

EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_J b + H_{CD} b + V_{CD} b = 4Fb - W + 10qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_J b + H_{CD} b - V_{CD} b = 2Fb - W + 7/2qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD} b - 3V_{CD} b = -W - 5/2qb^2$$

Traslazione verticale: aste DC

$$V_{CD} = qb$$

Matrice di equilibrio

$$\begin{bmatrix} V_F b & V_J b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \end{bmatrix}$$

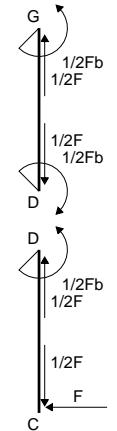
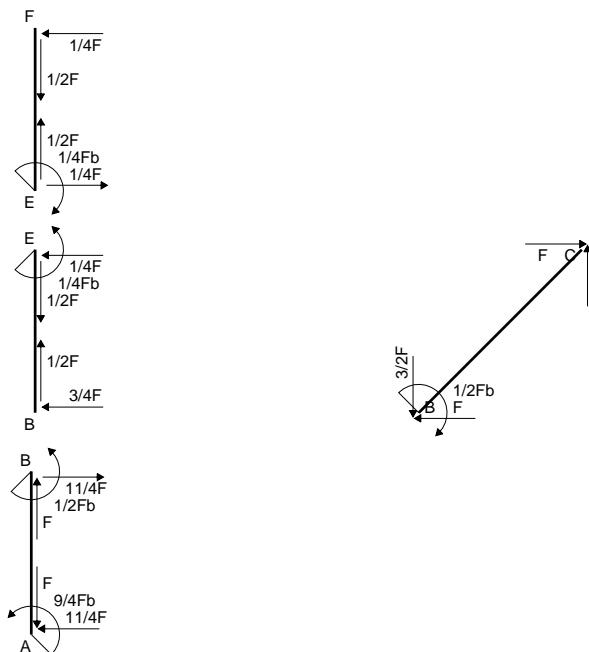
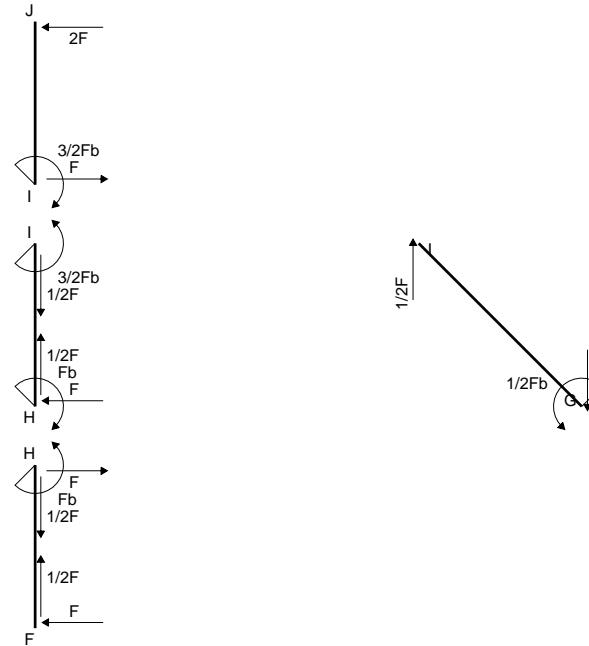
$$\begin{bmatrix} \varphi_{BE} \\ \varphi_{FE} \\ \varphi_{IG} \\ \varphi_{DG} \end{bmatrix} = \begin{bmatrix} 2 & 5 & 1 & 1 \\ 0 & 3 & 1 & -1 \\ 0 & 0 & 1 & -3 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 4 & -1 & 10 \\ 2 & -1 & 7/2 \\ 0 & -1 & -5/2 \\ 0 & 0 & 1 \end{bmatrix}$$

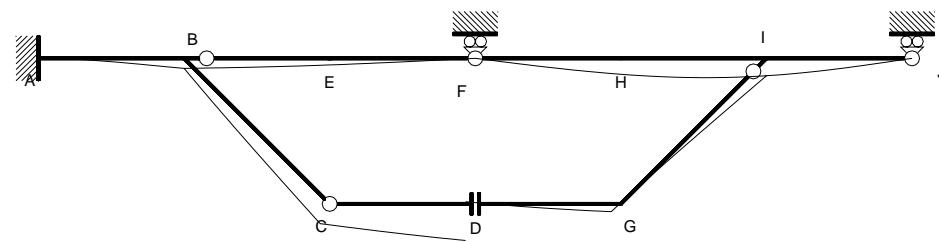
$$\text{Soluzione del sistema}$$

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb \\ W \\ qb^2 \\ 11/12 \end{bmatrix}$$

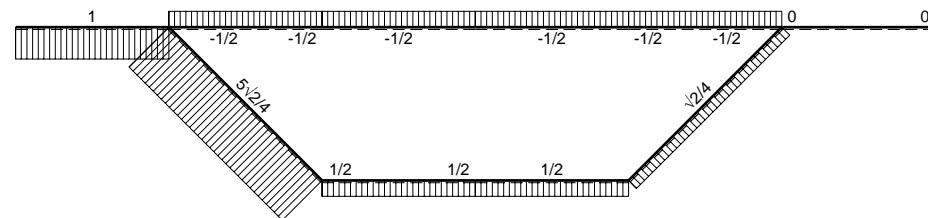
$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} 1/3 \\ 2/3 \\ 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} 1/2 \\ 4/3 \\ 1/2 \\ 1 \end{bmatrix}$$

