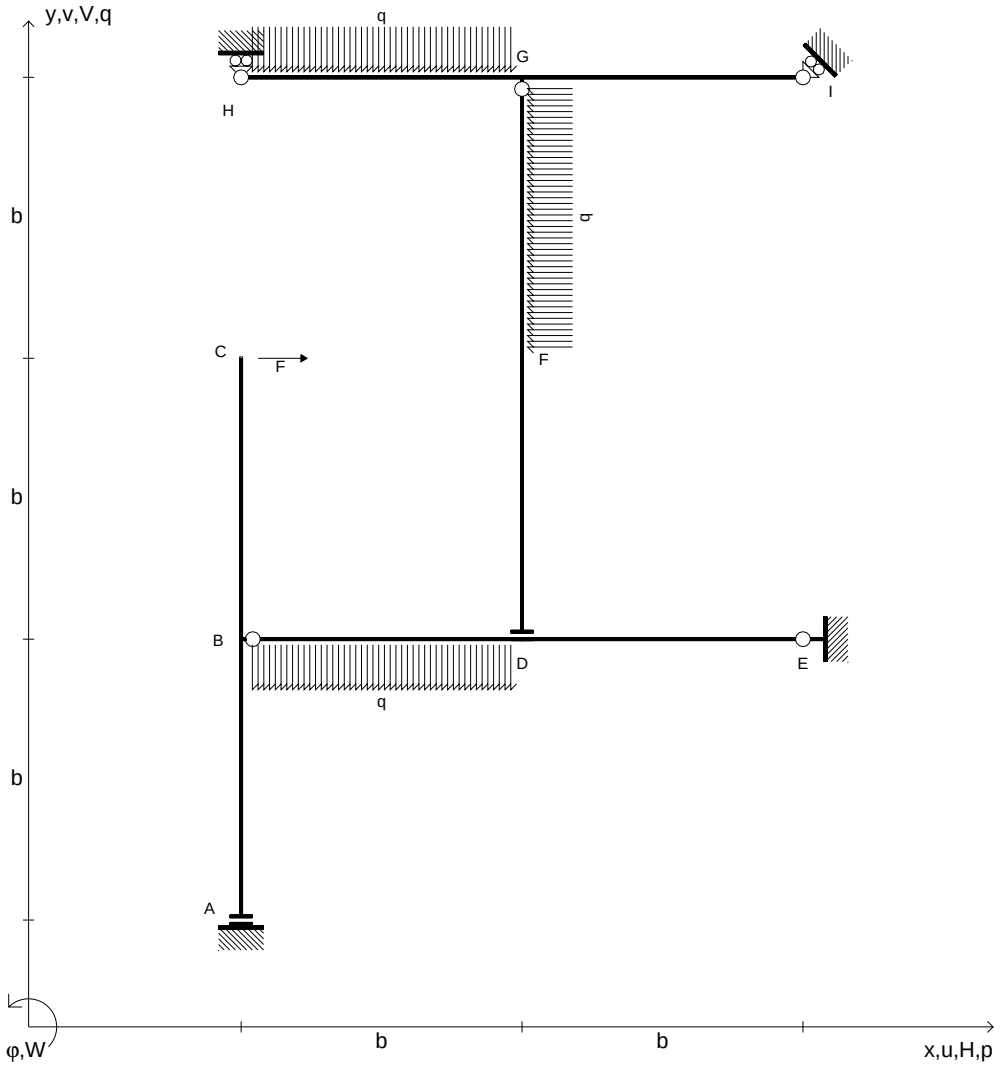

$H_C = F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

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

$p_{FG} = -q = -F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

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

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.001

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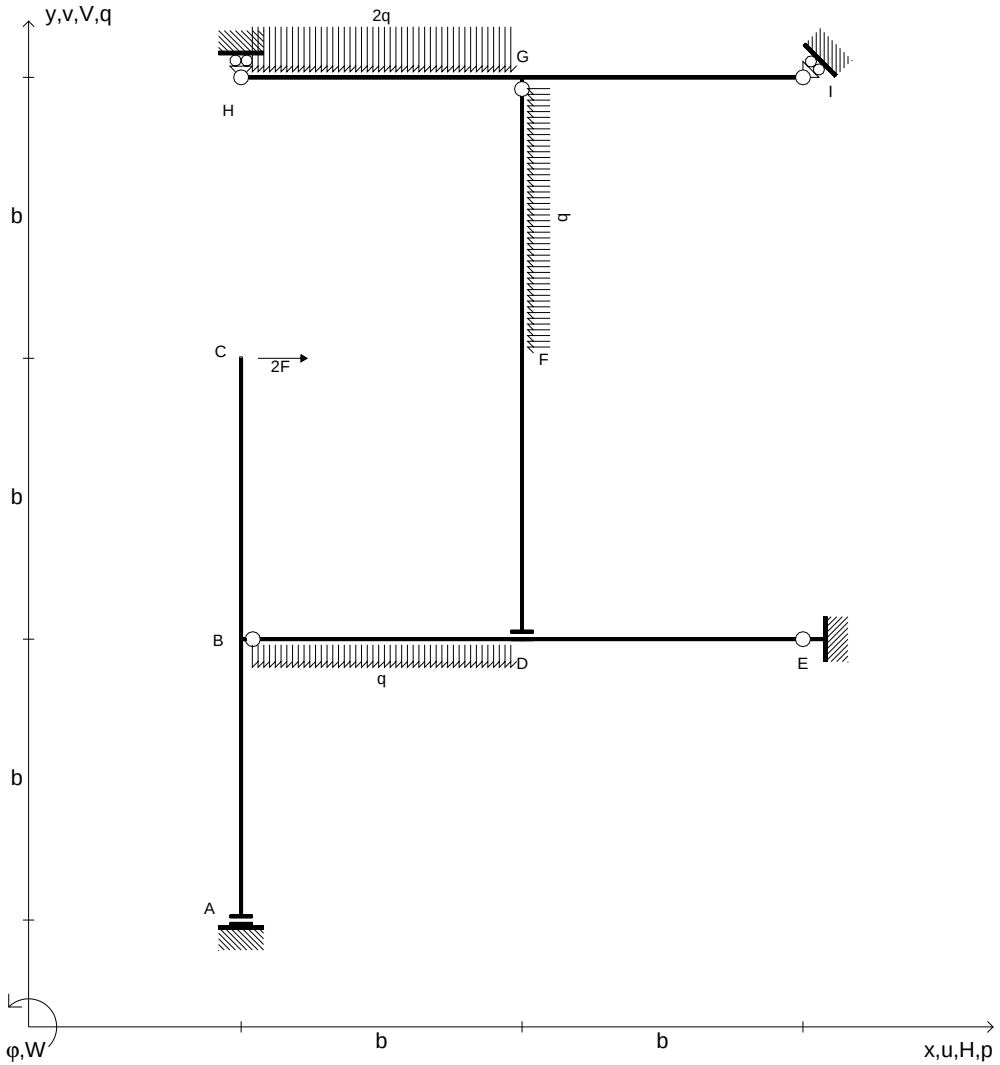
Struttura Isostatica.001

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = 2F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

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

$p_{FG} = -q = -F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

$q_{GH} = -2q = -2F/b$ $EJ_{DE} = EJ$ $EJ_{GI} = EJ$

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.002

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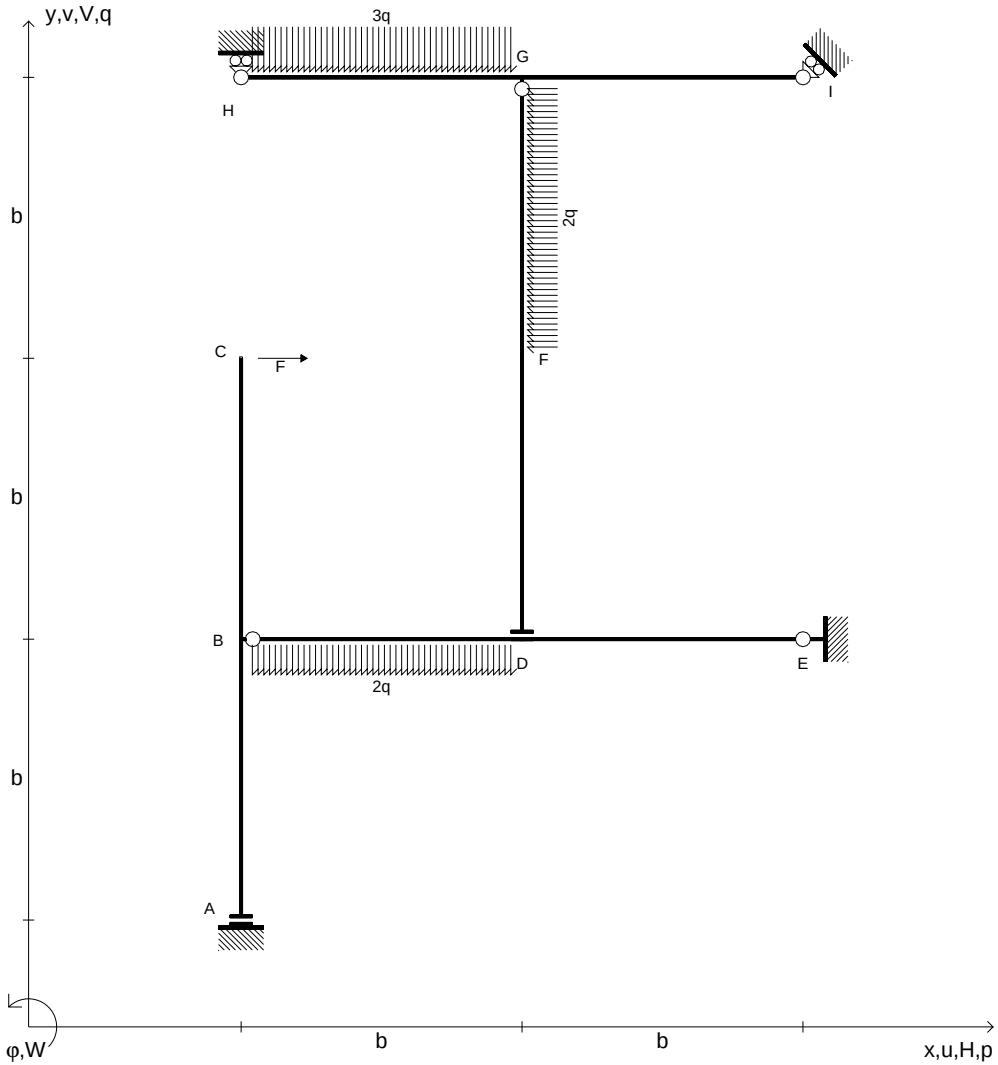
Struttura Isostatica.002

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

$q_{BD} = -2q = -2F/b$ $EJ_{BC} = EJ$ $EJ_{FG} = EJ$

$p_{FG} = -2q = -2F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

$q_{GH} = -3q = -3F/b$ $EJ_{DE} = EJ$ $EJ_{GI} = EJ$

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.003

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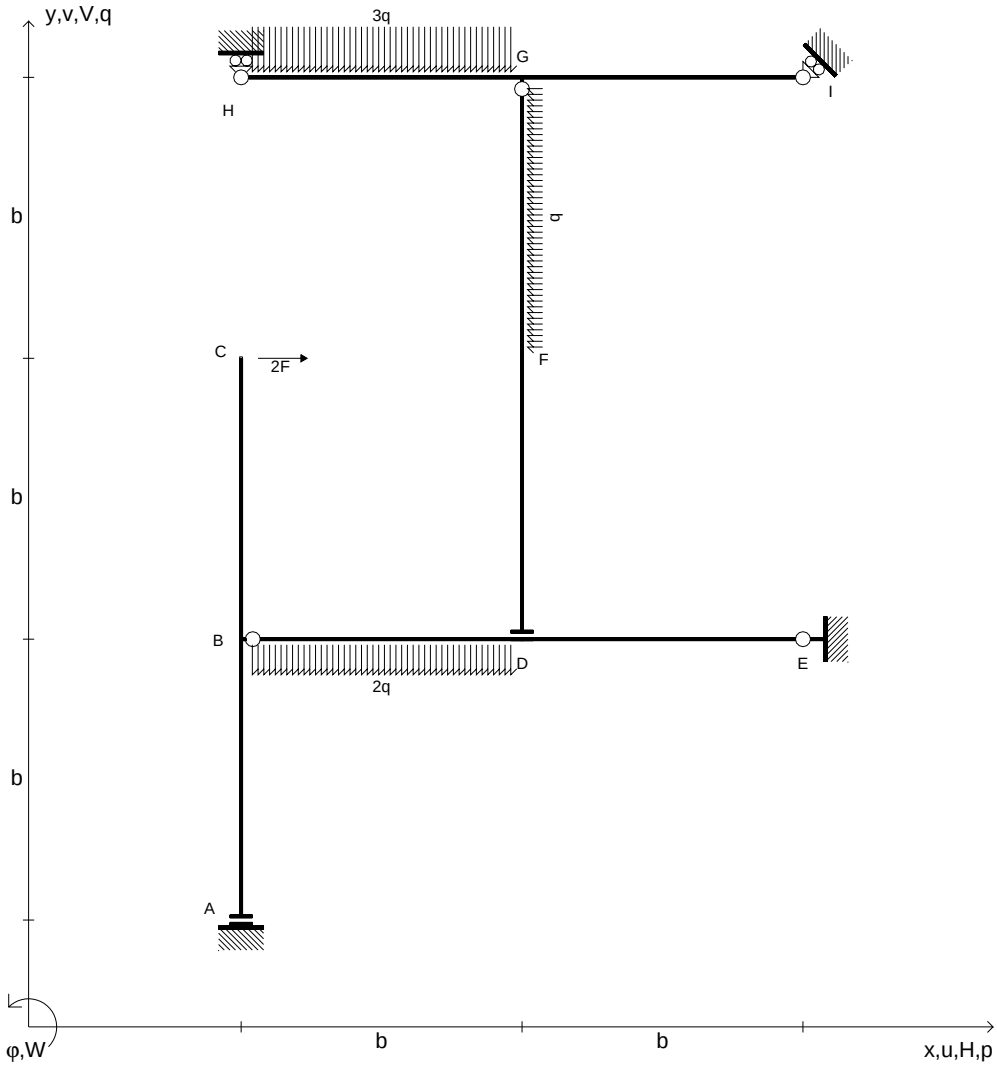
Struttura Isostatica.003

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = 2F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

$q_{BD} = -2q = -2F/b$ $EJ_{BC} = EJ$ $EJ_{FG} = EJ$

$p_{FG} = -q = -F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

$q_{GH} = -3q = -3F/b$ $EJ_{DE} = EJ$ $EJ_{GI} = EJ$

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.004

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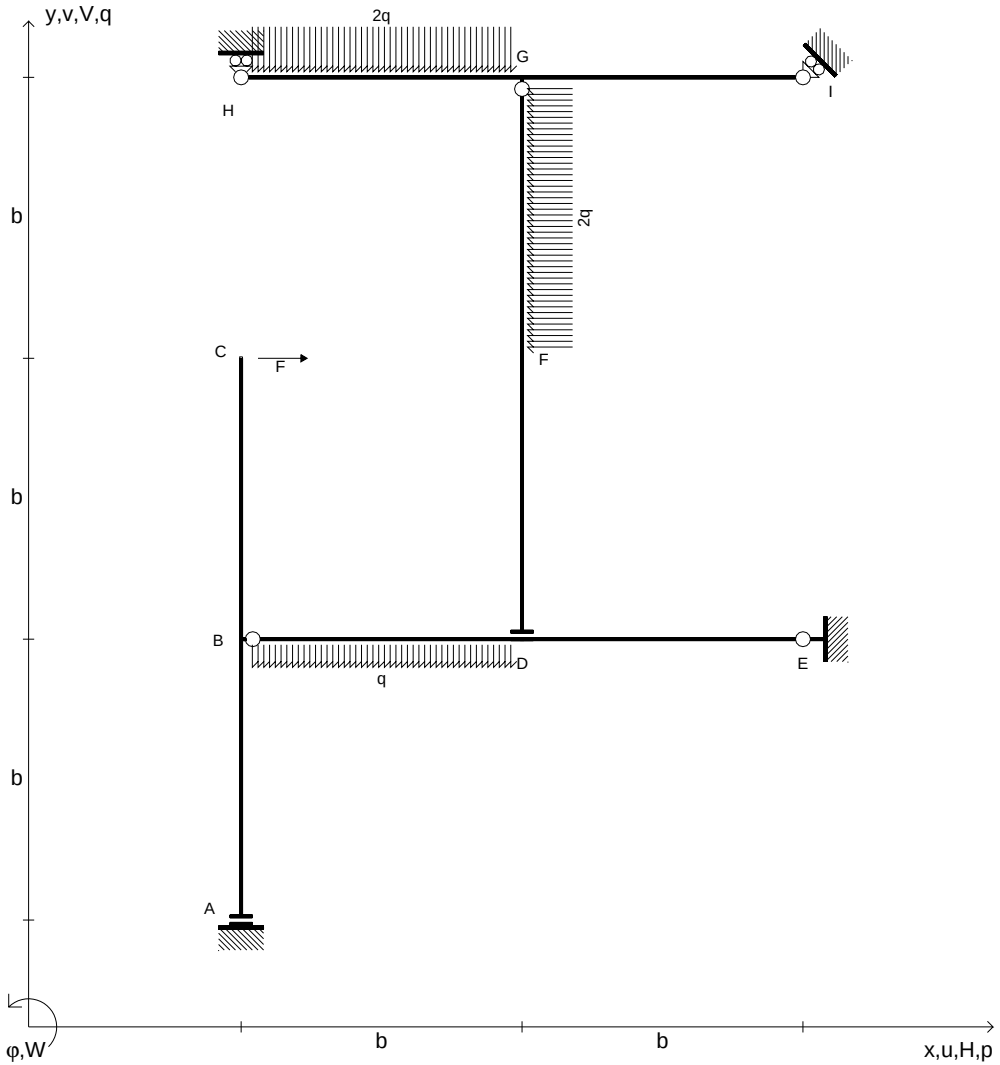
Struttura Isostatica.004

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

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

$p_{FG} = -2q = -2F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

$q_{GH} = -2q = -2F/b$ $EJ_{DE} = EJ$ $EJ_{GI} = EJ$

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

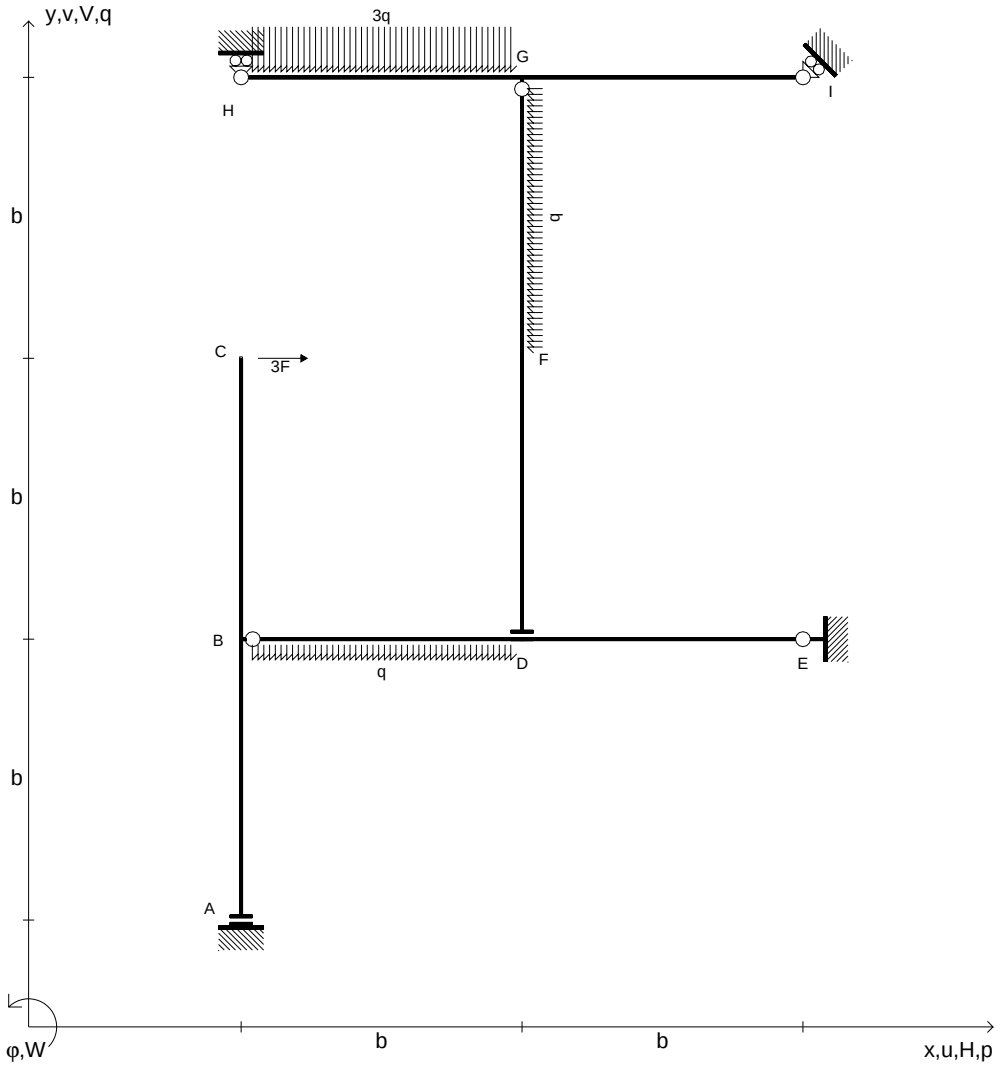
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.005

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13

Struttura Isostatica.005

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = 3F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

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

$p_{FG} = -q = -F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

$q_{GH} = -3q = -3F/b$ $EJ_{DE} = EJ$ $EJ_{GI} = EJ$

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.006

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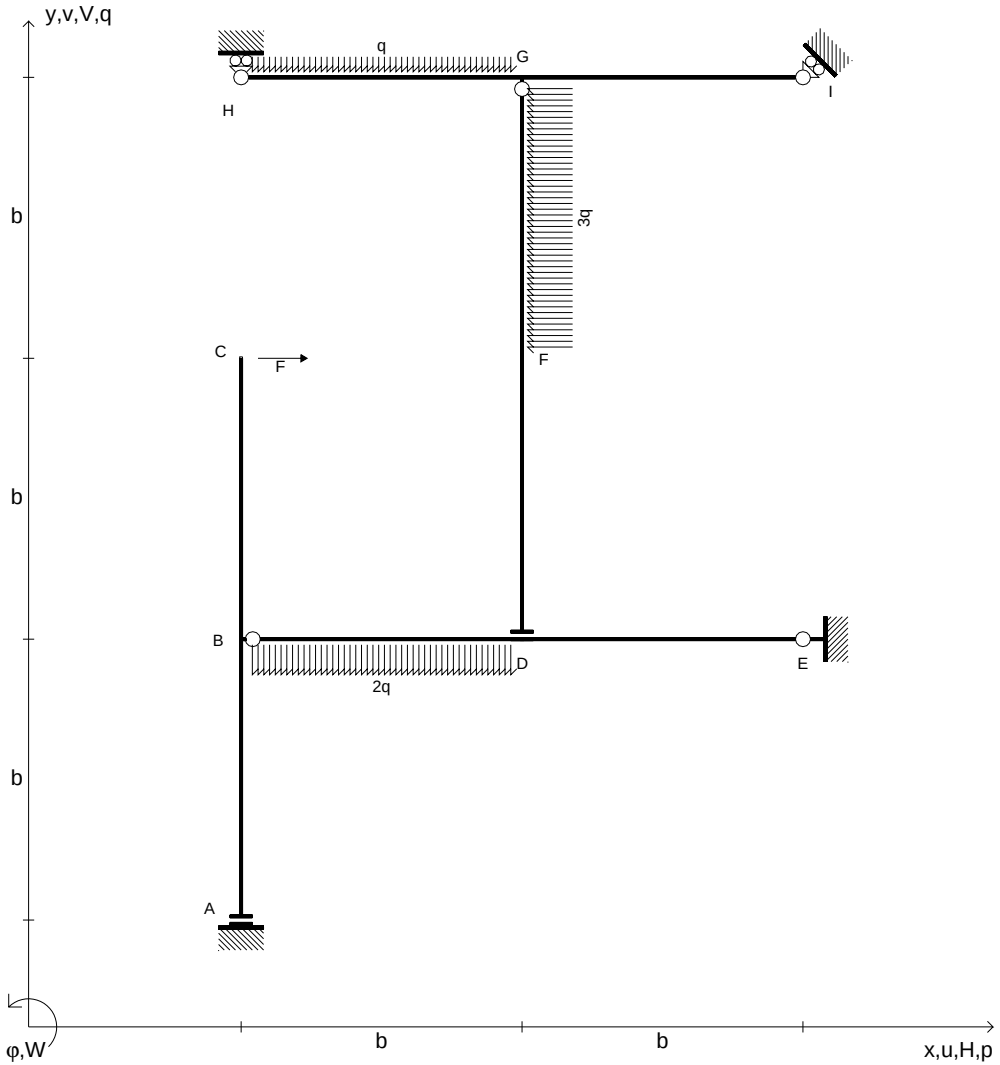
Struttura Isostatica.006

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

$q_{BD} = -2q = -2F/b$ $EJ_{BC} = EJ$ $EJ_{FG} = EJ$

$p_{FG} = -3q = -3F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

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

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.007

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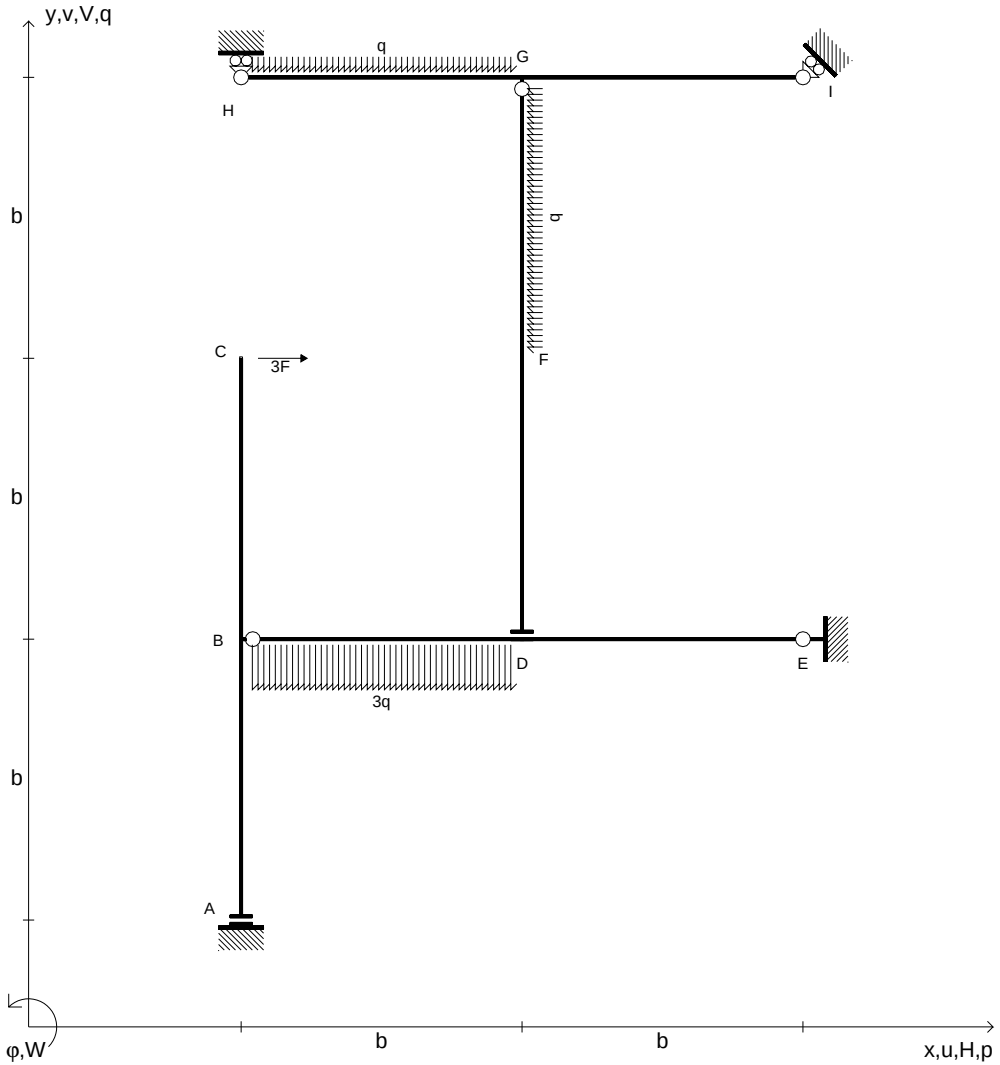
Struttura Isostatica.007

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = 3F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

$q_{BD} = -3q = -3F/b$ $EJ_{BC} = EJ$ $EJ_{FG} = EJ$

$p_{FG} = -q = -F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

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

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

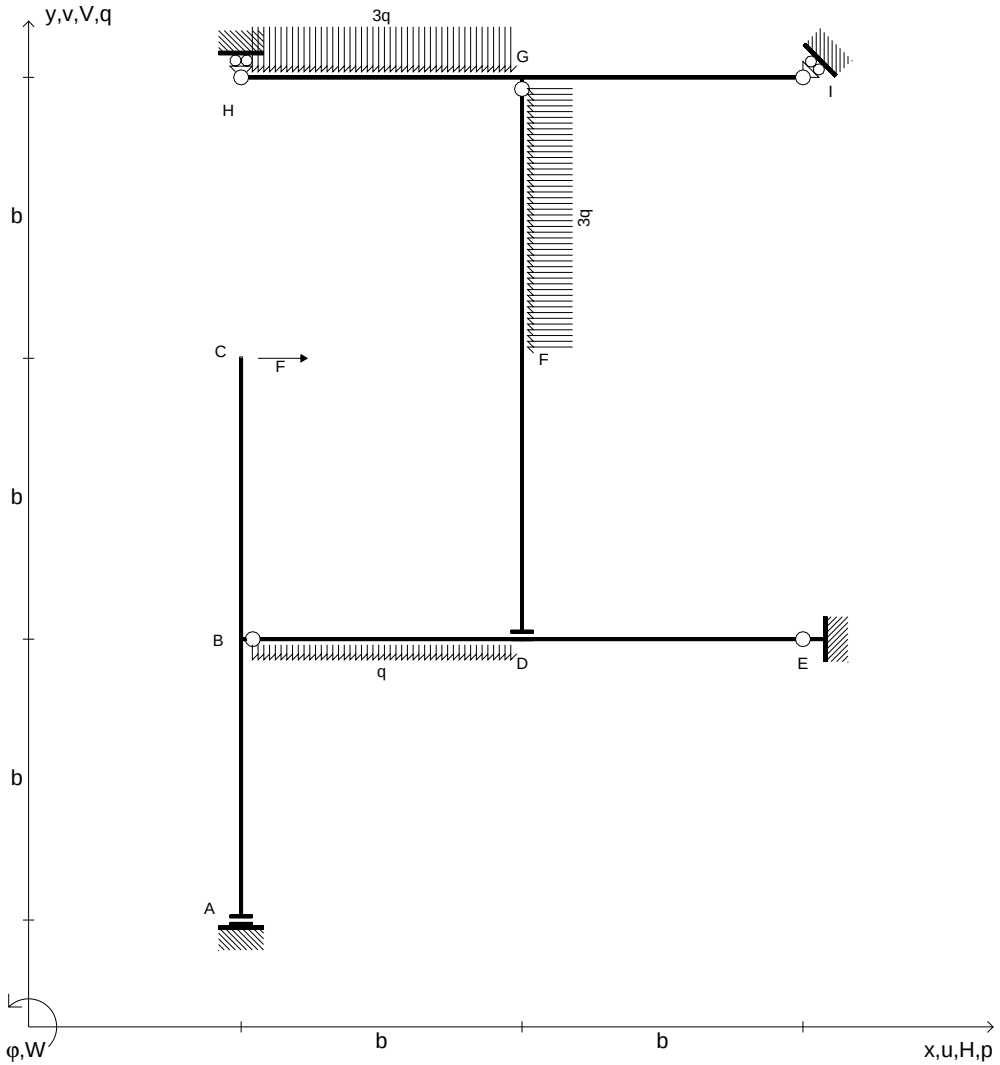
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.008

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13

Struttura Isostatica.008

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



$H_C = F$ $EJ_{AB} = EJ$ $EJ_{DF} = EJ$

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

$p_{FG} = -3q = -3F/b$ $EJ_{BD} = EJ$ $EJ_{GH} = EJ$

$q_{GH} = -3q = -3F/b$ $EJ_{DE} = EJ$ $EJ_{GI} = EJ$

1 1 Piano I

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.

J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.009

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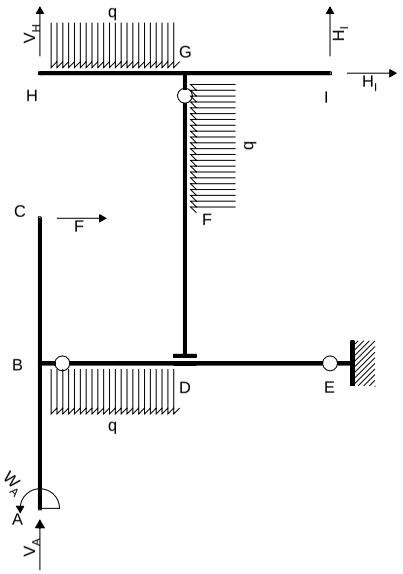
Struttura Isostatica.009

@ Adolfo Zavelani Rossi, Politecnico di Milano, vers.27.03.13 13.11.13



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = Fb - 9/2qb^2$

Rotazione intorno a B: aste BA BC

$W_A = Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = qb$

Rotazione intorno a G: aste GH GI

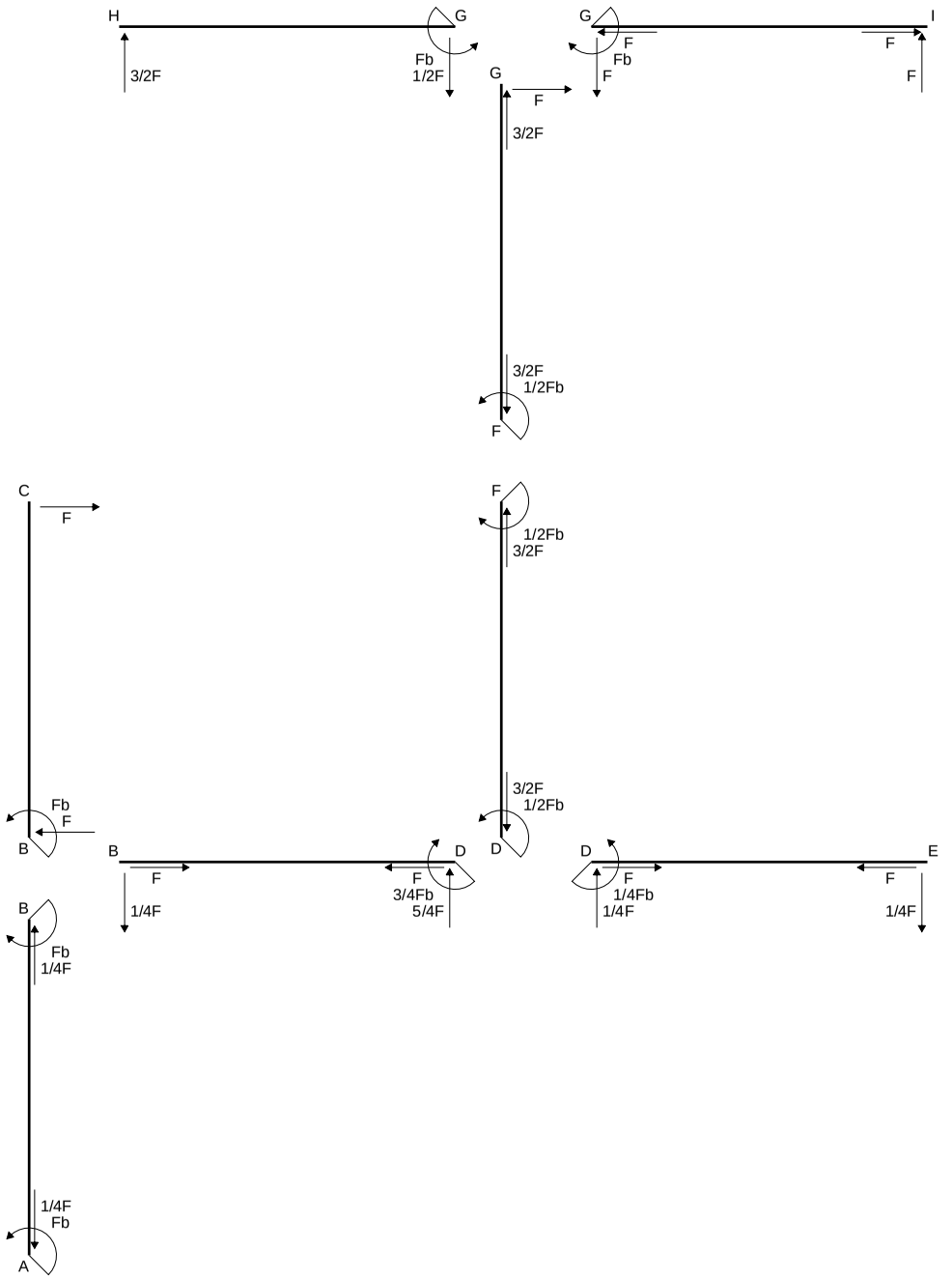
$-V_Hb + H_Ib = -1/2qb^2$

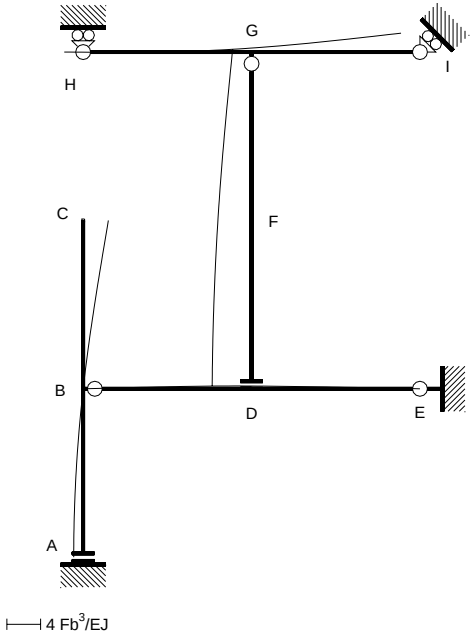
Matrice di equilibrio

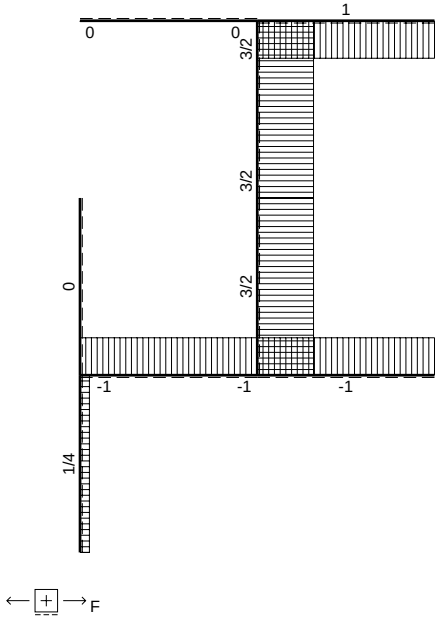
$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_Ab & W_A & V_Hb & H_Ib \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -9/2 \\ 1 & 0 \\ 0 & 1 \\ 0 & -1/2 \end{bmatrix}$$

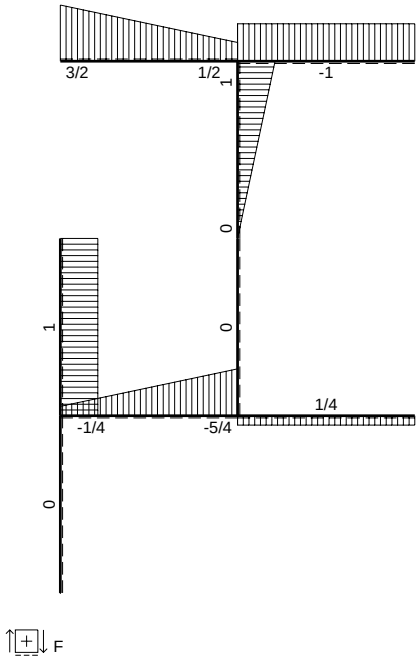
Soluzione del sistema

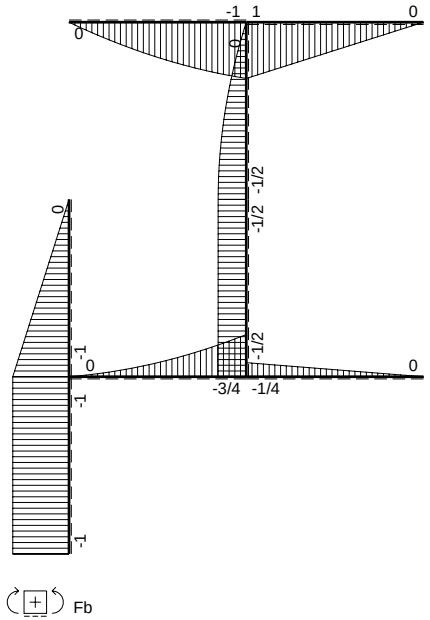
$$\begin{bmatrix} V_Ab \\ W_A \\ H_Ib \\ V_Hb \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -1/4 \\ 1 & 0 \\ 0 & 1 \\ 0 & 3/2 \end{bmatrix}$$




G
H
I
C
F
B
D
E
A
4 Fb³/EJ


1
0
0
3/2
3/2
3/2
0
-1
-1
-1
1/4
F


3/2
1/2
1
-1
0
0
1
1/4
-1/4
-5/4
0
F


-1
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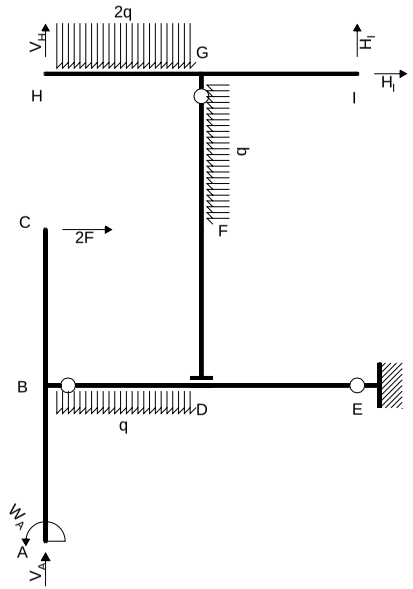
-1/2
-1/2
0
-1
-1
0
0
-3/4
-1/4
-1
-1
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = 2Fb - 6qb^2$

Rotazione intorno a B: aste BA BC

$W_A = 2Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = qb$

Rotazione intorno a G: aste GH GI

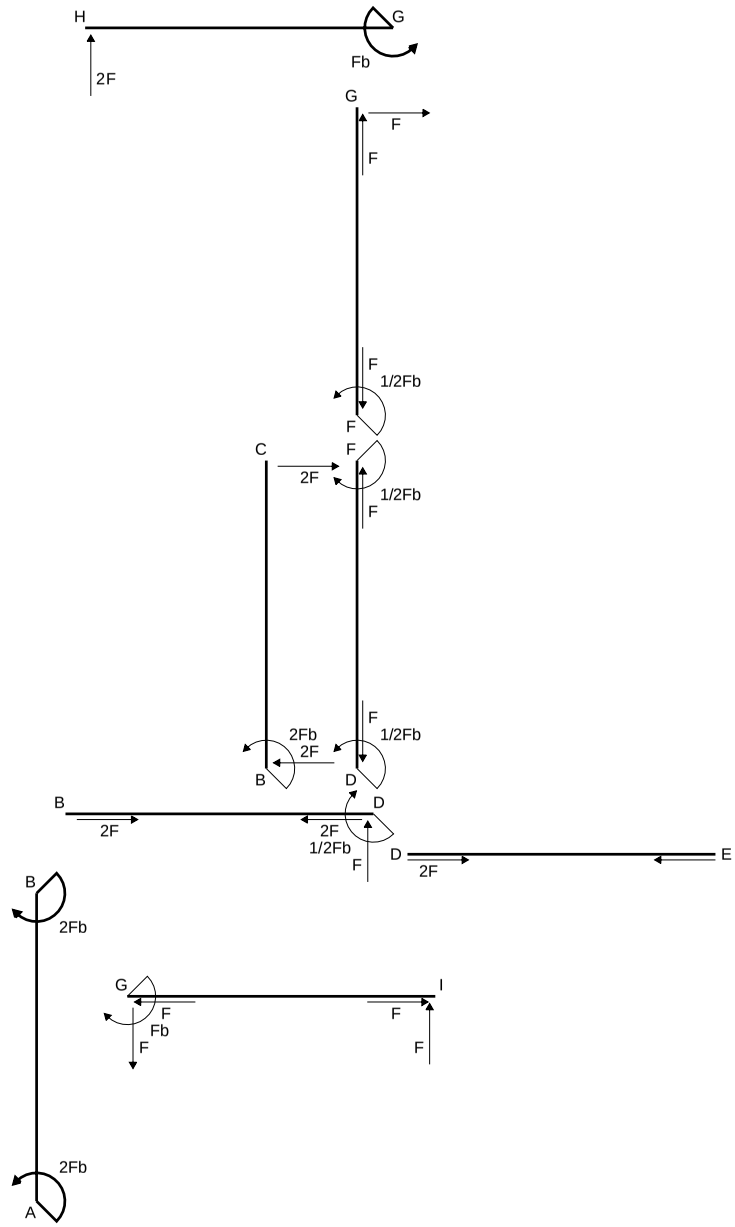
$-V_Hb + H_Ib = -qb^2$

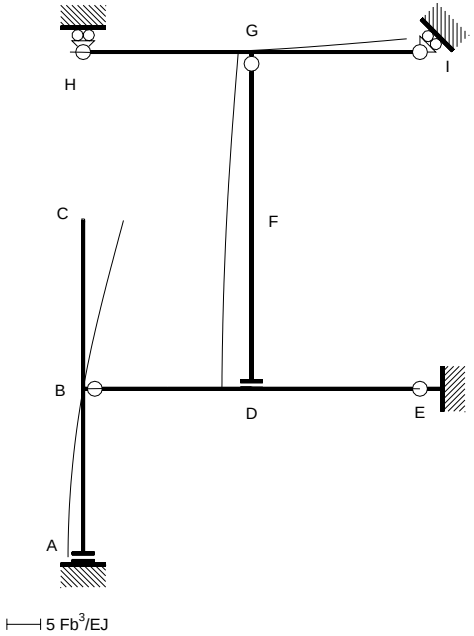
Matrice di equilibrio

$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_Ab & W_A & V_Hb & H_Ib \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 2 & -6 \\ 2 & 0 \\ 0 & 1 \\ 0 & -1 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_Ab \\ W_A \\ H_Ib \\ V_Hb \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & 0 \\ 2 & 0 \\ 0 & 1 \\ 0 & 2 \end{bmatrix}$$




G
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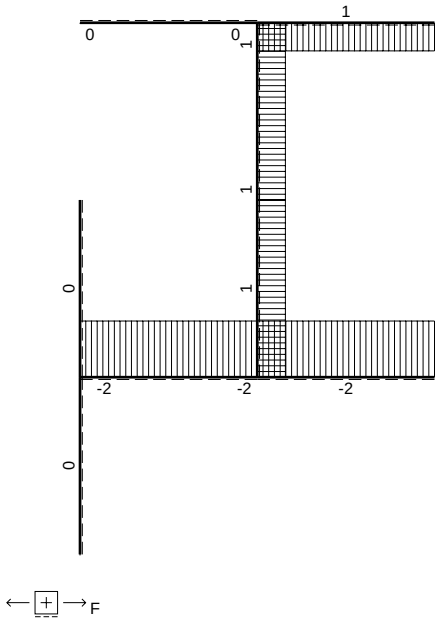
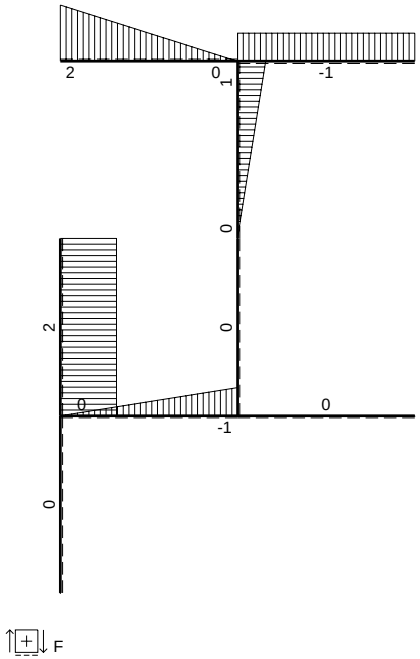
A
5 Fb³/EJ