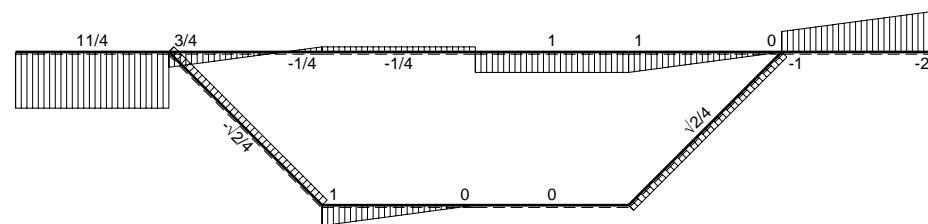




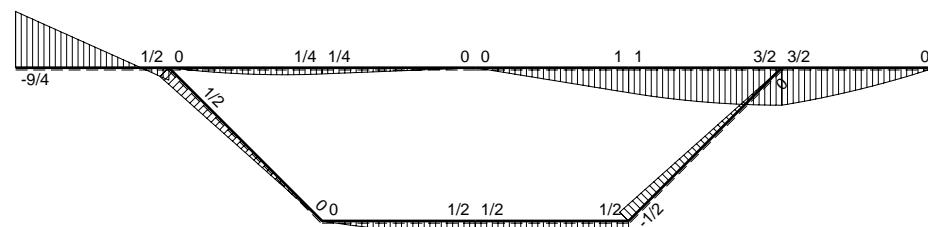
$\rightarrow 5 Fb^3/EJ$



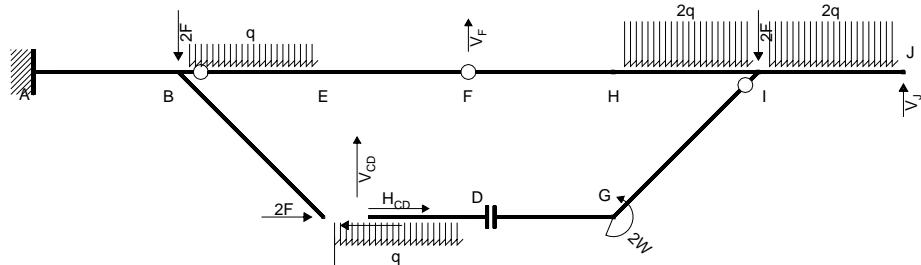
$\leftarrow \boxed{+} \rightarrow F$



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



$\zeta \boxed{+} \zeta F_b$



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_J b + H_{CD} b + V_{CD} b = 8Fb - 2W + 18qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_J b + H_{CD} b - V_{CD} b = 4Fb - 2W + 15/2qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD} b - 3V_{CD} b = -2W - 5/2qb^2$$

Traslazione verticale: aste DC

$$V_{CD} = qb$$

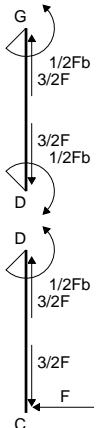
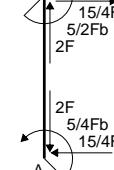
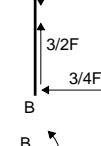
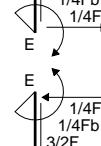
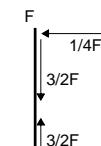
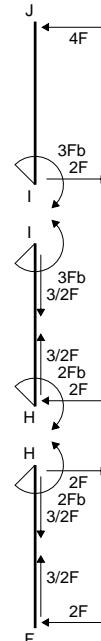
Matrice di equilibrio

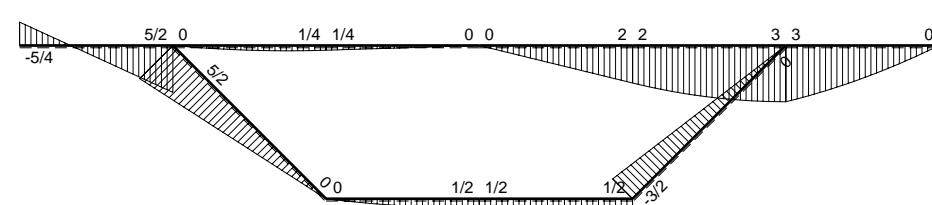
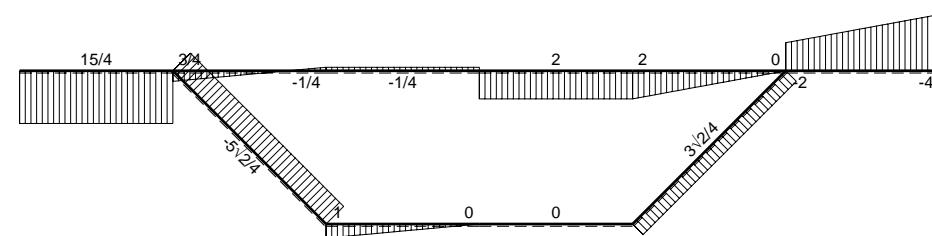
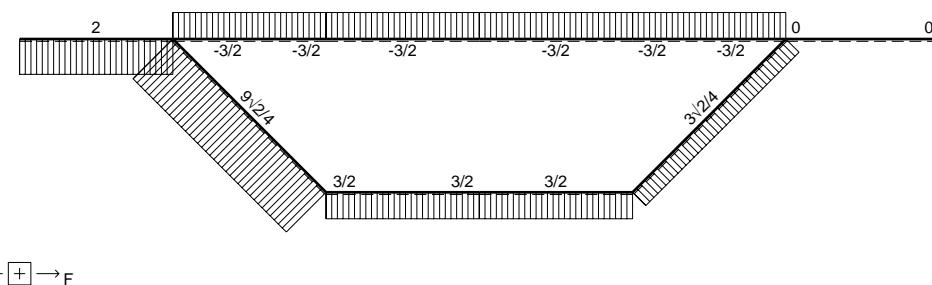
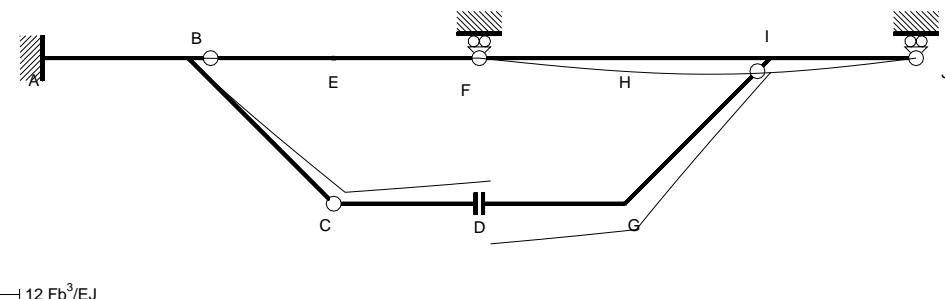
$$\begin{bmatrix} V_F b & V_J b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \end{bmatrix}$$

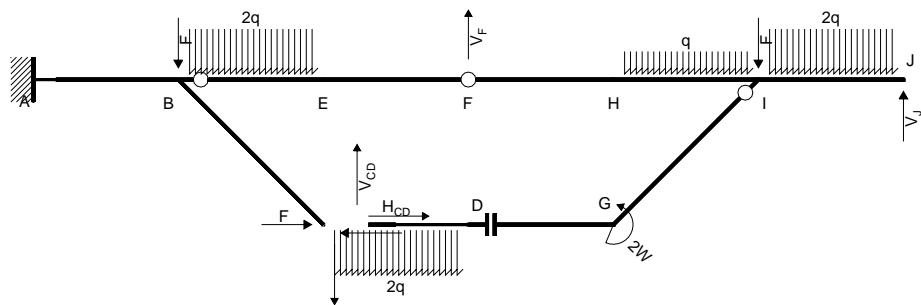
$$\begin{bmatrix} \varphi_{BE} \\ \varphi_{FE} \\ \varphi_{IG} \\ \varphi_{DG} \end{bmatrix} = \begin{bmatrix} 2 & 5 & 1 & 1 \\ 0 & 3 & 1 & -1 \\ 0 & 0 & 1 & -3 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 2/3 & 0 & 19/12 \\ 4/3 & 0 & 8/3 \\ 0 & -2 & 1/2 \\ 0 & 0 & 1 \end{bmatrix}$$







EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_E b + H_{CD} b + V_{CD} b = 4Fb - 2W + 33/2qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_H b + H_{CD} b - V_{CD} b = 2Fb - 2W + 11/2qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD} b - 3V_{CD} b = -2W - 5qb^2$$

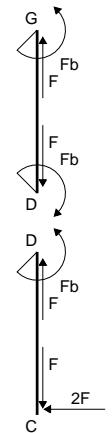
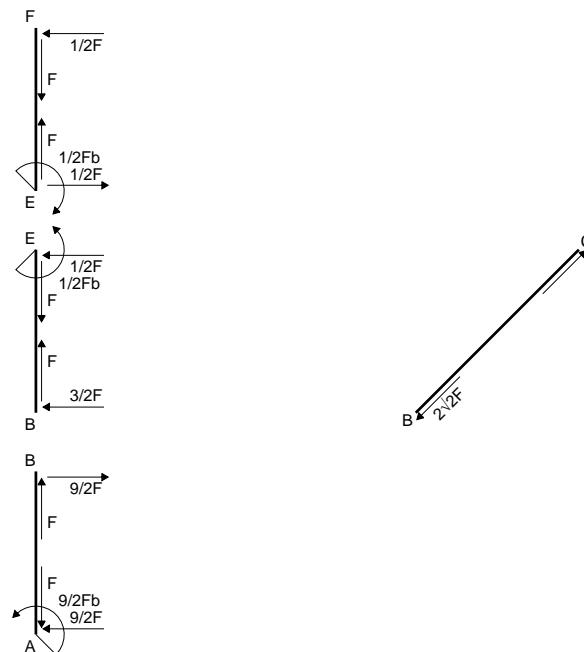
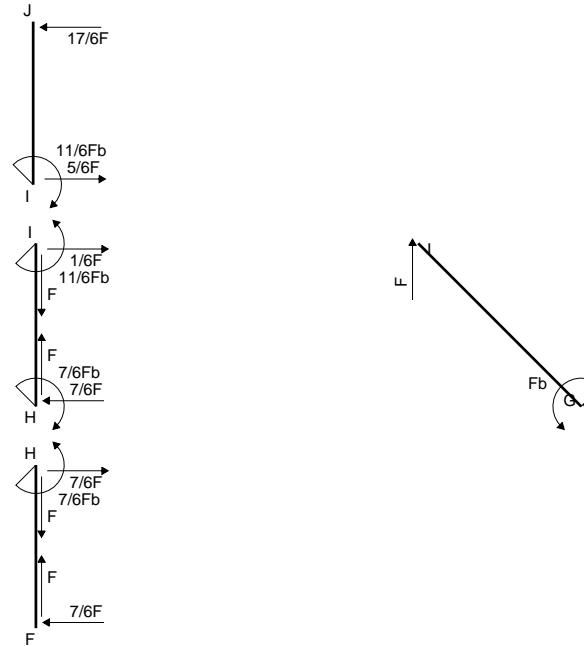
Traslazione verticale: aste DC

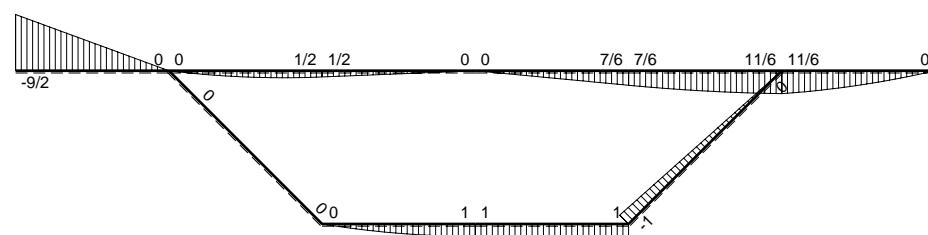
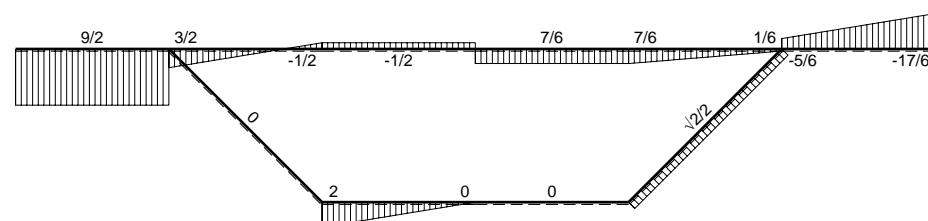
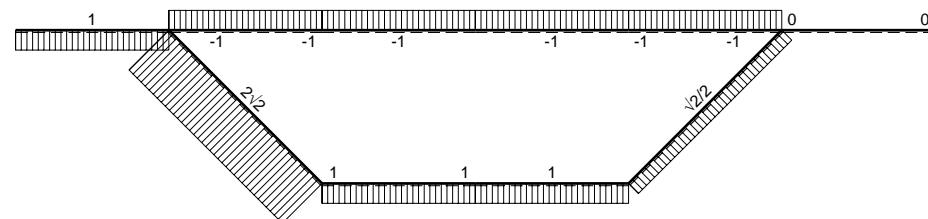
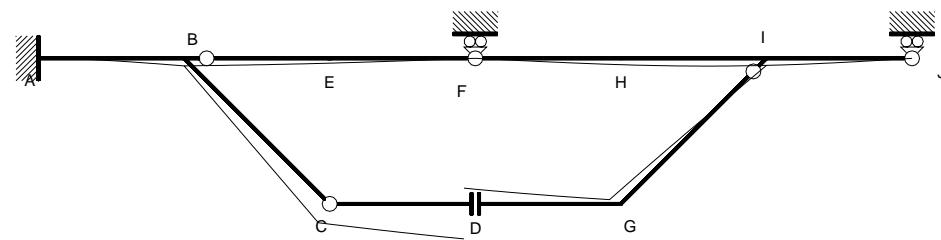
$$V_{CD} = 2qb$$

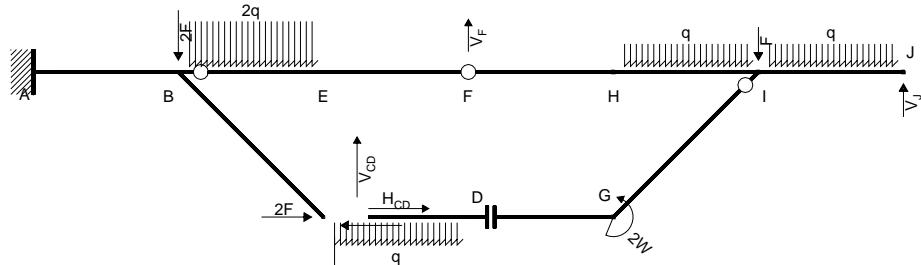
Matrice di equilibrio

$$\begin{bmatrix} V_F b & V_E b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 4 & -2 & 33/2 \\ 2 & 5 & 1 & 1 \\ 0 & 3 & 1 & -1 \\ 0 & 0 & 1 & -3 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} V_F b \\ V_E b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 1/3 & 0 & 4/3 \\ 2/3 & 0 & 13/6 \\ 0 & -2 & 1 \\ 0 & 0 & 2 \end{bmatrix}$$







EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_J b + H_{CD} b + V_{CD} b = 4Fb - 2W + 21/2qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_J b + H_{CD} b - V_{CD} b = 2Fb - 2W + 7/2qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD} b - 3V_{CD} b = -2W - 5/2qb^2$$

Traslazione verticale: aste DC

$$V_{CD} = qb$$

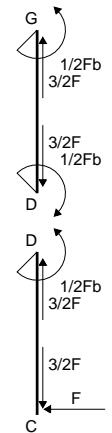
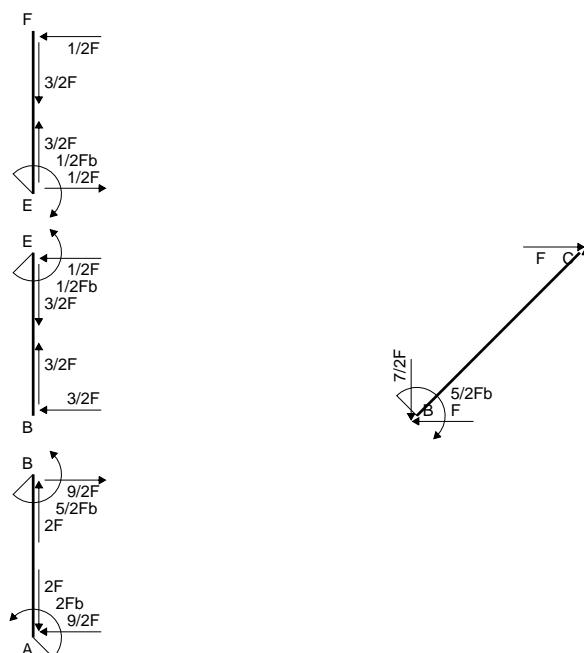
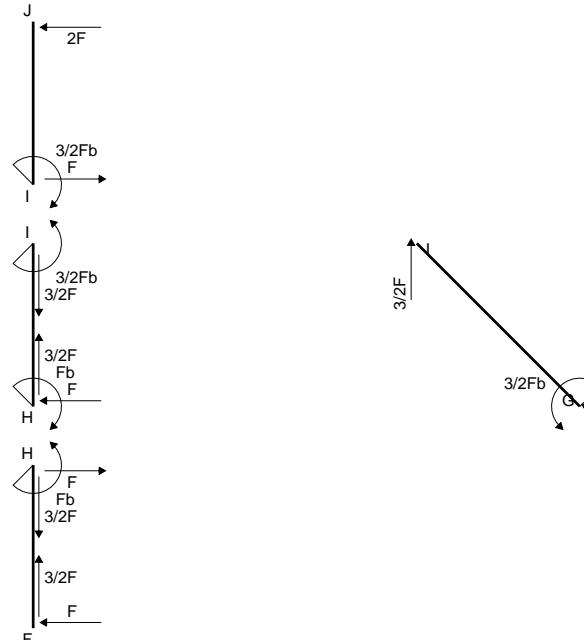
Matrice di equilibrio

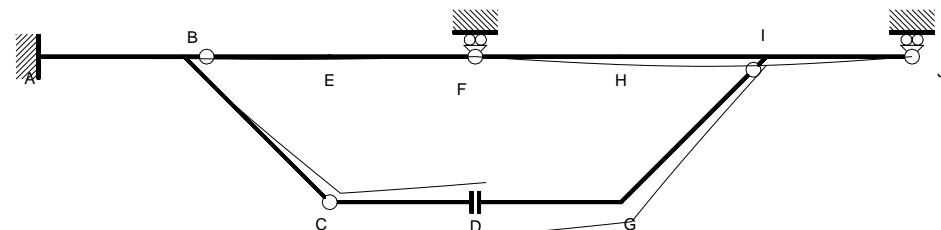
$$\begin{bmatrix} V_F b & V_J b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \end{bmatrix}$$

$$\begin{bmatrix} \varphi_{BE} \\ \varphi_{FE} \\ \varphi_{IG} \\ \varphi_{DG} \end{bmatrix} = \begin{bmatrix} 2 & 5 & 1 & 1 \\ 0 & 3 & 1 & -1 \\ 0 & 0 & 1 & -3 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

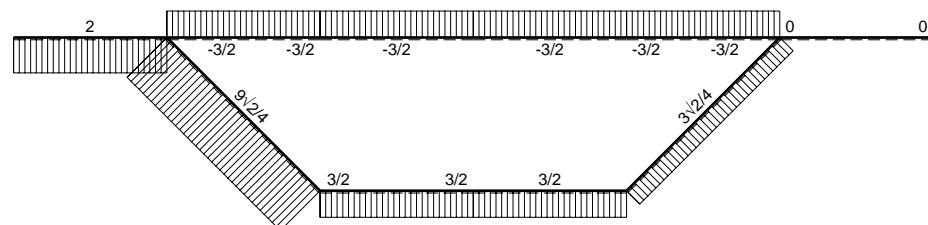
Soluzione del sistema

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb \\ W \\ qb^2 \\ 1/3 & 0 & 7/6 \\ 2/3 & 0 & 4/3 \\ 0 & -2 & 1/2 \\ 0 & 0 & 1 \end{bmatrix}$$