1
0
0
1
1
1
0
0
-2
-2
-2
F


2
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-1
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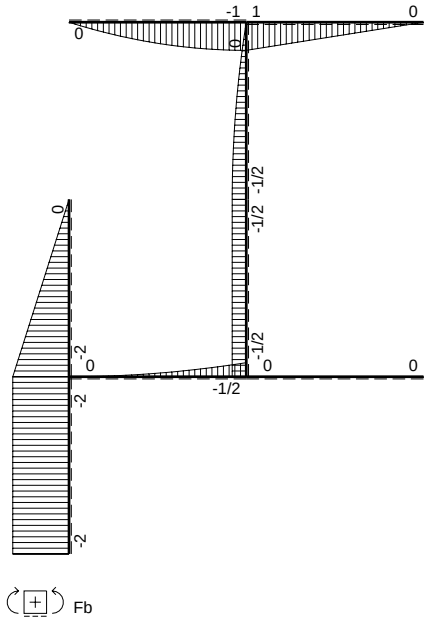
F


-1
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-1/2
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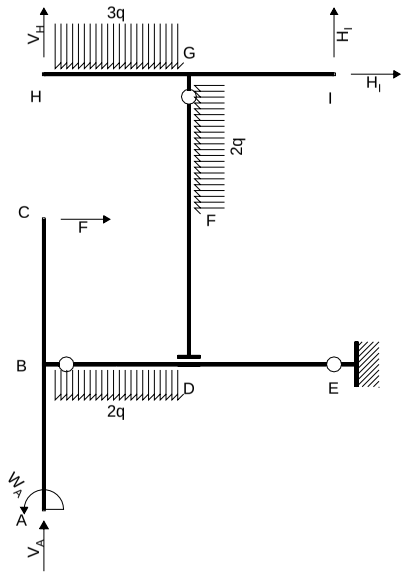
0
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = Fb - 21/2qb^2$

Rotazione intorno a B: aste BA BC

$W_A = Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = 2qb$

Rotazione intorno a G: aste GH GI

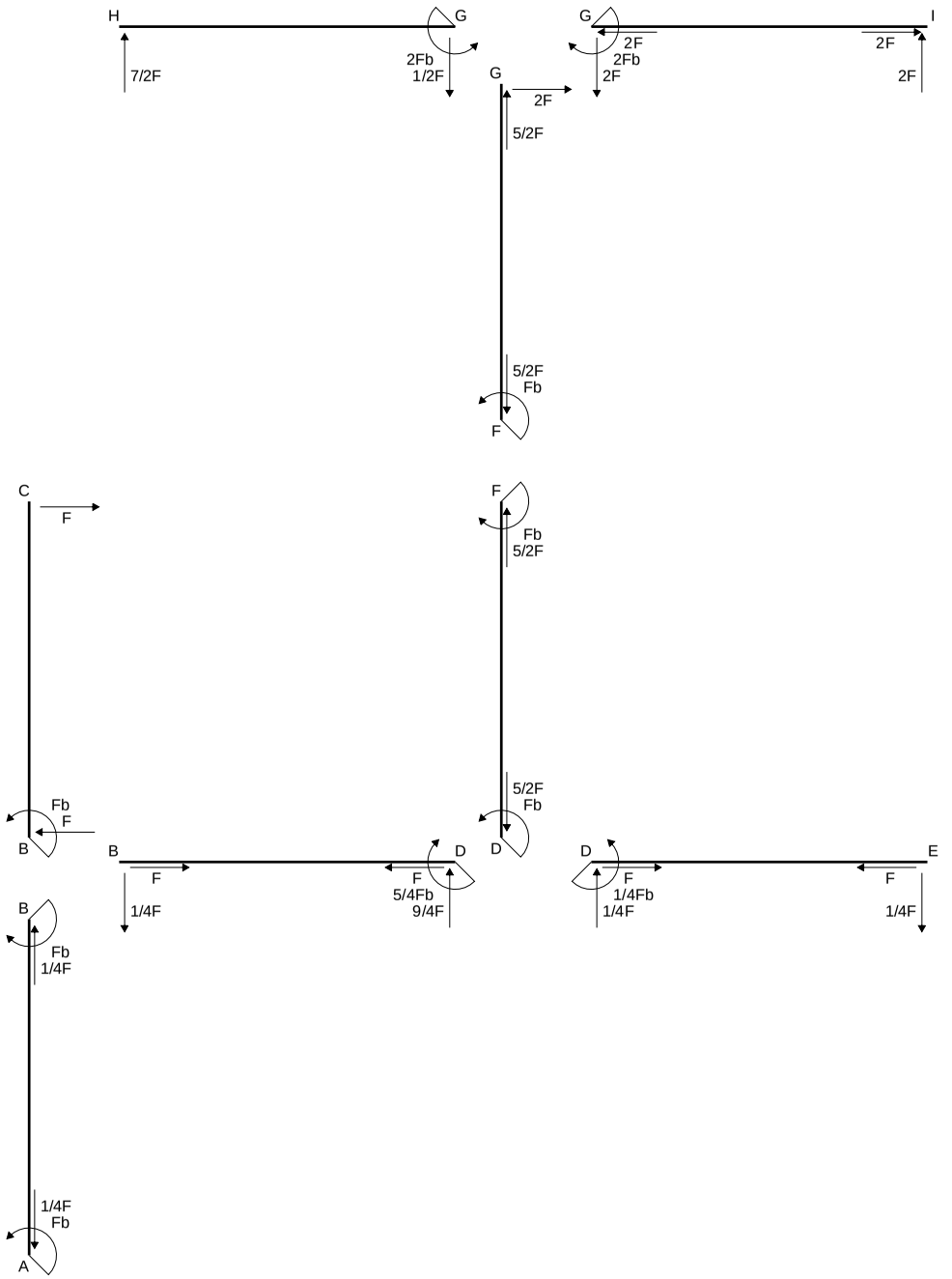
$-V_Hb + H_Ib = -3/2qb^2$

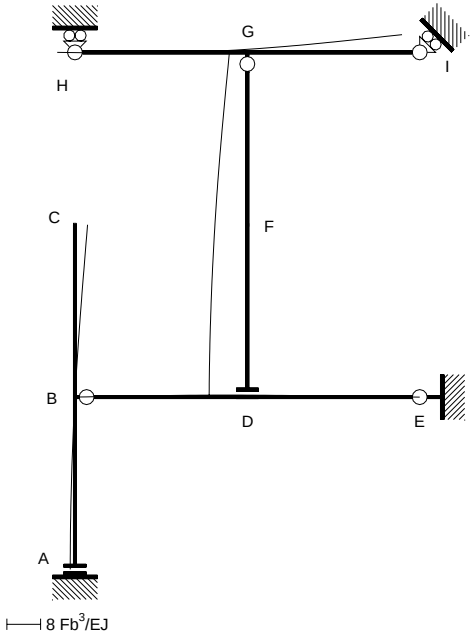
Matrice di equilibrio

$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_Ab & W_A & V_Hb & H_Ib \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -21/2 \\ 1 & 0 \\ 0 & 2 \\ 0 & -3/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_Ab \\ W_A \\ H_Ib \\ V_Hb \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -1/4 \\ 1 & 0 \\ 0 & 2 \\ 0 & 7/2 \end{bmatrix}$$




G
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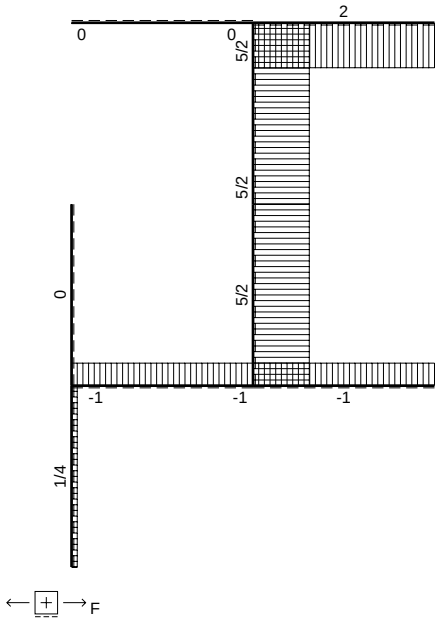
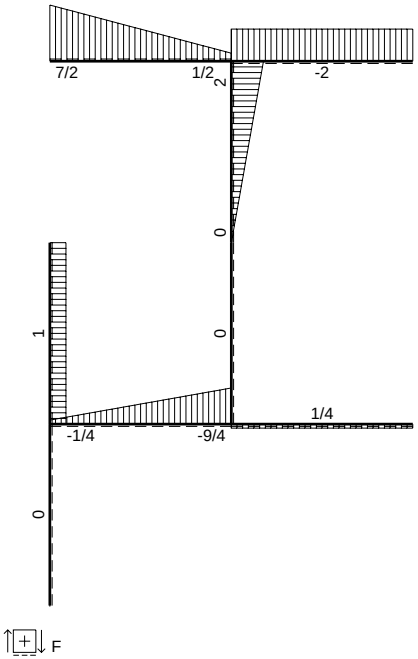
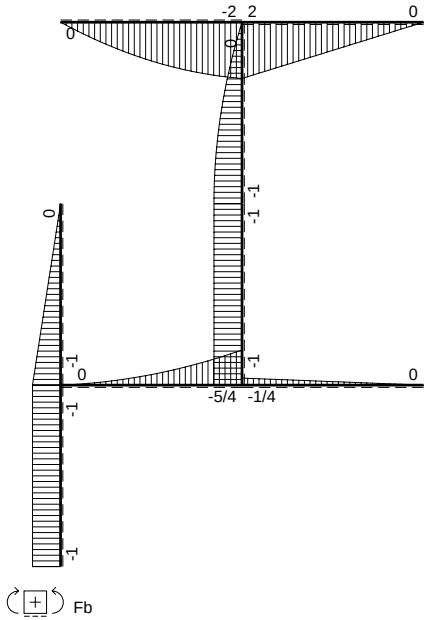
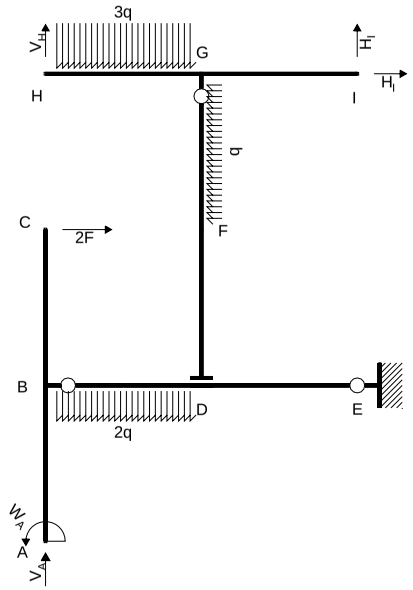
A
8 Fb³/EJ


2
0
0
5/2
5/2
5/2
0
-1
-1
-1
1/4
F


7/2
1/2
2
-2
2
0
0
1
-1/4
-9/4
1/4
0
F


-2
2
0
0
-1
-1
-1
-1
-1
0
-5/4
-1/4
0
-1
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_A b + W_A - 2V_H b - 2H_I b = 2Fb - 9qb^2$

Rotazione intorno a B: aste BA BC

$W_A = 2Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = qb$

Rotazione intorno a G: aste GH GI

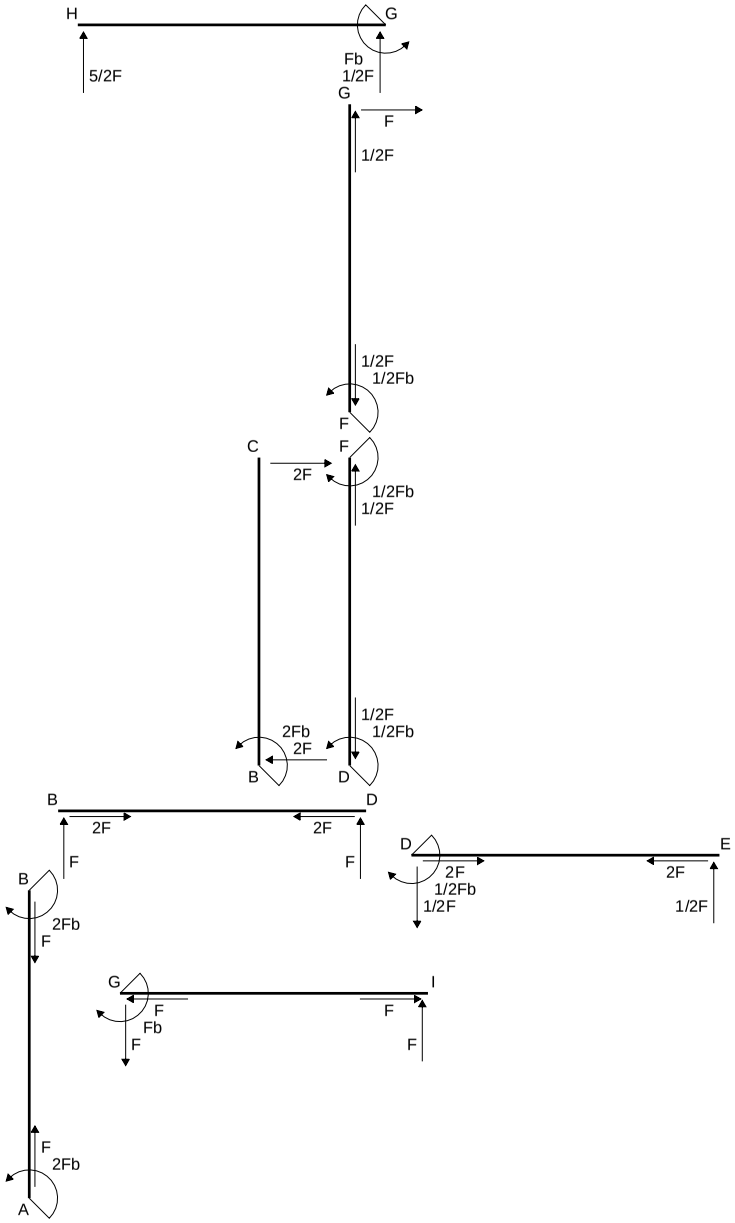
$-V_H b + H_I b = -3/2qb^2$

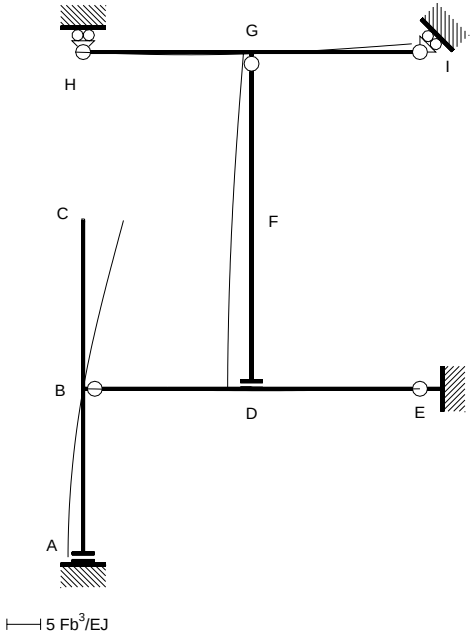
Matrice di equilibrio

$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_A b & W_A & V_H b & H_I b \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 2 & -9 \\ 2 & 0 \\ 0 & 1 \\ 0 & -3/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_A b \\ W_A \\ H_I b \\ V_H b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & 1 \\ 2 & 0 \\ 0 & 1 \\ 0 & 5/2 \end{bmatrix}$$




G
H
I
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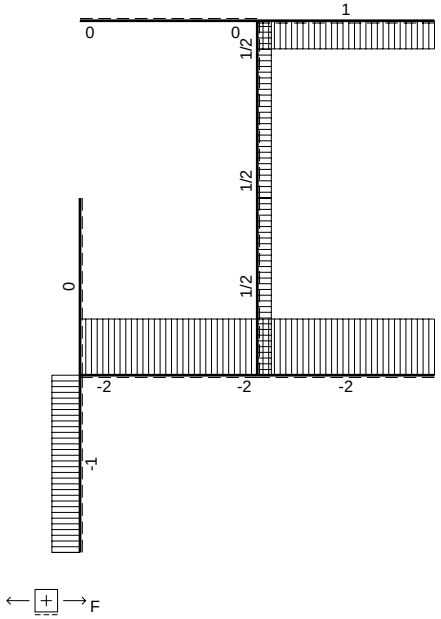
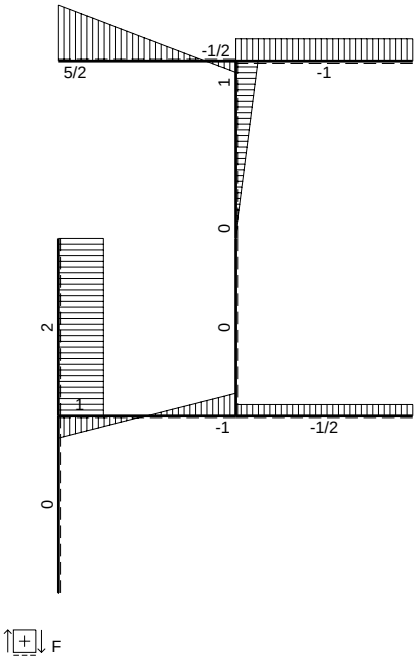
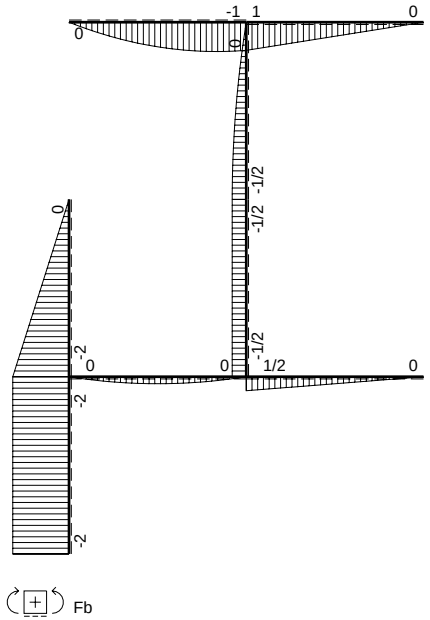
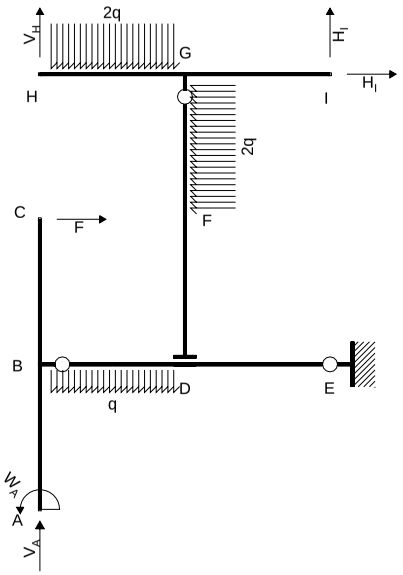
B
D
E
A
5 Fb³/EJ


1
0
0
1/2
1/2
1/2
0
-2
-2
-2
-1
F


5/2
-1/2
-1
1
0
0
2
1
-1
-1/2
0
F


-1
1
0
0
0
-1/2
-1/2
-2
0
0
1/2
0
-2
-2
-2
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = Fb - 15/2qb^2$

Rotazione intorno a B: aste BA BC

$W_A = Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = 2qb$

Rotazione intorno a G: aste GH GI

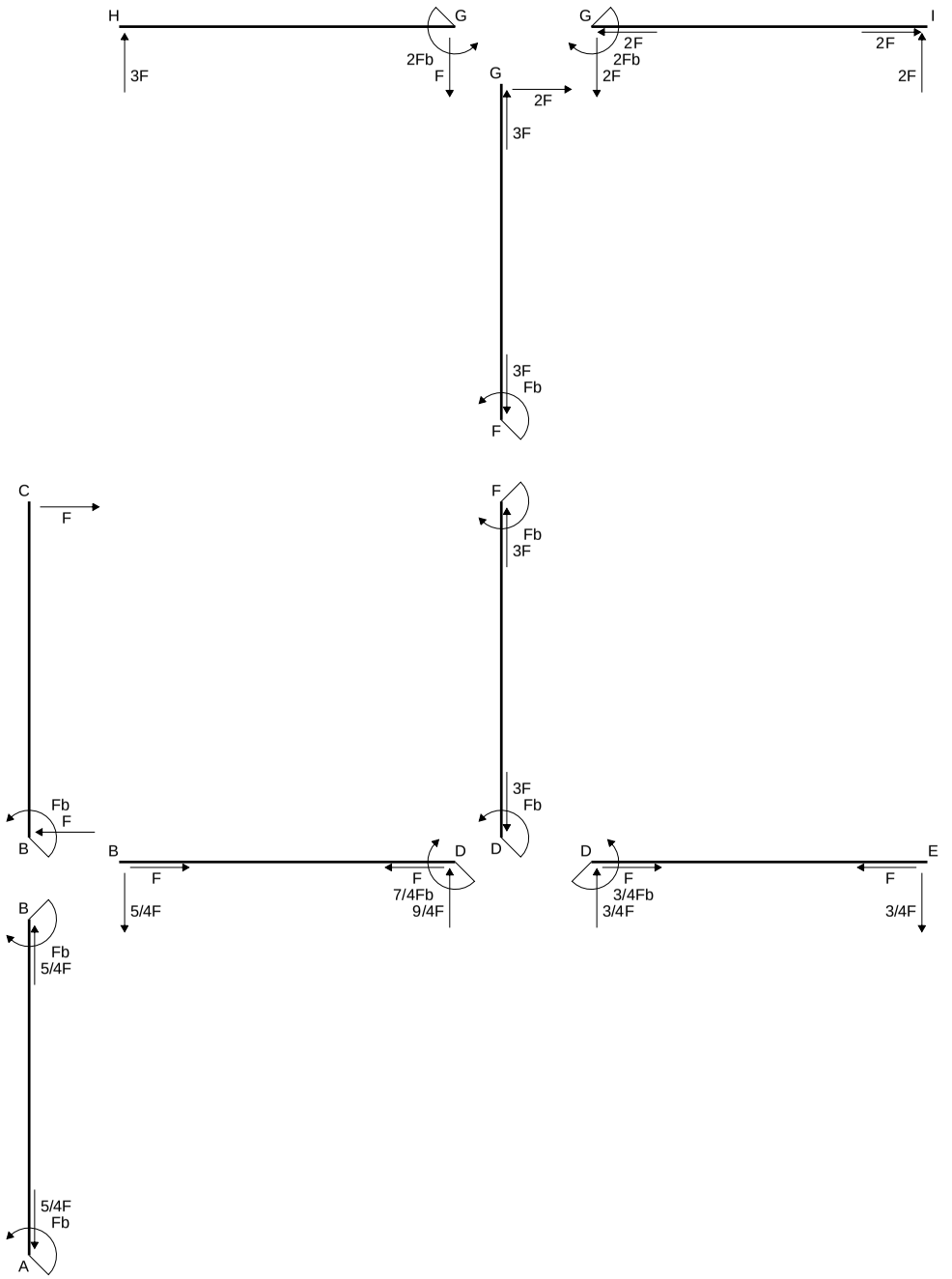
$-V_Hb + H_Ib = -qb^2$

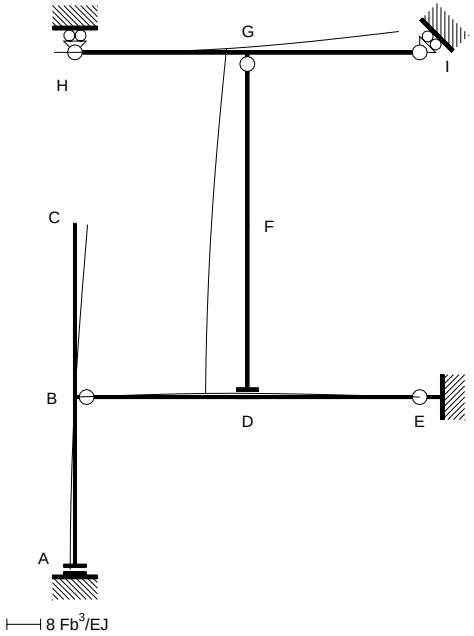
Matrice di equilibrio

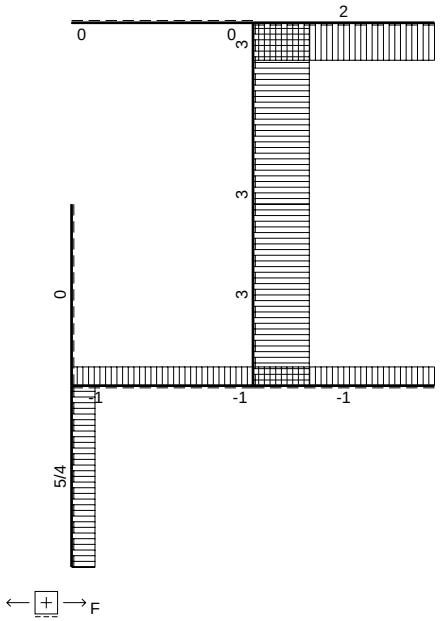
$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_Ab & W_A & V_Hb & H_Ib \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -15/2 \\ 1 & 0 \\ 0 & 2 \\ 0 & -1 \end{bmatrix}$$

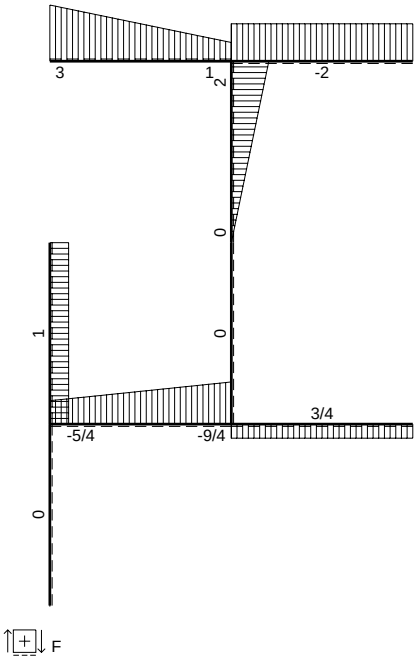
Soluzione del sistema

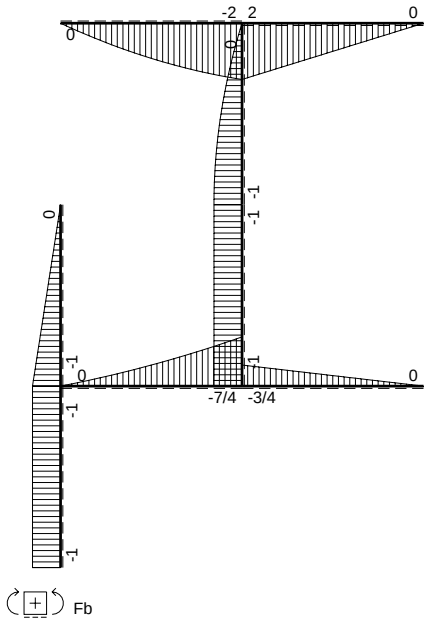
$$\begin{bmatrix} V_Ab \\ W_A \\ H_Ib \\ V_Hb \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -5/4 \\ 1 & 0 \\ 0 & 2 \\ 0 & 3 \end{bmatrix}$$




G
H
I
C
F
B
D
E
A
8 Fb³/EJ


2
0
0
3
3
3
0
-1
-1
-1
5/4
F


3
1
2
-2
0
0
1
3/4
-5/4
-9/4
0
F


-2
2
0
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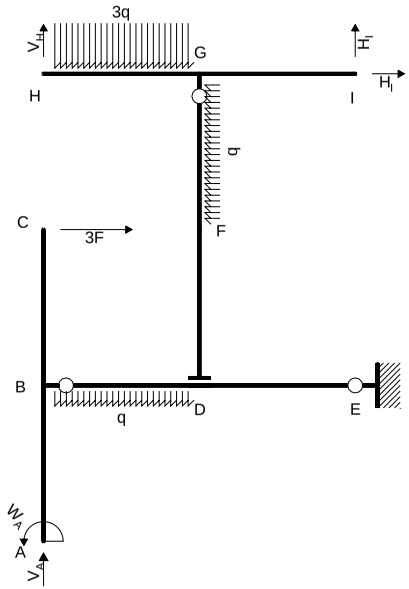
-1
-1
-1
0
-1
1
0
0
-7/4
-3/4
-1
-1
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = 3Fb - 15/2qb^2$

Rotazione intorno a B: aste BA BC

$W_A = 3Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = qb$

Rotazione intorno a G: aste GH GI

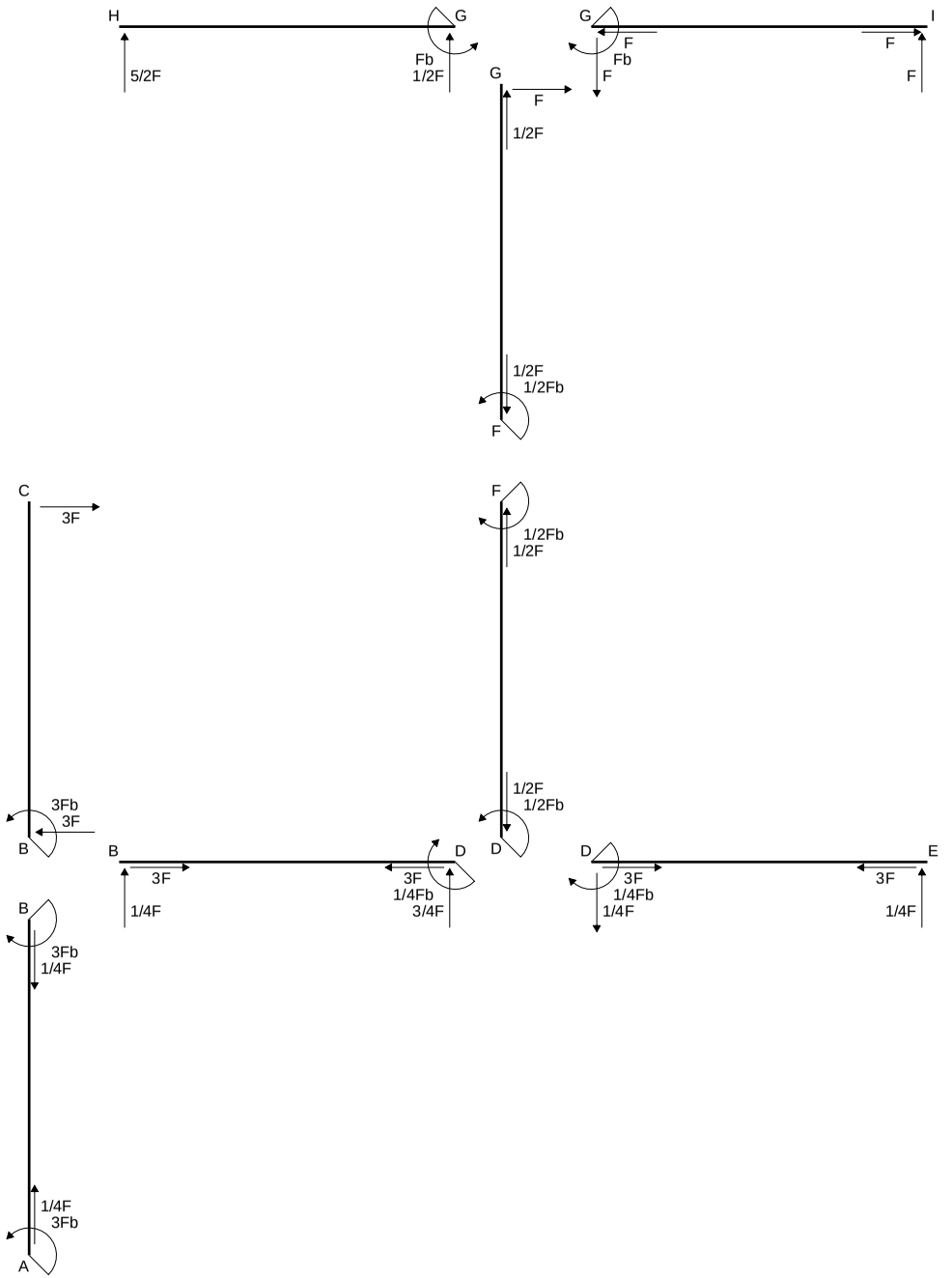
$-V_Hb + H_Ib = -3/2qb^2$

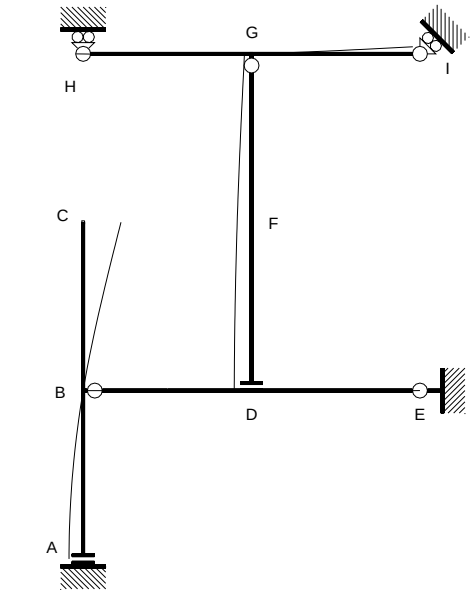
Matrice di equilibrio

$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_Ab & W_A & V_Hb & H_Ib \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 3 & -15/2 \\ 3 & 0 \\ 0 & 1 \\ 0 & -3/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_Ab \\ W_A \\ H_Ib \\ V_Hb \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & 1/4 \\ 3 & 0 \\ 0 & 1 \\ 0 & 5/2 \end{bmatrix}$$




G
H
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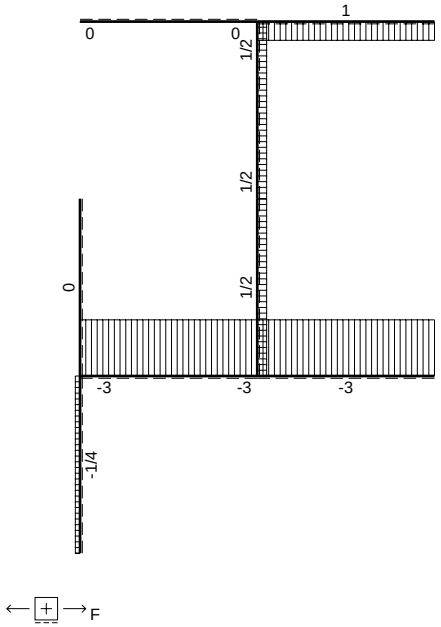
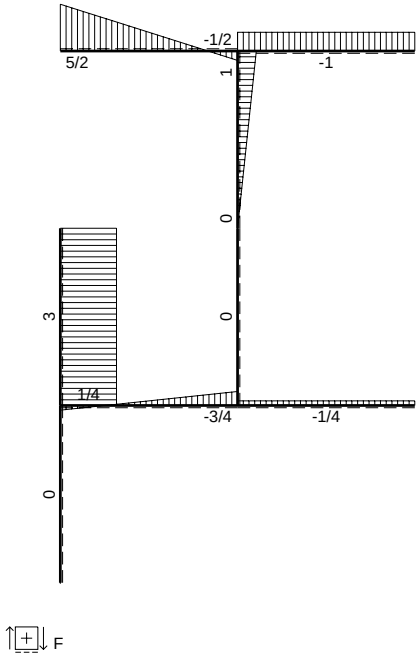
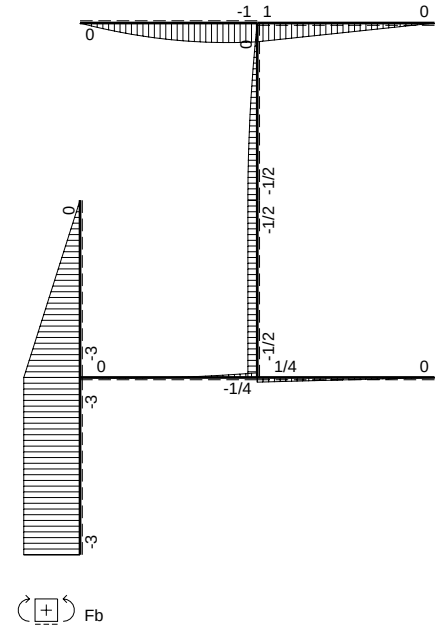
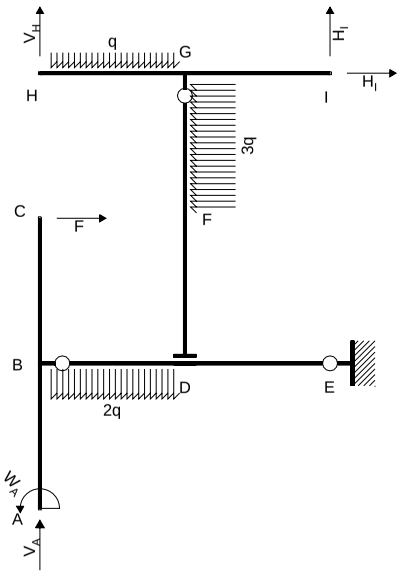
A
8 Fb³/EJ


1
0
0
1/2
1/2
1/2
0
-3
-3
-3
-1/4
F


-1/2
5/2
-1
1
0
0
3
1/4
-3/4
-1/4
0
F


-1
1
0
0
0
-1/2
-1/2
-1/2
0
-3
0
1/4
0
-1/4
-3
-3
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = Fb - 9qb^2$

Rotazione intorno a B: aste BA BC

$W_A = Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = 3qb$

Rotazione intorno a G: aste GH GI

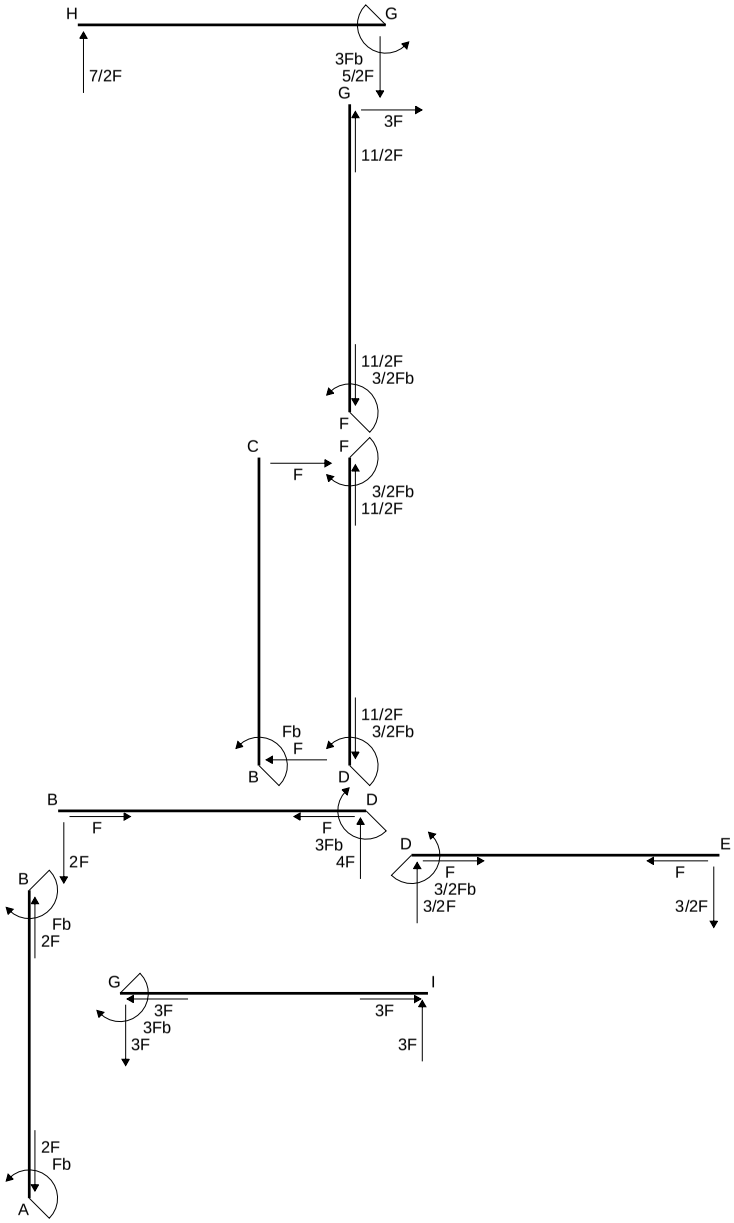
$-V_Hb + H_Ib = -1/2qb^2$

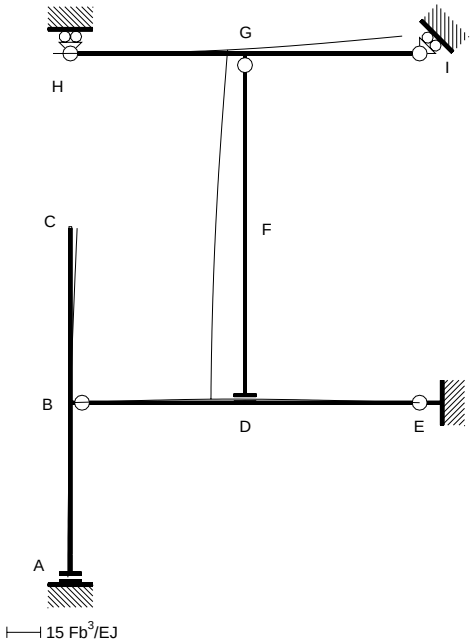
Matrice di equilibrio

$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_Ab & W_A & V_Hb & H_Ib \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -9 \\ 1 & 0 \\ 0 & 3 \\ 0 & -1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_Ab \\ W_A \\ H_Ib \\ V_Hb \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -2 \\ 1 & 0 \\ 0 & 3 \\ 0 & 7/2 \end{bmatrix}$$




G
H
I
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F
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D
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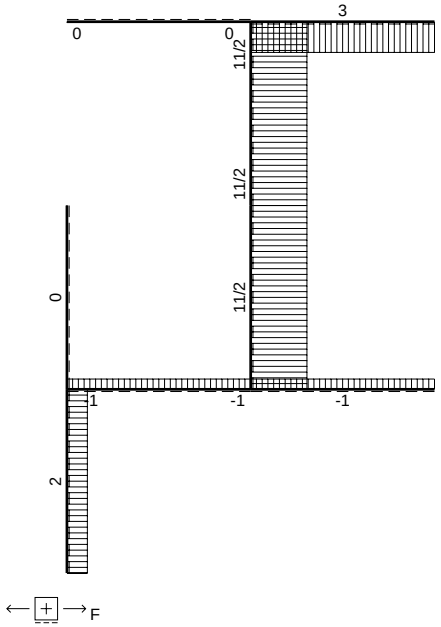
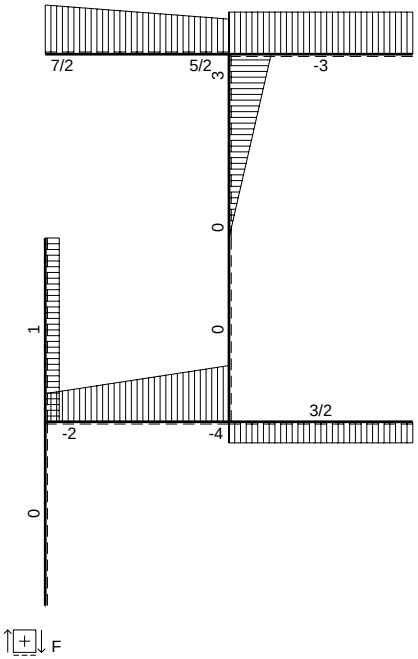
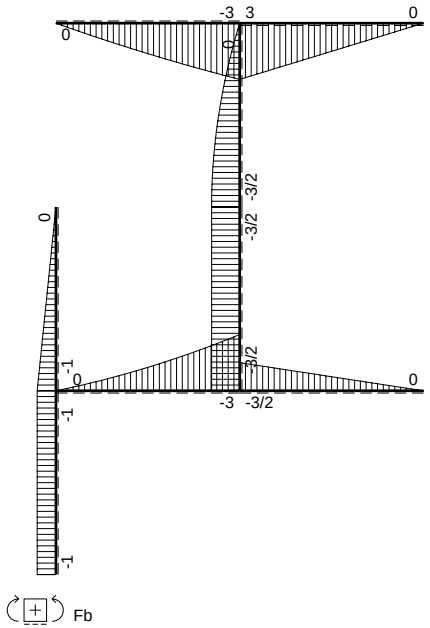
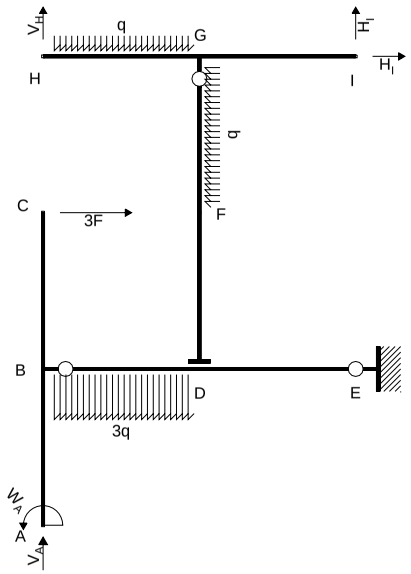
A
15 Fb3/EJ


3
0
0
11/2
11/2
11/2
0
1
-1
-1
2
F


7/2
5/2
-3
3
0
0
1
3/2
-2
-4
0
F


-3
3
0
0
-3/2
-3/2
0
-1
0
0
-3
-3/2
-1
-1
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = 3Fb - 15/2qb^2$

Rotazione intorno a B: aste BA BC

$W_A = 3Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = qb$

Rotazione intorno a G: aste GH GI

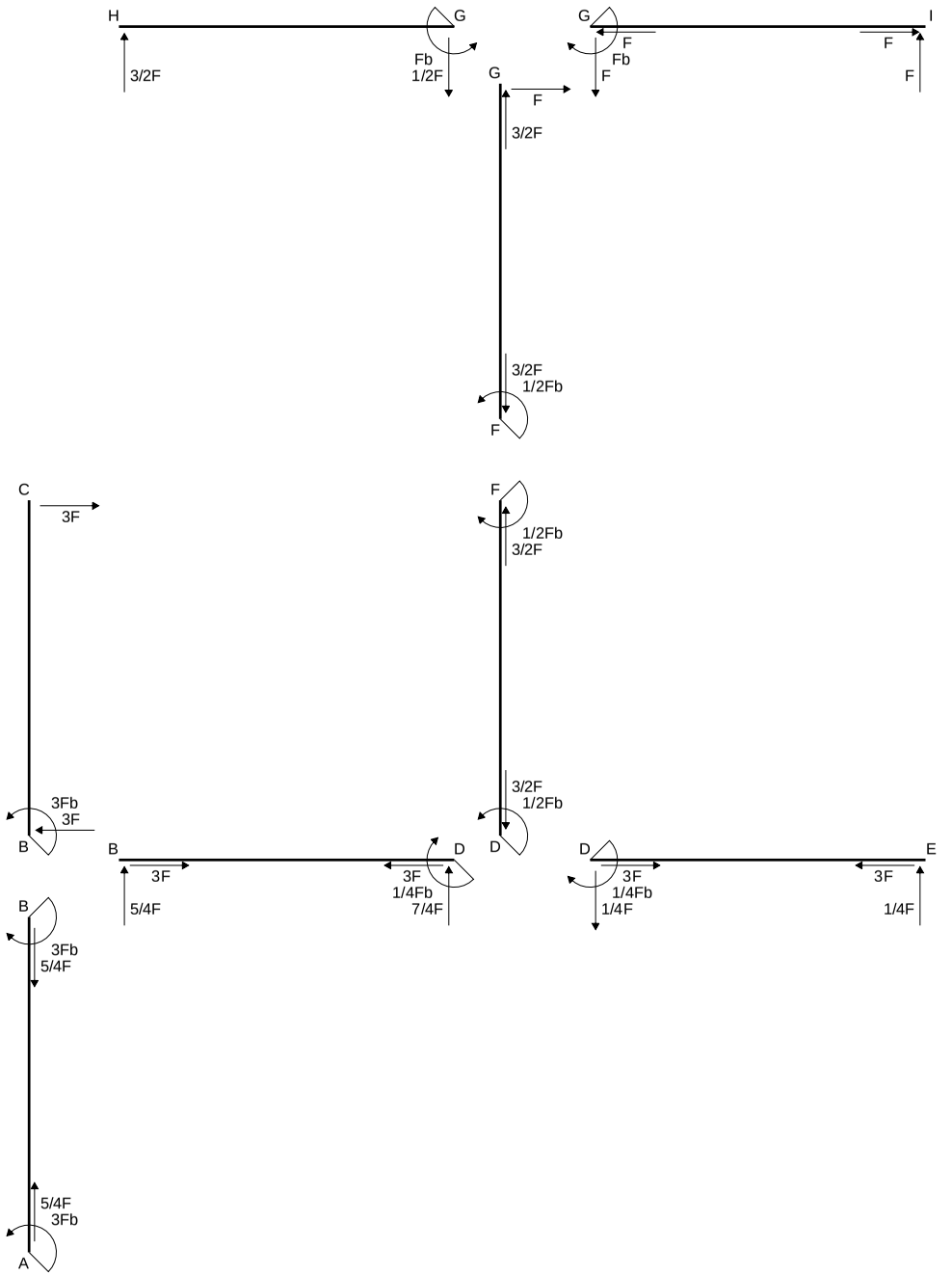
$-V_Hb + H_Ib = -1/2qb^2$

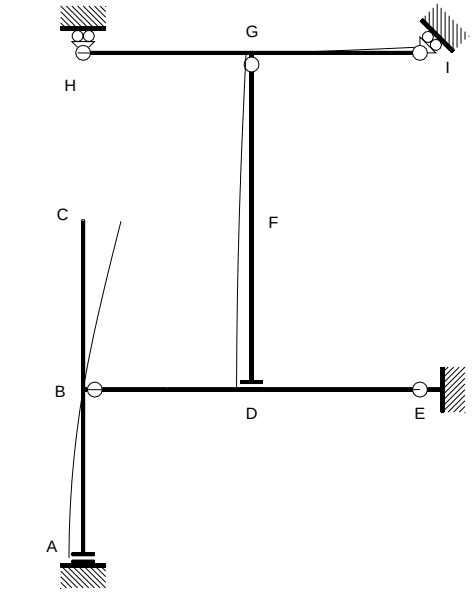
Matrice di equilibrio

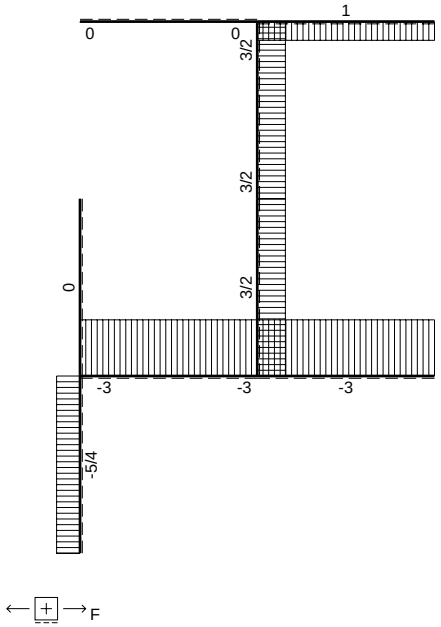
	V_Ab	W_A	V_Hb	H_Ib		Fb	qb^2
φ_E	-2	1	-2	-2		3	-15/2
φ_{BD}	0	1	0	0	=	3	0
u_{DF}	0	0	0	1		0	1
φ_{GF}	0	0	-1	1		0	-1/2

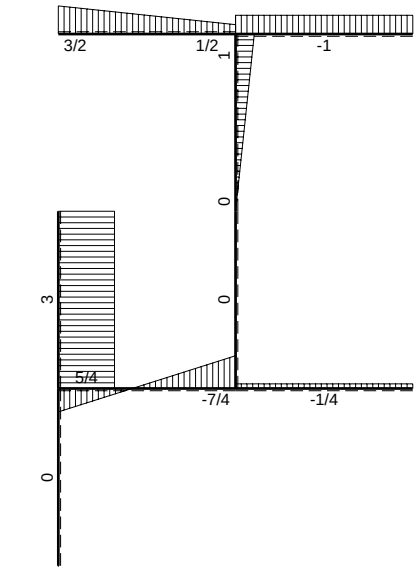
Soluzione del sistema

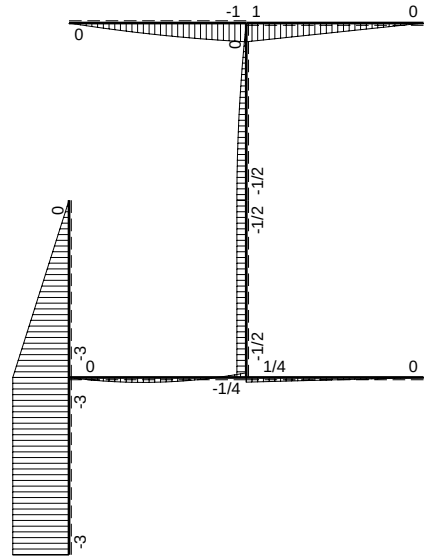
	Fb	qb^2
V_Ab	0	5/4
W_A	3	0
H_Ib	0	1
V_Hb	0	3/2

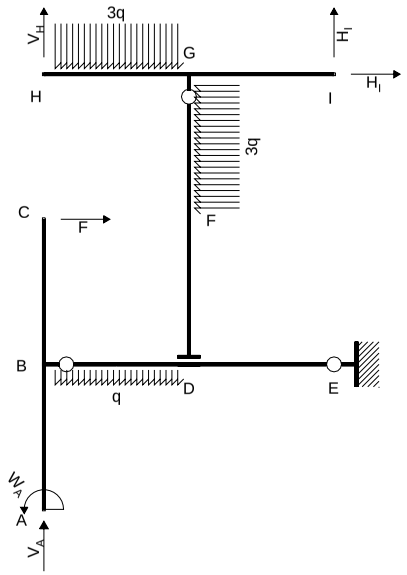



G
H
I
C
F
B
D
E
A
8 Fb³/EJ


1
0
0
3/2
3/2
3/2
0
-3
-3
-3
-5/4
F


3/2
1/2
-1
1
0
0
3
5/4
-7/4
-1/4
0
F


-1
1
0
0
0
-1/2
-1/2
-1/2
0
-3
0
1/4
0
-1/4
-3
-3
Fb



EQUAZIONI DI EQUILIBRIO

Rotazione globale intorno a E

$-2V_Ab + W_A - 2V_Hb - 2H_Ib = Fb - 21/2qb^2$

Rotazione intorno a B: aste BA BC

$W_A = Fb$

Traslazione orizzontale: aste DF FG GH GI

$H_I = 3qb$

Rotazione intorno a G: aste GH GI

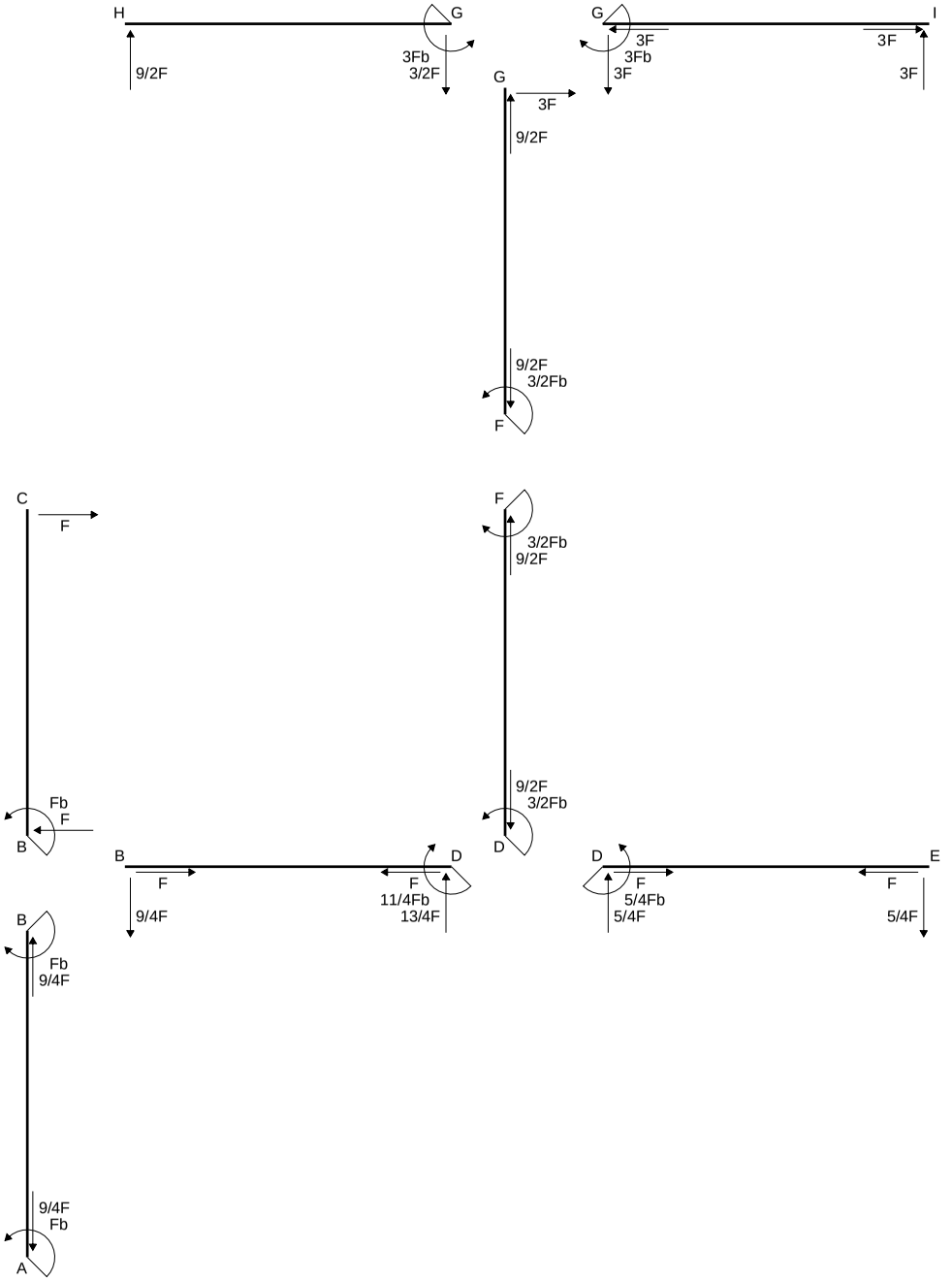
$-V_Hb + H_Ib = -3/2qb^2$

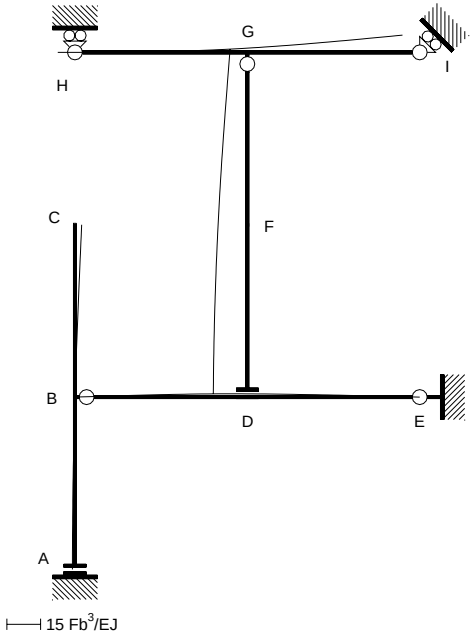
Matrice di equilibrio

$$\begin{array}{c} \\ \varphi_E \\ \varphi_{BD} \\ u_{DF} \\ \varphi_{GF} \end{array} \begin{bmatrix} V_Ab & W_A & V_Hb & H_Ib \\ -2 & 1 & -2 & -2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -21/2 \\ 1 & 0 \\ 0 & 3 \\ 0 & -3/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_Ab \\ W_A \\ H_Ib \\ V_Hb \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -9/4 \\ 1 & 0 \\ 0 & 3 \\ 0 & 9/2 \end{bmatrix}$$




G
H
I
C
F
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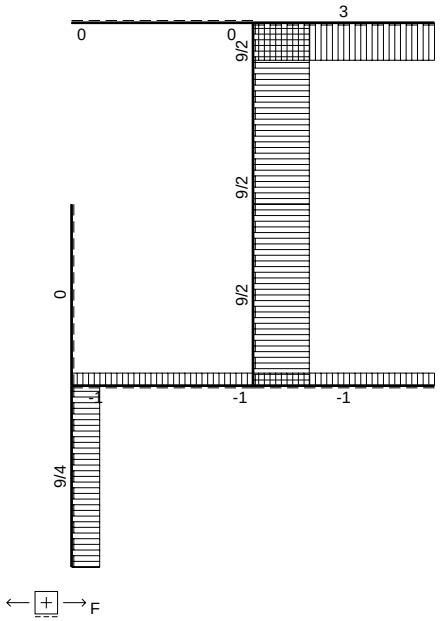
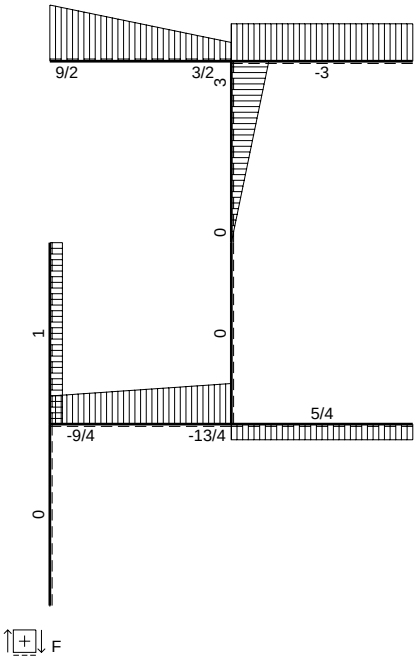
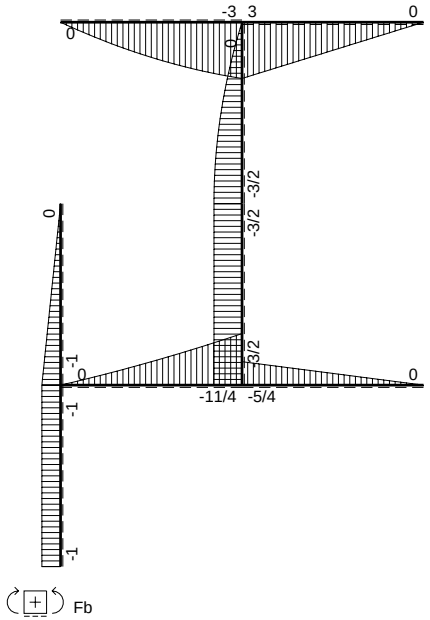
D
E
A
15 Fb3/EJ


3
0
0
9/2
9/2
9/2
0
-1
-1
-1
9/4
F


9/2
3/2
-3
3
0
0
1
5/4
-9/4
-13/4
0
F


-3
3
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-3/2
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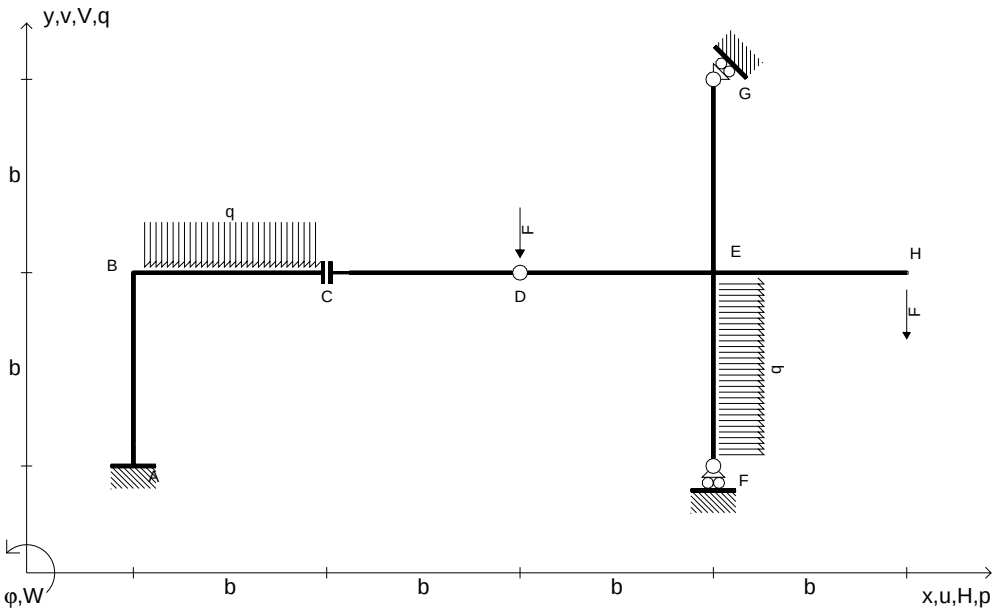
-1
-1
-11/4
-5/4
Fb



$V_H = -F$
$V_D = -F$
$q_{BC} = -q = -F/b$
$p_{EF} = q = F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.001

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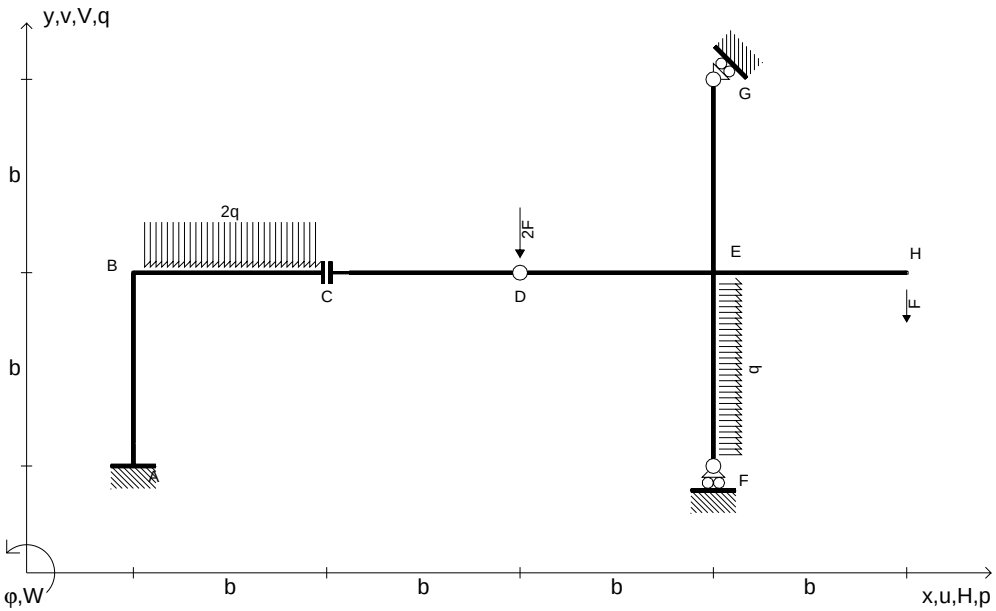

$V_H = -F$
$V_D = -2F$
$q_{BC} = -2q = -2F/b$
$p_{EF} = q = F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.002

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Struttura Isostatica.002

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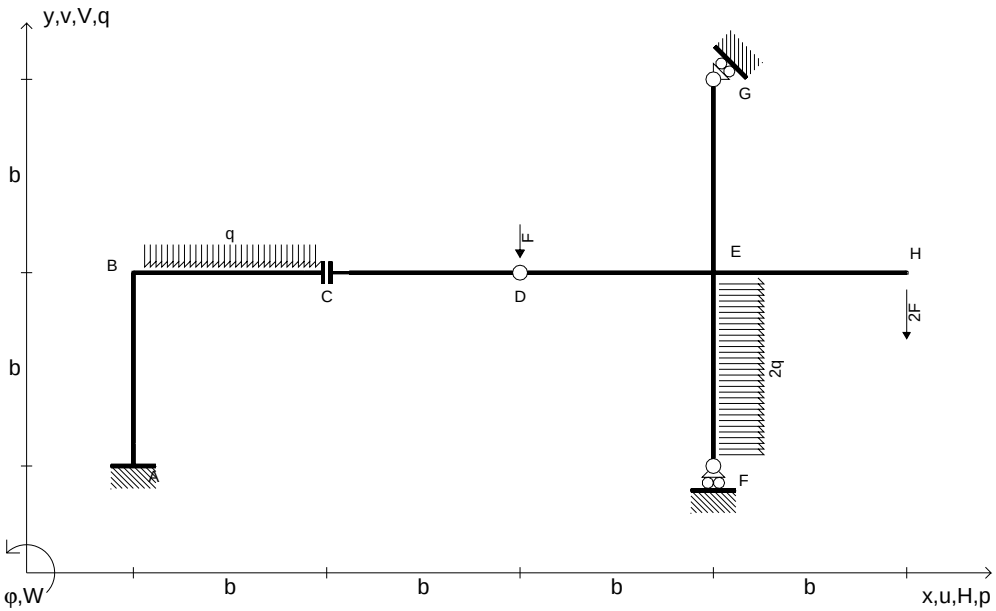

$V_H = -2F$
$V_D = -F$
$q_{BC} = -q = -F/b$
$p_{EF} = 2q = 2F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.003

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Struttura Isostatica.003

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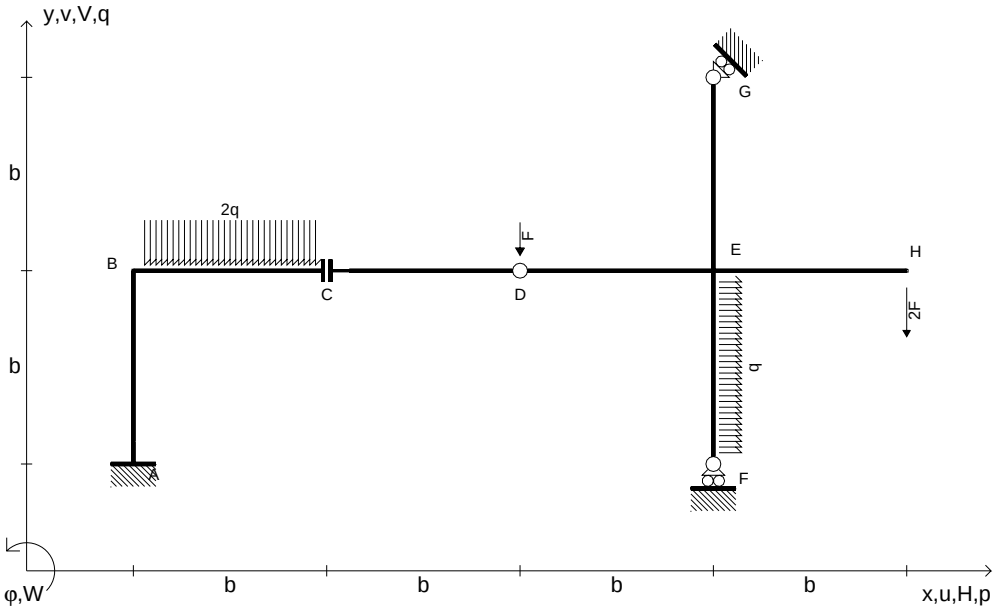

$V_H = -2F$
$V_D = -F$
$q_{BC} = -2q = -2F/b$
$p_{EF} = q = F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.004

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Struttura Isostatica.004

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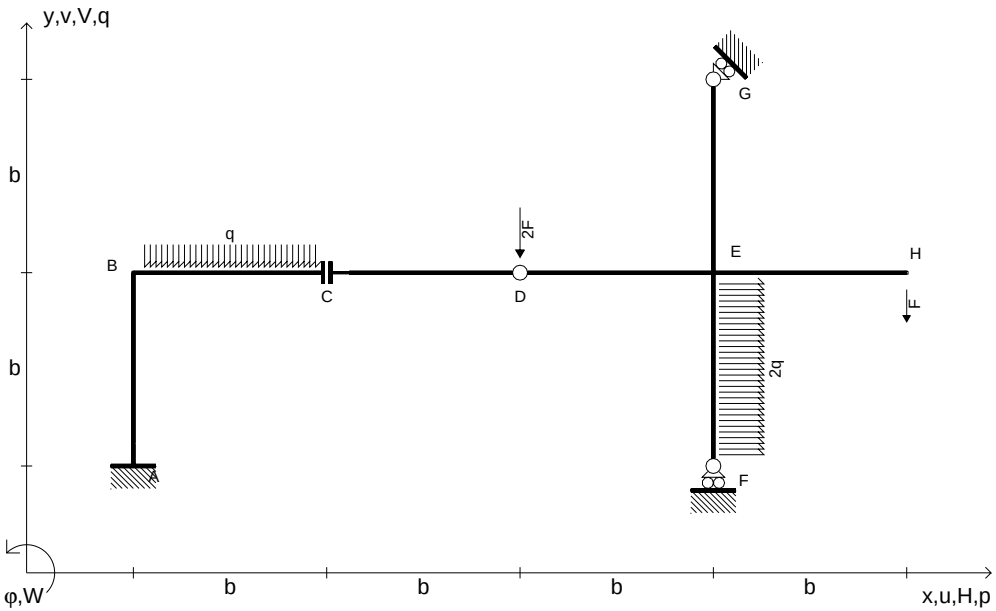

$V_H = -F$
$V_D = -2F$
$q_{BC} = -q = -F/b$
$p_{EF} = 2q = 2F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.005
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Struttura Isostatica.005

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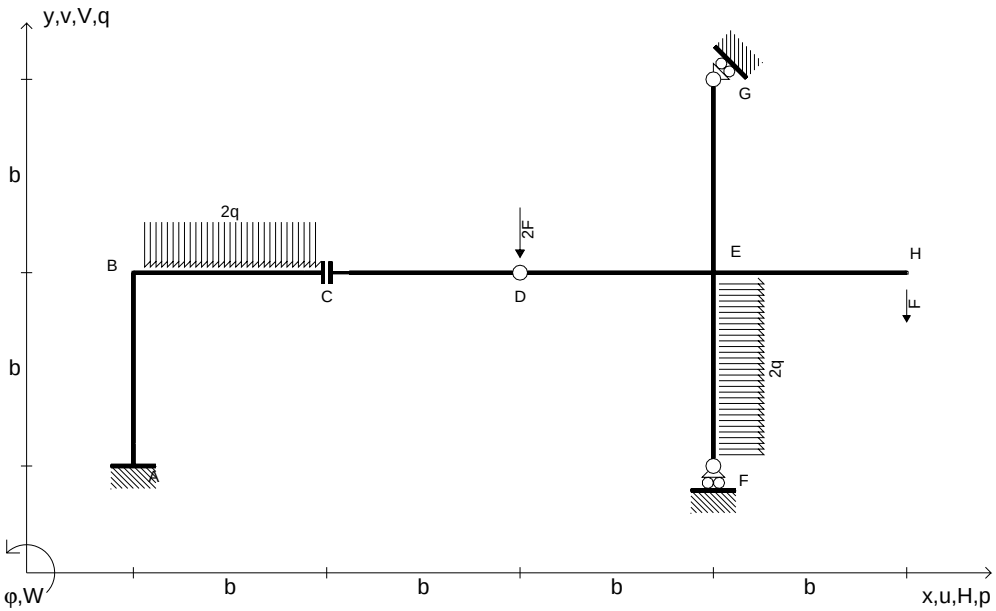

$V_H = -F$
$V_D = -2F$
$q_{BC} = -2q = -2F/b$
$p_{EF} = 2q = 2F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.006

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Struttura Isostatica.006

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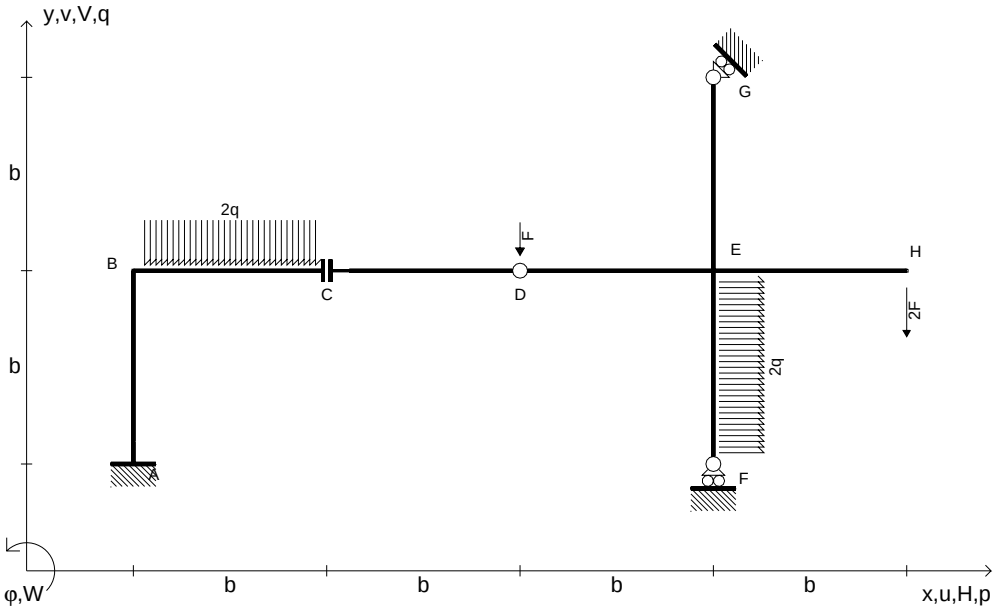

$V_H = -2F$
$V_D = -F$
$q_{BC} = -2q = -2F/b$
$p_{EF} = 2q = 2F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.007

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Struttura Isostatica.007

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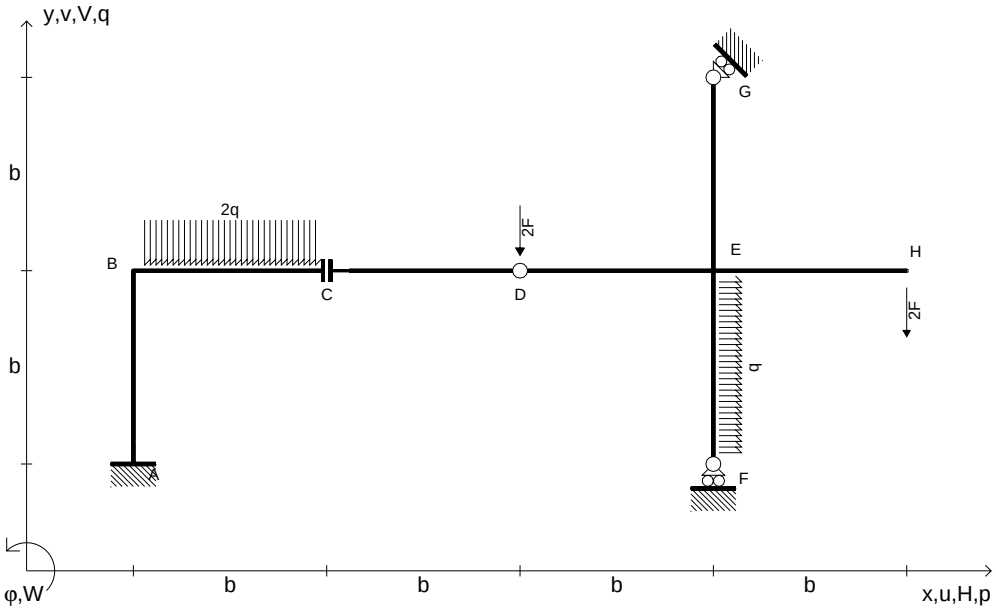

$V_H = -2F$
$V_D = -2F$
$q_{BC} = -2q = -2F/b$
$p_{EF} = q = F/b$

$EJ_{AB} = EJ$
$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$
$EJ_{EH} = EJ$

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Piano G

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Piano di scorrimento del vincolo con inclinazione assegnata.

Struttura Isostatica.008

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Struttura Isostatica.008

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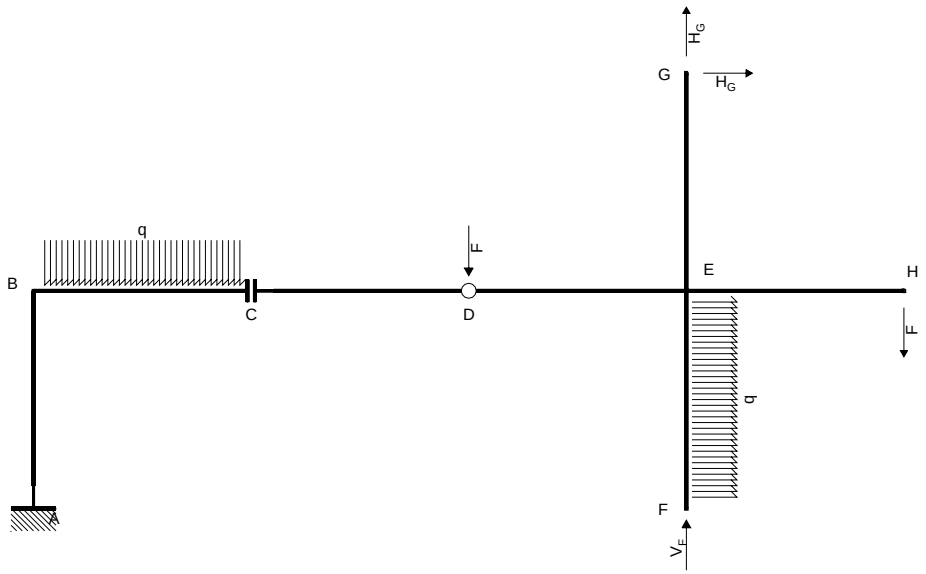


EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG EH

$V_F + H_G = 2F$

Rotazione intorno a D: aste DE EF EG EH

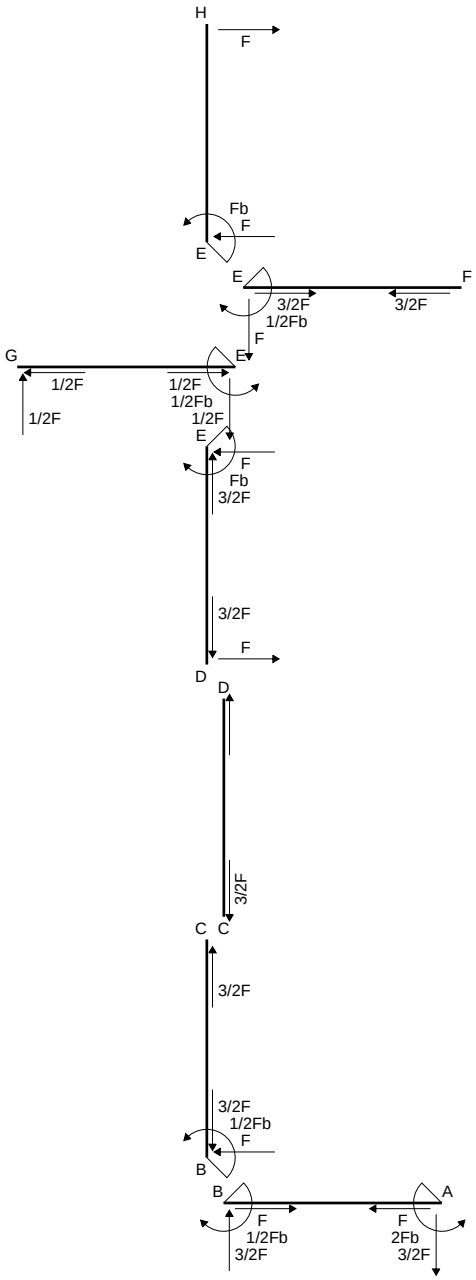
$V_F b = 2Fb - 1/2qb^2$

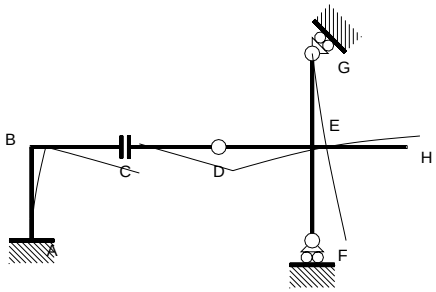
Matrice di equilibrio

$$\begin{matrix} & [V_F b & H_G b] \\ v_{CB} & 1 & 1 \\ \varphi_{DC} & 1 & 0 \end{matrix} \begin{bmatrix} \\ \\ \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 2 & 0 \\ 2 & -1/2 \end{bmatrix}$$

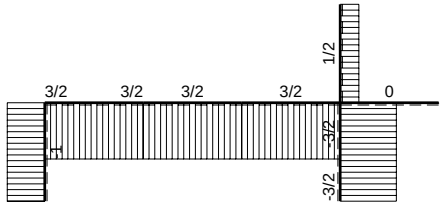
Soluzione del sistema

$$\begin{bmatrix} V_F b \\ H_G b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 2 & -1/2 \\ 0 & 1/2 \end{bmatrix}$$

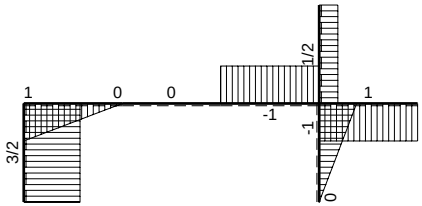




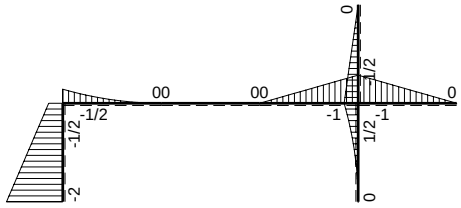
$\longmapsto$ 4 Fb^3/EJ



$\leftarrow \boxplus \rightarrow$ F



$\uparrow \boxplus \downarrow$ F



$\circlearrowleft \boxplus \circlearrowright$ Fb

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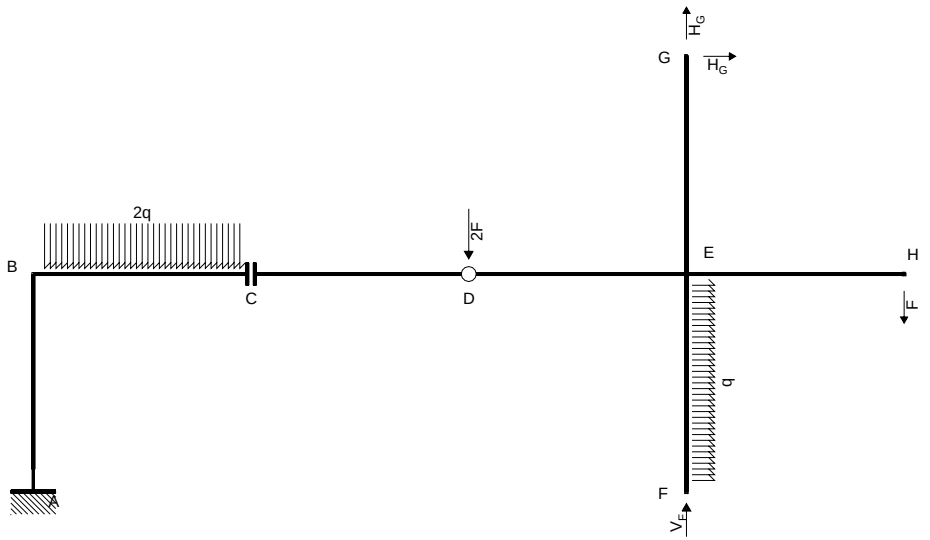


EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG EH

$V_F + H_G = 3F$

Rotazione intorno a D: aste DE EF EG EH

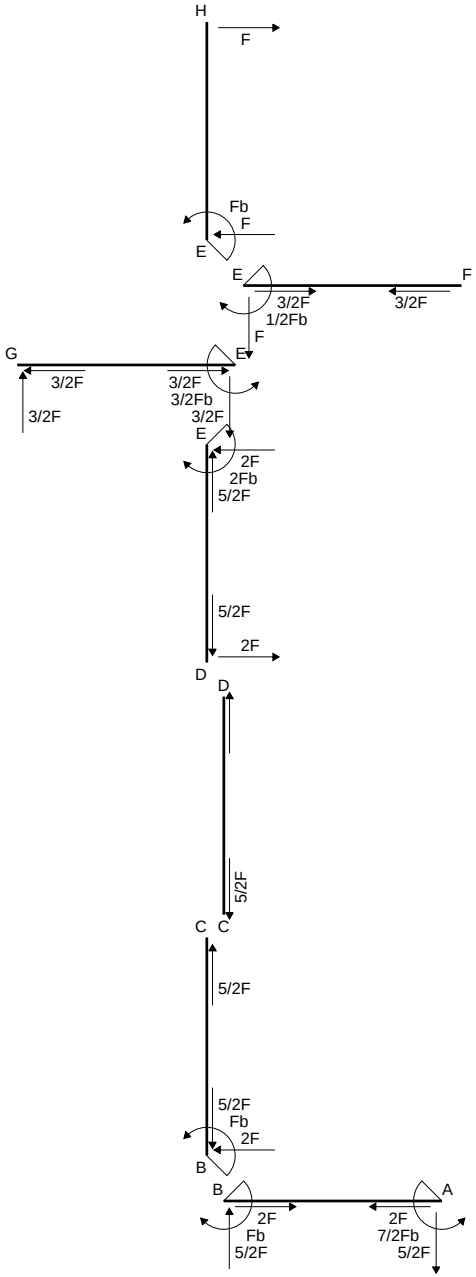
$V_F b = 2Fb - 1/2qb^2$

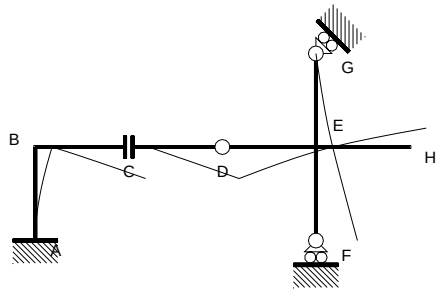
Matrice di equilibrio

$$\begin{matrix} & \begin{bmatrix} V_F b & H_G b \end{bmatrix} \\ \begin{matrix} v_{CB} \\ \varphi_{DC} \end{matrix} & \begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix} \end{matrix} = \begin{bmatrix} Fb & qb^2 \\ 3 & 0 \\ 2 & -1/2 \end{bmatrix}$$

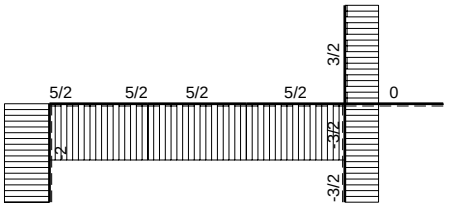
Soluzione del sistema

$$\begin{bmatrix} V_F b \\ H_G b \end{bmatrix} = \begin{matrix} \begin{bmatrix} Fb & qb^2 \end{bmatrix} \\ \begin{bmatrix} 2 & -1/2 \\ 1 & 1/2 \end{bmatrix} \end{matrix}$$

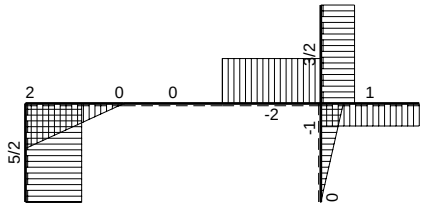




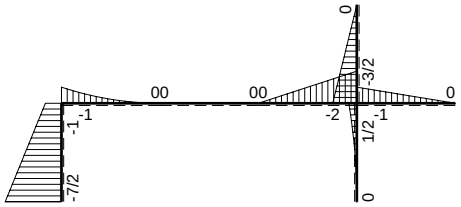
$\vdash\!\!\!\dashv$ 6 Fb^3/EJ



$\leftarrow \boxplus \rightarrow$ F



$\uparrow \boxplus \downarrow$ F



$\circlearrowright \boxplus \circlearrowleft$ Fb

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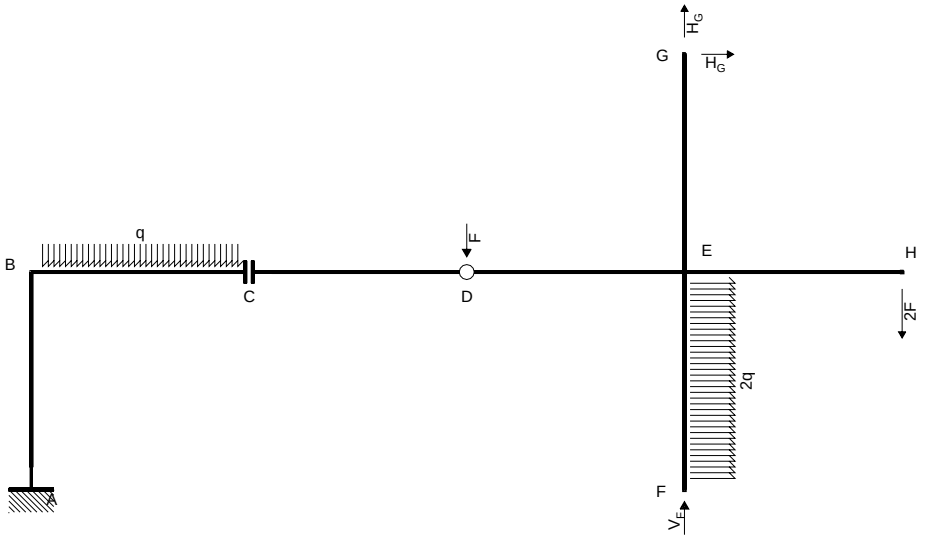


EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG EH

$V_F + H_G = 3F$

Rotazione intorno a D: aste DE EF EG EH

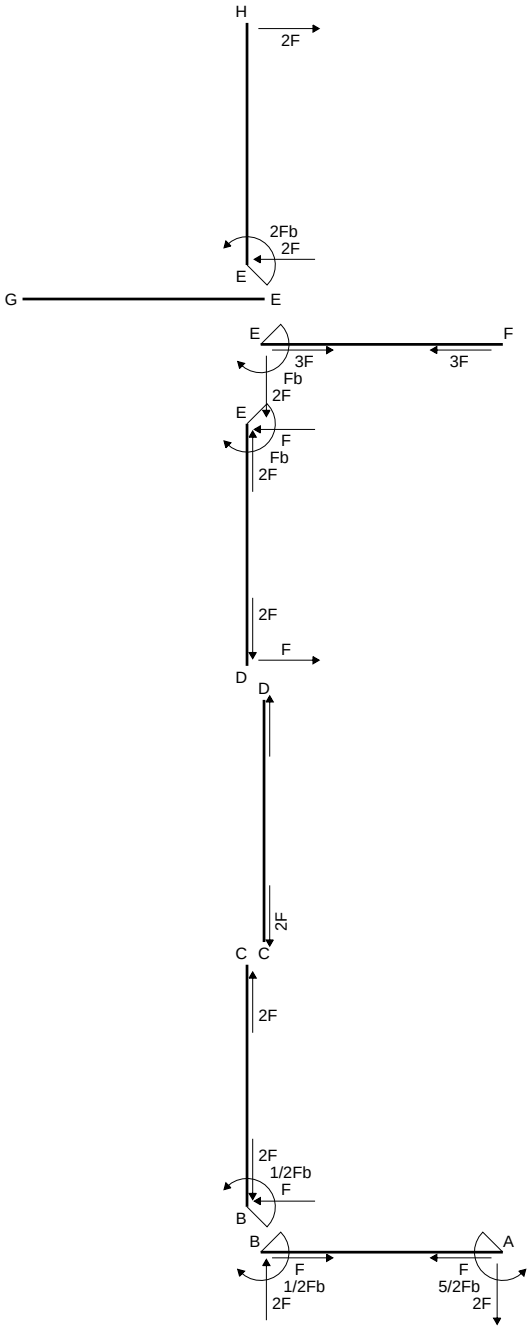
$V_F b = 4Fb - qb^2$

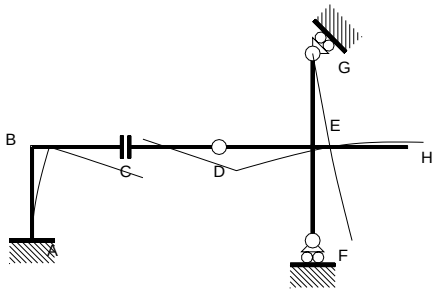
Matrice di equilibrio

$$\begin{matrix} & \begin{bmatrix} V_F b & H_G b \end{bmatrix} \\ \begin{matrix} v_{CB} \\ \varphi_{DC} \end{matrix} & \begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix} \end{matrix} = \begin{bmatrix} Fb & qb^2 \\ 3 & 0 \\ 4 & -1 \end{bmatrix}$$

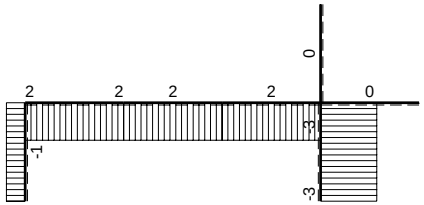
Soluzione del sistema

$$\begin{bmatrix} V_F b \\ H_G b \end{bmatrix} = \begin{matrix} \begin{bmatrix} Fb & qb^2 \end{bmatrix} \\ \begin{bmatrix} 4 & -1 \\ -1 & 1 \end{bmatrix} \end{matrix}$$