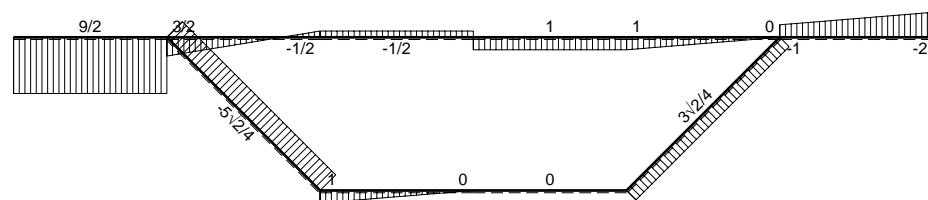




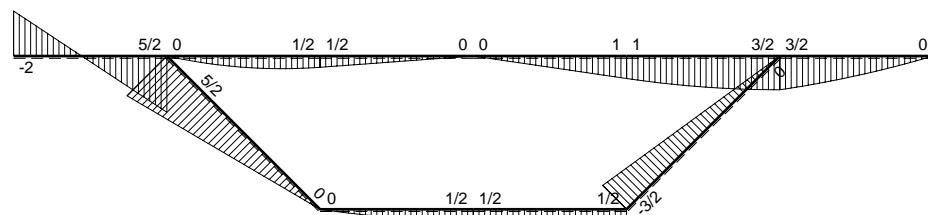
$\vdash 10 Fb^3/EJ$



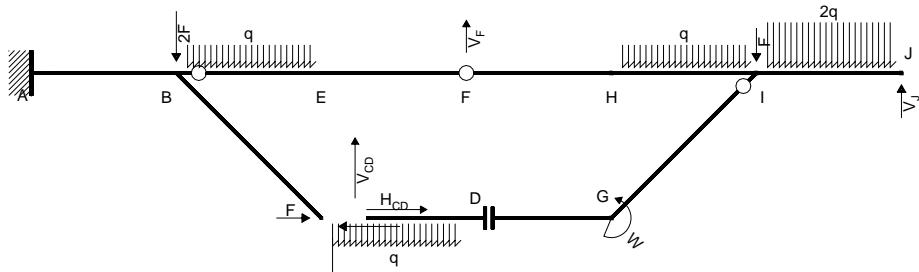
$\leftarrow \boxed{+} \rightarrow F$



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



$\zeta \boxed{+} \zeta Fb$



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_J b + H_{CD} b + V_{CD} b = 4Fb - W + 29/2qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_J b + H_{CD} b - V_{CD} b = 2Fb - W + 6qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD}b - 3V_{CD}b = -W - 5/2qb^2$$

Traslazione verticale: aste DC

$$V_{CD} = qb$$

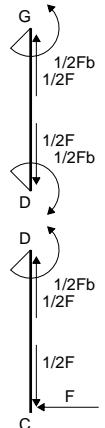
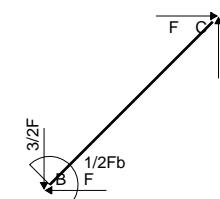
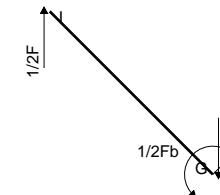
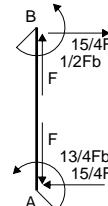
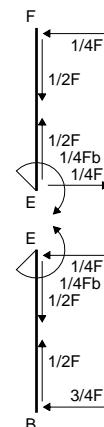
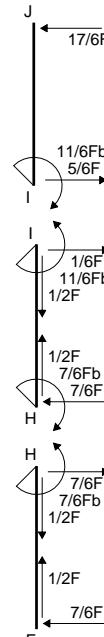
Matrice di equilibrio

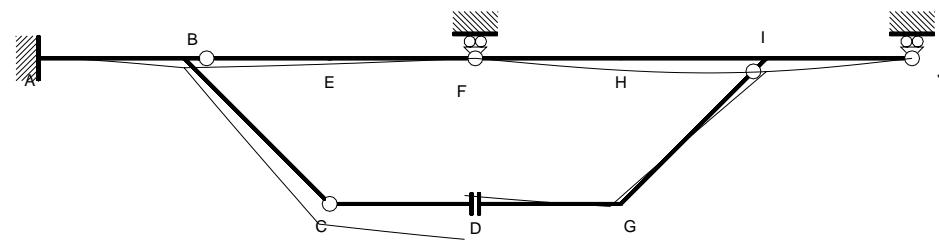
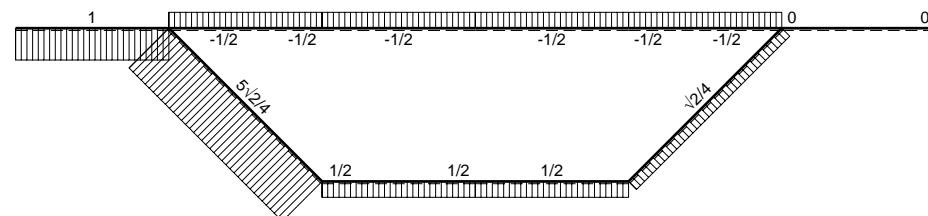
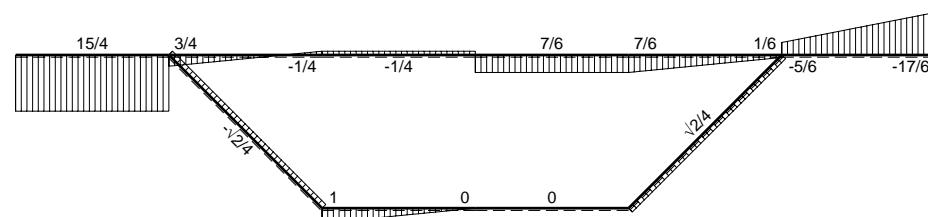
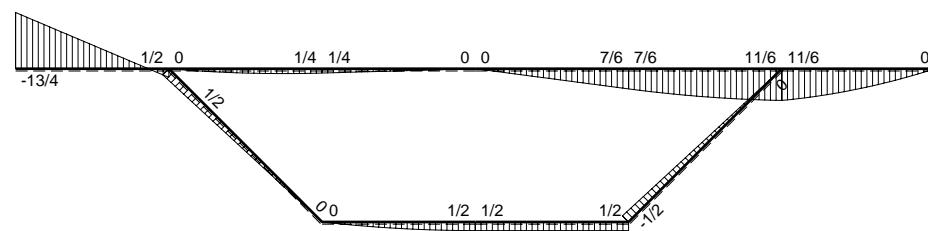
$$\begin{bmatrix} V_F b & V_J b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} F b & W & q b^2 \end{bmatrix}$$

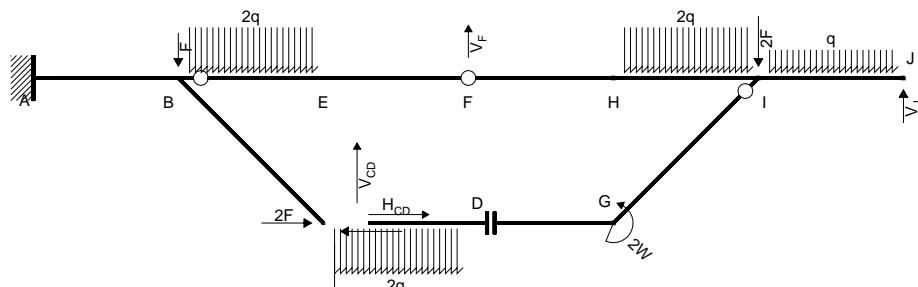
$$\begin{array}{l|cccc} \Phi_{BE} & 2 & 5 & 1 & 1 \\ \Phi_{FE} & 0 & 3 & 1 & -1 \\ \Phi_{IG} & 0 & 0 & 1 & -3 \\ V_{DG} & 0 & 0 & 0 & 1 \end{array}$$

Soluzione del sistema

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CP} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 1/3 & 0 & 13/12 \\ 2/3 & 0 & 13/6 \\ 0 & -1 & 1/2 \\ 0 & 0 & 1 \end{bmatrix}$$




 $\vdash - 8 F b^3 / E J$

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

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

 $\zeta \boxed{+} \zeta F_b$



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_J b + H_{CD} b + V_{CD} b = 8Fb - 2W + 31/2qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_J b + H_{CD} b - V_{CD} b = 4Fb - 2W + 9/2qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD} b - 3V_{CD} b = -2W - 5qb^2$$