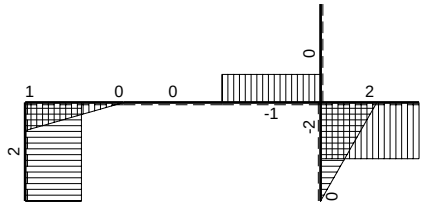




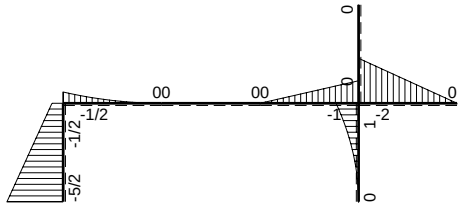
$\longmapsto$ 4 Fb^3/EJ



$\longleftarrow \boxplus \longrightarrow$ F



$\uparrow \boxplus \downarrow$ F



$\circlearrowright \boxplus \circlearrowleft$ Fb

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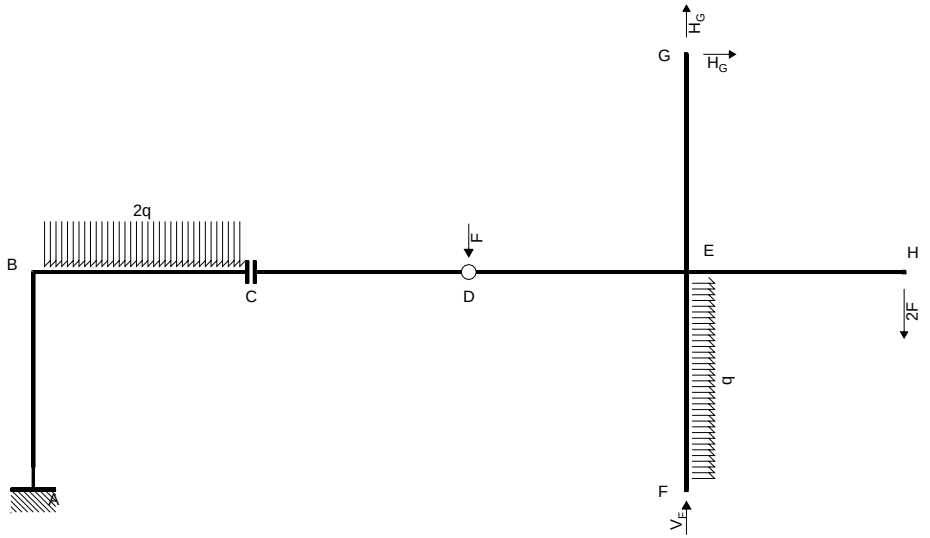


EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG EH

$V_F + H_G = 3F$

Rotazione intorno a D: aste DE EF EG EH

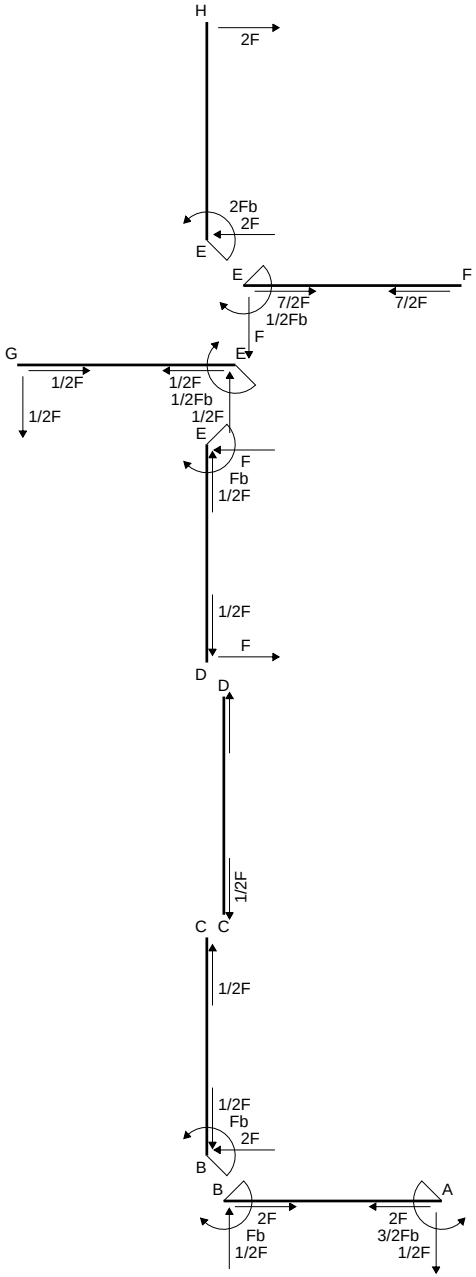
$V_F b = 4Fb - 1/2qb^2$

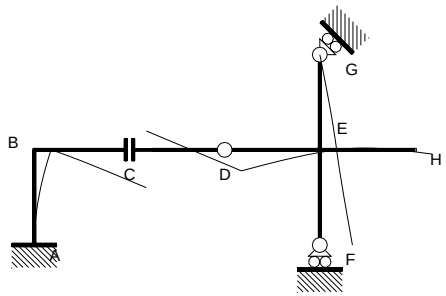
Matrice di equilibrio

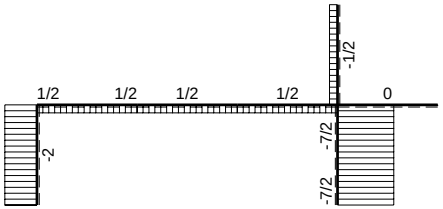
$$\begin{matrix} & \begin{bmatrix} V_F b & H_G b \end{bmatrix} \\ \begin{matrix} v_{CB} \\ \varphi_{DC} \end{matrix} & \begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix} \end{matrix} = \begin{bmatrix} Fb & qb^2 \\ 3 & 0 \\ 4 & -1/2 \end{bmatrix}$$

Soluzione del sistema

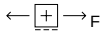
$$\begin{bmatrix} V_F b \\ H_G b \end{bmatrix} = \begin{matrix} \begin{bmatrix} Fb & qb^2 \end{bmatrix} \\ \begin{bmatrix} 4 & -1/2 \\ -1 & 1/2 \end{bmatrix} \end{matrix}$$

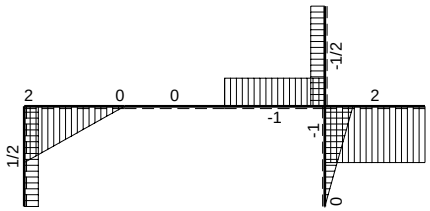


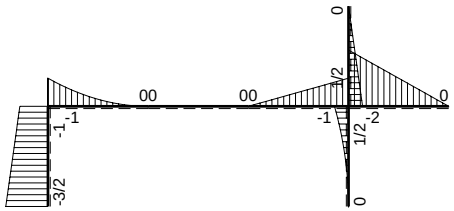


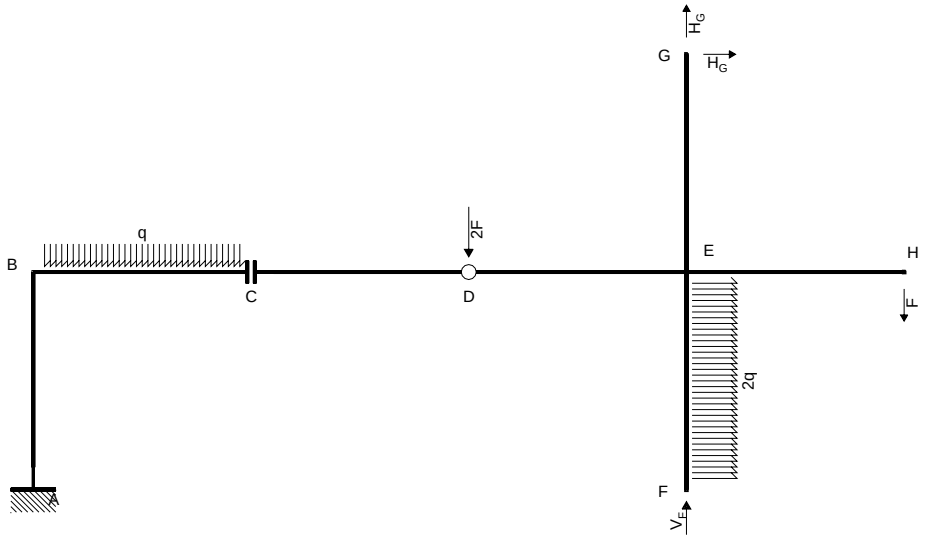


$\vdash\!\!\dashv$ 3 Fb^3/EJ









EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG EH

$V_F + H_G = 3F$

Rotazione intorno a D: aste DE EF EG EH

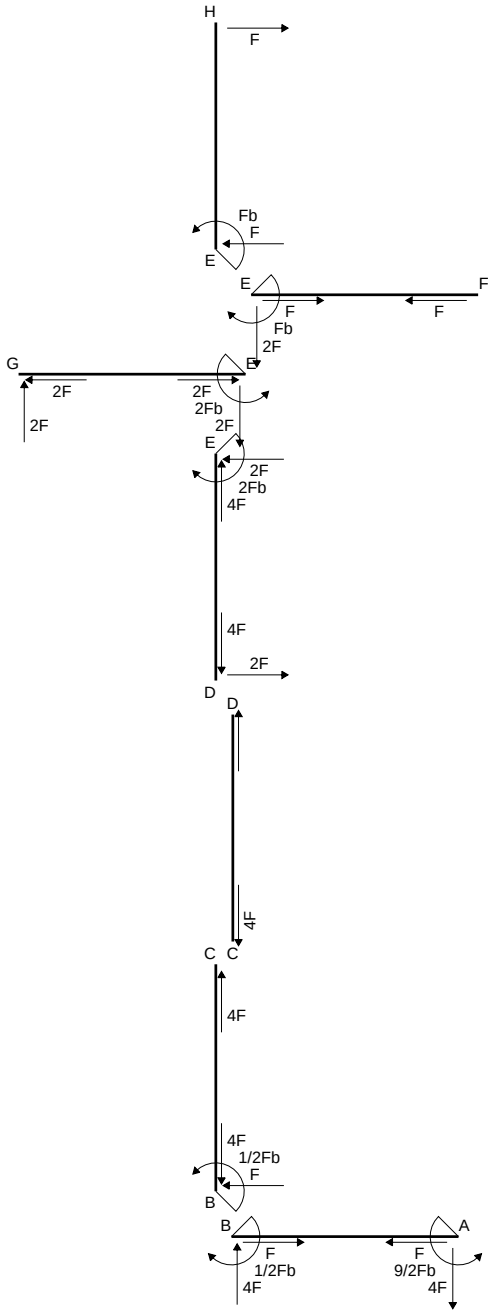
$V_F b = 2Fb - qb^2$

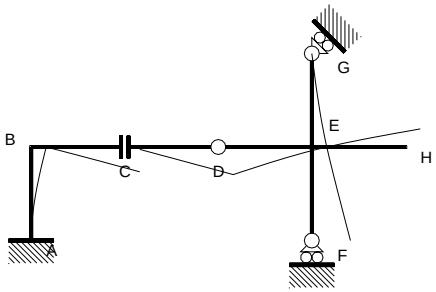
Matrice di equilibrio

$$\begin{matrix} & \begin{bmatrix} V_F b & H_G b \end{bmatrix} \\ \begin{matrix} v_{CB} \\ \varphi_{DC} \end{matrix} & \begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix} \end{matrix} = \begin{bmatrix} Fb & qb^2 \\ 3 & 0 \\ 2 & -1 \end{bmatrix}$$

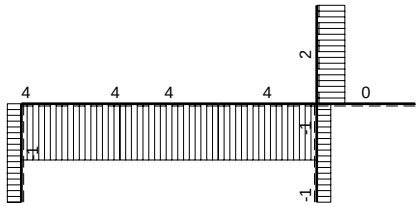
Soluzione del sistema

$$\begin{bmatrix} V_F b \\ H_G b \end{bmatrix} = \begin{matrix} \begin{bmatrix} Fb & qb^2 \end{bmatrix} \\ \begin{bmatrix} 2 & -1 \\ 1 & 1 \end{bmatrix} \end{matrix}$$

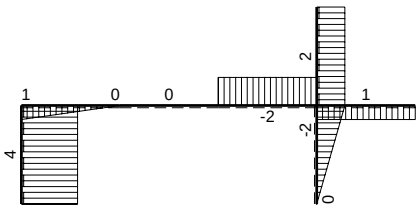




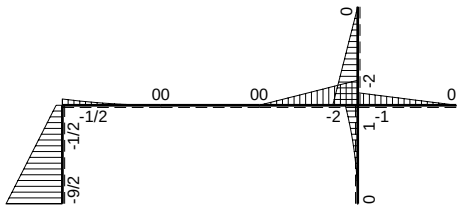
$\vdash\!\!\!\!\!\!\dashv$ 8 Fb^3/EJ



$\leftarrow\boxed{+}\rightarrow$ F



$\uparrow\boxed{+}\downarrow$ F



$\circlearrowright\boxed{+}\circlearrowleft$ Fb

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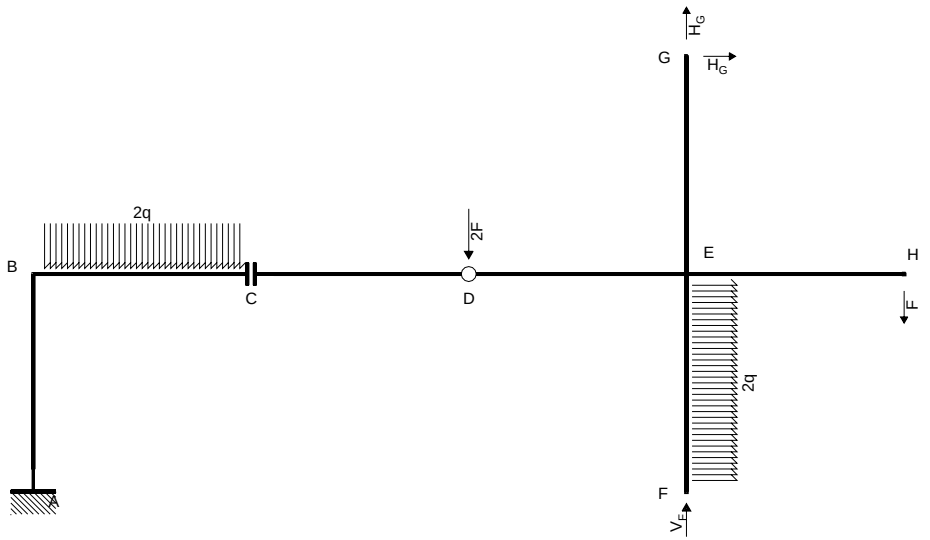

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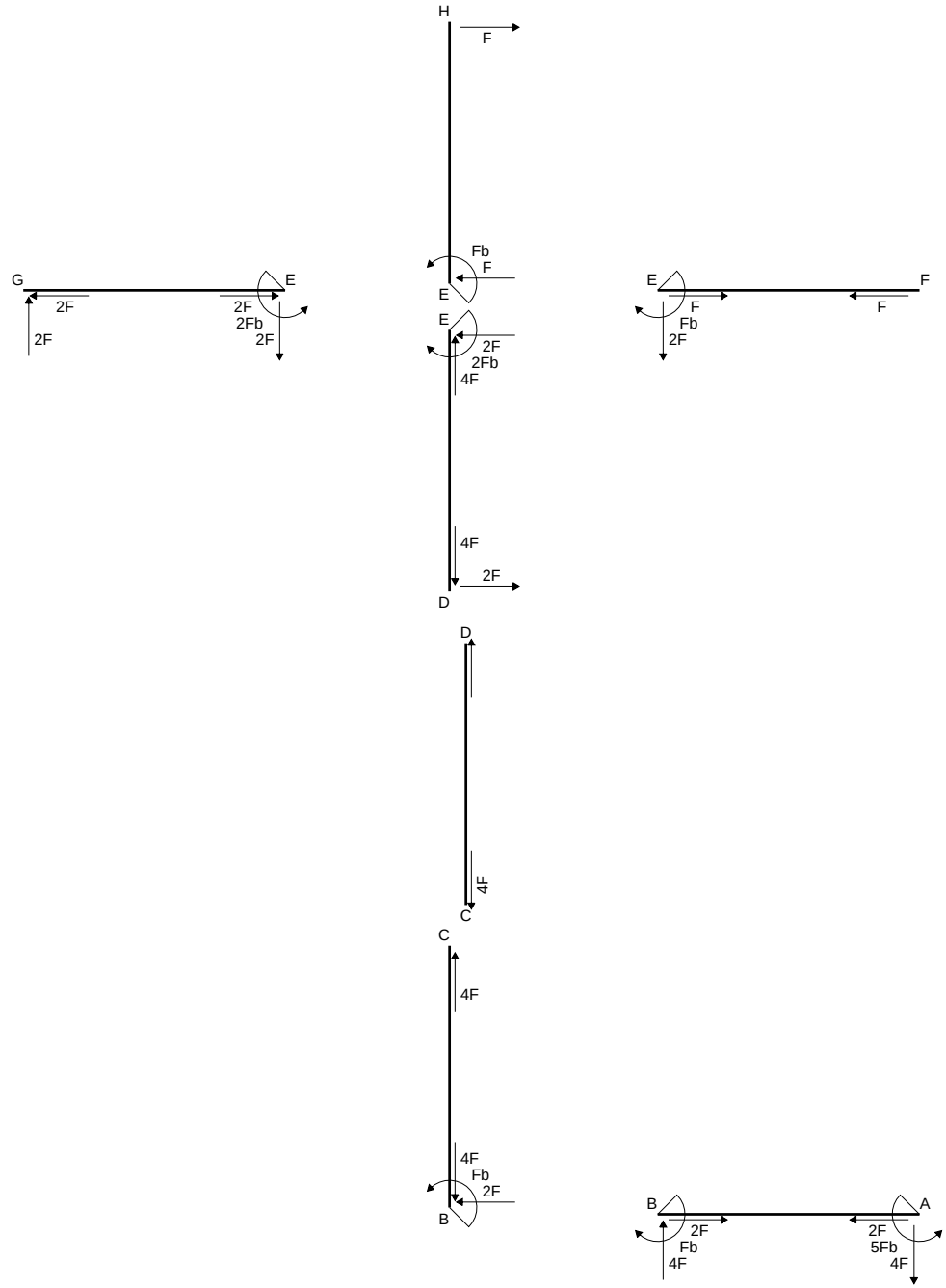
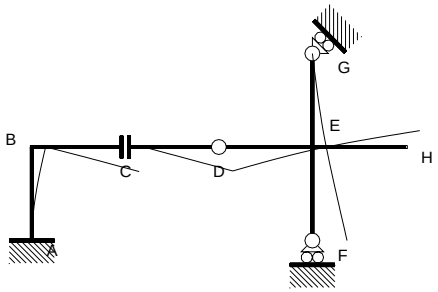
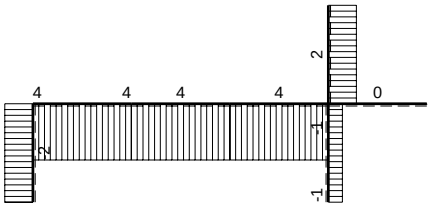




10 Fb^3/EJ



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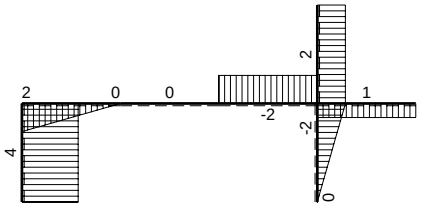

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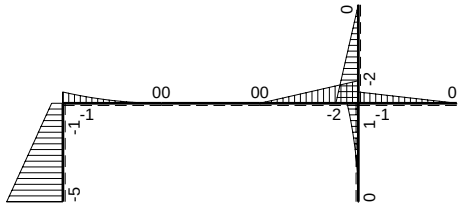

Fb

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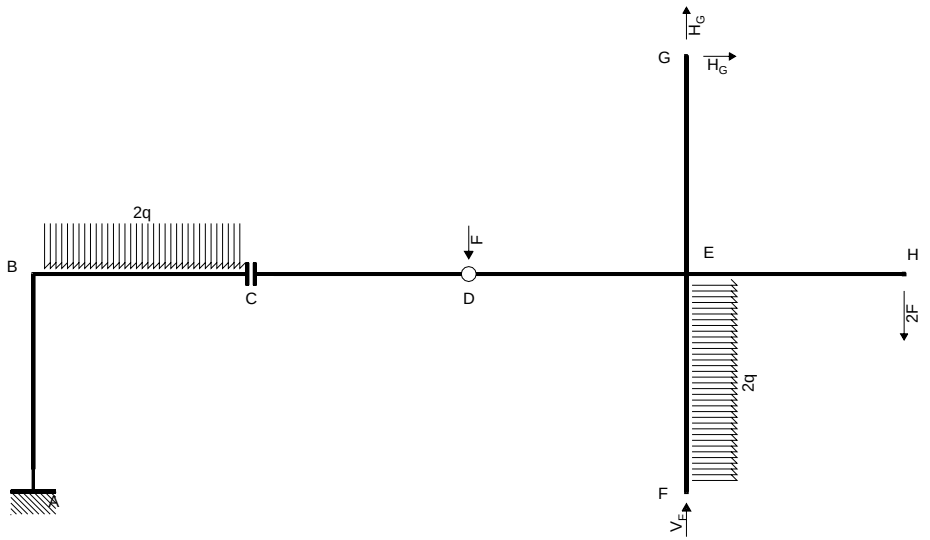

EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG EH

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Soluzione del sistema

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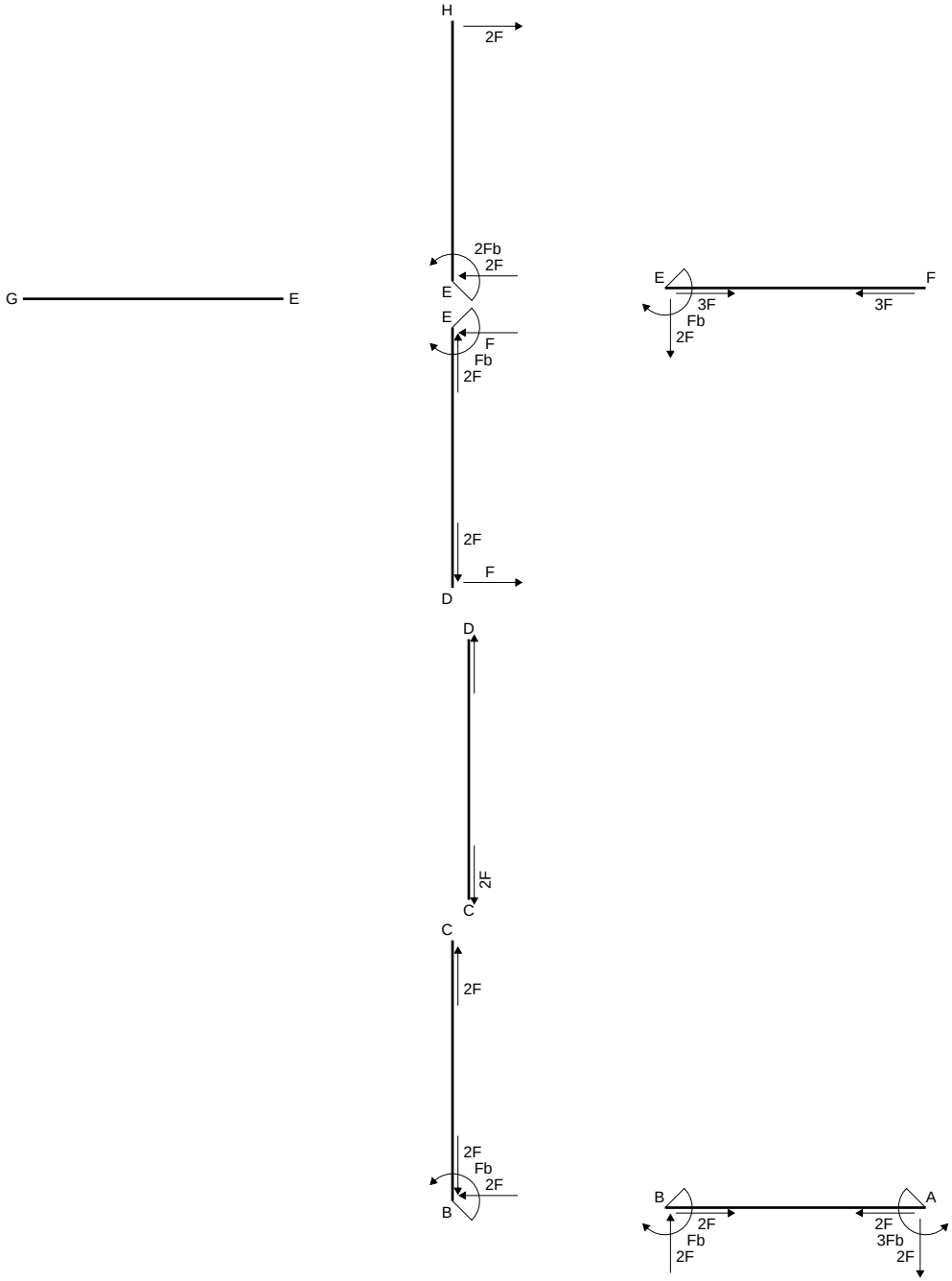
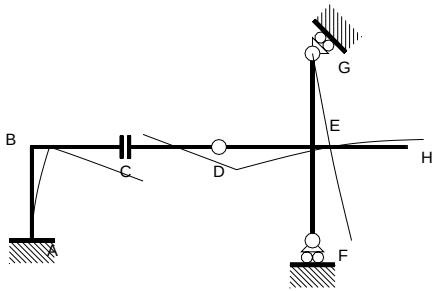
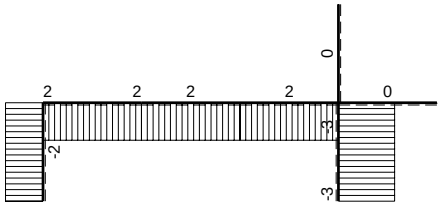
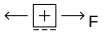




$\vdash\!\!\!\dashv$ 5 Fb^3/EJ

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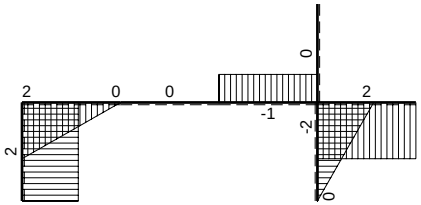


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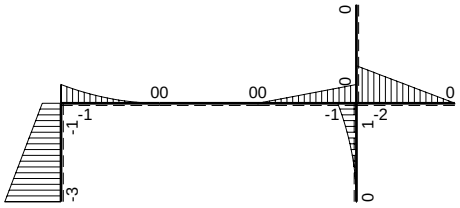


Fb

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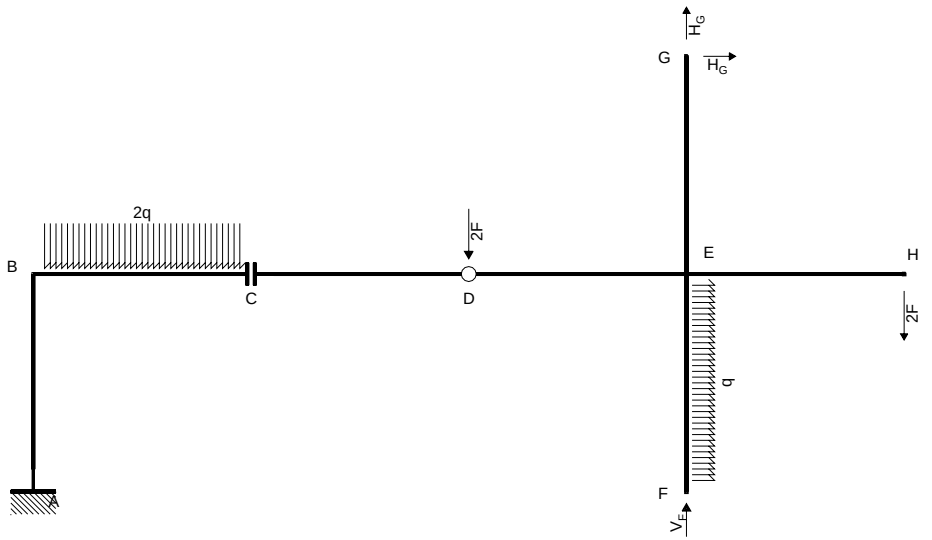


EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG EH

$V_F + H_G = 4F$

Rotazione intorno a D: aste DE EF EG EH

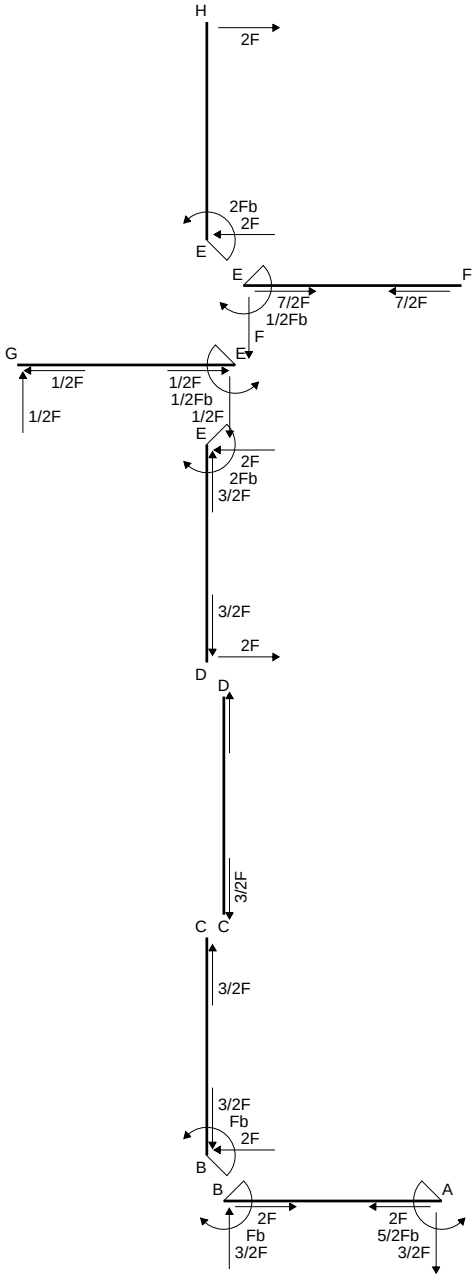
$V_F b = 4Fb - 1/2qb^2$

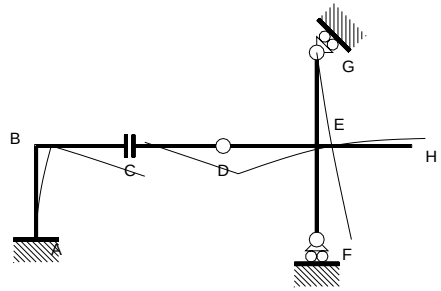
Matrice di equilibrio

$$\begin{matrix} & [V_F b & H_G b] \\ v_{CB} & 1 & 1 \\ \varphi_{DC} & 1 & 0 \end{matrix} \begin{bmatrix} \\ \\ \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 4 & 0 \\ 4 & -1/2 \end{bmatrix}$$

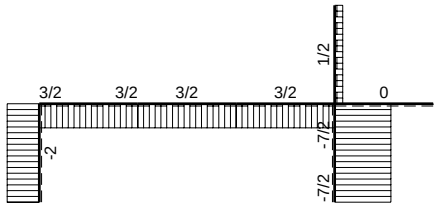
Soluzione del sistema

$$\begin{bmatrix} V_F b \\ H_G b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 4 & -1/2 \\ 0 & 1/2 \end{bmatrix}$$

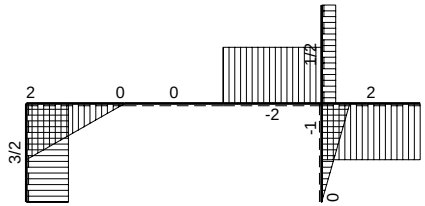




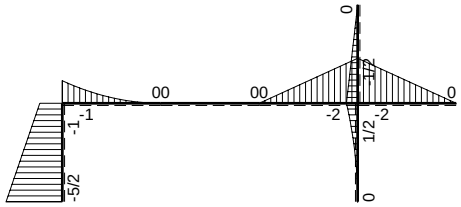
$\longmapsto$ 5 Fb^3/EJ



$\leftarrow \boxplus \rightarrow$ F



$\uparrow \boxplus \downarrow$ F



$\circlearrowleft \boxplus \circlearrowright$ Fb

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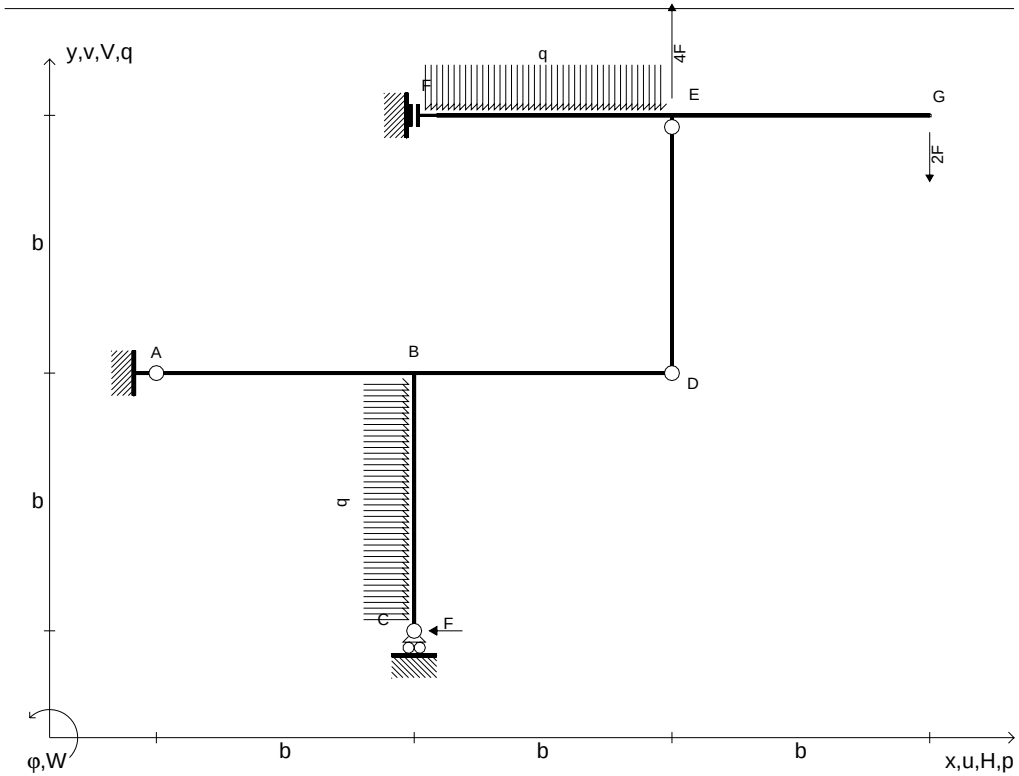

$H_C = -F$ $V_G = -2F$ $q_{EF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$ $EJ_{EG} = EJ$

$V_E = 4F$ $p_{BC} = q = F/b$ $EJ_{AB} = EJ$ $EJ_{BD} = EJ$ $EJ_{EF} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.001

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Struttura Isostatica.001

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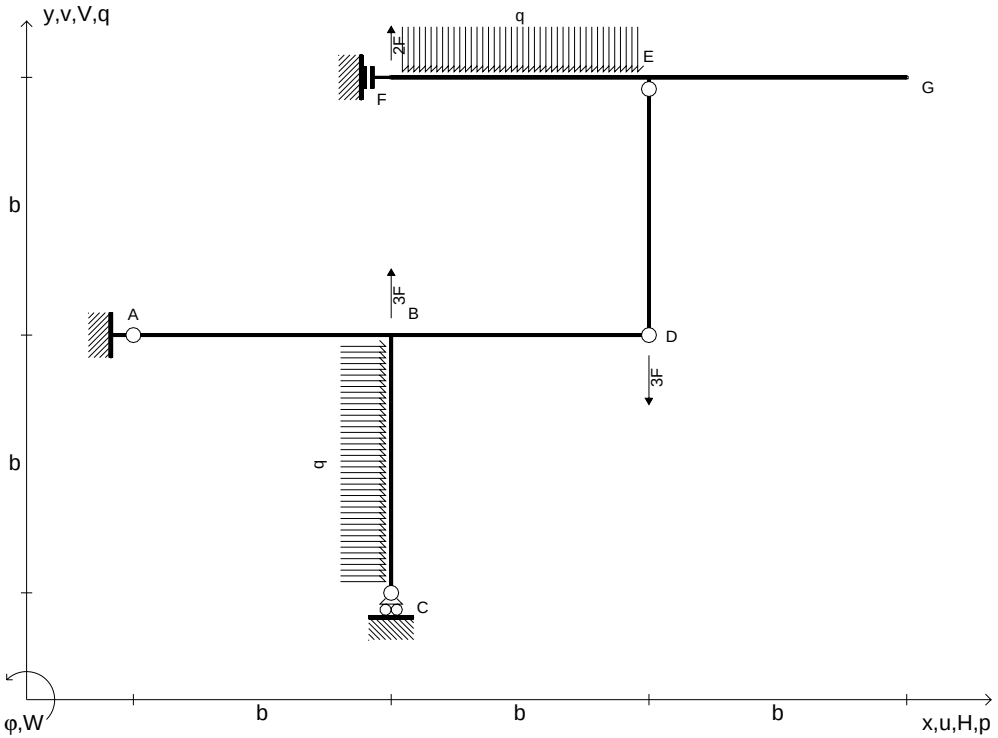

$V_B = 3F$ $V_F = 2F$ $q_{EF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$ $EJ_{EG} = EJ$
$V_D = -3F$ $p_{BC} = q = F/b$ $EJ_{AB} = EJ$ $EJ_{BD} = EJ$ $EJ_{EF} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.002

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Struttura Isostatica.002

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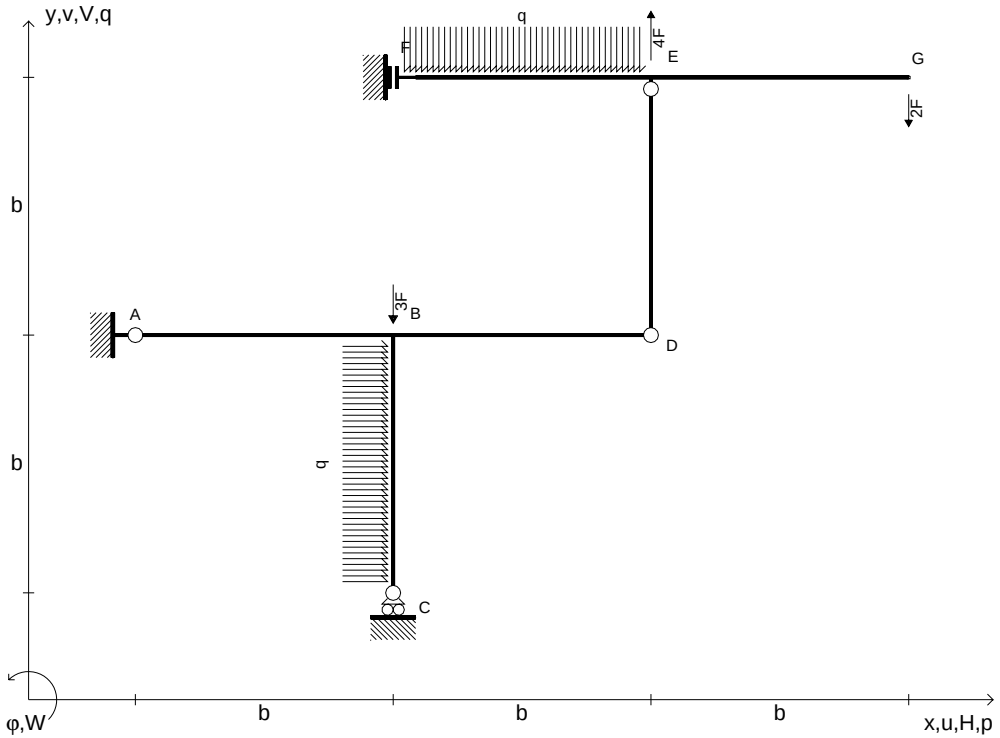

$V_E = 4F$ $V_B = -3F$ $q_{EF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$ $EJ_{EG} = EJ$

$V_G = -2F$ $p_{BC} = q = F/b$ $EJ_{AB} = EJ$ $EJ_{BD} = EJ$ $EJ_{EF} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.003

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Struttura Isostatica.003

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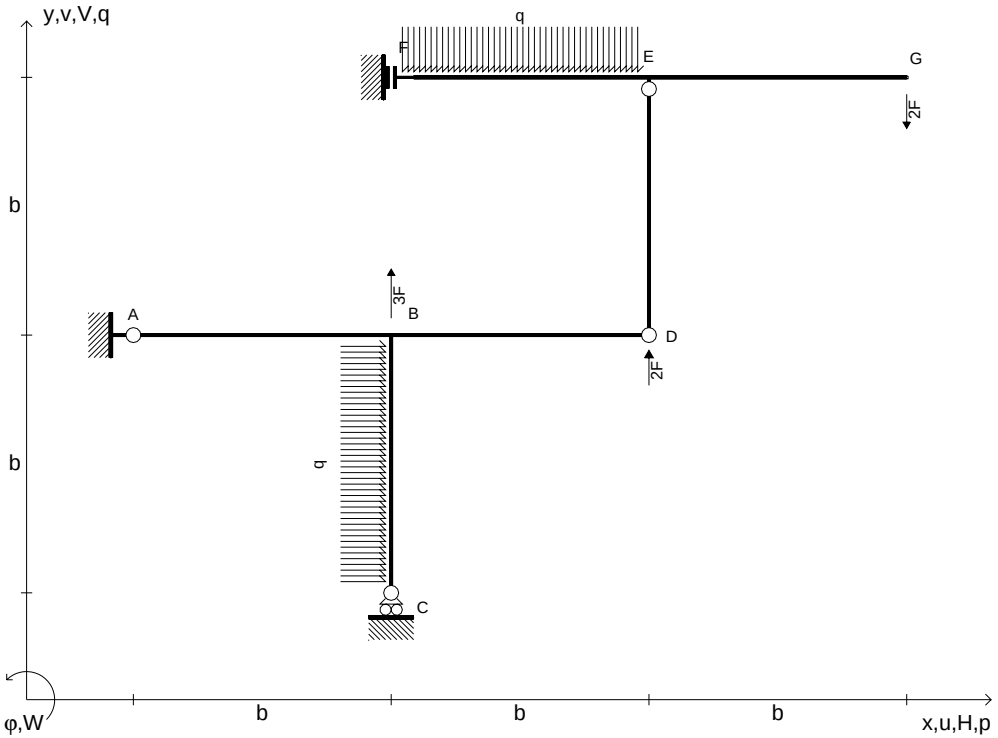

$V_G = -2F$ $V_D = 2F$ $q_{EF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$ $EJ_{EG} = EJ$
$V_B = 3F$ $p_{BC} = q = F/b$ $EJ_{AB} = EJ$ $EJ_{BD} = EJ$ $EJ_{EF} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.004

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Struttura Isostatica.004

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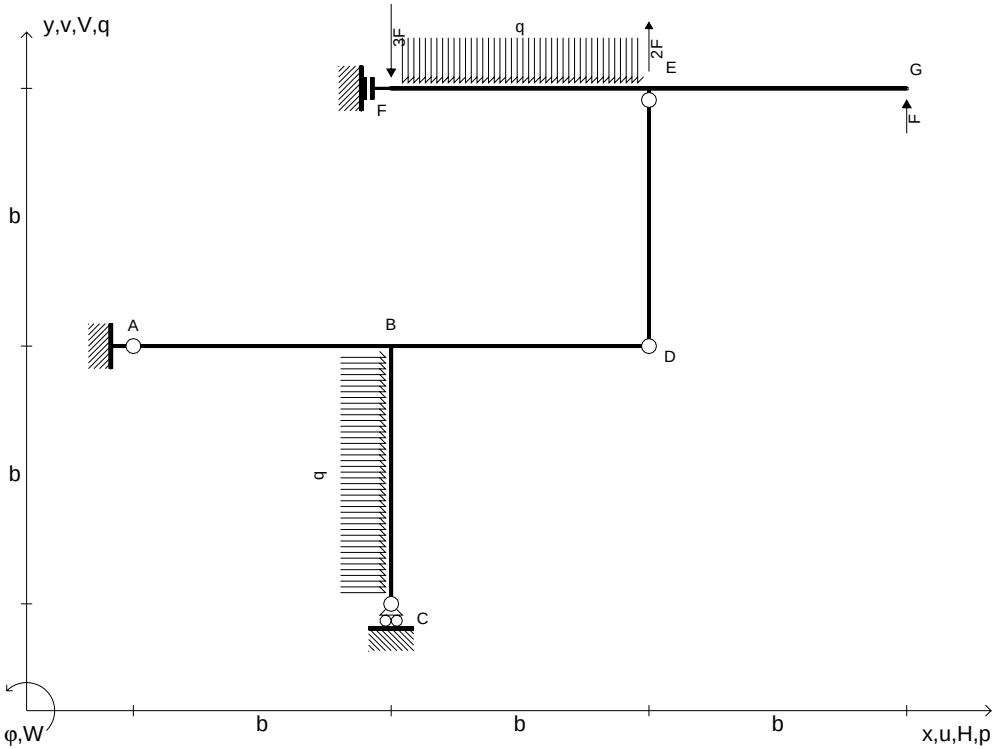

$V_F = -3F$ $V_G = F$ $q_{EF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$ $EJ_{EG} = EJ$

$V_E = 2F$ $p_{BC} = q = F/b$ $EJ_{AB} = EJ$ $EJ_{BD} = EJ$ $EJ_{EF} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.005

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Struttura Isostatica.005

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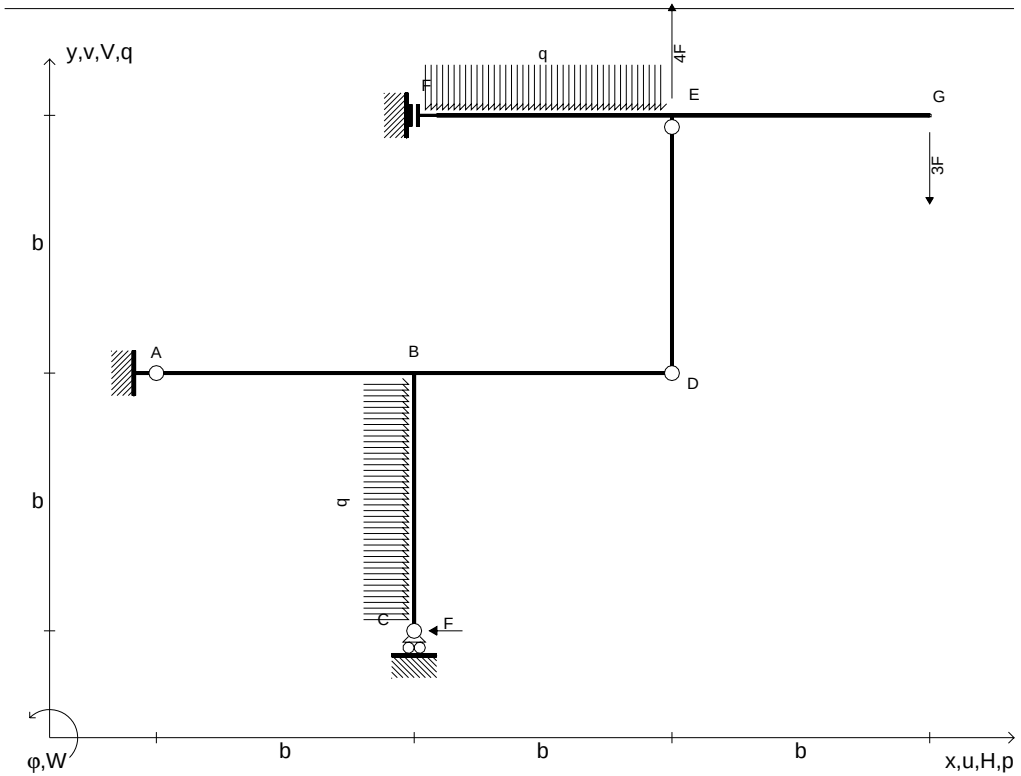

$H_C = -F$ $V_G = -3F$ $q_{EF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$ $EJ_{EG} = EJ$

$V_E = 4F$ $p_{BC} = q = F/b$ $EJ_{AB} = EJ$ $EJ_{BD} = EJ$ $EJ_{EF} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.006