Traslazione verticale: aste DC

$$V_{CD} = 2qb$$

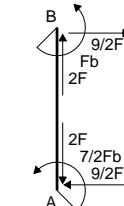
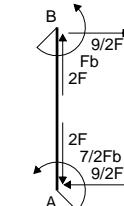
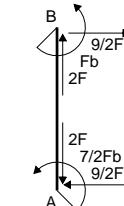
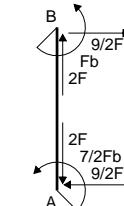
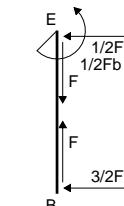
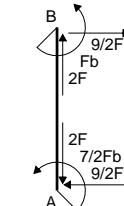
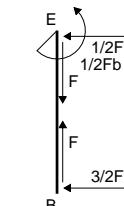
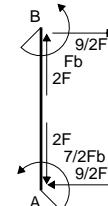
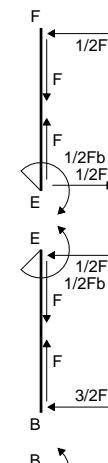
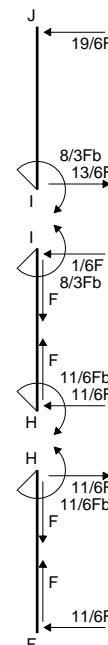
Matrice di equilibrio

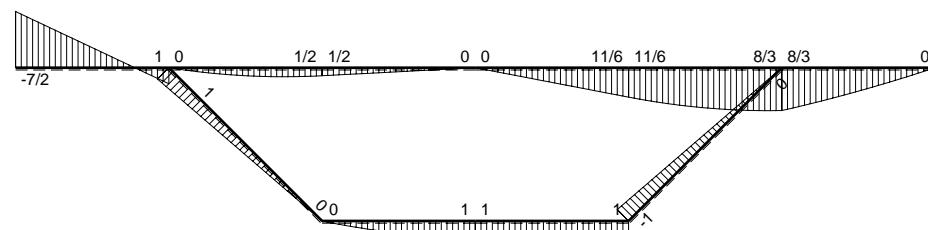
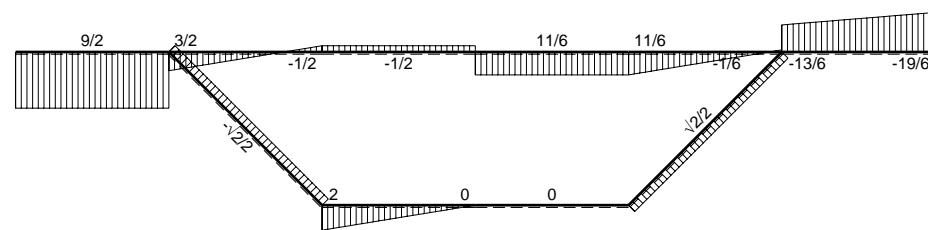
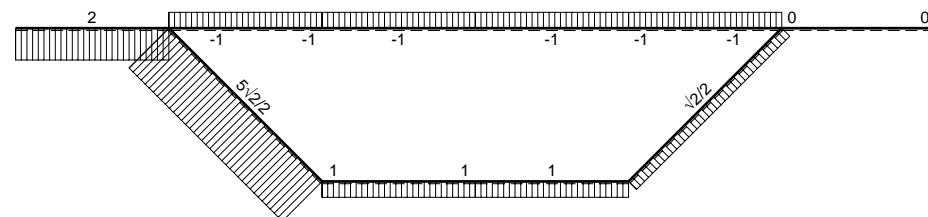
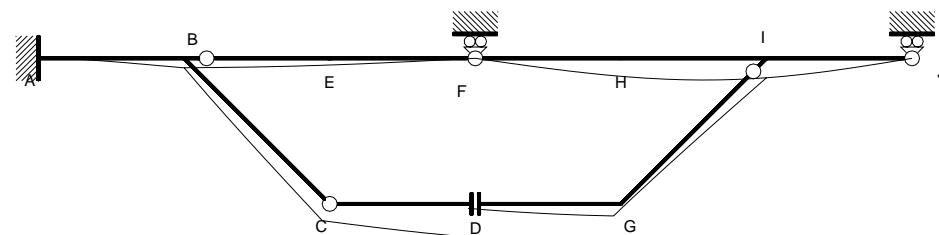
$$\begin{bmatrix} V_F b & V_J b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \end{bmatrix}$$

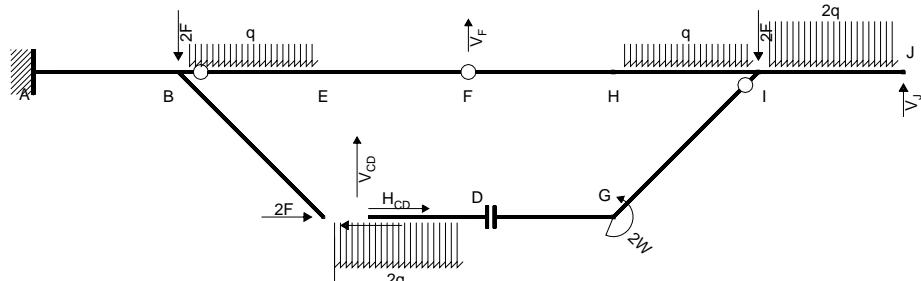
$$\begin{bmatrix} \varphi_{BE} \\ \varphi_{FE} \\ \varphi_{IG} \\ V_{DG} \end{bmatrix} = \begin{bmatrix} 2 & 5 & 1 & 1 \\ 0 & 3 & 1 & -1 \\ 0 & 0 & 1 & -3 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 8 & -2 & 31/2 \\ 4 & -2 & 9/2 \\ 0 & -2 & -5 \\ 0 & 0 & 2 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 2/3 & 0 & 5/3 \\ 4/3 & 0 & 11/6 \\ 0 & -2 & 1 \\ 0 & 0 & 2 \end{bmatrix}$$







EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_J b + H_{CD} b + V_{CD} b = 8Fb - 2W + 16qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_J b + H_{CD} b - V_{CD} b = 4Fb - 2W + 11/2qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD} b - 3V_{CD} b = -2W - 5qb^2$$

Traslazione verticale: aste DC

$$V_{CD} = 2qb$$

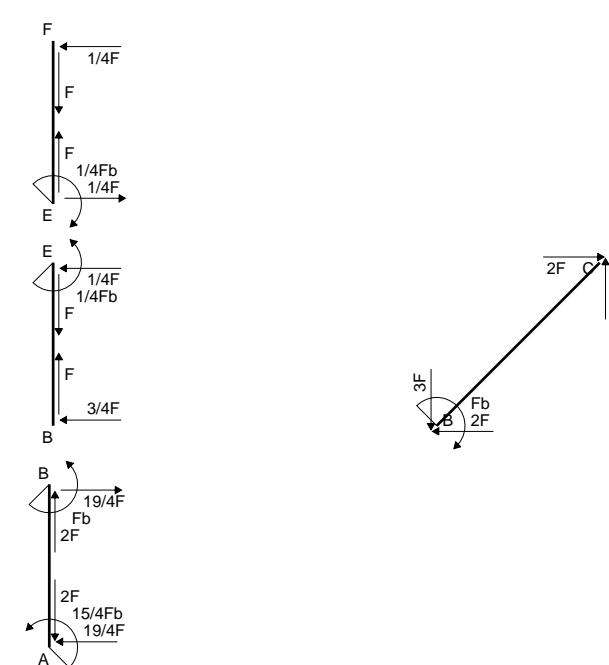
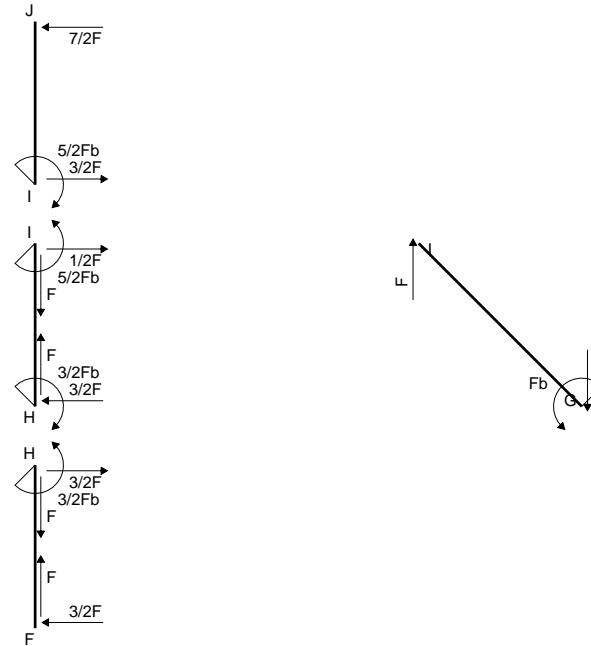
Matrice di equilibrio

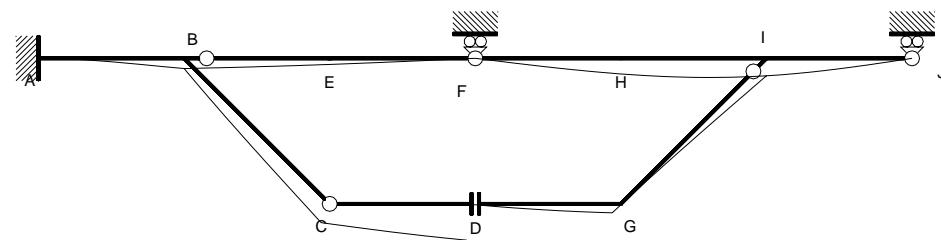
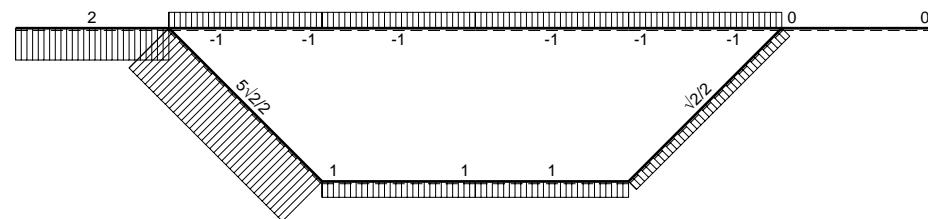
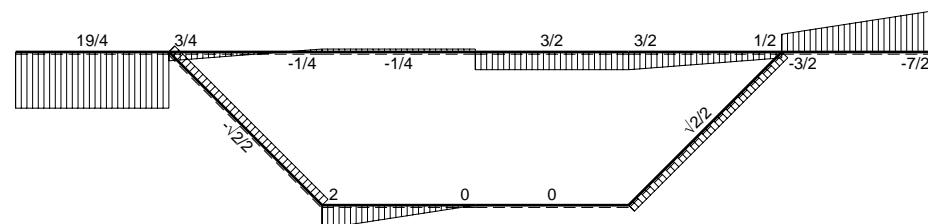
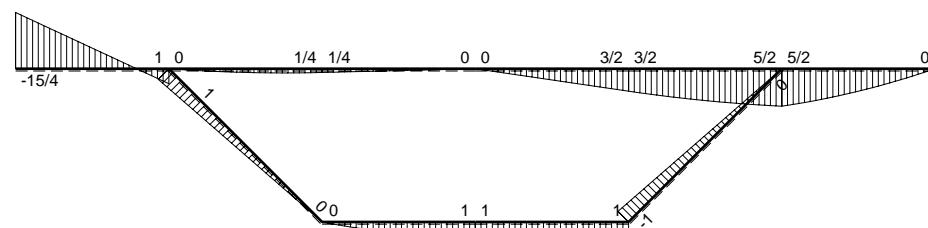
$$\begin{bmatrix} V_F b & V_J b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \end{bmatrix}$$

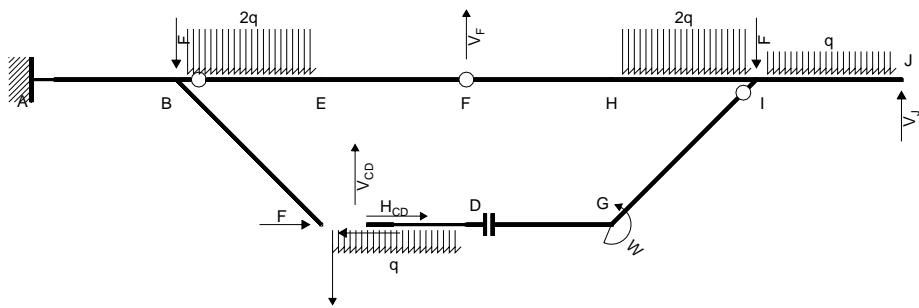
$$\begin{bmatrix} \varphi_{BE} \\ \varphi_{FE} \\ \varphi_{IG} \\ \varphi_{DG} \end{bmatrix} = \begin{bmatrix} 2 & 5 & 1 & 1 \\ 0 & 3 & 1 & -1 \\ 0 & 0 & 1 & -3 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Soluzione del sistema

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 2/3 & 0 & 13/12 \\ 4/3 & 0 & 13/6 \\ 0 & -2 & 1 \\ 0 & 0 & 2 \end{bmatrix}$$