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Struttura Isostatica.006

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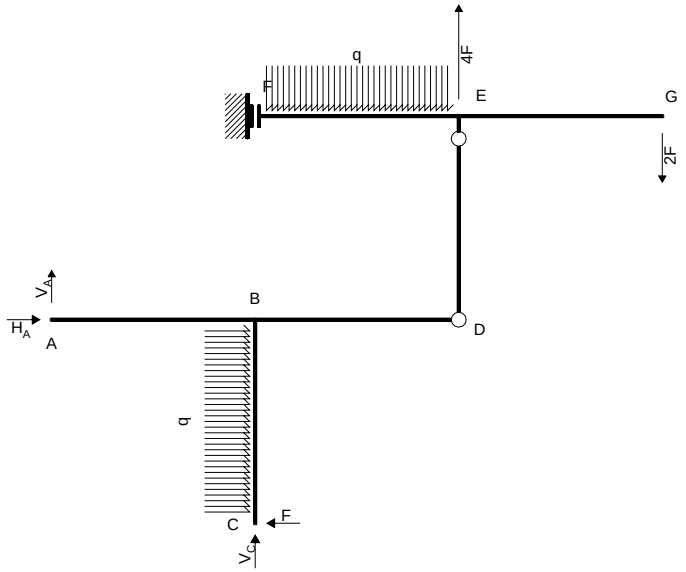


EQUAZIONI DI EQUILIBRIO

Traslazione verticale globale

$V_A + V_C = -2F + qb$

Rotazione intorno a E: aste ED DB BA BC

$H_A b - 2V_A b - V_C b = 2Fb - 3/2qb^2$

Rotazione intorno a D: aste DB BA BC

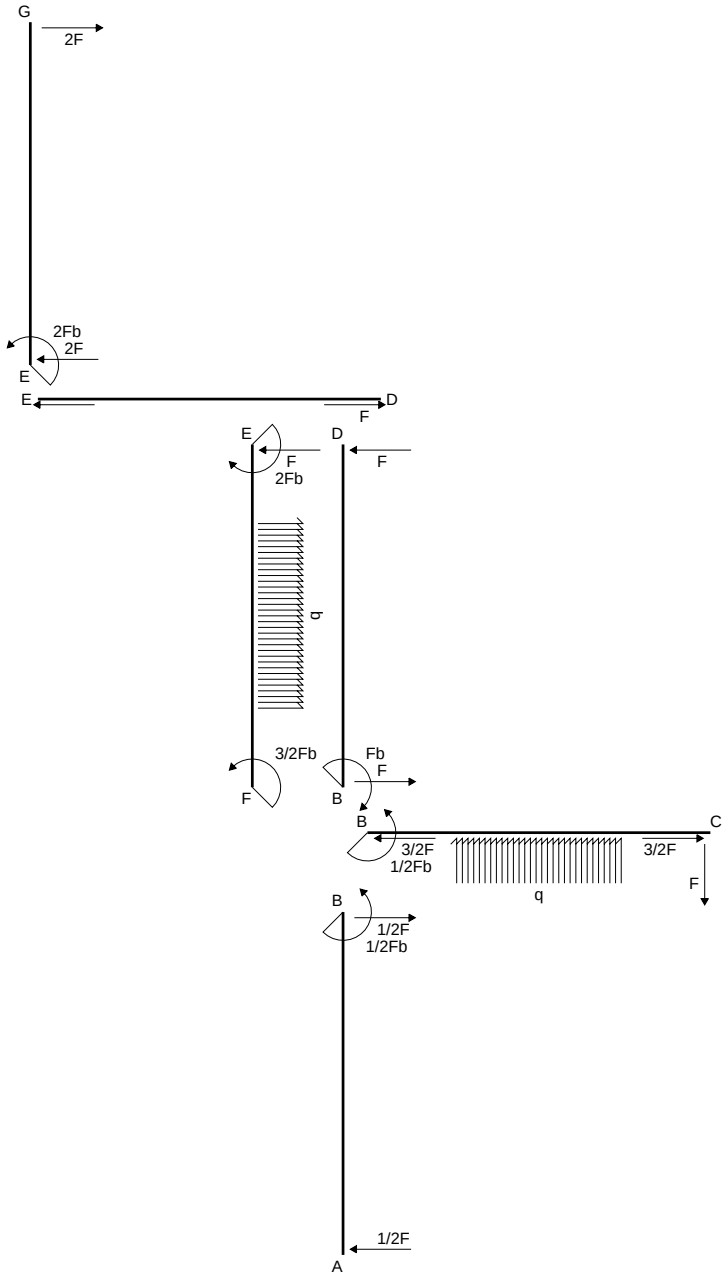
$-2V_A b - V_C b = Fb - 1/2qb^2$

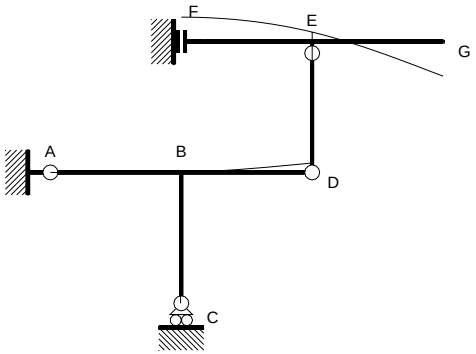
Matrice di equilibrio

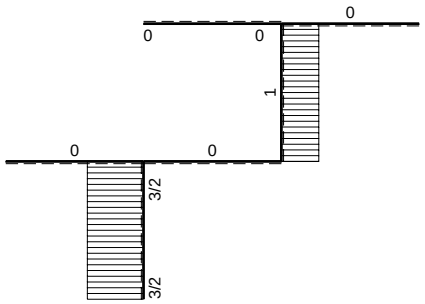
$$\begin{array}{c} \\ v_F \\ \varphi_{ED} \\ \varphi_{DB} \end{array} \begin{bmatrix} H_A b & V_A b & V_C b \\ 0 & 1 & 1 \\ 1 & -2 & -1 \\ 0 & -2 & -1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -2 & 1 \\ 2 & -3/2 \\ 1 & -1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_A b \\ H_A b \\ V_C b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -1/2 \\ 1 & -1 \\ -3 & 3/2 \end{bmatrix}$$

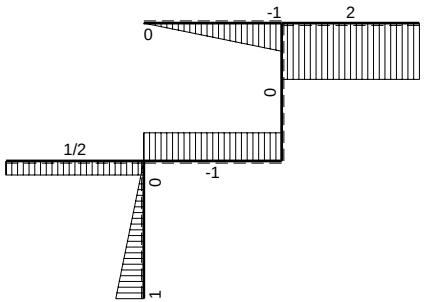


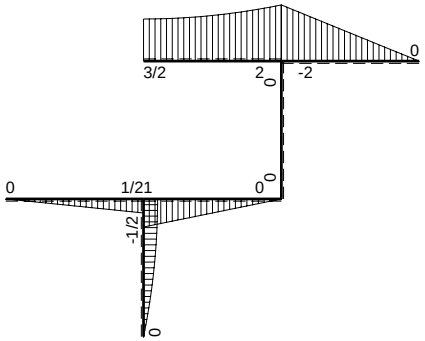




$\vdash\!\!\!\dashv$ 4 Fb^3/EJ

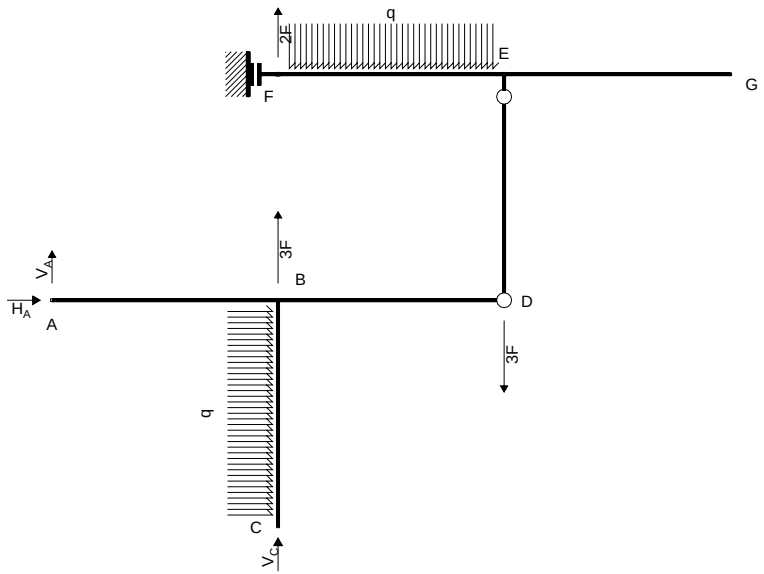
$\leftarrow\boxed{+}\rightarrow$ F





$\uparrow\boxed{+}\downarrow$ F

$\circlearrowright\boxed{+}\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Traslazione verticale globale

$V_A + V_C = -2F + qb$

Rotazione intorno a E: aste ED DB BA BC

$H_A b - 2V_A b - V_C b = 3Fb - 3/2qb^2$

Rotazione intorno a D: aste DB BA BC

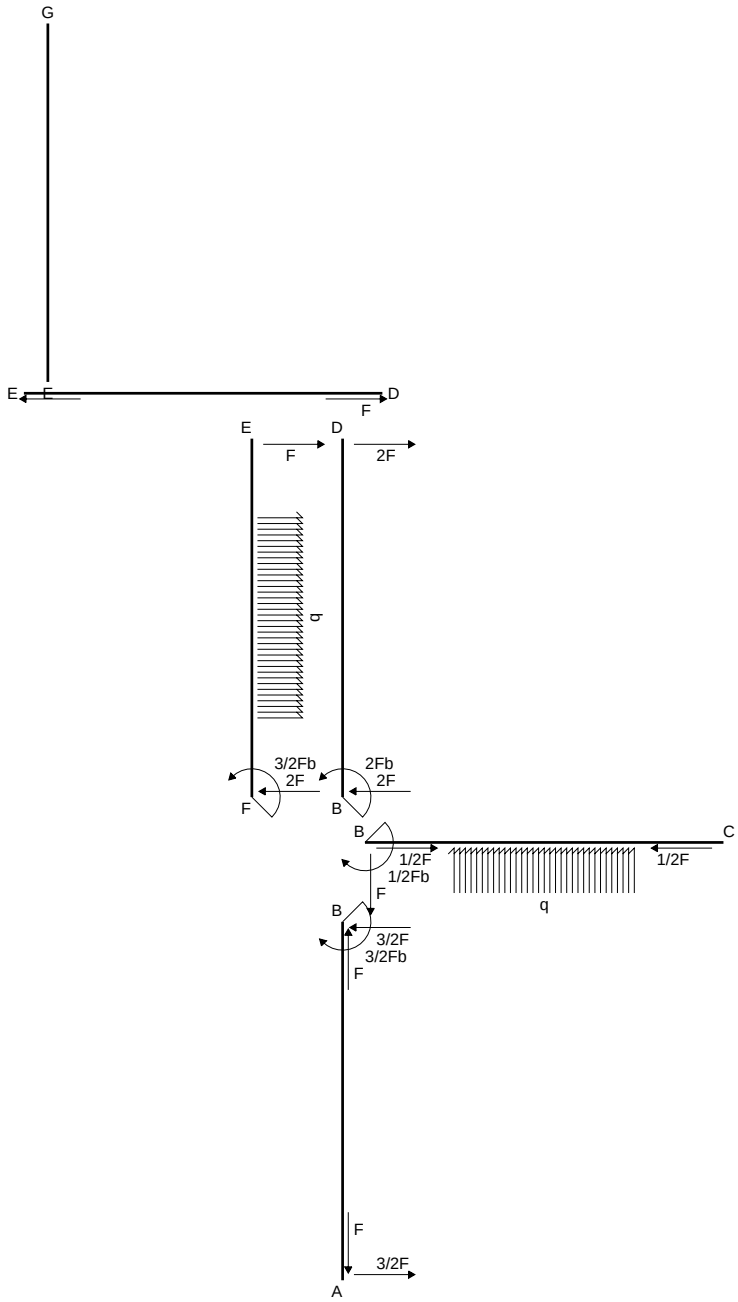
$-2V_A b - V_C b = 3Fb - 1/2qb^2$

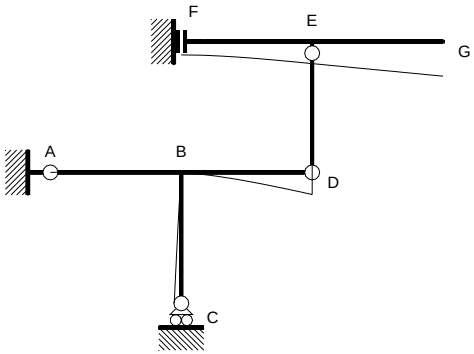
Matrice di equilibrio

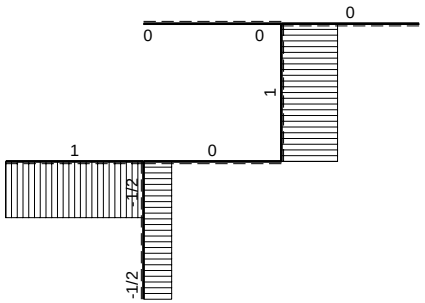
$$\begin{array}{c} \\ v_F \\ \varphi_{ED} \\ \varphi_{DB} \end{array} \begin{bmatrix} H_A b & V_A b & V_C b \\ 0 & 1 & 1 \\ 1 & -2 & -1 \\ 0 & -2 & -1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -2 & 1 \\ 3 & -3/2 \\ 3 & -1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_A b \\ H_A b \\ V_C b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -1 & -1/2 \\ 0 & -1 \\ -1 & 3/2 \end{bmatrix}$$

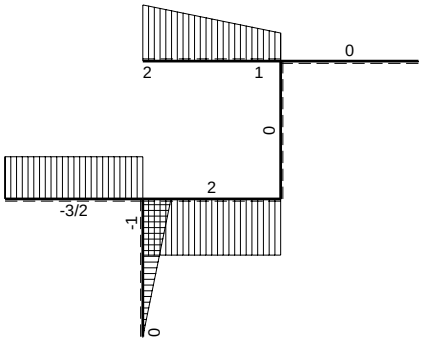


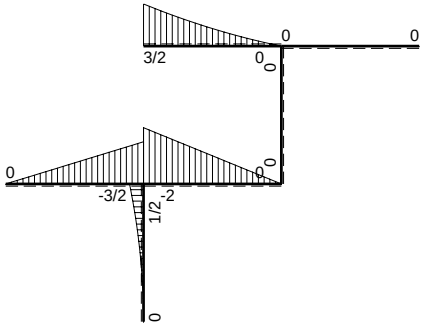




$\vdash\!\!\!\dashv$ $4\,Fb^3/EJ$

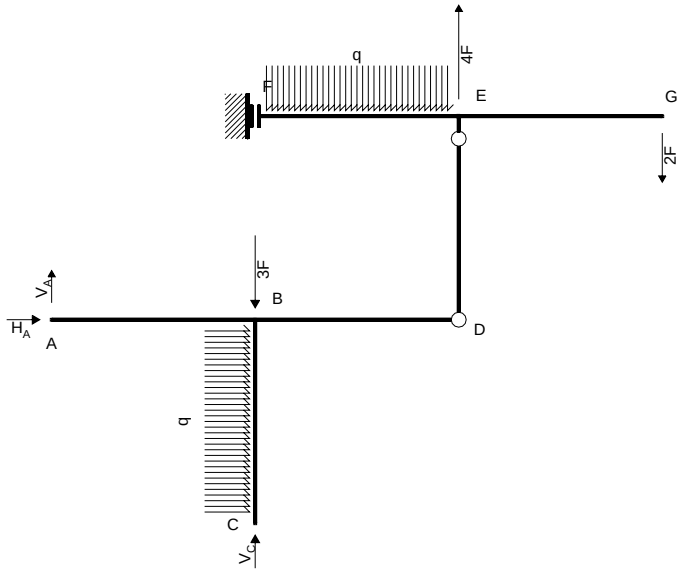
$\leftarrow \boxplus \rightarrow$ F





$\uparrow\boxplus\downarrow$ F

$\circlearrowright\boxplus\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Traslazione verticale globale

$V_A + V_C = F + qb$

Rotazione intorno a E: aste ED DB BA BC

$H_A b - 2V_A b - V_C b = -3Fb - 3/2qb^2$

Rotazione intorno a D: aste DB BA BC

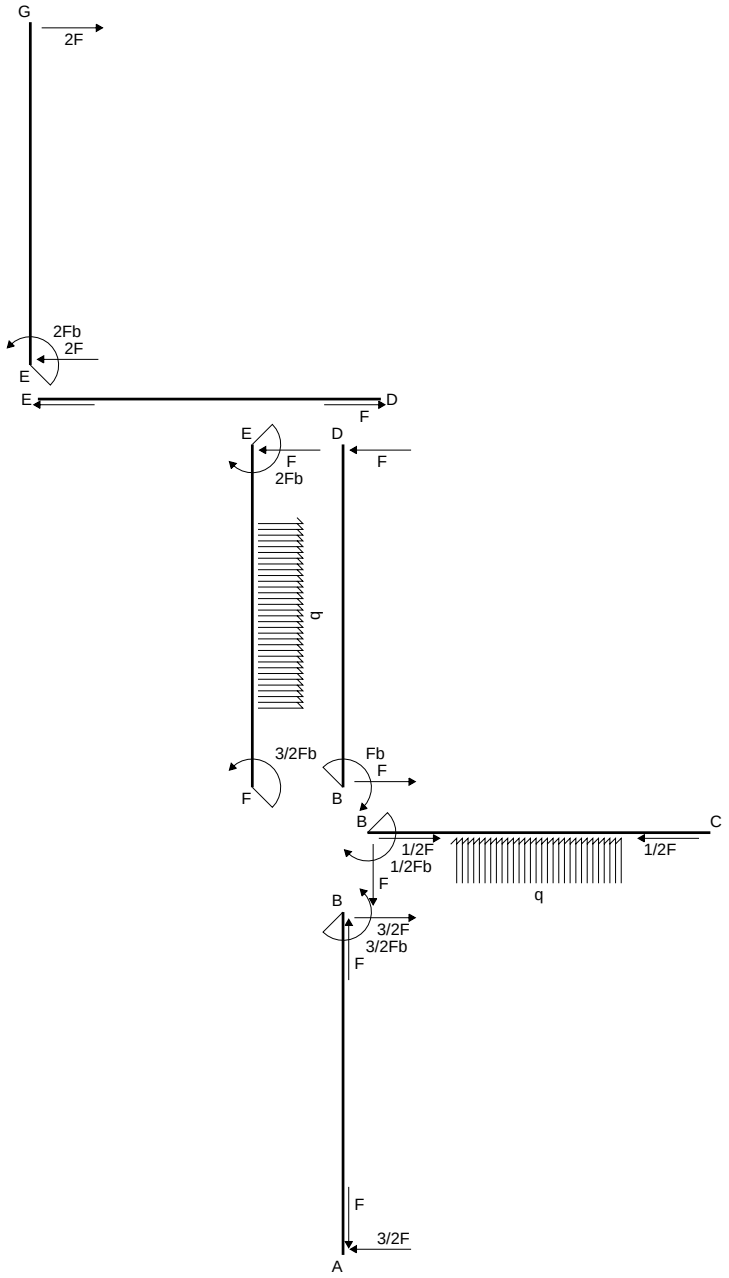
$-2V_A b - V_C b = -3Fb - 1/2qb^2$

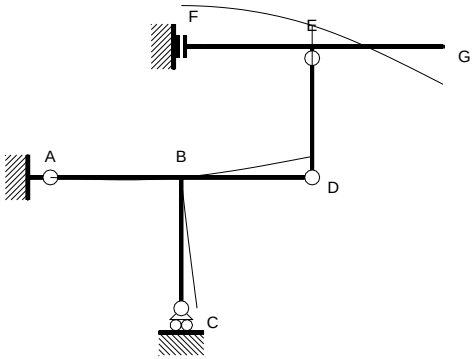
Matrice di equilibrio

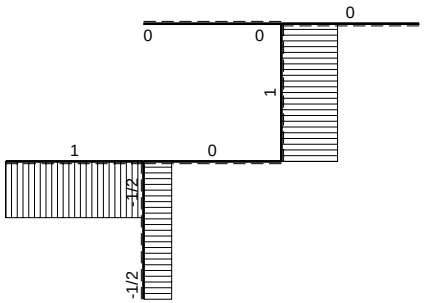
$$\begin{array}{c} \\ v_F \\ \varphi_{ED} \\ \varphi_{DB} \end{array} \begin{bmatrix} H_A b & V_A b & V_C b \\ 0 & 1 & 1 \\ 1 & -2 & -1 \\ 0 & -2 & -1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & 1 \\ -3 & -3/2 \\ -3 & -1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_A b \\ H_A b \\ V_C b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 2 & -1/2 \\ 0 & -1 \\ -1 & 3/2 \end{bmatrix}$$

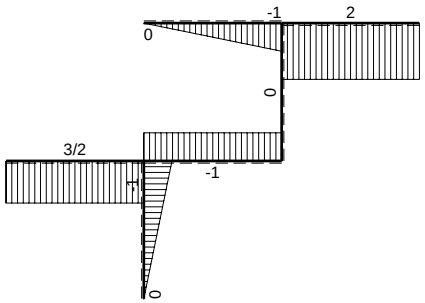


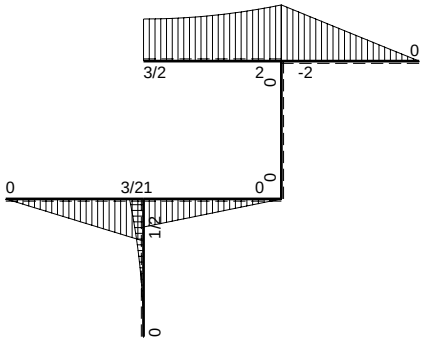




$\vdash\!\!\dashv$ 3 Fb^3/EJ

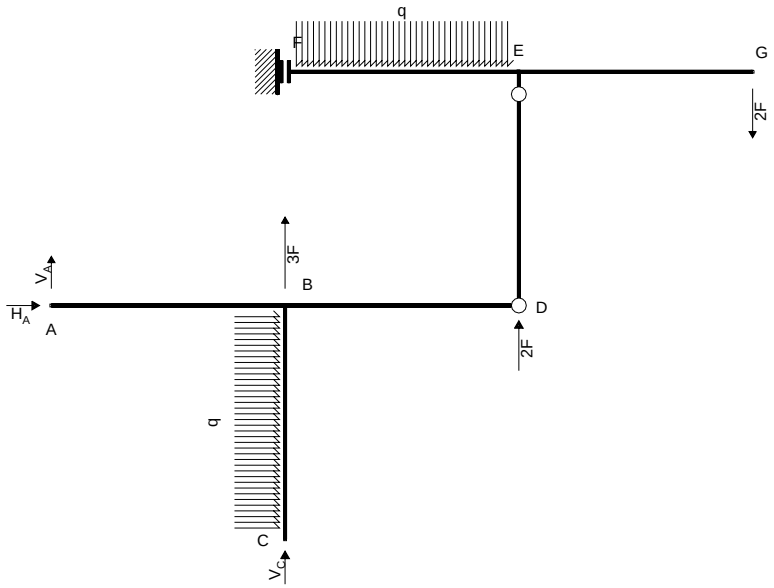
$\leftarrow\boxed{+}\rightarrow$ F





$\uparrow\boxed{+}\downarrow$ F

$\circlearrowright\boxed{+}\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Traslazione verticale globale

$V_A + V_C = -3F + qb$

Rotazione intorno a E: aste ED DB BA BC

$H_A b - 2V_A b - V_C b = 3Fb - 3/2qb^2$

Rotazione intorno a D: aste DB BA BC

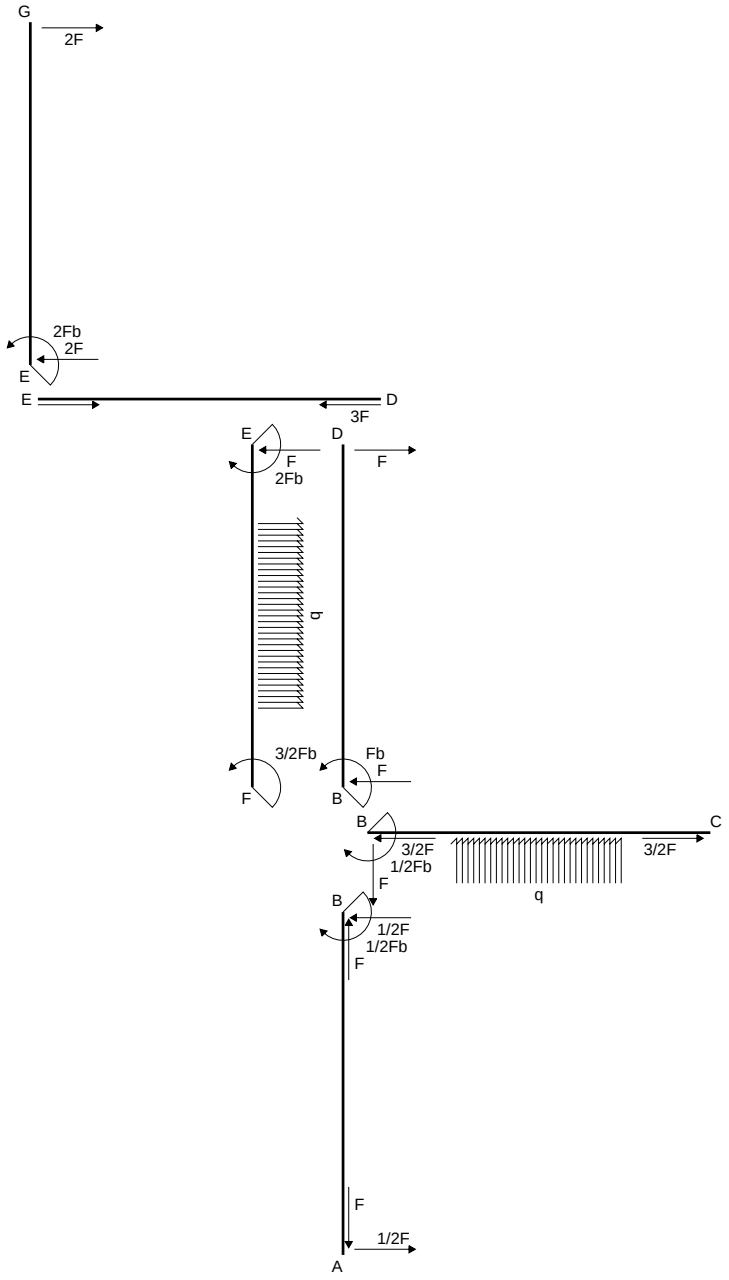
$-2V_A b - V_C b = 3Fb - 1/2qb^2$

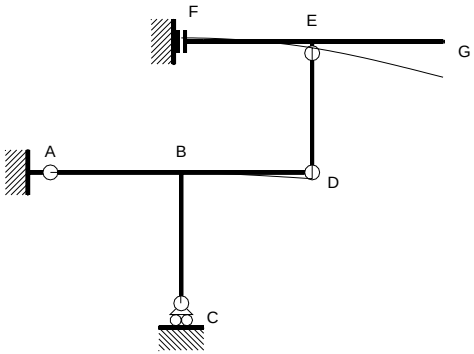
Matrice di equilibrio

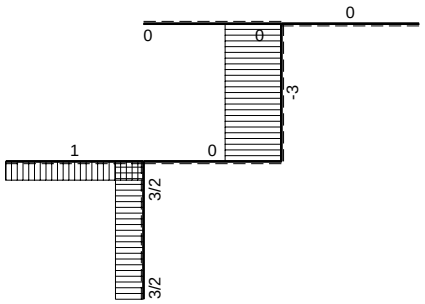
$$\begin{array}{c} \\ v_F \\ \varphi_{ED} \\ \varphi_{DB} \end{array} \begin{bmatrix} H_A b & V_A b & V_C b \\ 0 & 1 & 1 \\ 1 & -2 & -1 \\ 0 & -2 & -1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -3 & 1 \\ 3 & -3/2 \\ 3 & -1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_A b \\ H_A b \\ V_C b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -1/2 \\ 0 & -1 \\ -3 & 3/2 \end{bmatrix}$$

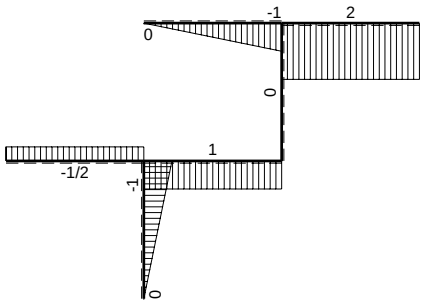


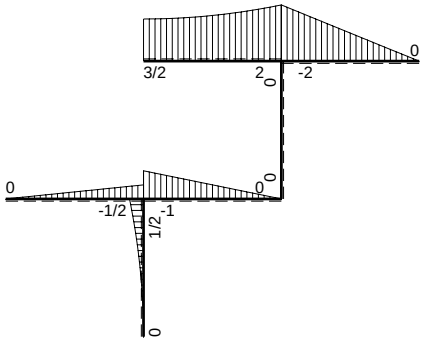




$\vdash\!\!\!\dashv$ 6 Fb^3/EJ

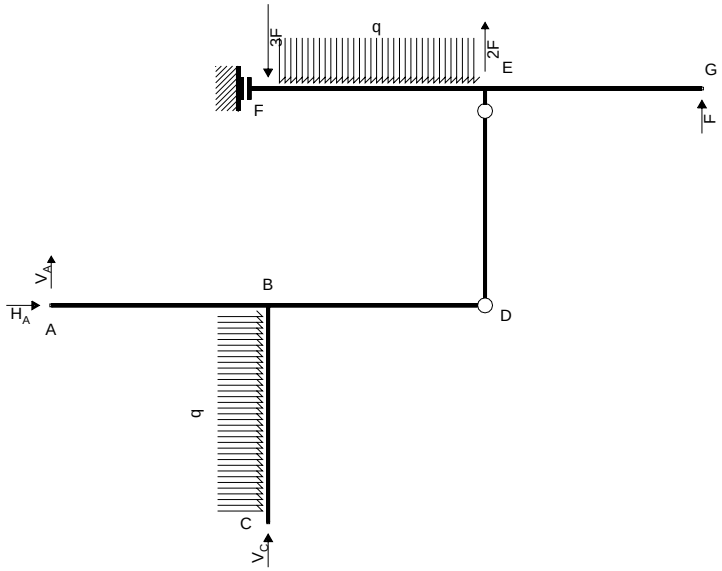
$\leftarrow$ F $\rightarrow$





F

Fb



EQUAZIONI DI EQUILIBRIO

Traslazione verticale globale

$V_A + V_C = qb$

Rotazione intorno a E: aste ED DB BA BC

$H_A b - 2V_A b - V_C b = -3/2 qb^2$

Rotazione intorno a D: aste DB BA BC

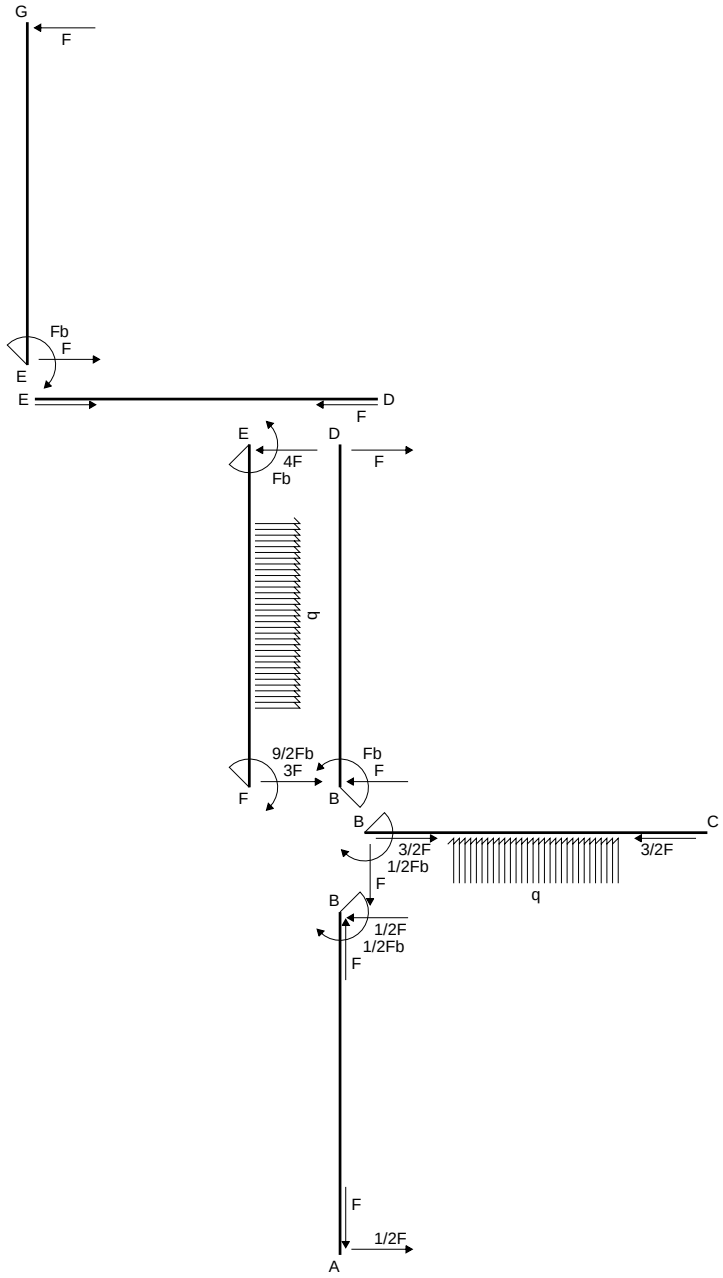
$-2V_A b - V_C b = -1/2 qb^2$

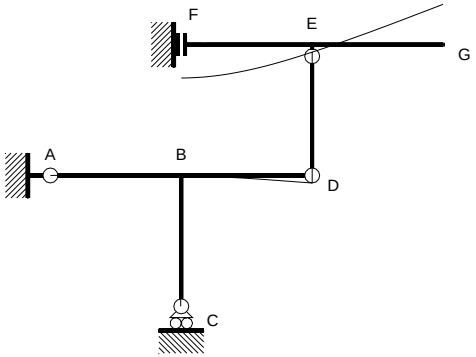
Matrice di equilibrio

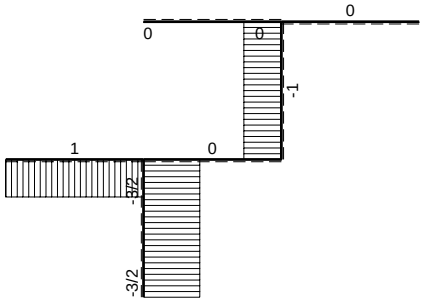
$$\begin{array}{c} \\ v_F \\ \varphi_{ED} \\ \varphi_{DB} \end{array} \begin{bmatrix} H_A b & V_A b & V_C b \\ 0 & 1 & 1 \\ 1 & -2 & -1 \\ 0 & -2 & -1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & 1 \\ 0 & -3/2 \\ 0 & -1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_A b \\ H_A b \\ V_C b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -1/2 \\ 0 & -1 \\ 0 & 3/2 \end{bmatrix}$$

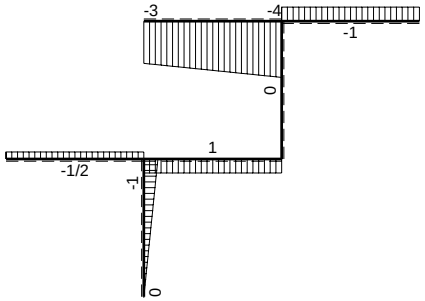


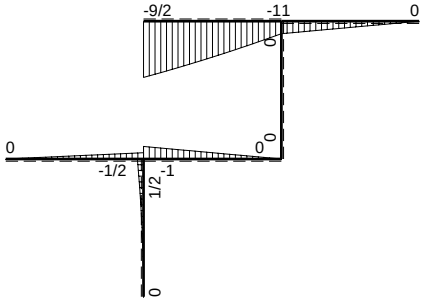




$\vdash\!\!\!\!\dashv$ 5 Fb^3/EJ

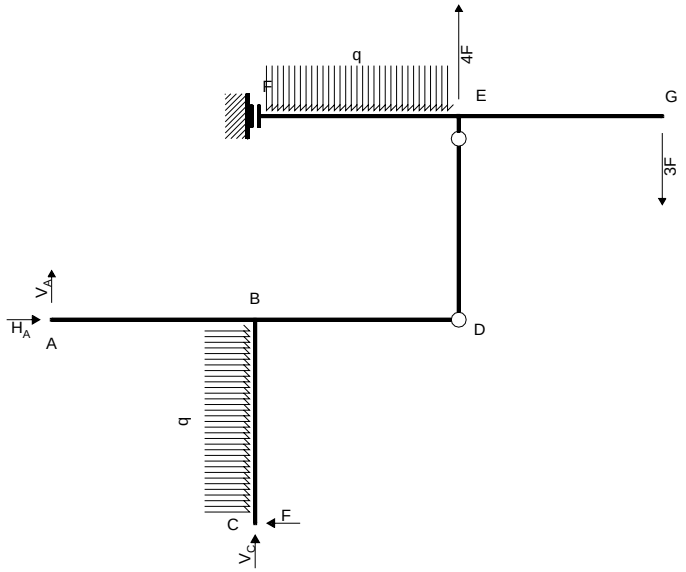
$\leftarrow$ + $\rightarrow$ F





$\uparrow$ + $\downarrow$ F

$\circlearrowright$ + $\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Traslazione verticale globale

$V_A + V_C = -F + qb$

Rotazione intorno a E: aste ED DB BA BC

$H_A b - 2V_A b - V_C b = 2Fb - 3/2qb^2$

Rotazione intorno a D: aste DB BA BC

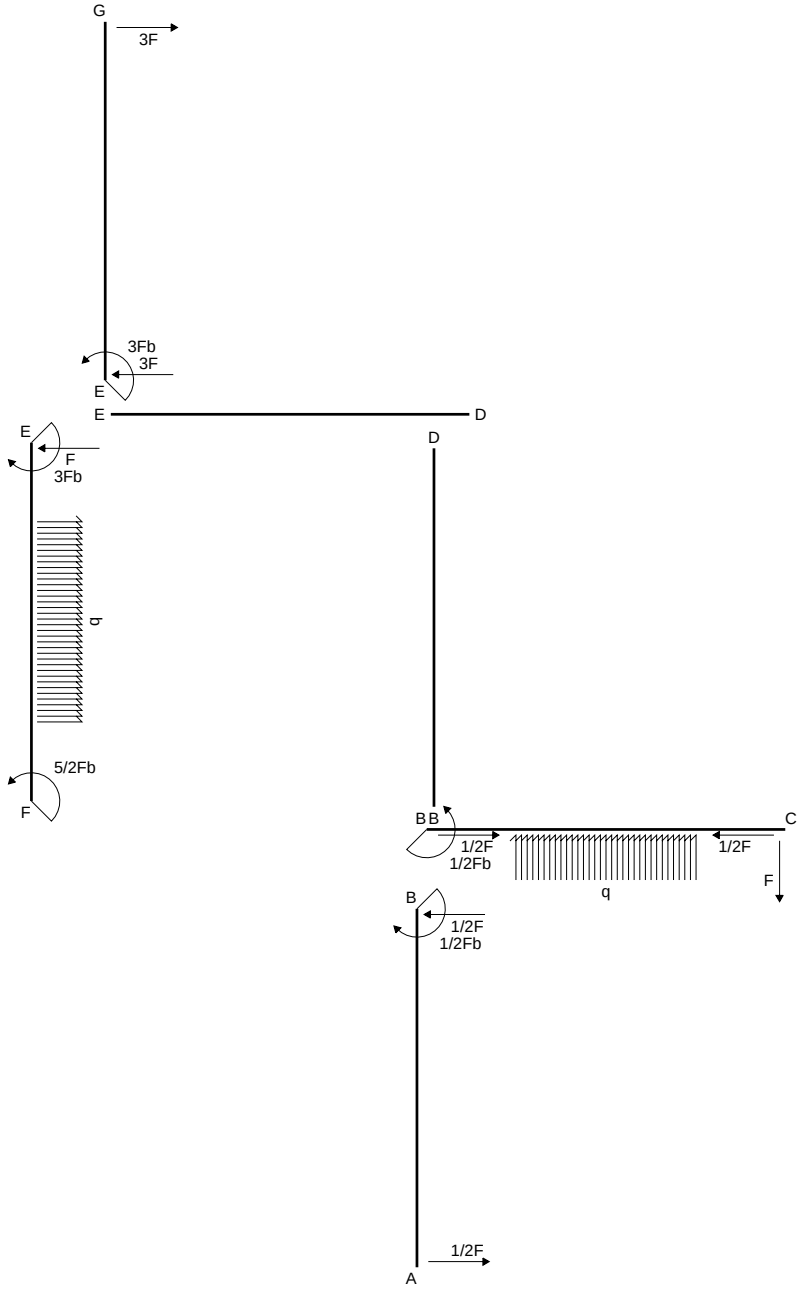
$-2V_A b - V_C b = Fb - 1/2qb^2$

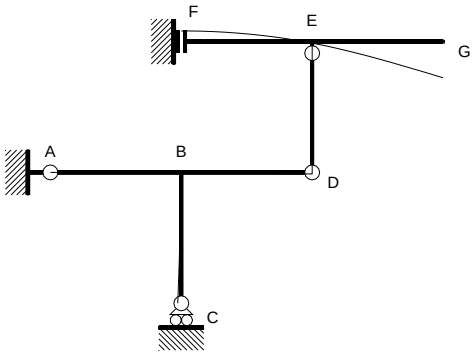
Matrice di equilibrio

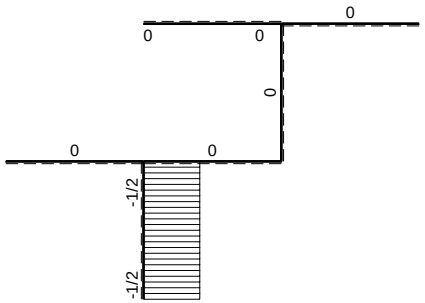
$$\begin{array}{c} \\ v_F \\ \varphi_{ED} \\ \varphi_{DB} \end{array} \begin{bmatrix} H_A b & V_A b & V_C b \\ 0 & 1 & 1 \\ 1 & -2 & -1 \\ 0 & -2 & -1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -1 & 1 \\ 2 & -3/2 \\ 1 & -1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_A b \\ H_A b \\ V_C b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 0 & -1/2 \\ 1 & -1 \\ -1 & 3/2 \end{bmatrix}$$

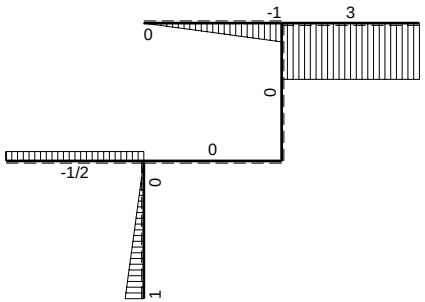


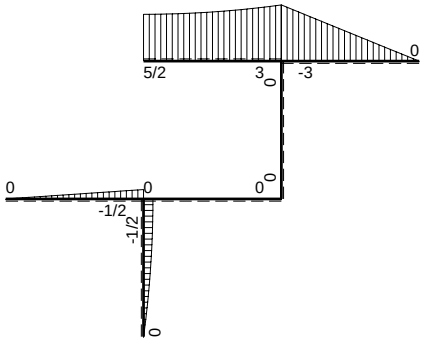




$\vdash\!\!\dashv$ 8 Fb^3/EJ

$\leftarrow$ F $\rightarrow$





F

Fb

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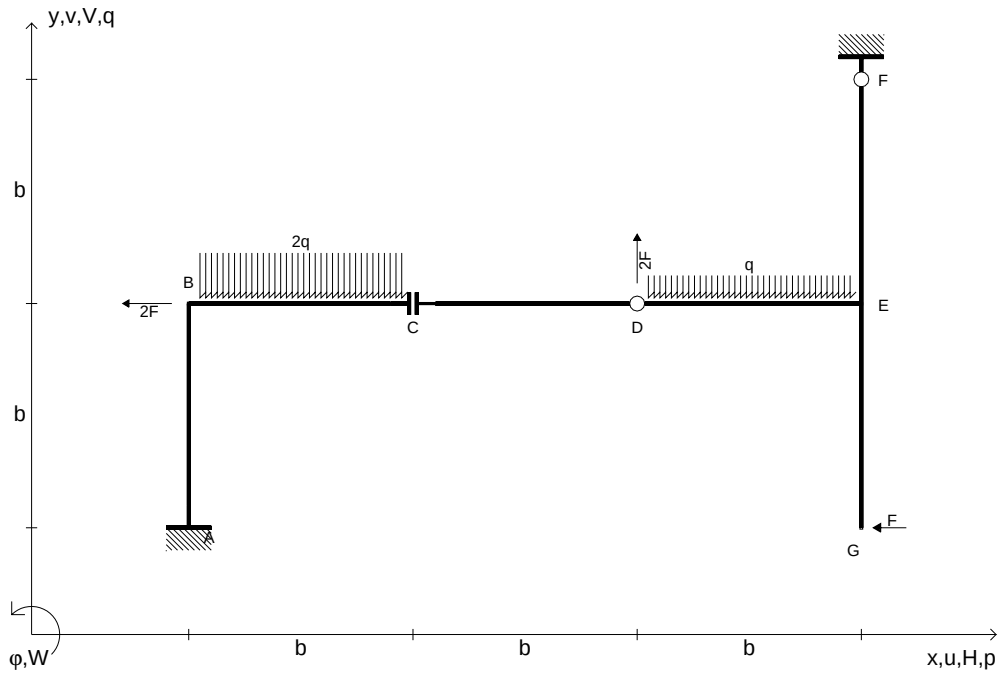

$V_D = 2F$ $q_{BC} = -2q = -2F/b$ $EJ_{BC} = EJ$ $EJ_{EF} = EJ$

$H_B = -2F$ $q_{DE} = -q = -F/b$ $EJ_{CD} = EJ$ $EJ_{EG} = EJ$

$H_G = -F$ $EJ_{AB} = EJ$ $EJ_{DE} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.001

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Struttura Isostatica.001

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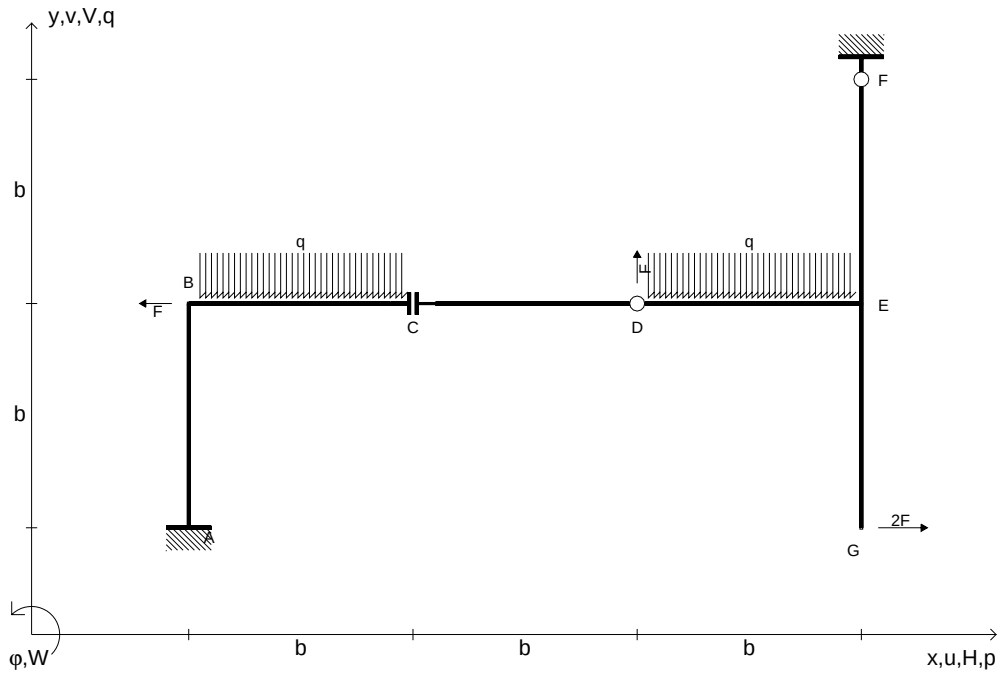

$V_D = F$ $H_G = 2F$ $q_{DE} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{DE} = EJ$ $EJ_{EG} = EJ$

$H_B = -F$ $q_{BC} = -q = -F/b$ $EJ_{AB} = EJ$ $EJ_{CD} = EJ$ $EJ_{EF} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.002

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Struttura Isostatica.002

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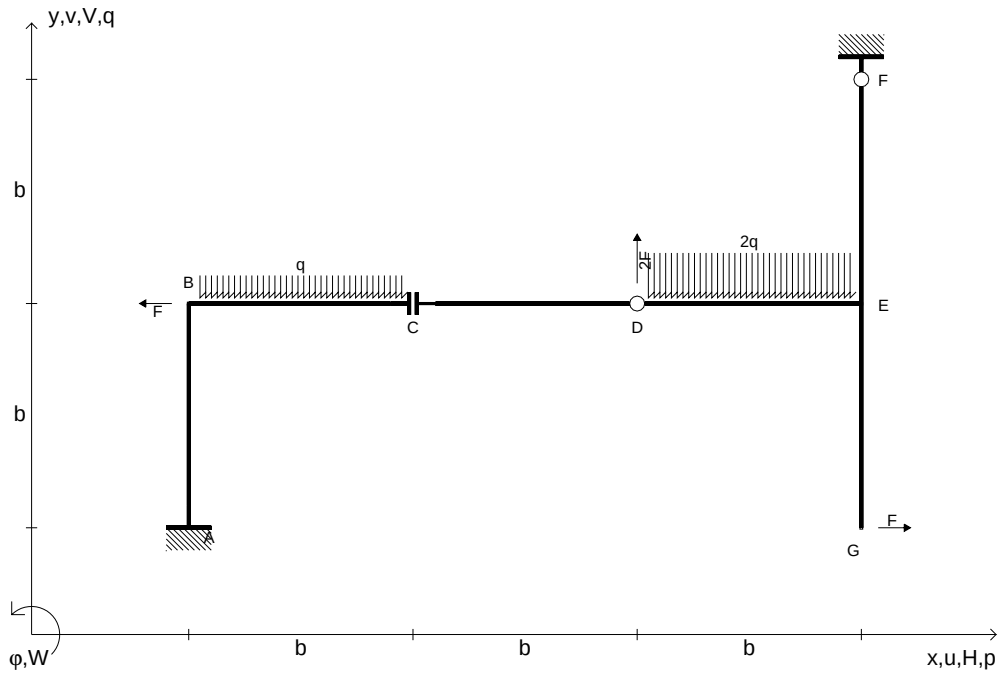

$V_D = 2F$
$H_B = -F$
$H_G = F$

$q_{BC} = -q = -F/b$
$q_{DE} = -2q = -2F/b$
$EJ_{AB} = EJ$

$EJ_{BC} = EJ$
$EJ_{CD} = EJ$
$EJ_{DE} = EJ$

$EJ_{EF} = EJ$
$EJ_{EG} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.003

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Struttura Isostatica.003

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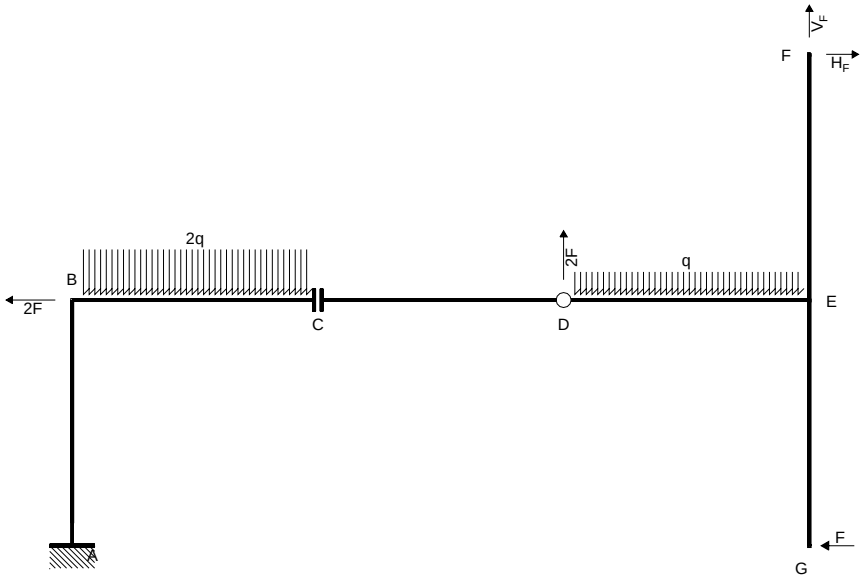


EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG

$V_F = -2F + qb$

Rotazione intorno a D: aste DE EF EG

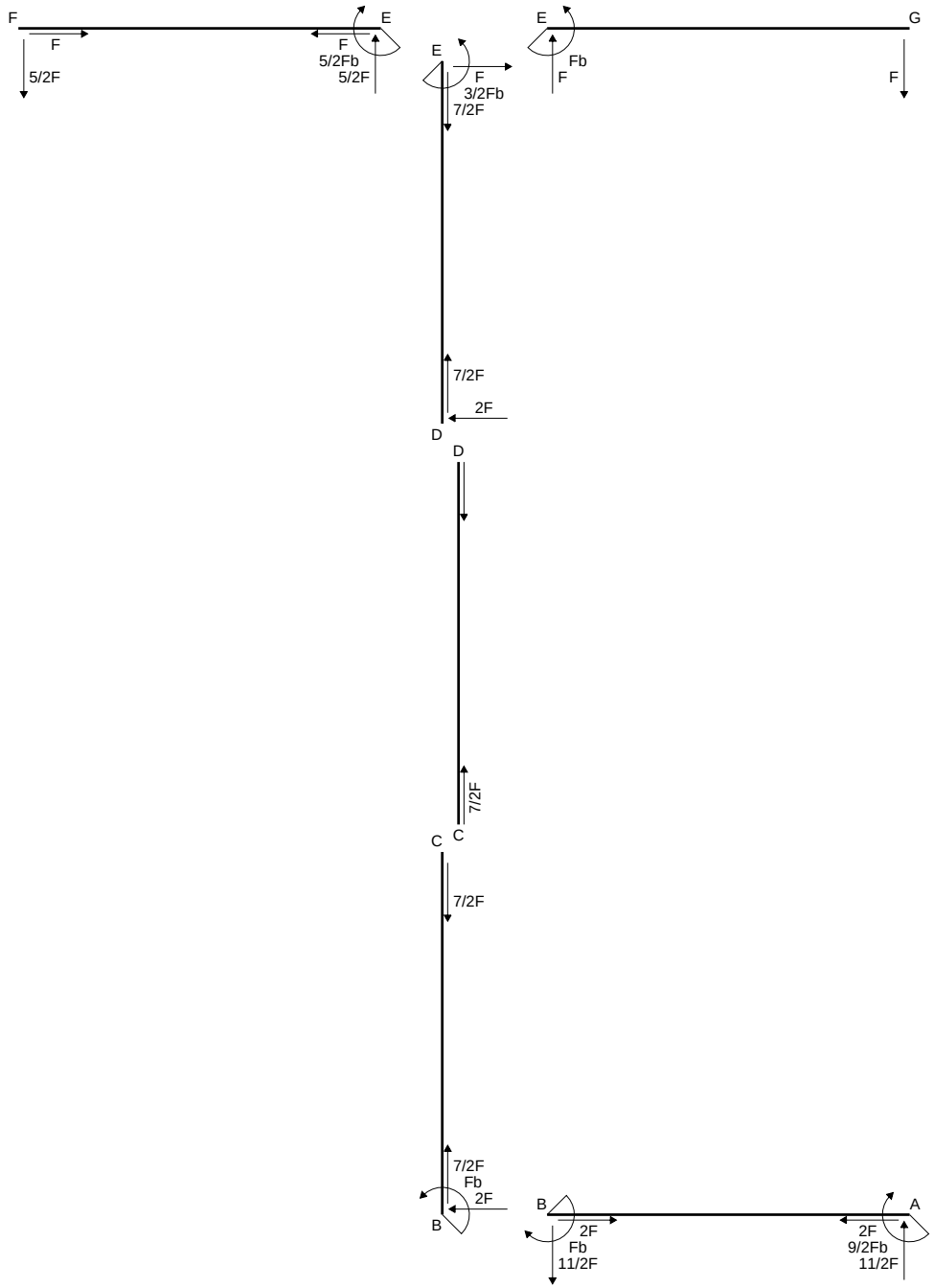
$-H_F b + V_F b = Fb + 1/2 qb^2$

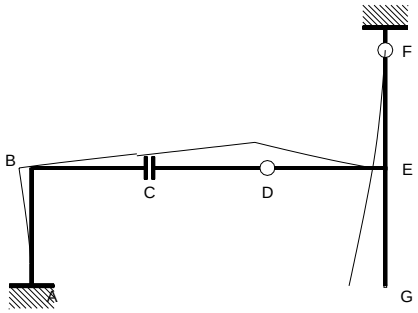
Matrice di equilibrio

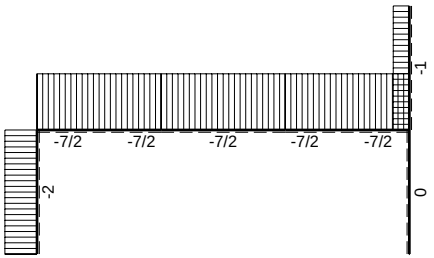
$$\begin{matrix} & [H_F b & V_F b] \\ v_{CB} & [0 & 1] \\ \varphi_{DC} & [-1 & 1] \end{matrix} = \begin{bmatrix} Fb & qb^2 \\ -2 & 1 \\ 1 & 1/2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_F b \\ H_F b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -2 & 1 \\ -3 & 1/2 \end{bmatrix}$$

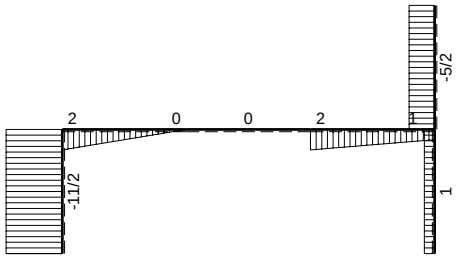


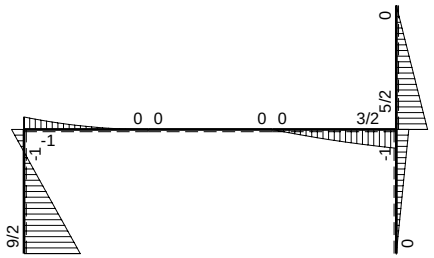




$\vdash\!\!\!\dashv$ 8 Fb^3/EJ

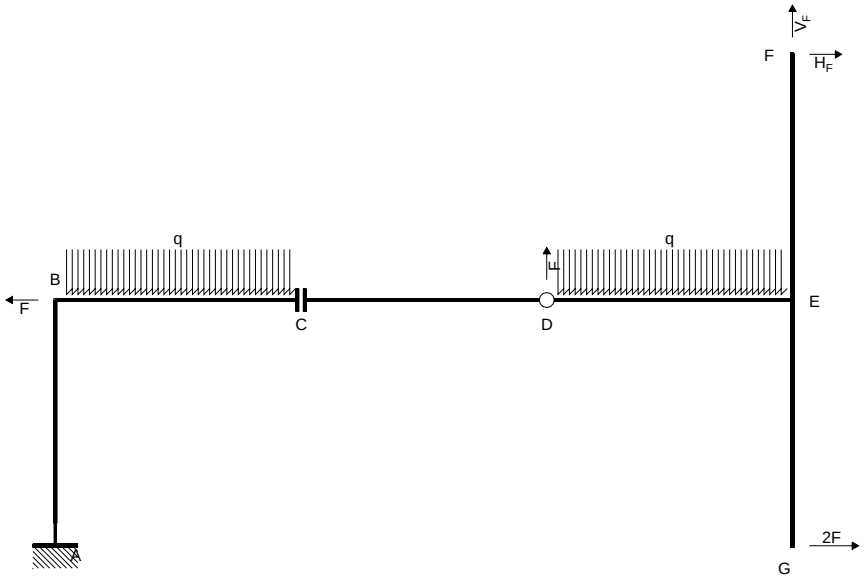
$\leftarrow$ + $\rightarrow$ F





$\uparrow$ + $\downarrow$ F

$\circlearrowright$ + $\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG

$V_F = -F + qb$

Rotazione intorno a D: aste DE EF EG

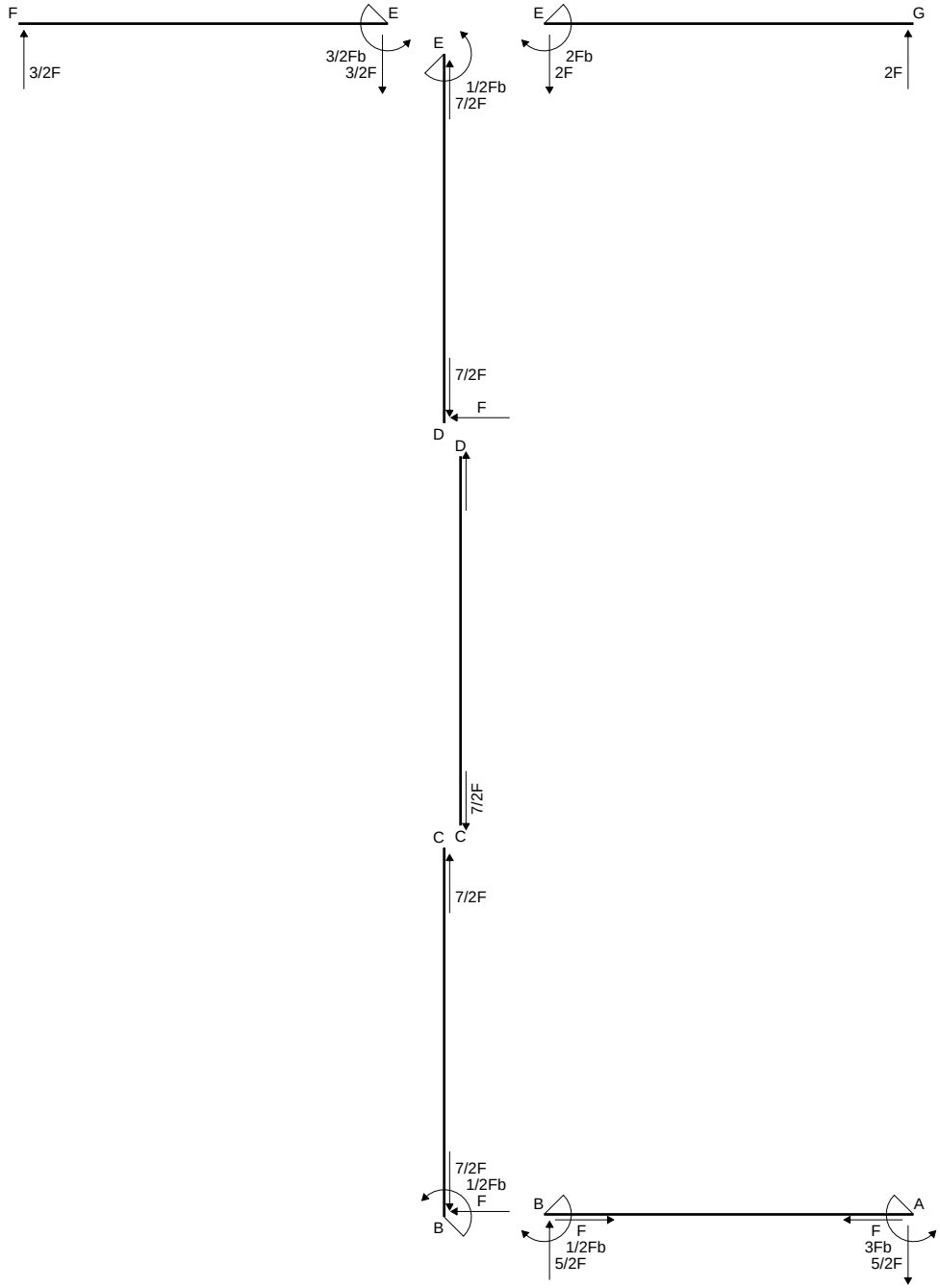
$-H_F b + V_F b = -2Fb + 1/2qb^2$

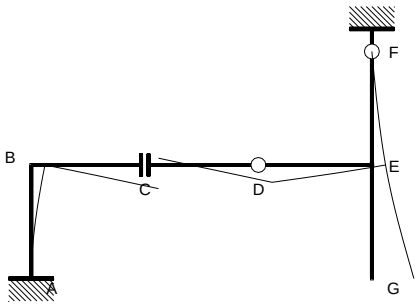
Matrice di equilibrio

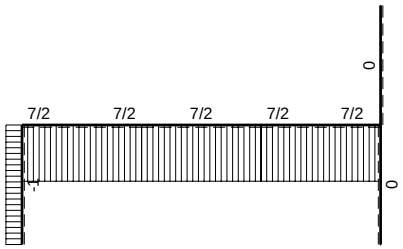
$$\begin{matrix} & [H_F b & V_F b] \\ v_{CB} & \begin{bmatrix} 0 & 1 \end{bmatrix} \\ \varphi_{DC} & \begin{bmatrix} -1 & 1 \end{bmatrix} \end{matrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} -1 & 1 \\ -2 & 1/2 \end{bmatrix} \end{matrix}$$

Soluzione del sistema

$$\begin{matrix} & [Fb & qb^2] \\ \begin{matrix} [V_F b] \\ [H_F b] \end{matrix} & \begin{bmatrix} -1 & 1 \\ 1 & 1/2 \end{bmatrix} \end{matrix}$$

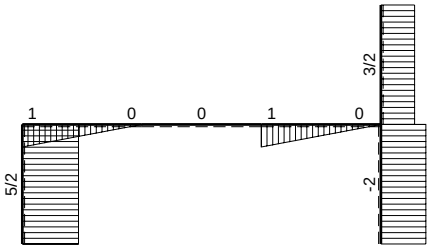


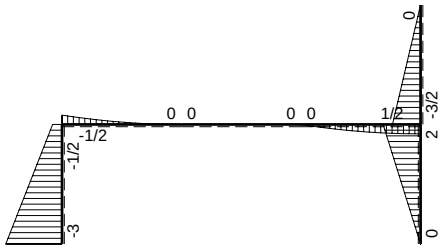




$\vdash\!\!\dashv$ 6 Fb^3/EJ

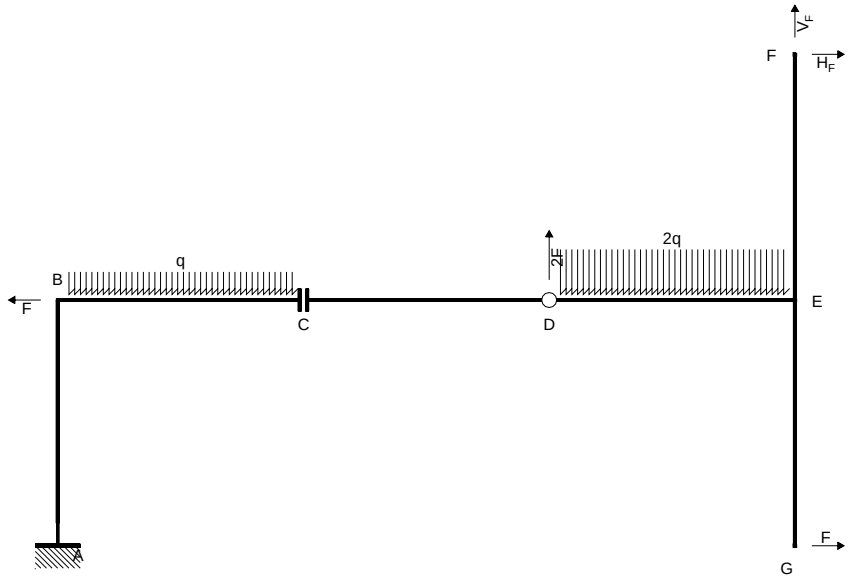
$\leftarrow$ + $\rightarrow$ F





$\uparrow$ + $\downarrow$ F

$\circlearrowright$ + $\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Traslazione verticale: aste CD DE EF EG

$V_F = -2F + 2qb$

Rotazione intorno a D: aste DE EF EG

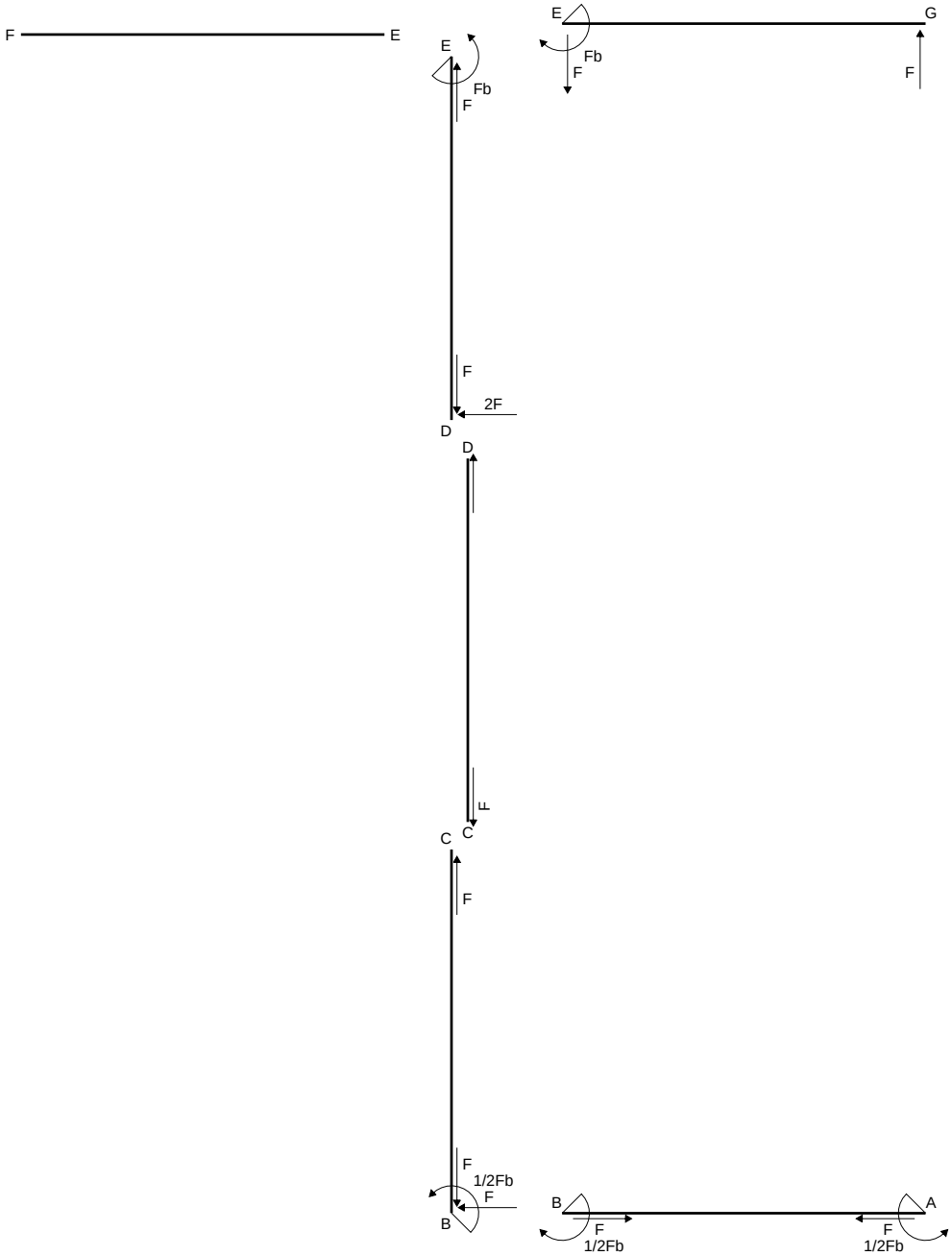
$-H_F b + V_F b = -Fb + qb^2$

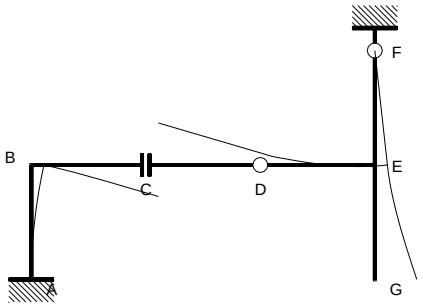
Matrice di equilibrio

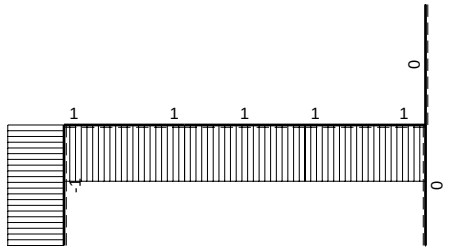
$$\begin{matrix} & [H_F b & V_F b] \\ v_{CB} & [0 & 1] \\ \varphi_{DC} & [-1 & 1] \end{matrix} = \begin{bmatrix} Fb & qb^2 \\ -2 & 2 \\ -1 & 1 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_F b \\ H_F b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -2 & 2 \\ -1 & 1 \end{bmatrix}$$

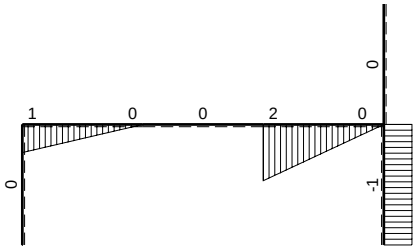


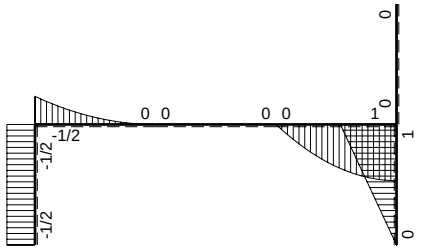




$\vdash\!\!\!\dashv$ 1.5 Fb^3/EJ

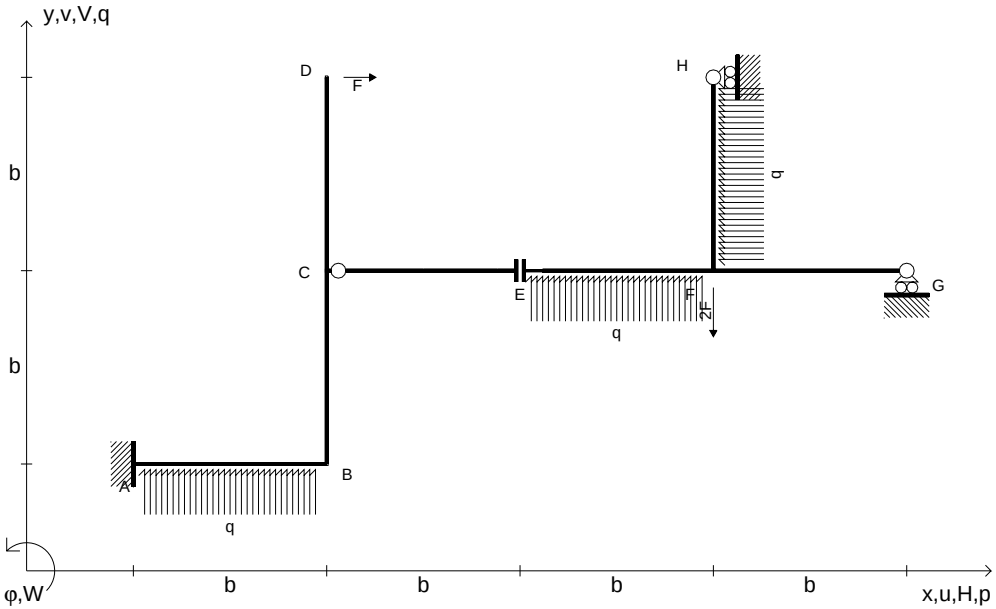
$\leftarrow \boxed{+} \rightarrow F$





$\uparrow \boxed{+} \downarrow F$

$\circlearrowright \boxed{+} \circlearrowleft Fb$



$V_F = -2F$ $q_{AB} = q = F/b$ $q_{EF} = q = F/b$ $EJ_{BC} = EJ$ $EJ_{CE} = EJ$ $EJ_{FG} = EJ$

$H_D = F$ $p_{FH} = -q = -F/b$ $EJ_{AB} = EJ$ $EJ_{CD} = EJ$ $EJ_{EF} = EJ$ $EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.001

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Struttura Isostatica.001

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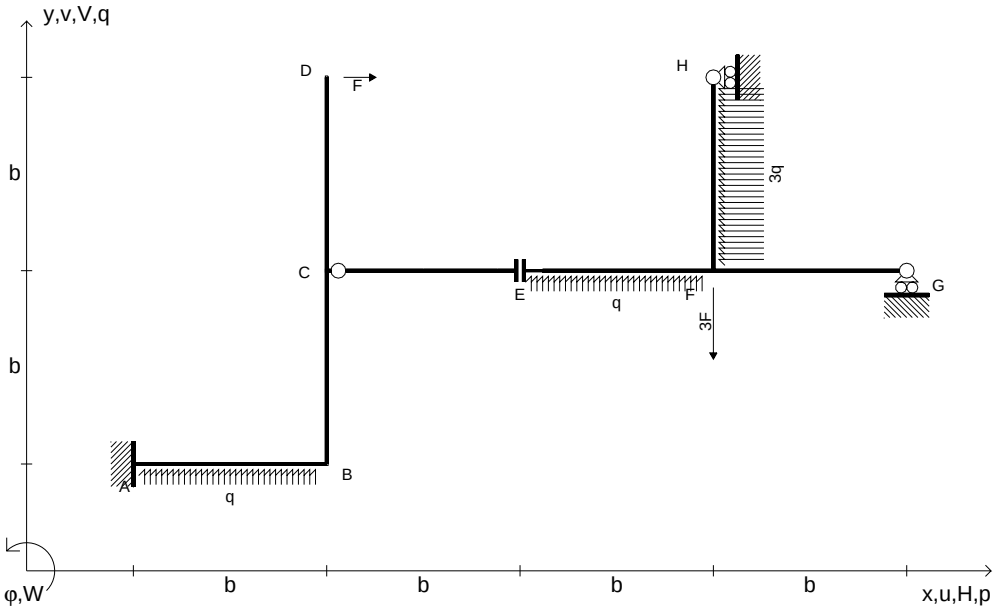

$V_F = -3F$	$p_{FH} = -3q = -3F/b$	$EJ_{BC} = EJ$	$EJ_{EF} = EJ$
$H_D = F$	$q_{EF} = q = F/b$	$EJ_{CD} = EJ$	$EJ_{FG} = EJ$
$q_{AB} = q = F/b$	$EJ_{AB} = EJ$	$EJ_{CE} = EJ$	$EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.002

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Struttura Isostatica.002

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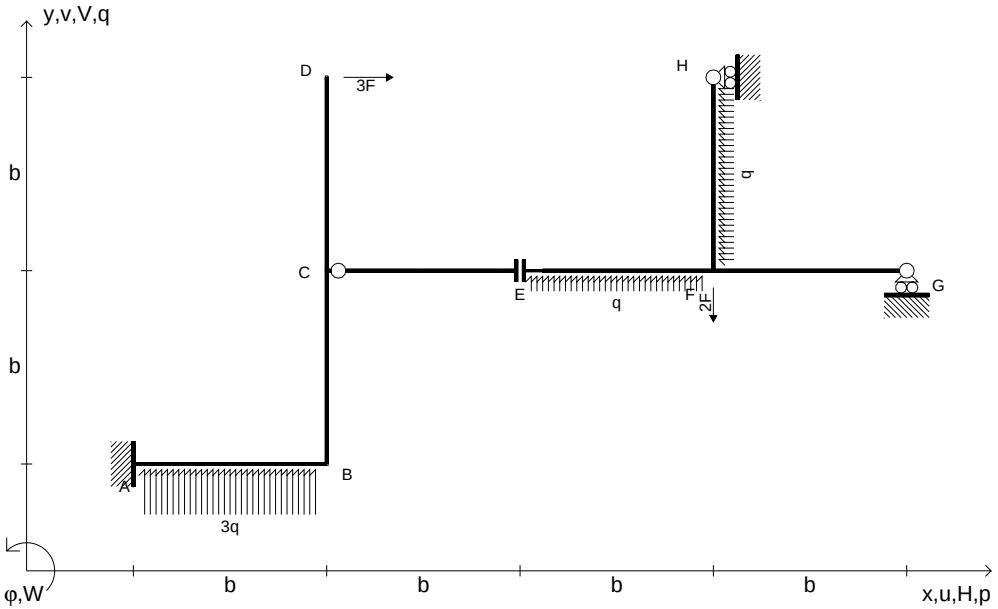

$V_F = -2F$	$p_{FH} = -q = -F/b$	$EJ_{BC} = EJ$	$EJ_{EF} = EJ$
$H_D = 3F$	$q_{EF} = q = F/b$	$EJ_{CD} = EJ$	$EJ_{FG} = EJ$
$q_{AB} = 3q = 3F/b$	$EJ_{AB} = EJ$	$EJ_{CE} = EJ$	$EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.003

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Struttura Isostatica.003

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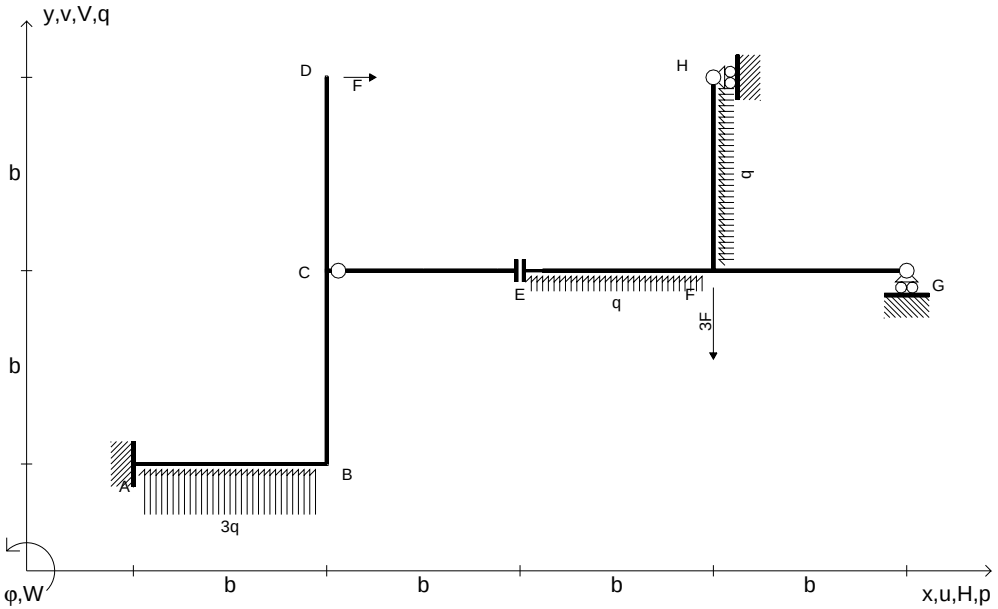

V_F = -3F	p_{FH} = -q = -F/b	EJ_{BC} = EJ	EJ_{EF} = EJ
H_D = F	q_{EF} = q = F/b	EJ_{CD} = EJ	EJ_{FG} = EJ
q_{AB} = 3q = 3F/b	EJ_{AB} = EJ	EJ_{CE} = EJ	EJ_{FH} = EJ

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.004

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Struttura Isostatica.004

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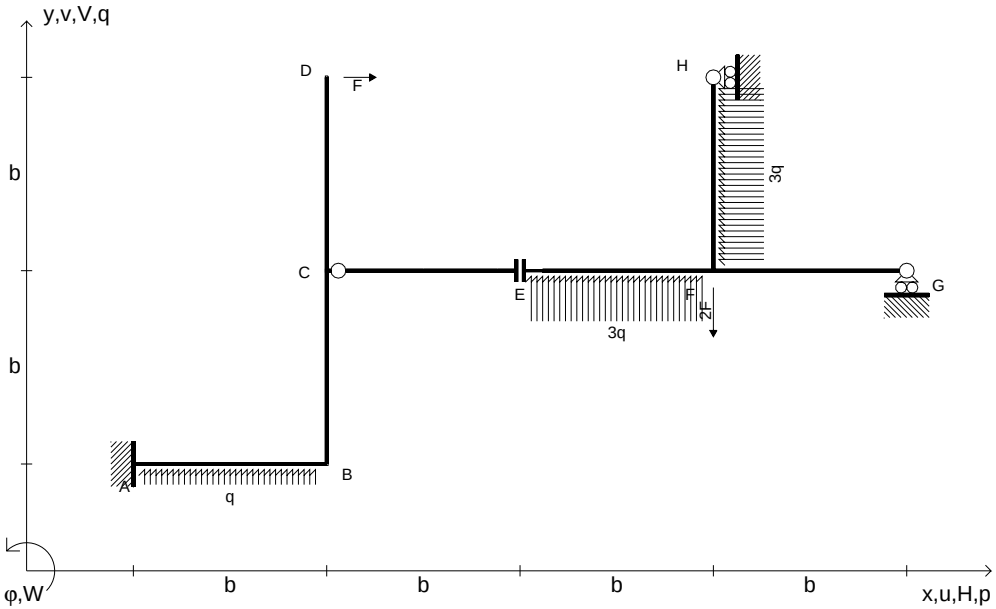

$V_F = -2F$ $p_{FH} = -3q = -3F/b$ $EJ_{BC} = EJ$ $EJ_{EF} = EJ$

$H_D = F$ $q_{EF} = 3q = 3F/b$ $EJ_{CD} = EJ$ $EJ_{FG} = EJ$

$q_{AB} = q = F/b$ $EJ_{AB} = EJ$ $EJ_{CE} = EJ$ $EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.005

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Struttura Isostatica.005

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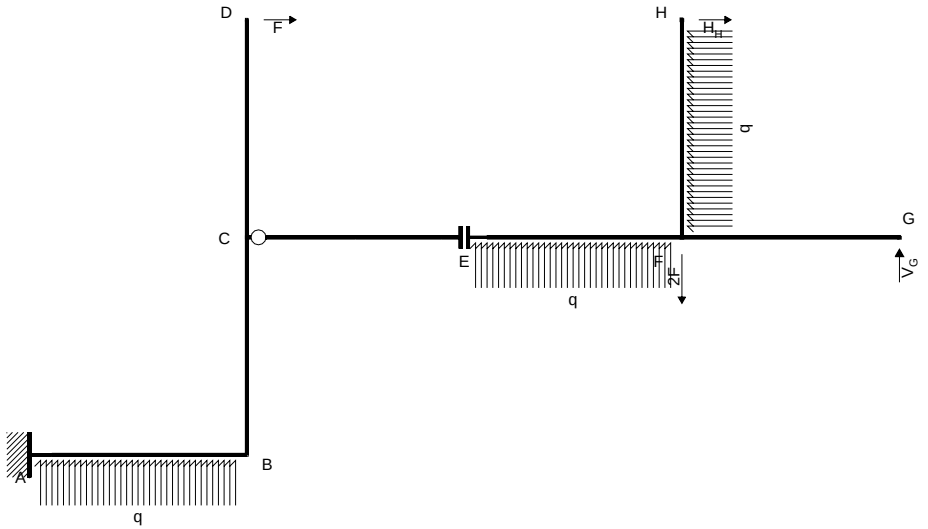


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CE EF FG FH

$3V_G b - H_H b = 4Fb - 2qb^2$

Traslazione verticale: aste EF FG FH

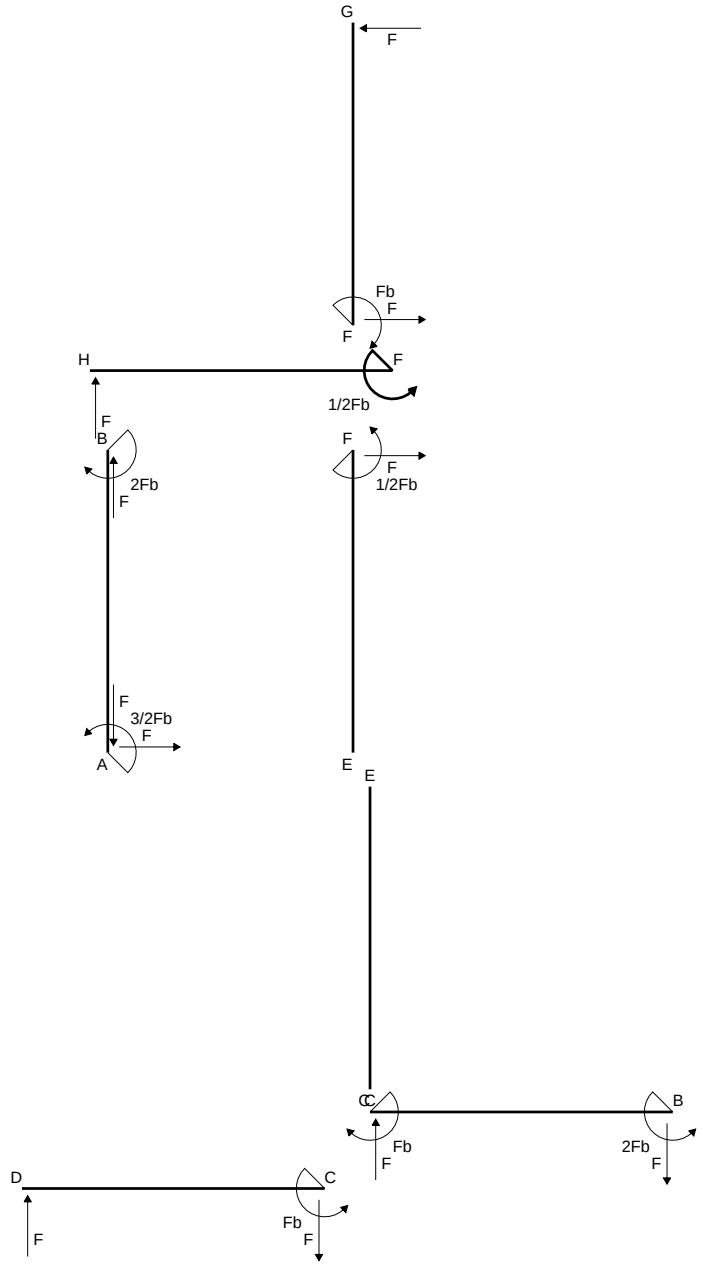
$V_G = 2F - qb$

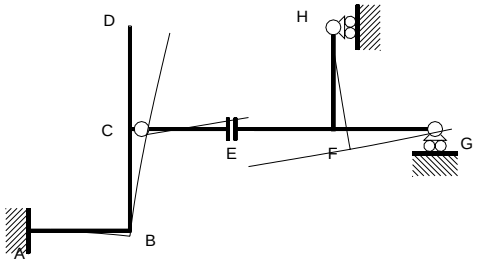
Matrice di equilibrio

$$\begin{matrix} & [V_G b & H_H b] \\ \varphi_{CE} & \begin{bmatrix} 3 & -1 \\ 1 & 0 \end{bmatrix} \\ v_{EC} & \end{matrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 4 & -2 \\ 2 & -1 \end{bmatrix} \end{matrix}$$

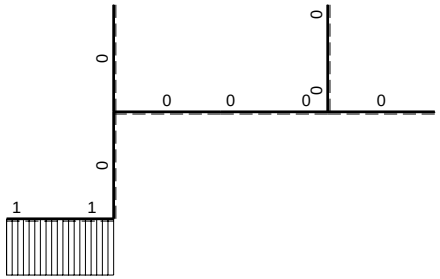
Soluzione del sistema

$$\begin{bmatrix} V_G b \\ H_H b \end{bmatrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 2 & -1 \\ 2 & -1 \end{bmatrix} \end{matrix}$$

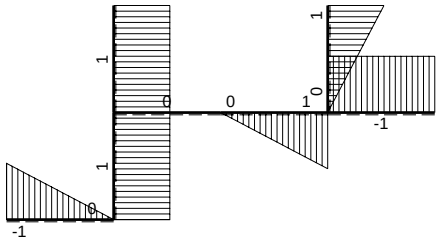




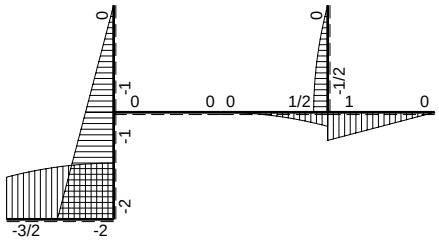
$\vdash\!\!\!\dashv$ 12 Fb^3/EJ



$\leftarrow\boxed{+}\rightarrow$ F



$\uparrow\boxed{+}\downarrow$ F



$\circlearrowright\boxed{+}\circlearrowleft$ Fb

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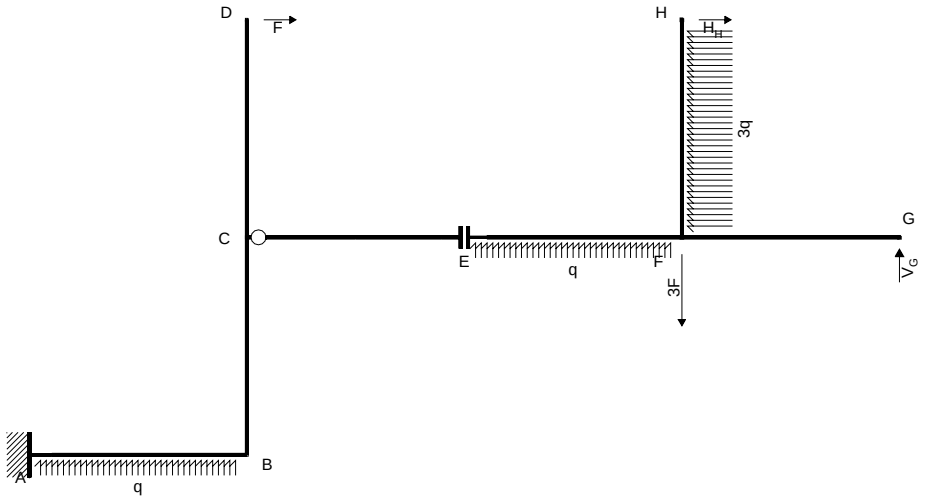


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CE EF FG FH

$3V_G b - H_H b = 6Fb - 3qb^2$

Traslazione verticale: aste EF FG FH

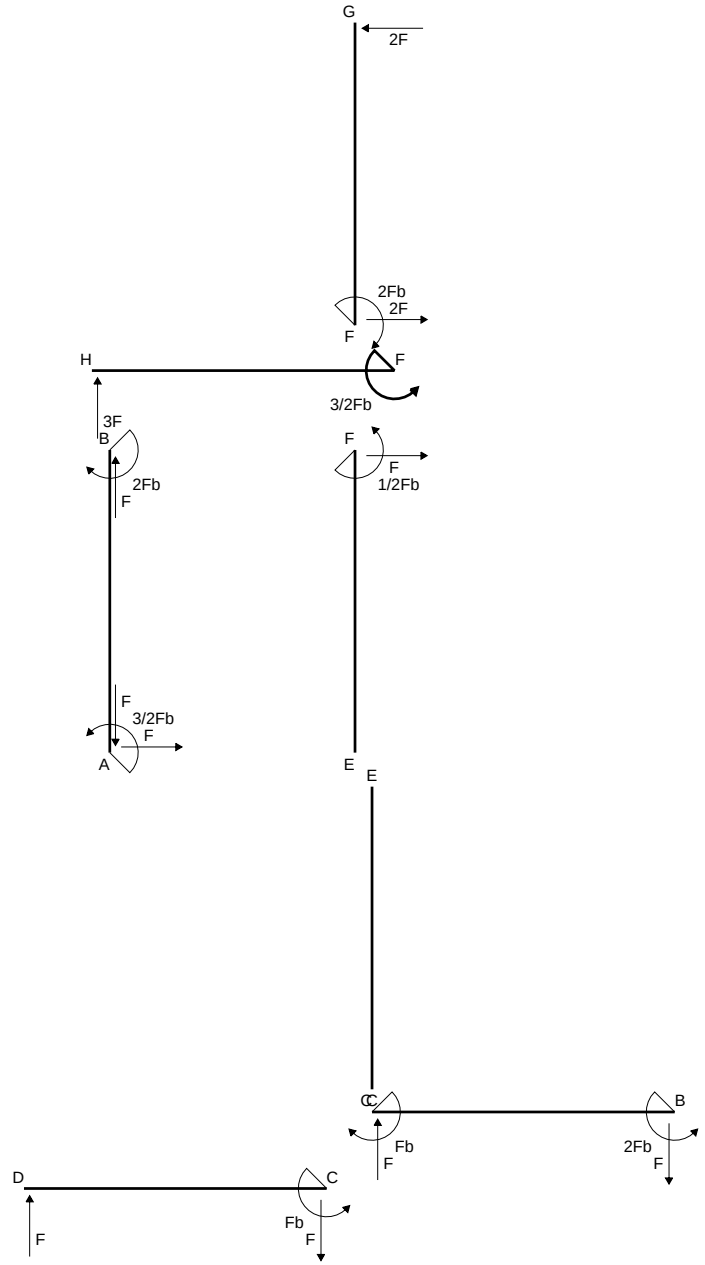
$V_G = 3F - qb$

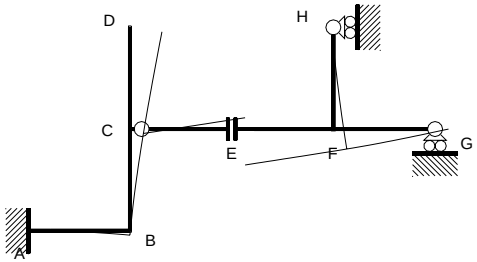
Matrice di equilibrio

$$\begin{matrix} & [V_G b & H_H b] \\ \varphi_{CE} & \begin{bmatrix} 3 & -1 \\ 1 & 0 \end{bmatrix} \\ v_{EC} & \end{matrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 6 & -3 \\ 3 & -1 \end{bmatrix} \\ \end{matrix}$$