 $\vdash - 8 F b^3 / E J$

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

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

 $\zeta \boxed{+} \zeta F_b$



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a B: aste BE EF FH HI IG IJ GD DC

$$2V_F b + 5V_J b + H_{CD} b + V_{CD} b = 4Fb - W + 14qb^2$$

Rotazione intorno a F: aste FH HI IG IJ GD DC

$$3V_J b + H_{CD} b - V_{CD} b = 2Fb - W + 5qb^2$$

Rotazione intorno a I: aste IG GD DC

$$H_{CD} b - 3V_{CD} b = -W - 5/2qb^2$$

Traslazione verticale: aste DC

$$V_{CD} = qb$$

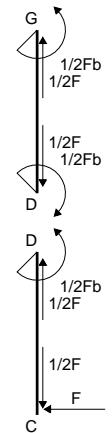
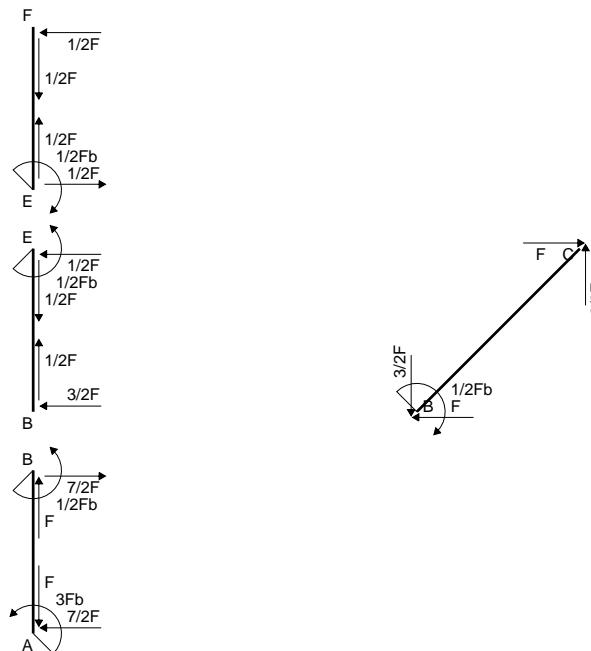
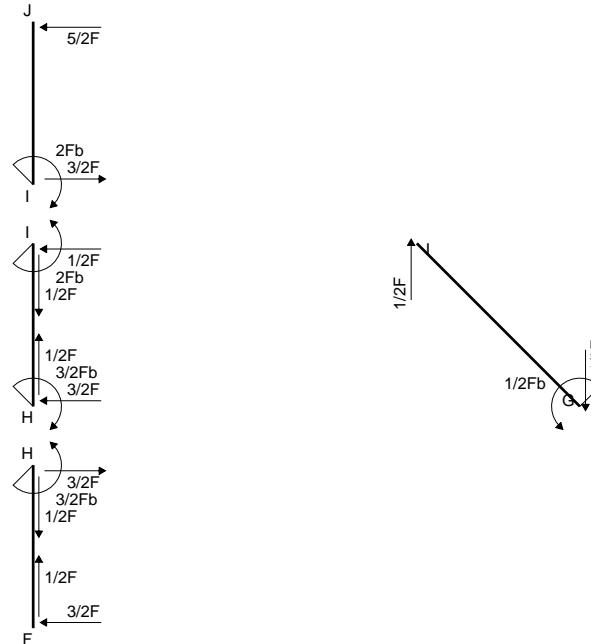
Matrice di equilibrio

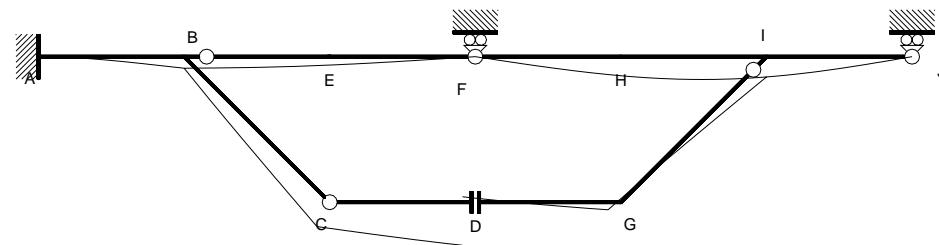
$$\begin{bmatrix} V_F b & V_J b & H_{CD} b & V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 4 & -1 & 14 \\ 2 & 1 & 1 \\ 0 & 3 & -1 \\ 0 & 0 & -3 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} \varphi_{BE} \\ \varphi_{FE} \\ \varphi_{IG} \\ \varphi_{DG} \end{bmatrix} = \begin{bmatrix} 2 & -1 & 5 \\ 0 & 0 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

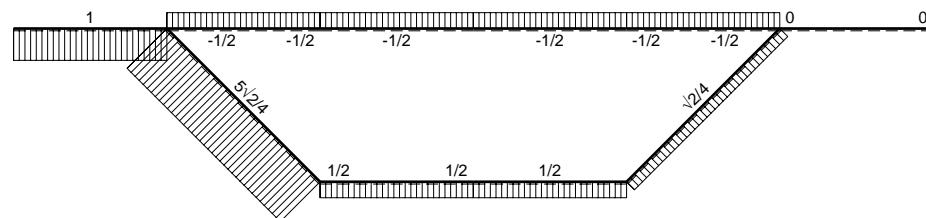
Soluzione del sistema

$$\begin{bmatrix} V_F b \\ V_J b \\ H_{CD} b \\ V_{CD} b \end{bmatrix} = \begin{bmatrix} Fb & W & qb^2 \\ 1/3 & 0 & 5/3 \\ 2/3 & 0 & 11/6 \\ 0 & -1 & 1/2 \\ 0 & 0 & 1 \end{bmatrix}$$

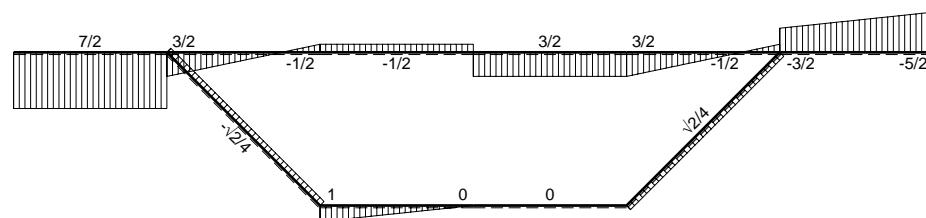




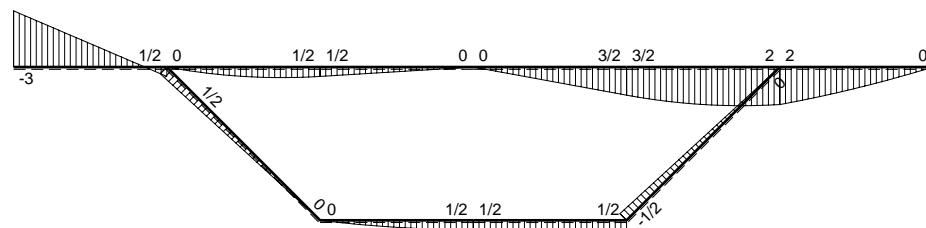
$\longleftarrow \boxed{+} \rightarrow F$



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



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



$\zeta \boxed{+} \zeta F_b$