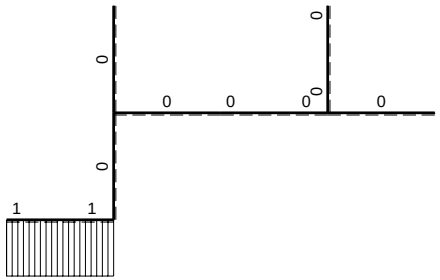
Soluzione del sistema

$$\begin{bmatrix} V_G b \\ H_H b \end{bmatrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 3 & -1 \\ 3 & 0 \end{bmatrix} \end{matrix}$$





15 Fb^3/EJ



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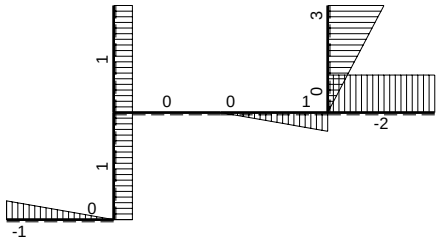

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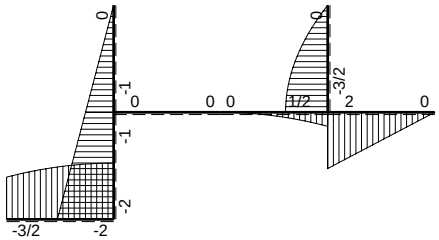

Fb

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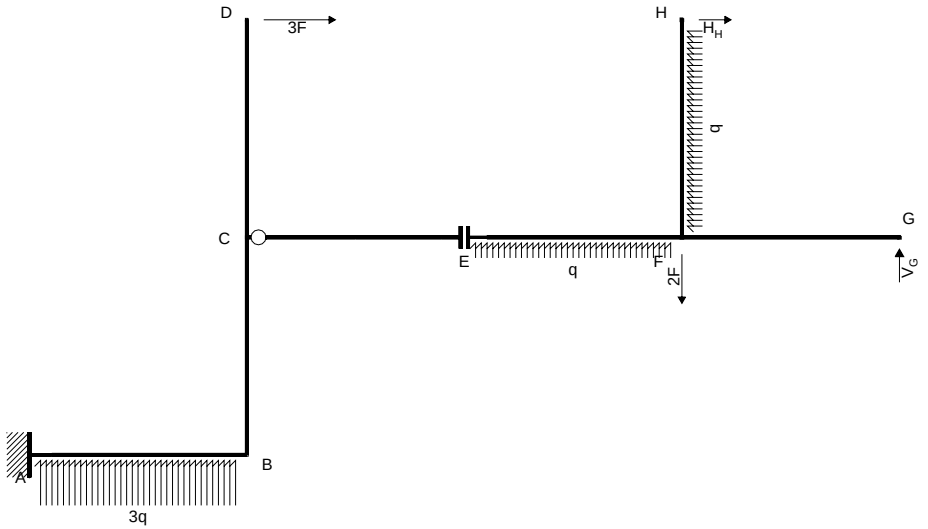


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CE EF FG FH

$3V_G b - H_H b = 4Fb - 2qb^2$

Traslazione verticale: aste EF FG FH

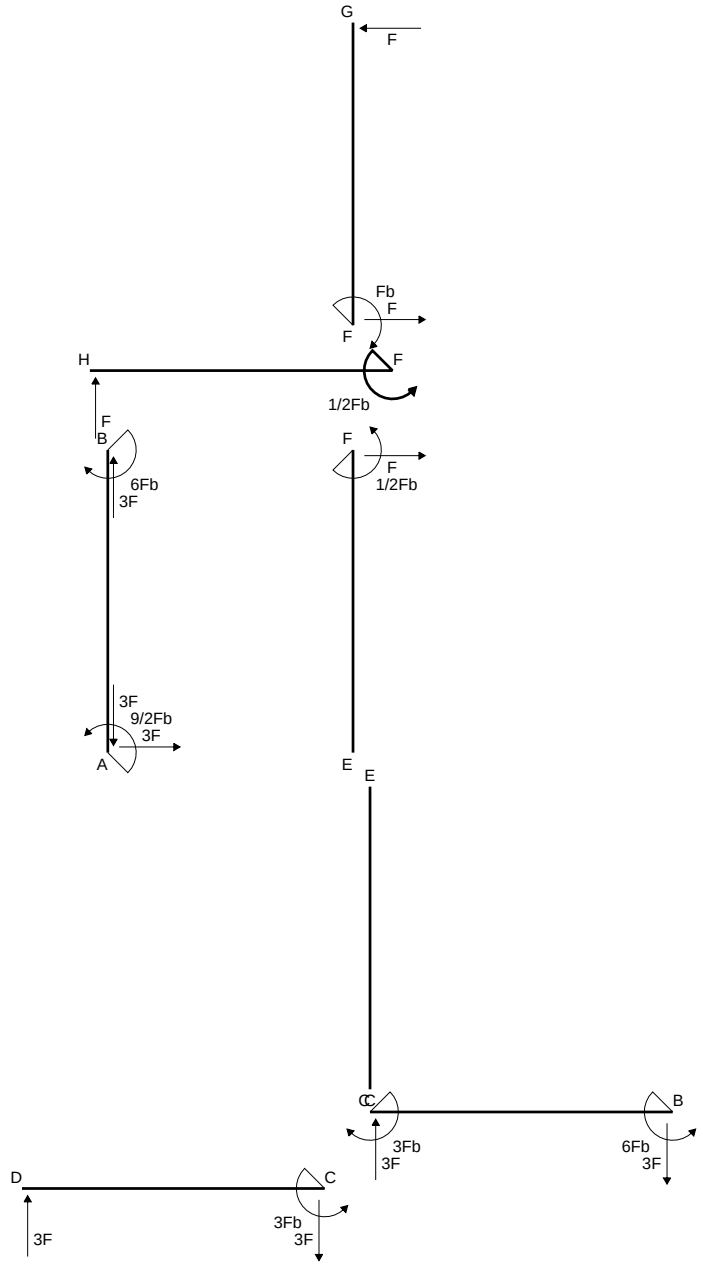
$V_G = 2F - qb$

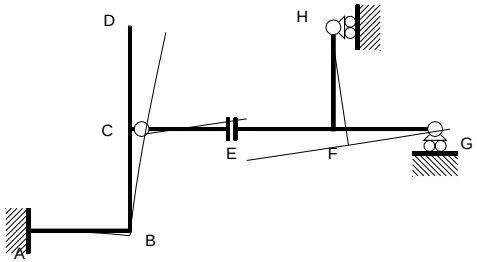
Matrice di equilibrio

$$\begin{matrix} & [V_G b & H_H b] \\ \varphi_{CE} & 3 & -1 \\ v_{EC} & 1 & 0 \end{matrix} \begin{bmatrix} \\ \\ \end{bmatrix} = \begin{matrix} [Fb & qb^2] \\ 4 & -2 \\ 2 & -1 \end{matrix} \begin{bmatrix} \\ \\ \end{bmatrix}$$

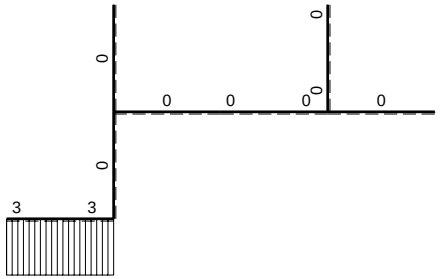
Soluzione del sistema

$$\begin{bmatrix} V_G b \\ H_H b \end{bmatrix} = \begin{matrix} [Fb & qb^2] \\ 2 & -1 \\ 2 & -1 \end{matrix} \begin{bmatrix} \\ \\ \end{bmatrix}$$





40 Fb^3/EJ



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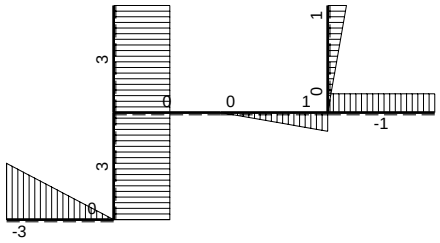

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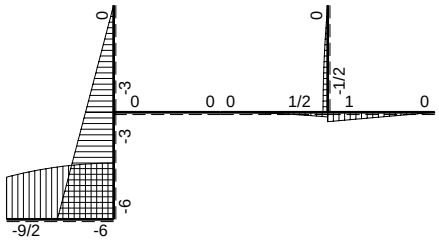

Fb

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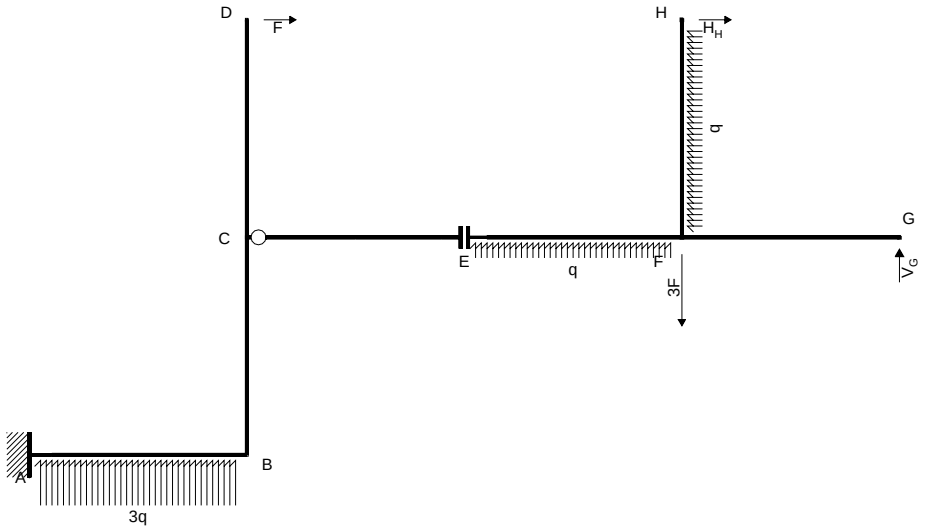


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CE EF FG FH

$3V_G b - H_H b = 6Fb - 2qb^2$

Traslazione verticale: aste EF FG FH

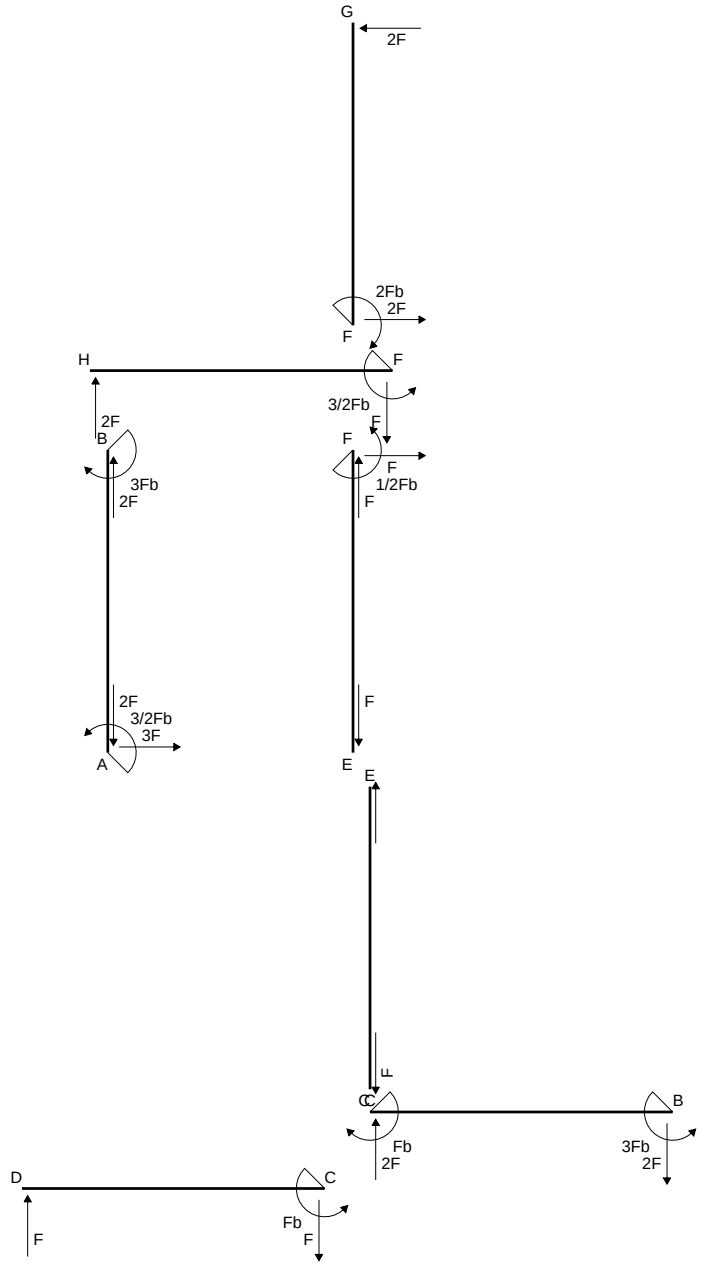
$V_G = 3F - qb$

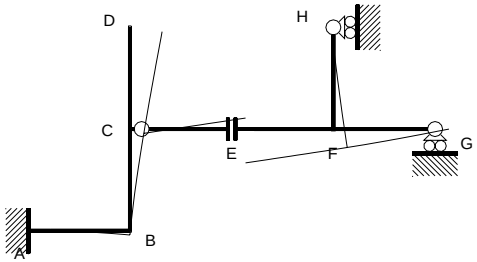
Matrice di equilibrio

$$\begin{matrix} & [V_G b & H_H b] \\ \varphi_{CE} & \begin{bmatrix} 3 & -1 \\ 1 & 0 \end{bmatrix} \\ v_{EC} & \end{matrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 6 & -2 \\ 3 & -1 \end{bmatrix} \end{matrix}$$

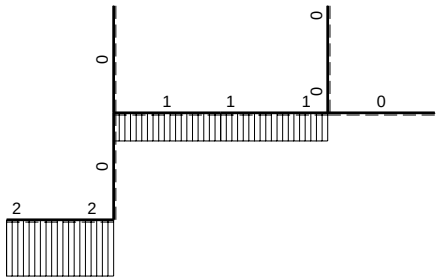
Soluzione del sistema

$$\begin{bmatrix} V_G b \\ H_H b \end{bmatrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 3 & -1 \\ 3 & -1 \end{bmatrix} \end{matrix}$$





20 Fb^3/EJ



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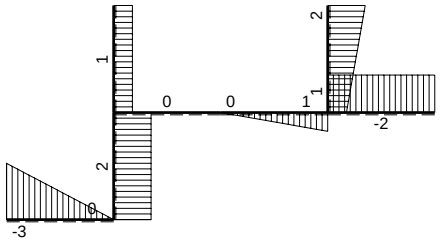

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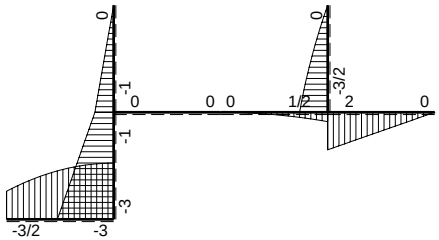

Fb

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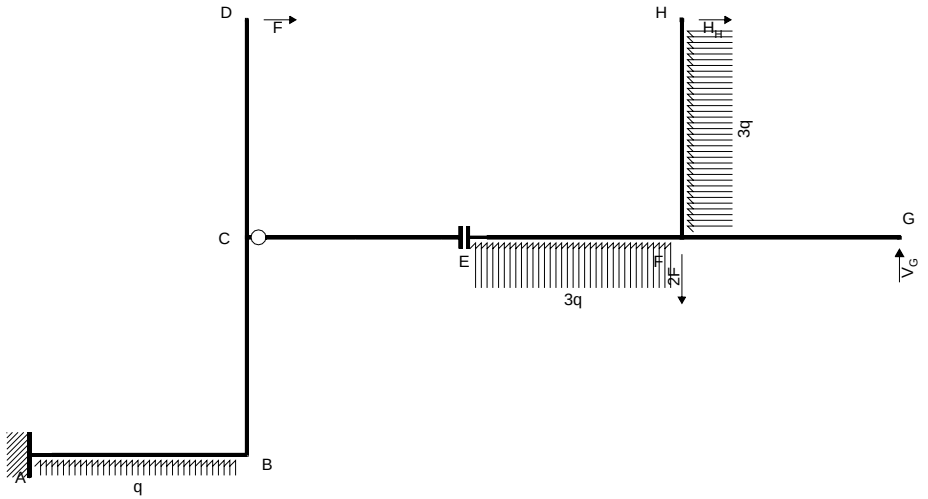


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CE EF FG FH

$3V_G b - H_H b = 4Fb - 6qb^2$

Traslazione verticale: aste EF FG FH

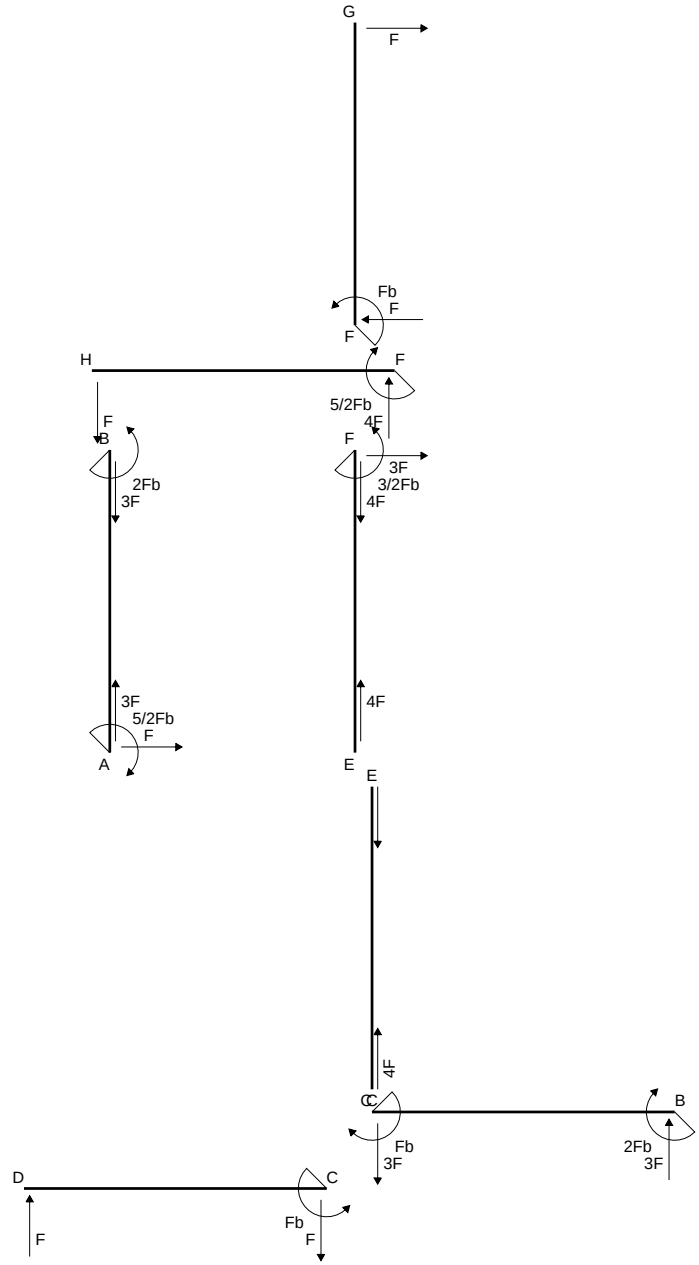
$V_G = 2F - 3qb$

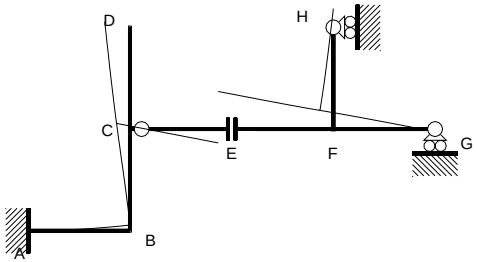
Matrice di equilibrio

$$\begin{matrix} & [V_G b & H_H b] \\ \varphi_{CE} & 3 & -1 \\ v_{EC} & 1 & 0 \end{matrix} = \begin{matrix} [Fb & qb^2] \\ 4 & -6 \\ 2 & -3 \end{matrix}$$

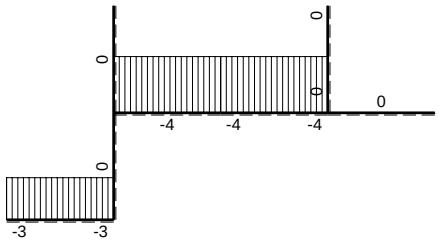
Soluzione del sistema

$$\begin{matrix} [Fb & qb^2] \\ [V_G b & \\ H_H b] & \end{matrix} = \begin{matrix} [Fb & qb^2] \\ 2 & -3 \\ 2 & -3 \end{matrix}$$

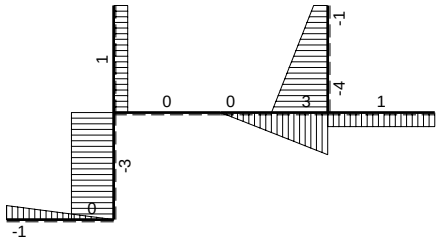




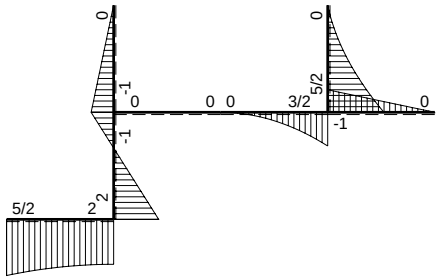
$\vdash\!\!\dashv$ 15 Fb^3/EJ



$\leftarrow\boxplus\rightarrow$ F



$\uparrow\boxplus\downarrow$ F



$\circlearrowright\boxplus\circlearrowleft$ Fb

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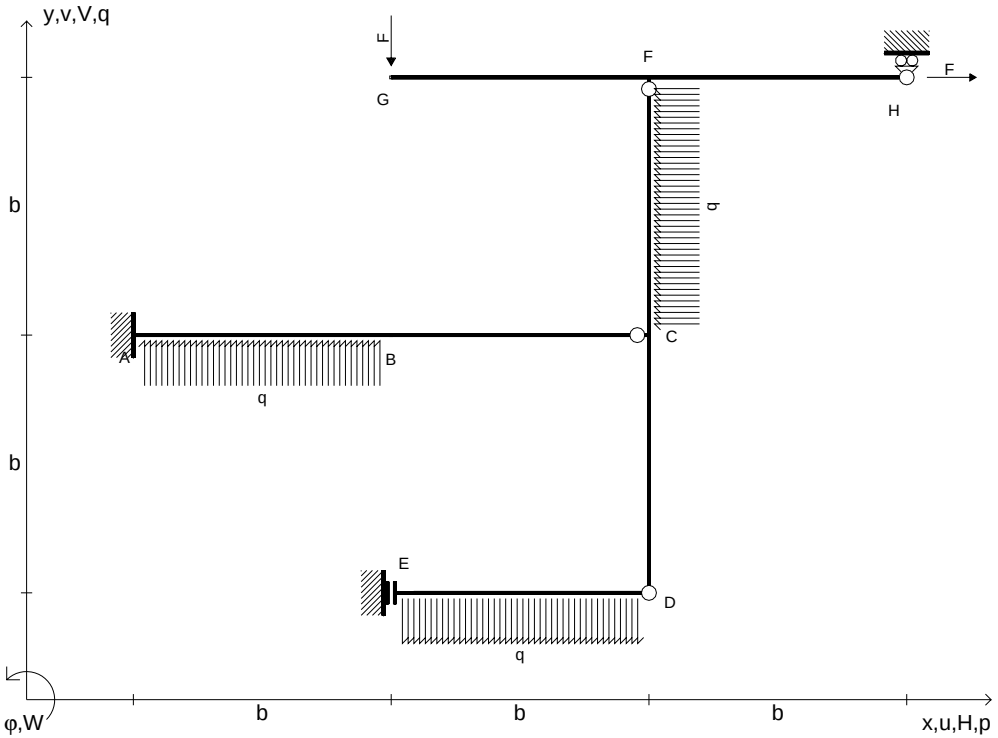

$V_G = -F$	$q_{AB} = q = F/b$	$q_{DE} = -q = -F/b$	$EJ_{BC} = EJ$	$EJ_{DE} = EJ$	$EJ_{FG} = EJ$
$H_H = F$	$p_{CF} = -q = -F/b$	$EJ_{AB} = EJ$	$EJ_{CD} = EJ$	$EJ_{CF} = EJ$	$EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.001

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Struttura Isostatica.001

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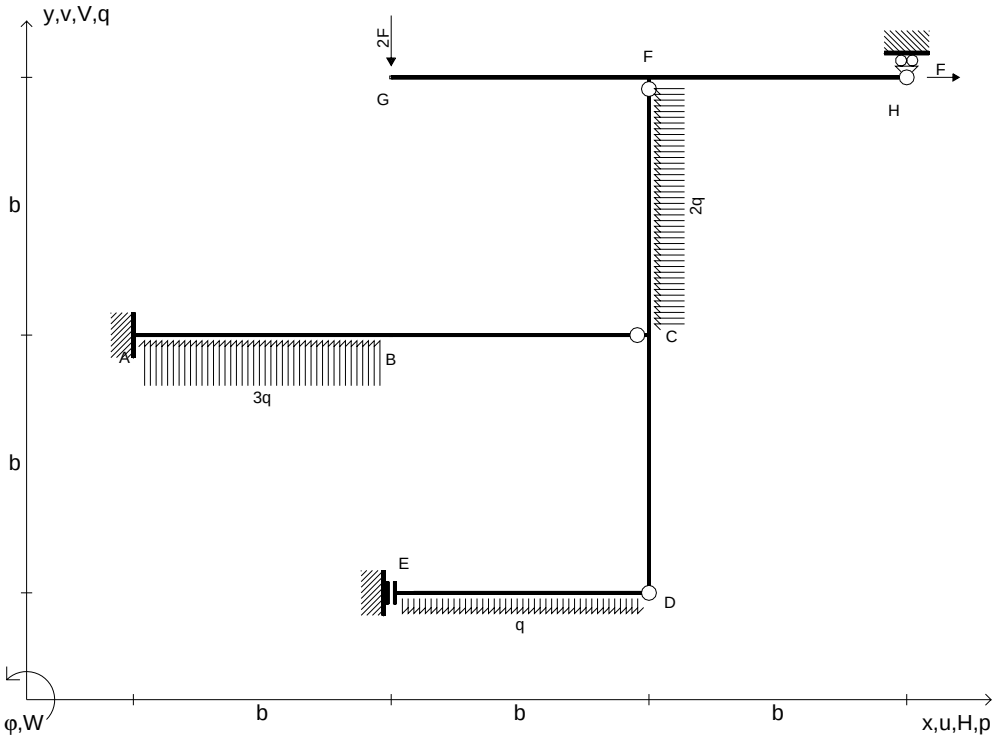
Struttura Isostatica.002



$V_G = -2F$ $p_{CF} = -2q = -2F/b$ $EJ_{BC} = EJ$ $EJ_{CF} = EJ$

$H_H = F$ $q_{DE} = -q = -F/b$ $EJ_{CD} = EJ$ $EJ_{FG} = EJ$

$q_{AB} = 3q = 3F/b$ $EJ_{AB} = EJ$ $EJ_{DE} = EJ$ $EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

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Struttura Isostatica.002

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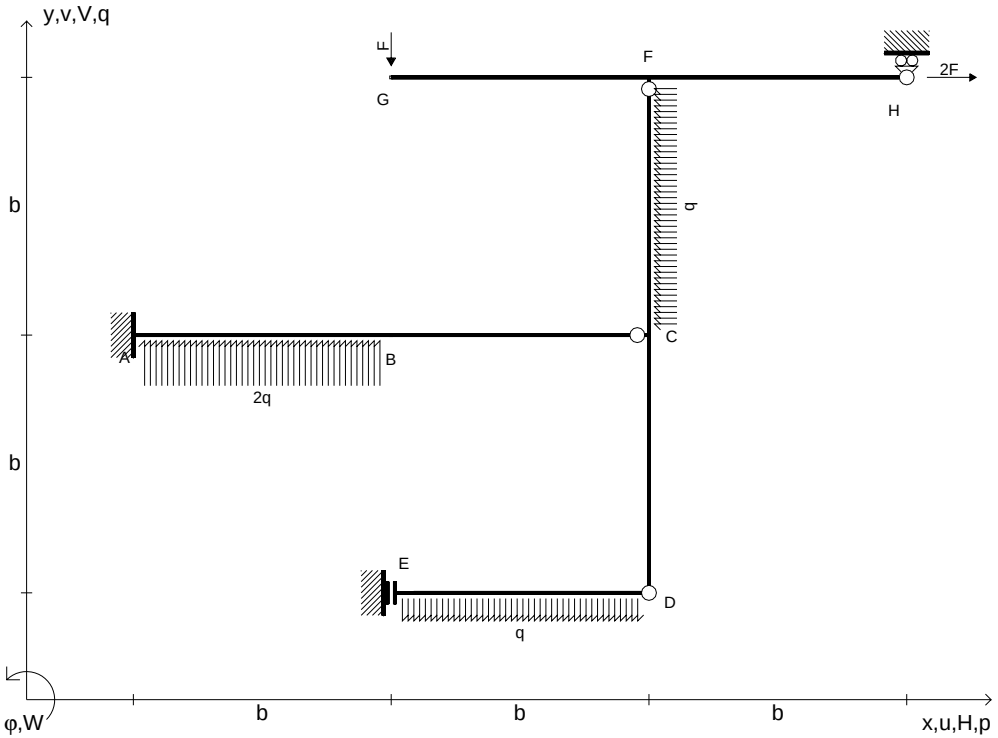

$V_G = -F$ $p_{CF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{CF} = EJ$

$H_H = 2F$ $q_{DE} = -q = -F/b$ $EJ_{CD} = EJ$ $EJ_{FG} = EJ$

$q_{AB} = 2q = 2F/b$ $EJ_{AB} = EJ$ $EJ_{DE} = EJ$ $EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.003

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Struttura Isostatica.003

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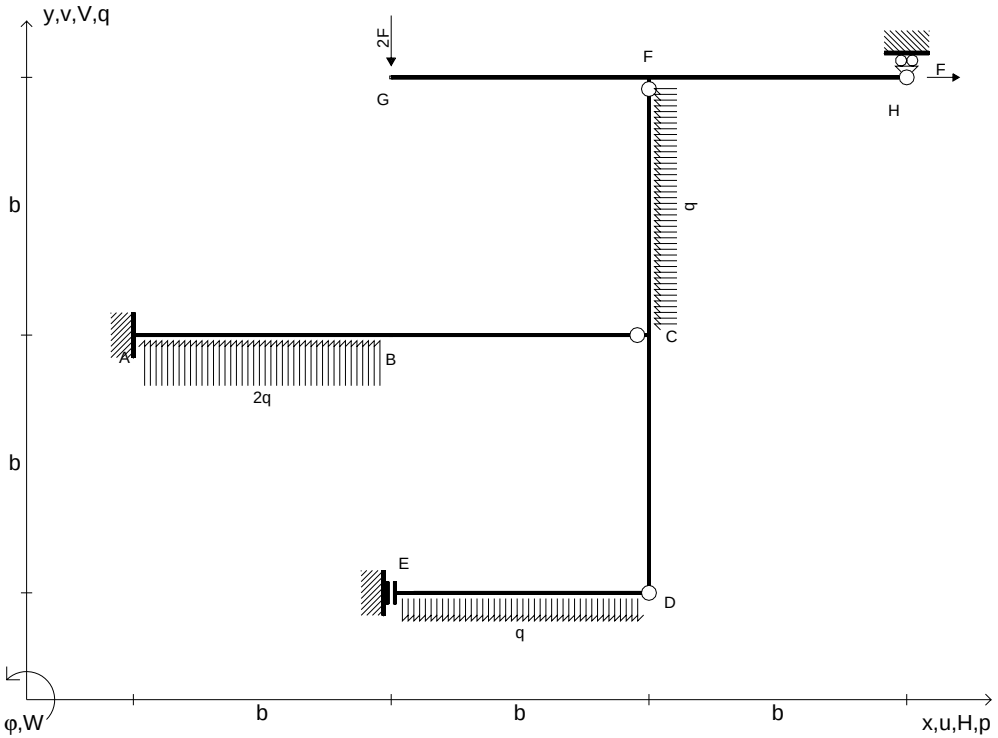

$V_G = -2F$ $p_{CF} = -q = -F/b$ $EJ_{BC} = EJ$ $EJ_{CF} = EJ$

$H_H = F$ $q_{DE} = -q = -F/b$ $EJ_{CD} = EJ$ $EJ_{FG} = EJ$

$q_{AB} = 2q = 2F/b$ $EJ_{AB} = EJ$ $EJ_{DE} = EJ$ $EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.004

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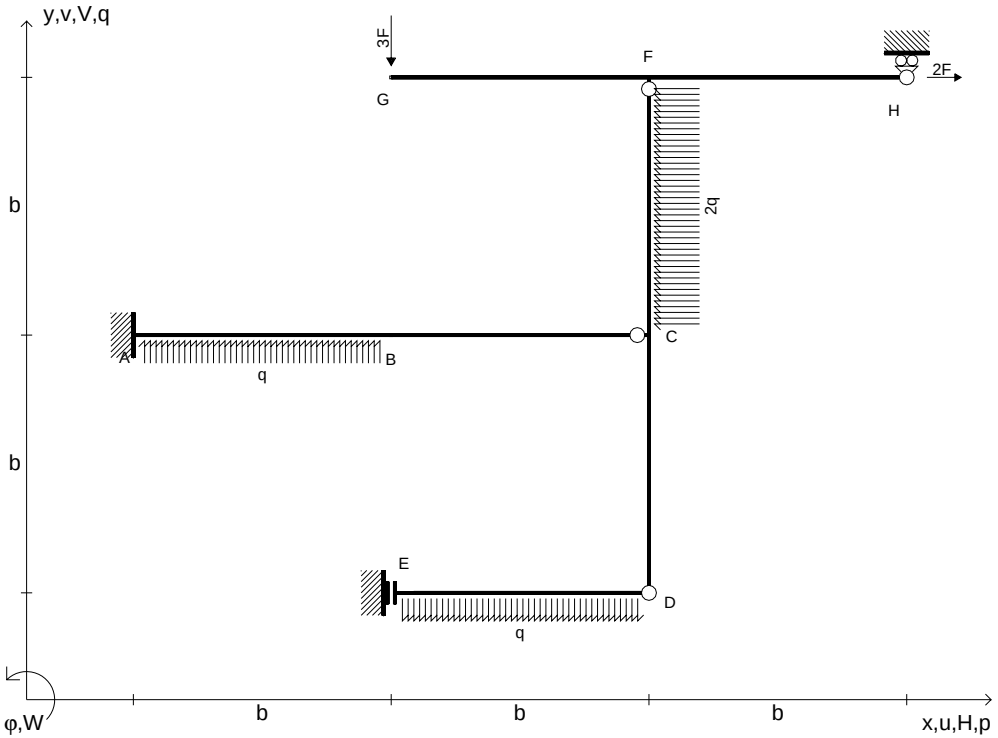

$V_G = -3F$	$p_{CF} = -2q = -2F/b$	$EJ_{BC} = EJ$	$EJ_{CF} = EJ$
$H_H = 2F$	$q_{DE} = -q = -F/b$	$EJ_{CD} = EJ$	$EJ_{FG} = EJ$
$q_{AB} = q = F/b$	$EJ_{AB} = EJ$	$EJ_{DE} = EJ$	$EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.005

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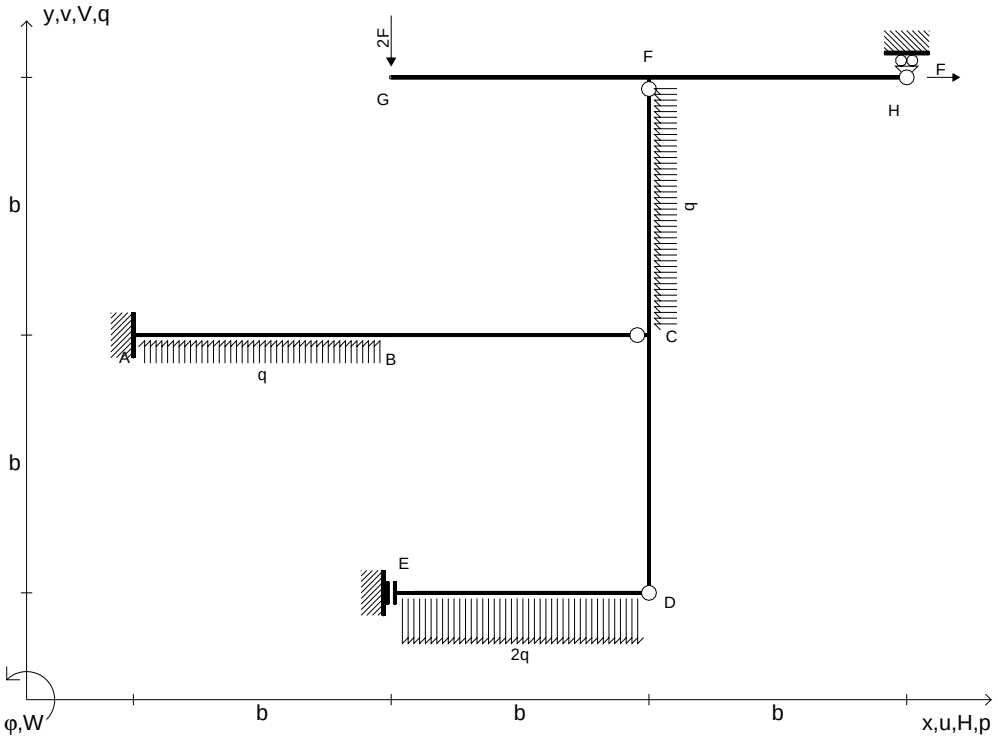

$V_G = -2F$	$p_{CF} = -q = -F/b$	$EJ_{BC} = EJ$	$EJ_{CF} = EJ$
$H_H = F$	$q_{DE} = -2q = -2F/b$	$EJ_{CD} = EJ$	$EJ_{FG} = EJ$
$q_{AB} = q = F/b$	$EJ_{AB} = EJ$	$EJ_{DE} = EJ$	$EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.006

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Struttura Isostatica.006

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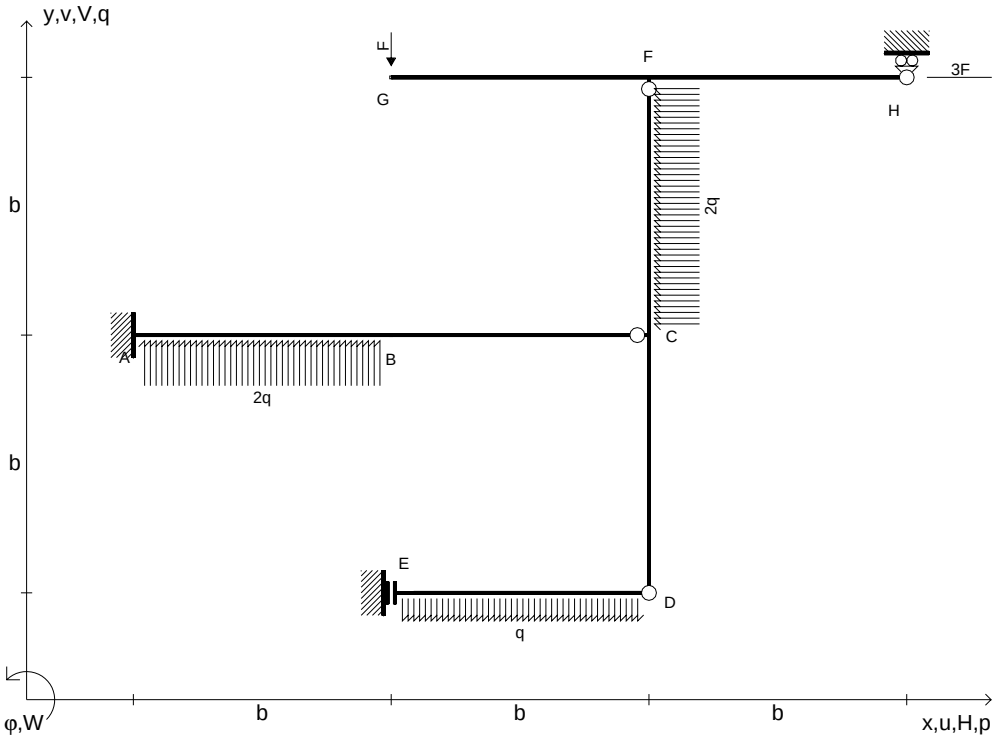

$V_G = -F$ $p_{CF} = -2q = -2F/b$ $EJ_{BC} = EJ$ $EJ_{CF} = EJ$

$H_H = 3F$ $q_{DE} = -q = -F/b$ $EJ_{CD} = EJ$ $EJ_{FG} = EJ$

$q_{AB} = 2q = 2F/b$ $EJ_{AB} = EJ$ $EJ_{DE} = EJ$ $EJ_{FH} = EJ$

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.
J_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.

Struttura Isostatica.007

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Struttura Isostatica.007

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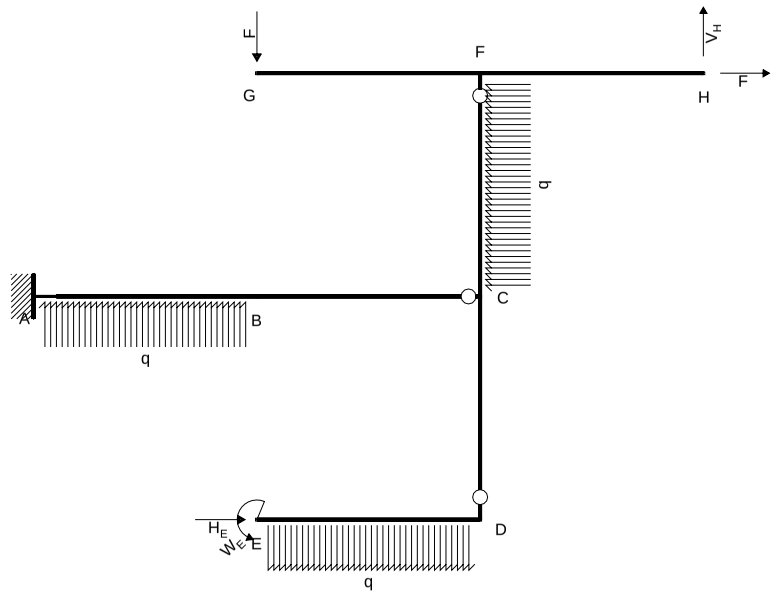


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CD CF DE FG FH

$H_E b + W_E + V_H b = -qb^2$

Rotazione intorno a D: aste DE

$W_E = -1/2 qb^2$

Rotazione intorno a F: aste FG FH

$V_H b = -Fb$

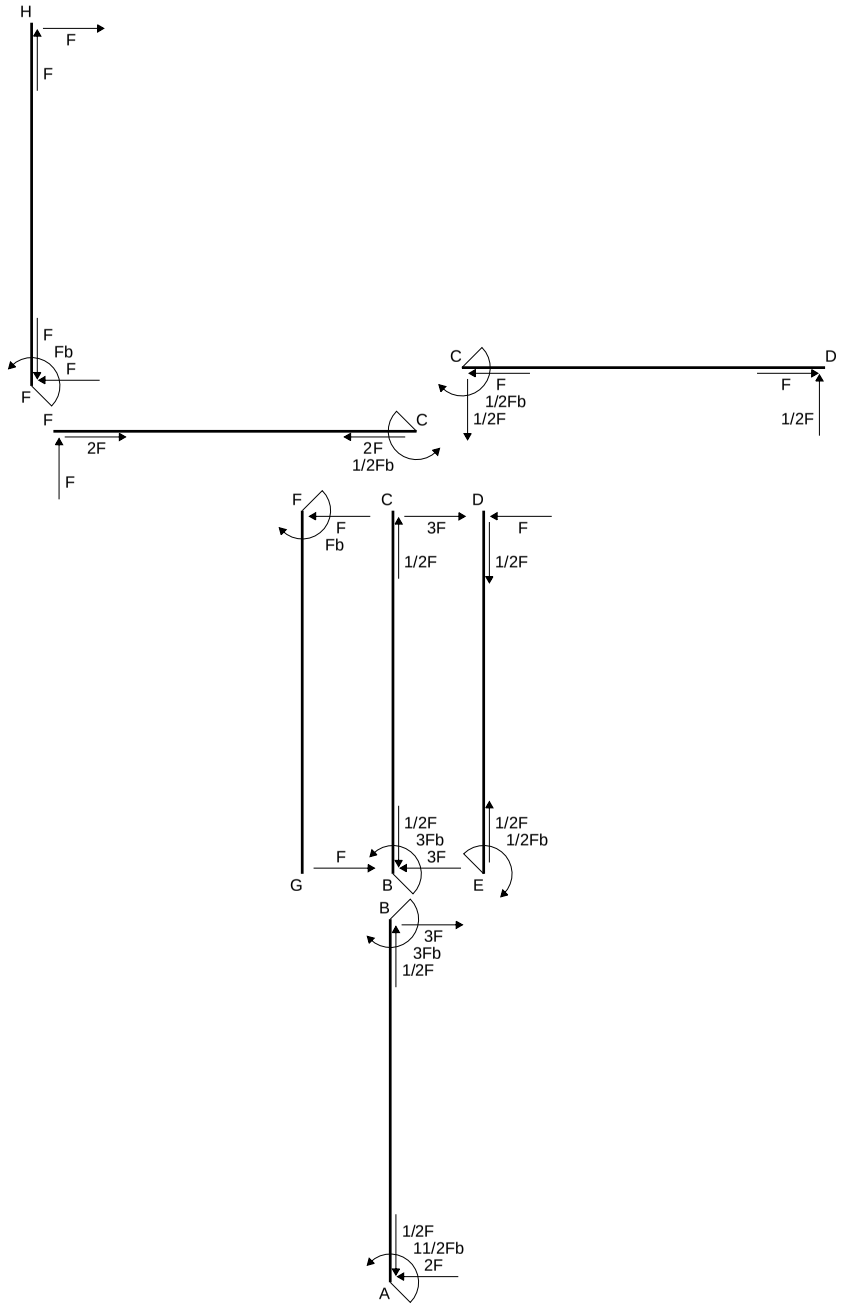
Matrice di equilibrio

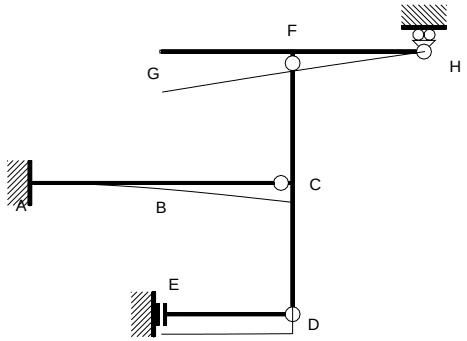
$$\begin{matrix} & [H_E b & W_E & V_H b] \end{matrix} \quad \begin{matrix} [Fb & qb^2] \end{matrix}$$

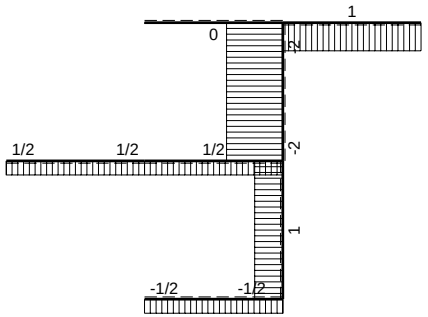
$$\begin{matrix} \varphi_{CB} \\ \varphi_{DC} \\ \varphi_{FC} \end{matrix} \begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} 0 & -1 \\ 0 & -1/2 \\ -1 & 0 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} H_E b \\ W_E \\ V_H b \end{bmatrix} = \begin{bmatrix} 1 & -1/2 \\ 0 & -1/2 \\ -1 & 0 \end{bmatrix} \begin{matrix} [Fb & qb^2] \end{matrix}$$

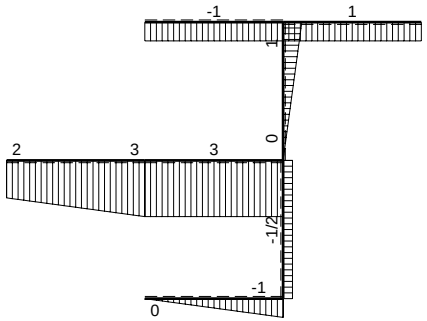


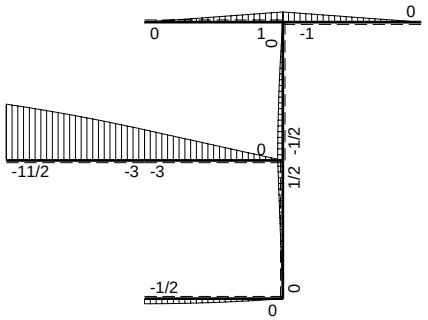




30 Fb^3/EJ

F





F

Fb

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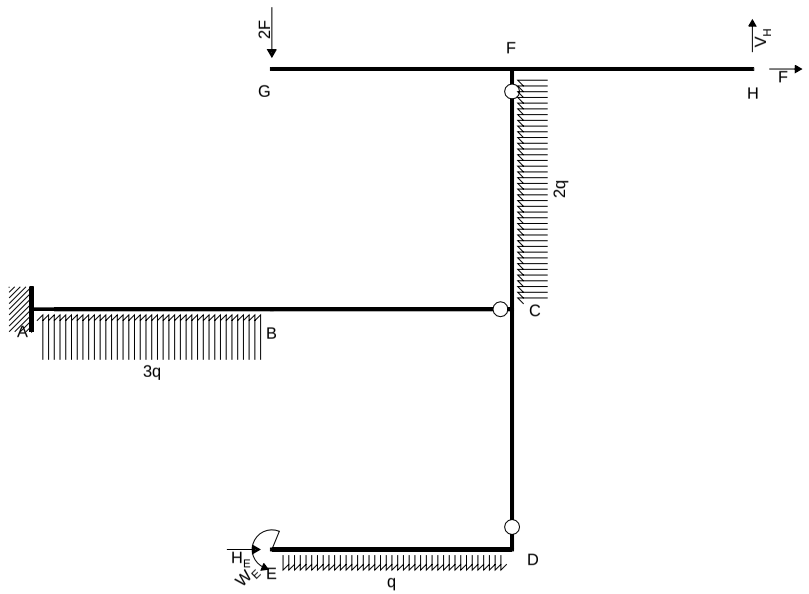


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CD CF DE FG FH

$H_E b + W_E + V_H b = -Fb - 3/2 qb^2$

Rotazione intorno a D: aste DE

$W_E = -1/2 qb^2$

Rotazione intorno a F: aste FG FH

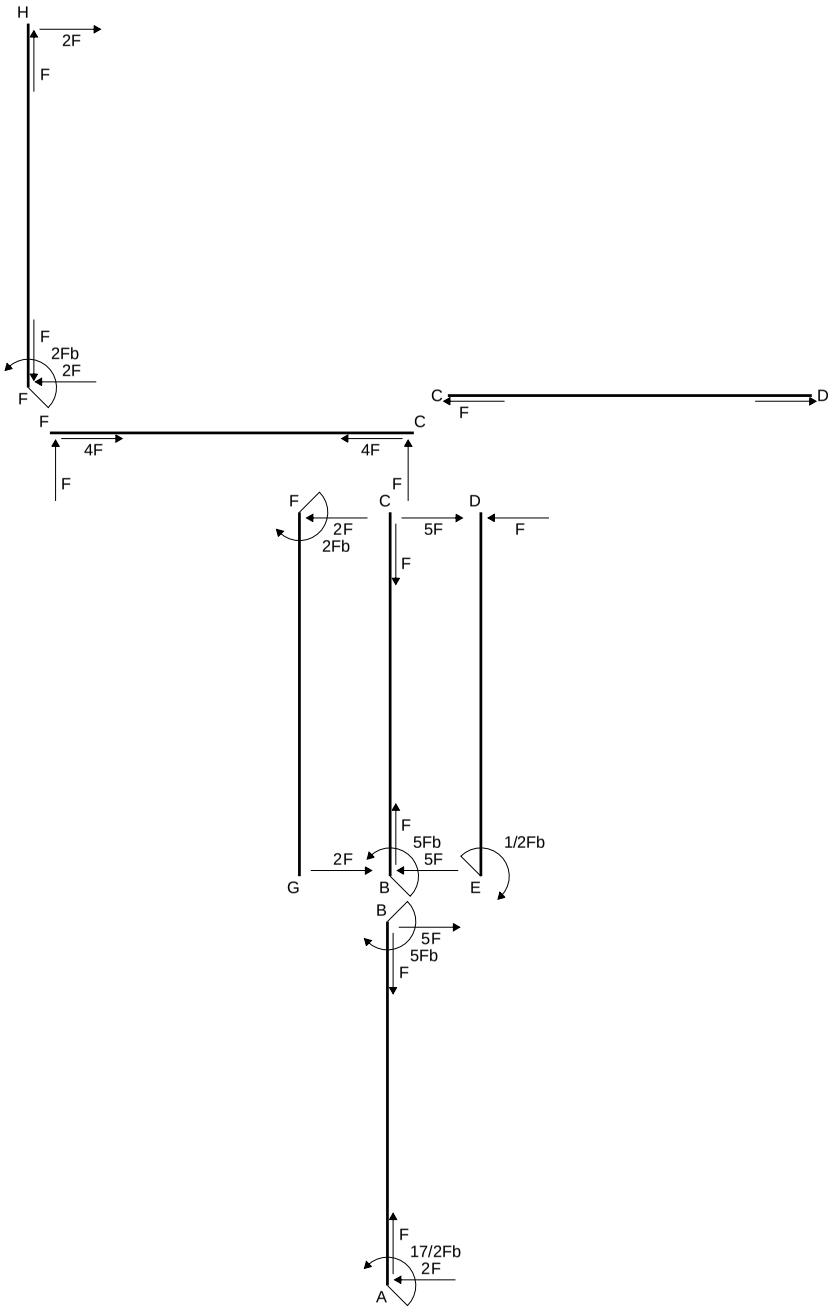
$V_H b = -2Fb$

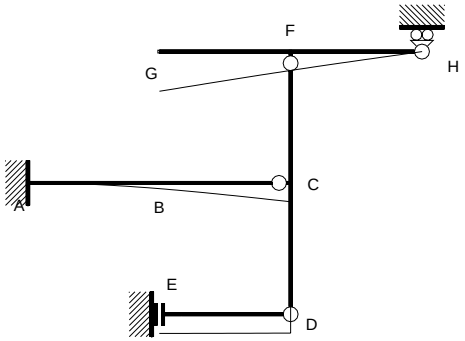
Matrice di equilibrio

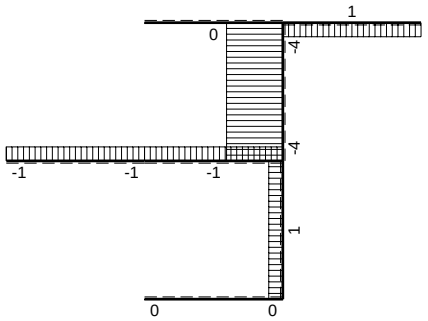
$$\begin{array}{c} \\ \varphi_{CB} \\ \varphi_{DC} \\ \varphi_{FC} \end{array} \begin{bmatrix} H_E b & W_E & V_H b \\ 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -1 & -3/2 \\ 0 & -1/2 \\ -2 & 0 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} H_E b \\ W_E \\ V_H b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -1 \\ 0 & -1/2 \\ -2 & 0 \end{bmatrix}$$

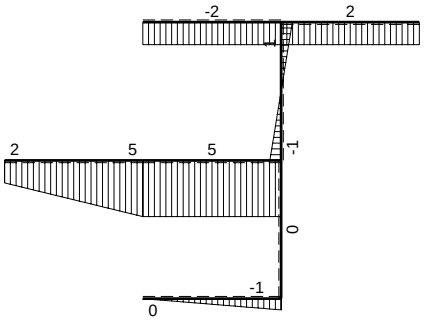


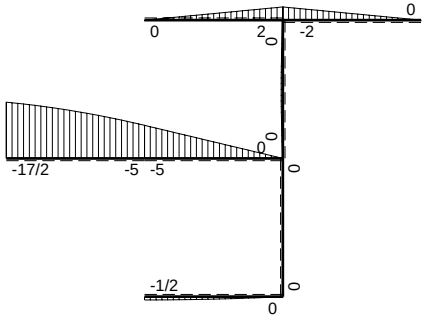




$\vdash\!\!\dashv$ 50 Fb^3/EJ

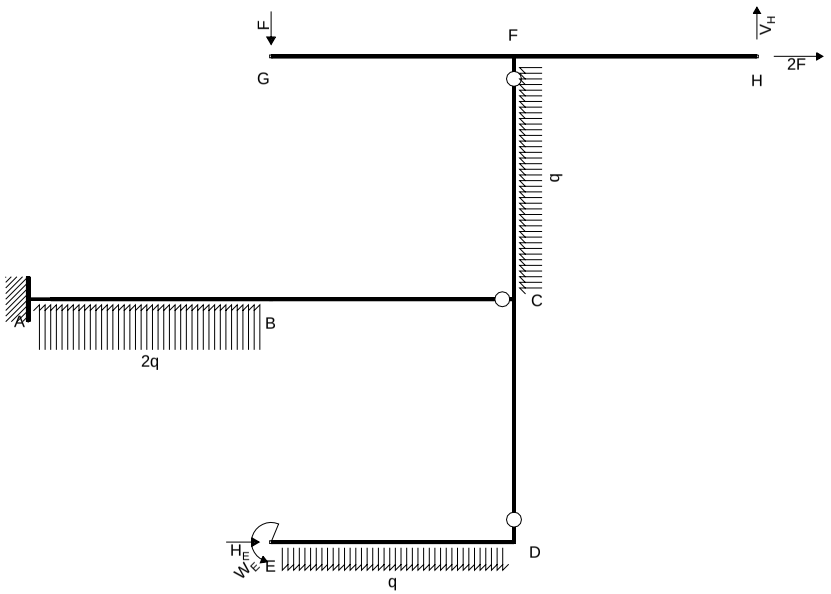
$\leftarrow$ + $\rightarrow$ F





$\uparrow$ + $\downarrow$ F

$\circlearrowright$ + $\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CD CF DE FG FH

$H_E b + W_E + V_H b = Fb - qb^2$

Rotazione intorno a D: aste DE

$W_E = -1/2 qb^2$

Rotazione intorno a F: aste FG FH

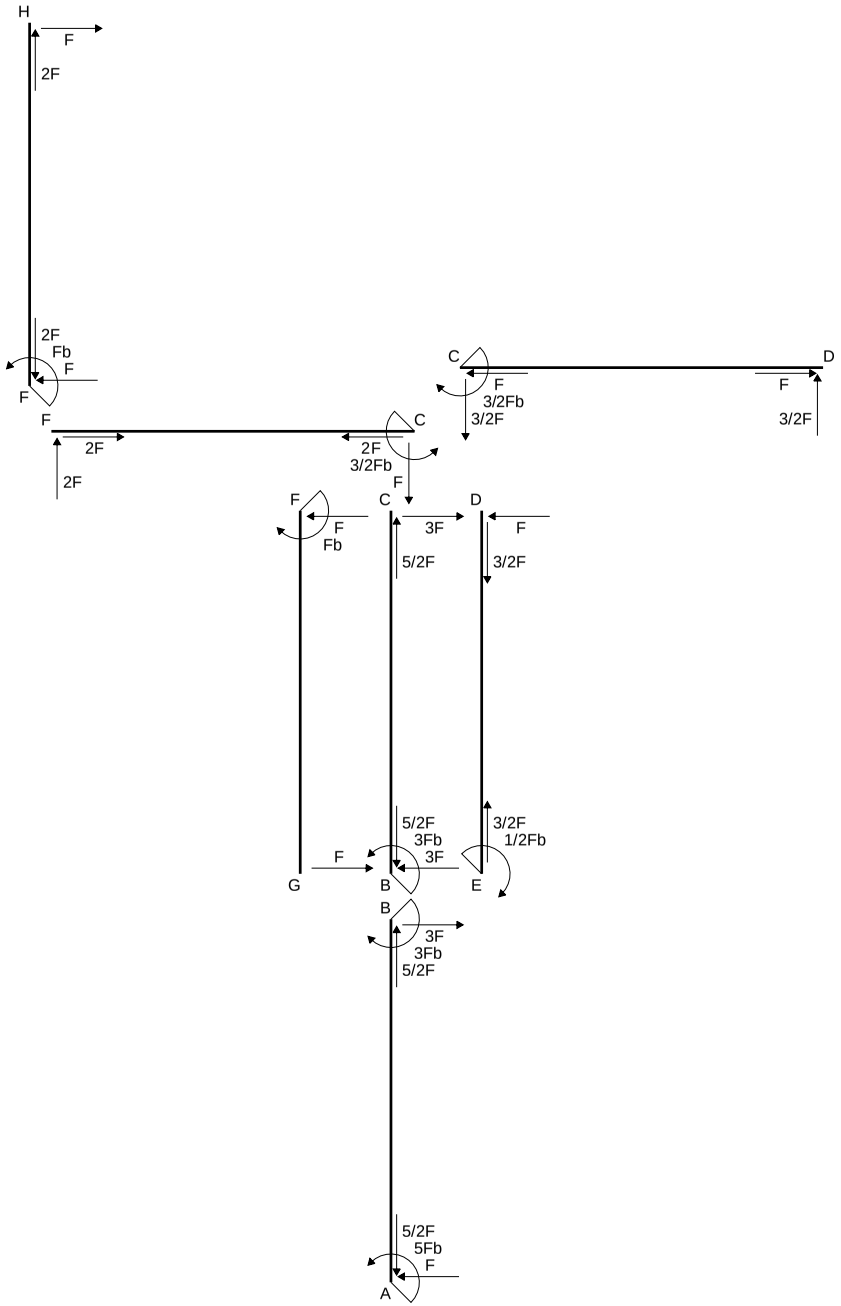
$V_H b = -Fb$

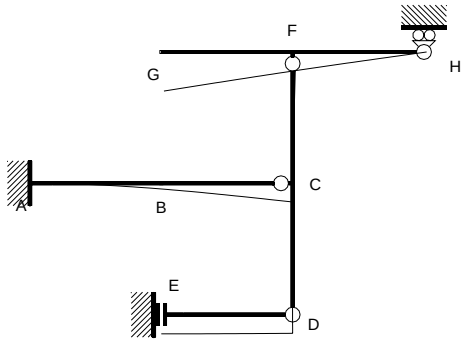
Matrice di equilibrio

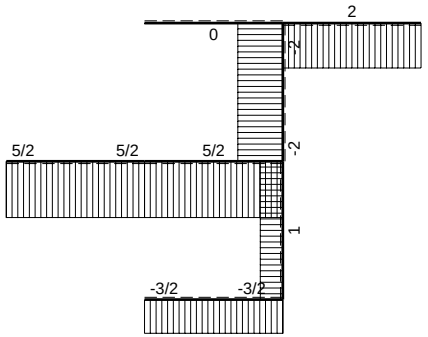
$$\begin{matrix} & [H_E b & W_E & V_H b] \\ \varphi_{CB} & \begin{bmatrix} 1 & 1 & 1 \end{bmatrix} \\ \varphi_{DC} & \begin{bmatrix} 0 & 1 & 0 \end{bmatrix} \\ \varphi_{FC} & \begin{bmatrix} 0 & 0 & 1 \end{bmatrix} \end{matrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 1 & -1 \end{bmatrix} \\ \begin{bmatrix} 0 & -1/2 \end{bmatrix} \\ \begin{bmatrix} -1 & 0 \end{bmatrix} \end{matrix}$$

Soluzione del sistema

$$\begin{bmatrix} H_E b \\ W_E \\ V_H b \end{bmatrix} = \begin{matrix} [Fb & qb^2] \\ \begin{bmatrix} 2 & -1/2 \end{bmatrix} \\ \begin{bmatrix} 0 & -1/2 \end{bmatrix} \\ \begin{bmatrix} -1 & 0 \end{bmatrix} \end{matrix}$$

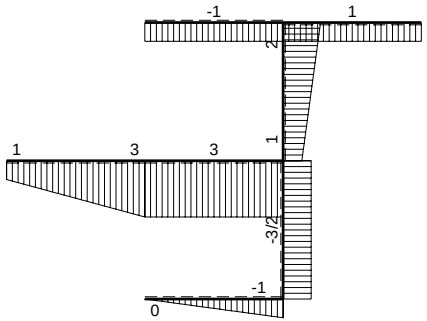


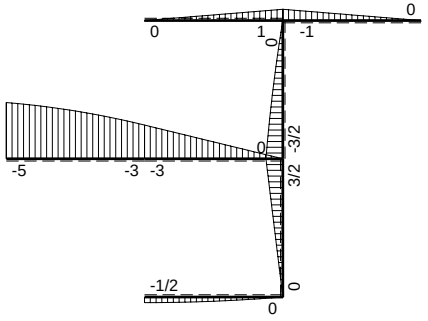




30 Fb^3/EJ

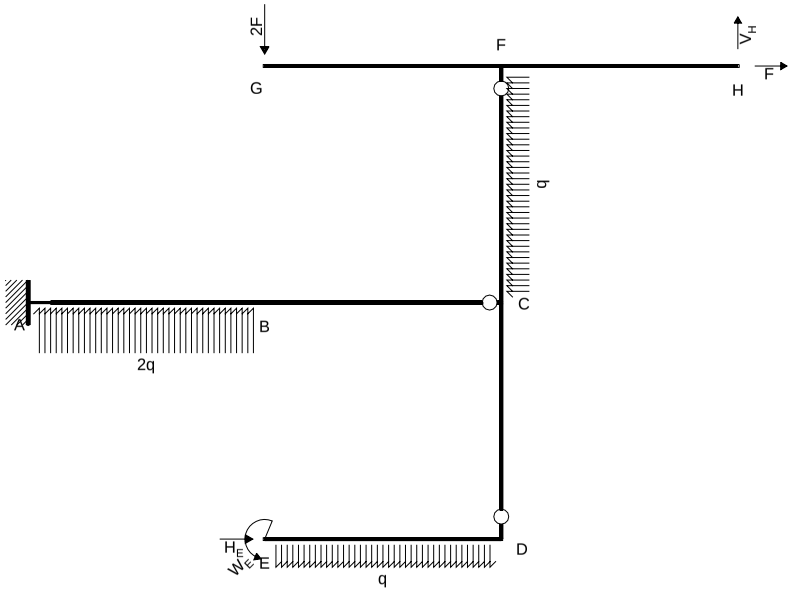
F





F

Fb



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CD CF DE FG FH

$H_E b + W_E + V_H b = -Fb - qb^2$

Rotazione intorno a D: aste DE

$W_E = -1/2 qb^2$

Rotazione intorno a F: aste FG FH

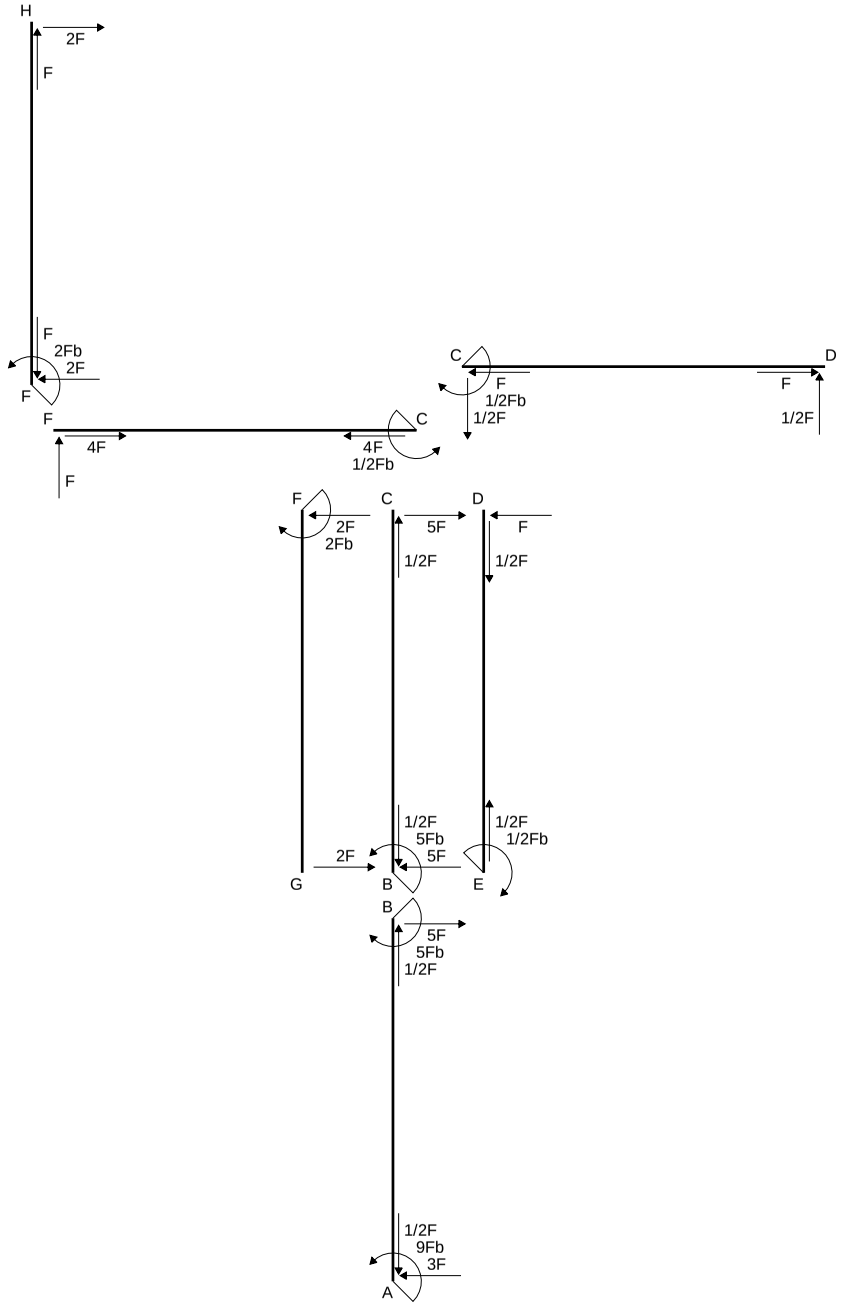
$V_H b = -2Fb$

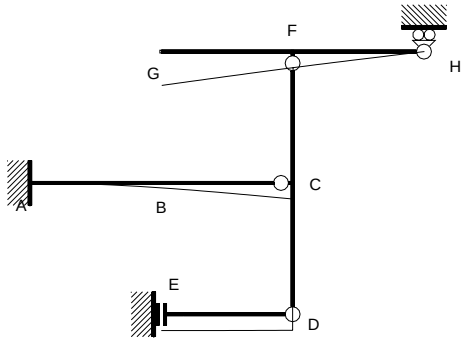
Matrice di equilibrio

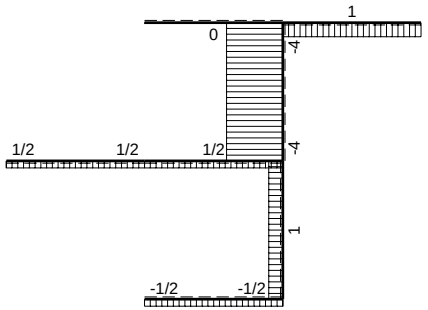
$$\begin{array}{c} \\ \varphi_{CB} \\ \varphi_{DC} \\ \varphi_{FC} \end{array} \begin{bmatrix} H_E b & W_E & V_H b \\ 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -1 & -1 \\ 0 & -1/2 \\ -2 & 0 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} H_E b \\ W_E \\ V_H b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -1/2 \\ 0 & -1/2 \\ -2 & 0 \end{bmatrix}$$

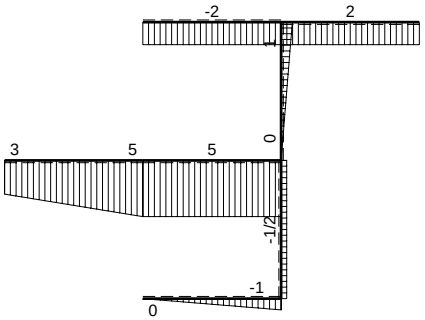


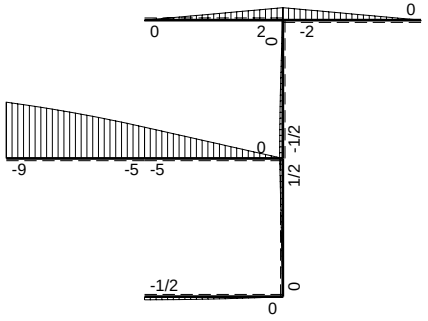




$\vdash\!\!\dashv$ 60 Fb^3/EJ

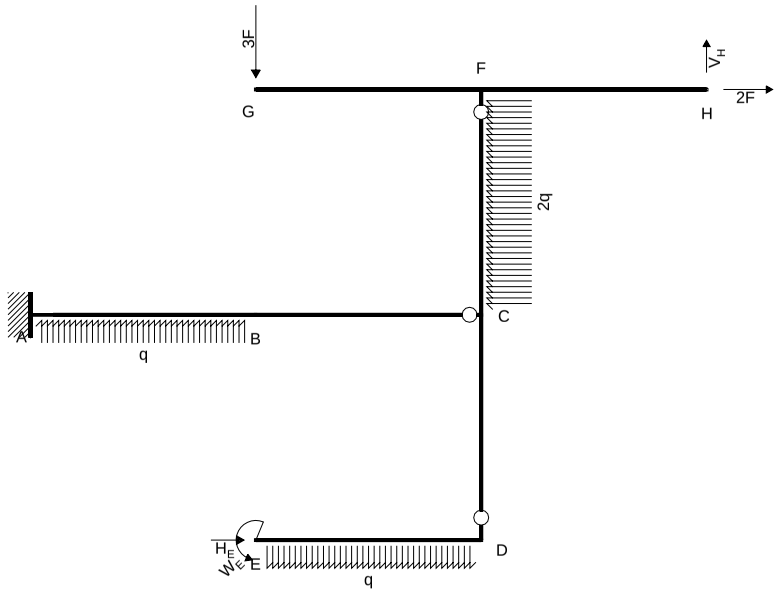
$\leftarrow$ F $\rightarrow$





$\uparrow$ F

Fb



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CD CF DE FG FH

$H_E b + W_E + V_H b = -Fb - 3/2qb^2$

Rotazione intorno a D: aste DE

$W_E = -1/2qb^2$

Rotazione intorno a F: aste FG FH

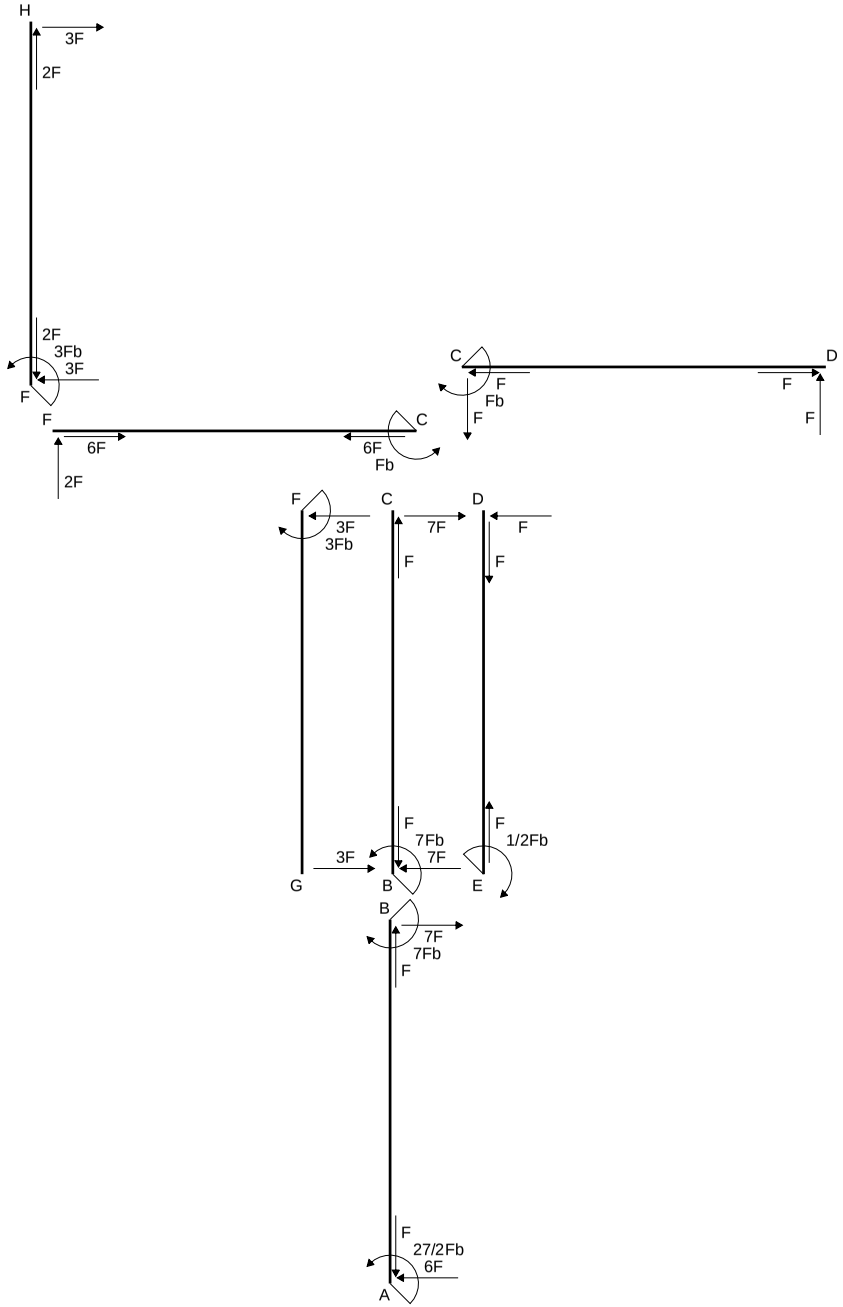
$V_H b = -3Fb$

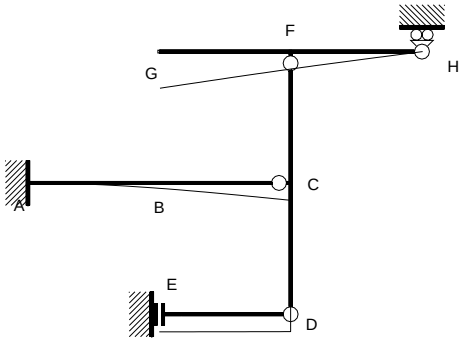
Matrice di equilibrio

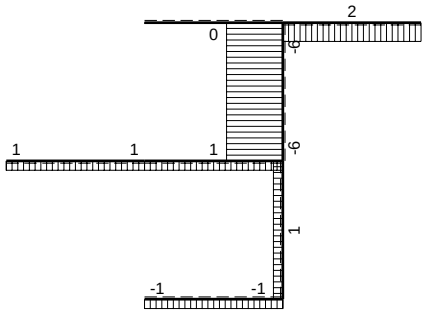
$$\begin{array}{c} \\ \varphi_{CB} \\ \varphi_{DC} \\ \varphi_{FC} \end{array} \begin{bmatrix} H_E b & W_E & V_H b \\ 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -1 & -3/2 \\ 0 & -1/2 \\ -3 & 0 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} H_E b \\ W_E \\ V_H b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 2 & -1 \\ 0 & -1/2 \\ -3 & 0 \end{bmatrix}$$

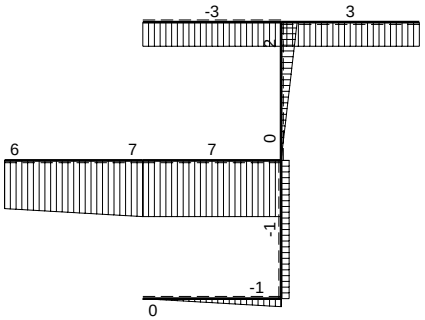


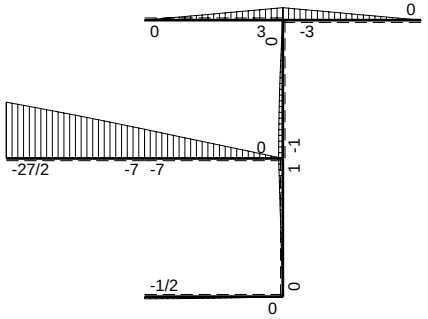




$\vdash\!\!\dashv$ 80 Fb^3/EJ

$\leftarrow$ F $\rightarrow$





$\uparrow$ F

Fb

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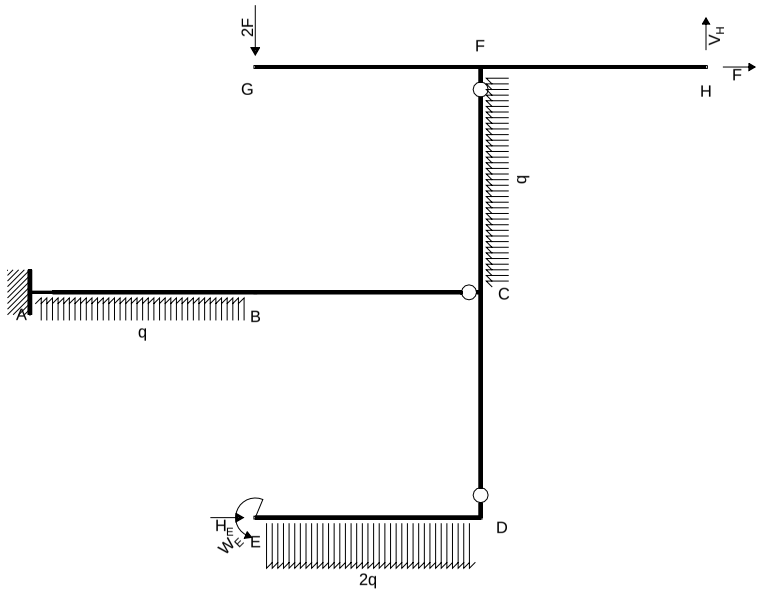


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CD CF DE FG FH

$H_E b + W_E + V_H b = -Fb - 3/2 qb^2$

Rotazione intorno a D: aste DE

$W_E = -qb^2$

Rotazione intorno a F: aste FG FH

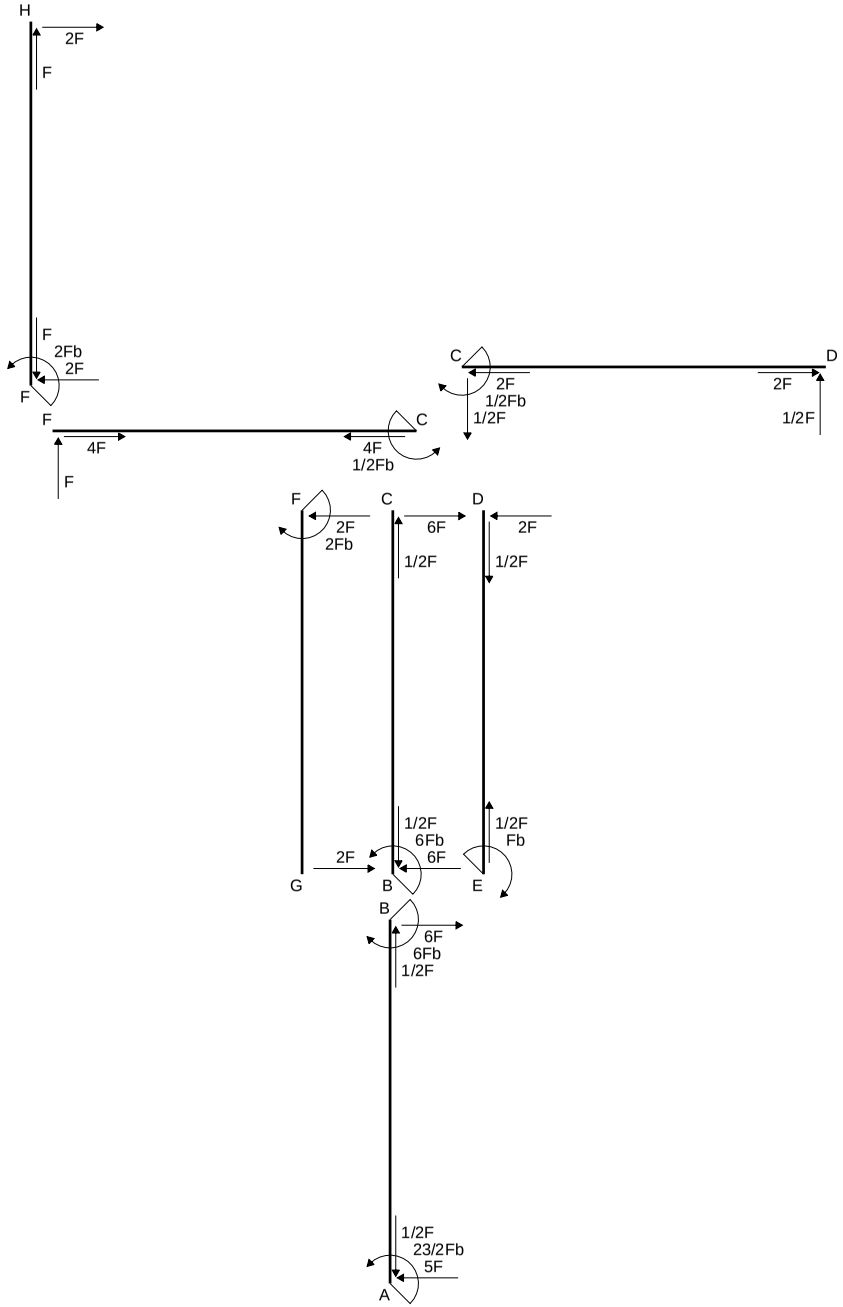
$V_H b = -2Fb$

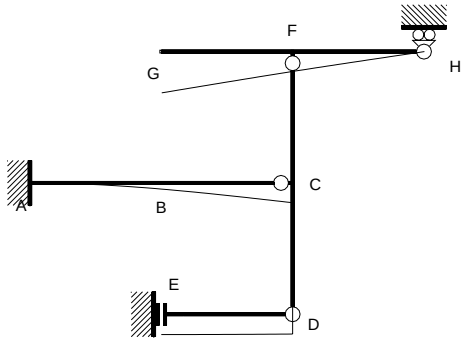
Matrice di equilibrio

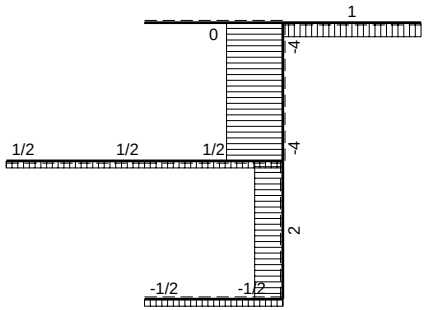
$$\begin{array}{c} \\ \varphi_{CB} \\ \varphi_{DC} \\ \varphi_{FC} \end{array} \begin{bmatrix} H_E b & W_E & V_H b \\ 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ -1 & -3/2 \\ 0 & -1 \\ -2 & 0 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} H_E b \\ W_E \\ V_H b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 1 & -1/2 \\ 0 & -1 \\ -2 & 0 \end{bmatrix}$$

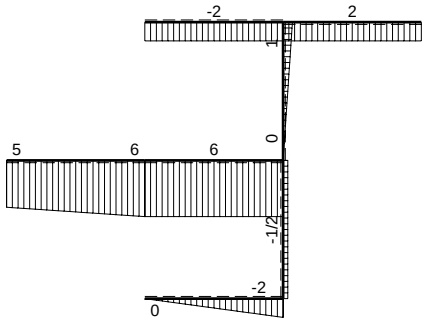


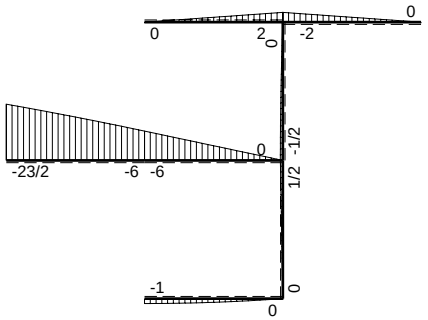




$\vdash\!\!\dashv$ 60 Fb^3/EJ

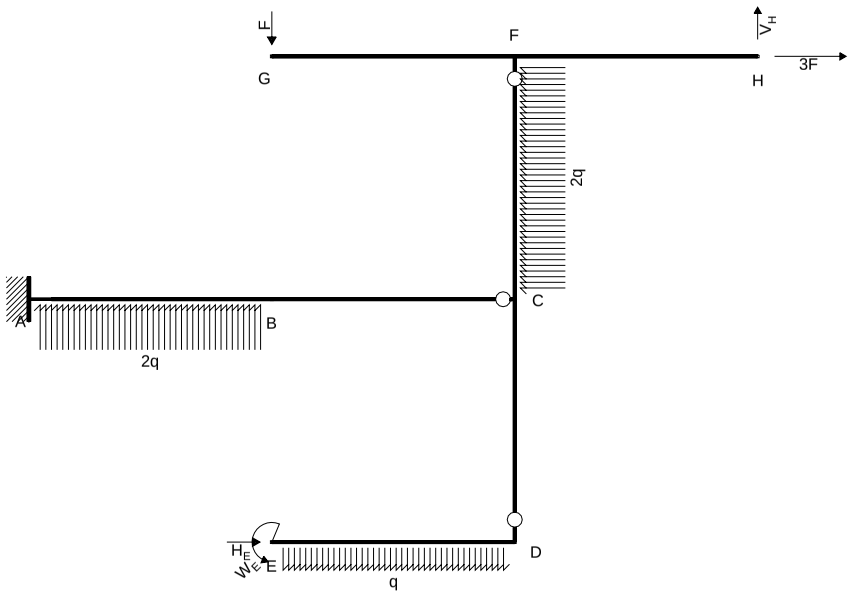
$\leftarrow$ + $\rightarrow$ F





$\uparrow$ + $\downarrow$ F

$\circlearrowright$ + $\circlearrowleft$ Fb



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a C: aste CD CF DE FG FH

$H_E b + W_E + V_H b = 2Fb - 3/2qb^2$

Rotazione intorno a D: aste DE

$W_E = -1/2qb^2$

Rotazione intorno a F: aste FG FH

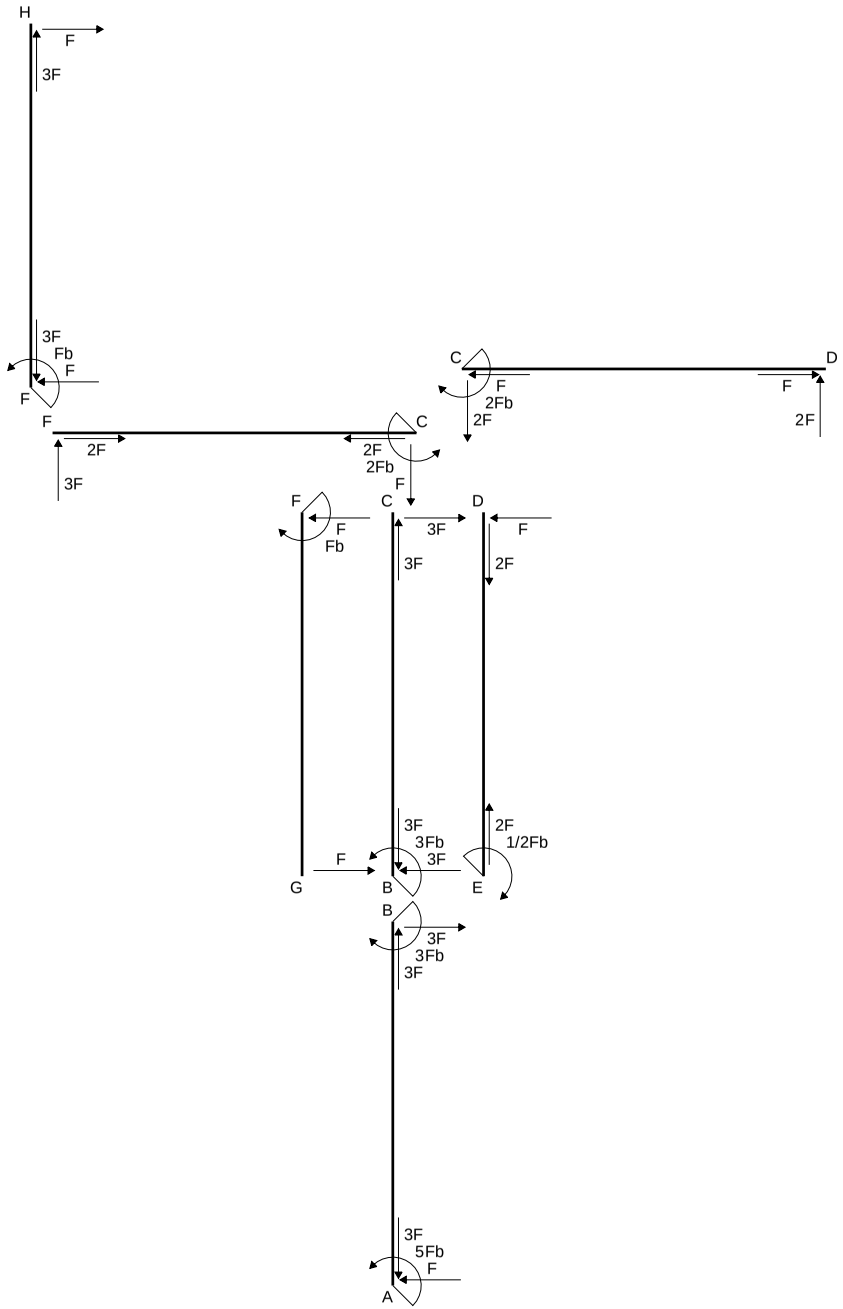
$V_H b = -Fb$

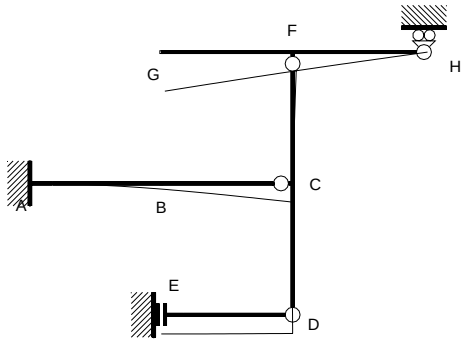
Matrice di equilibrio

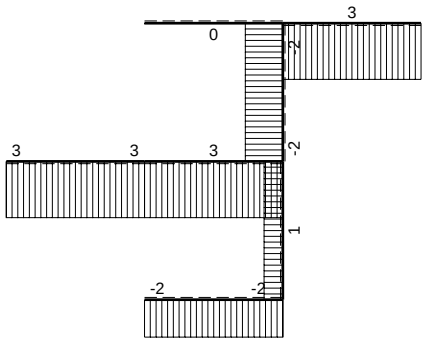
$$\begin{array}{c} \\ \varphi_{CB} \\ \varphi_{DC} \\ \varphi_{FC} \end{array} \begin{bmatrix} H_E b & W_E & V_H b \\ 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 2 & -3/2 \\ 0 & -1/2 \\ -1 & 0 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} H_E b \\ W_E \\ V_H b \end{bmatrix} = \begin{bmatrix} Fb & qb^2 \\ 3 & -1 \\ 0 & -1/2 \\ -1 & 0 \end{bmatrix}$$

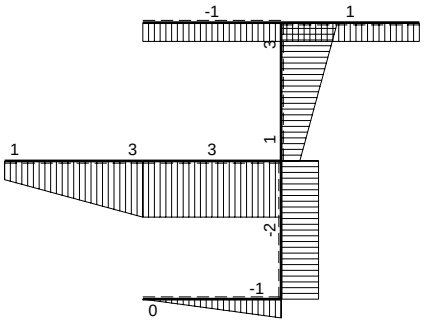


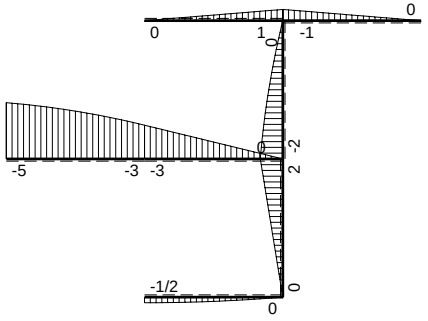




$\vdash\!\!\!\dashv$ 30 Fb^3/EJ

$\leftarrow$ + $\rightarrow$ F





$\uparrow$ + $\downarrow$ F

$\circlearrowright$ + $\circlearrowleft$ Fb