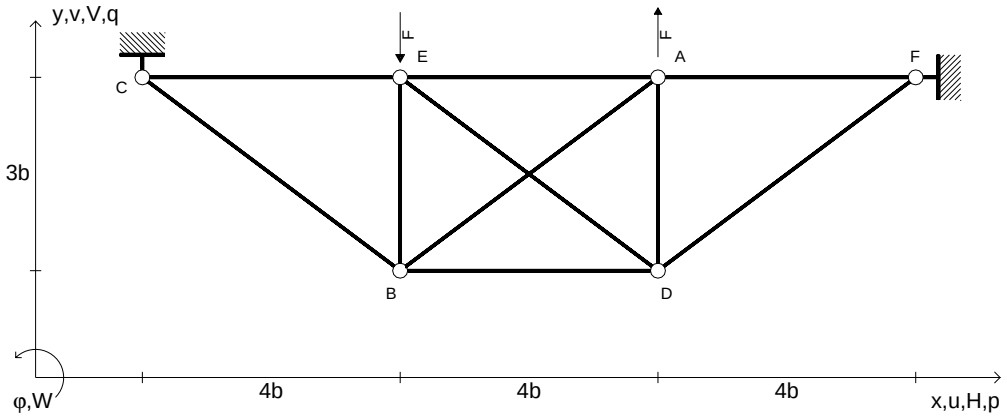
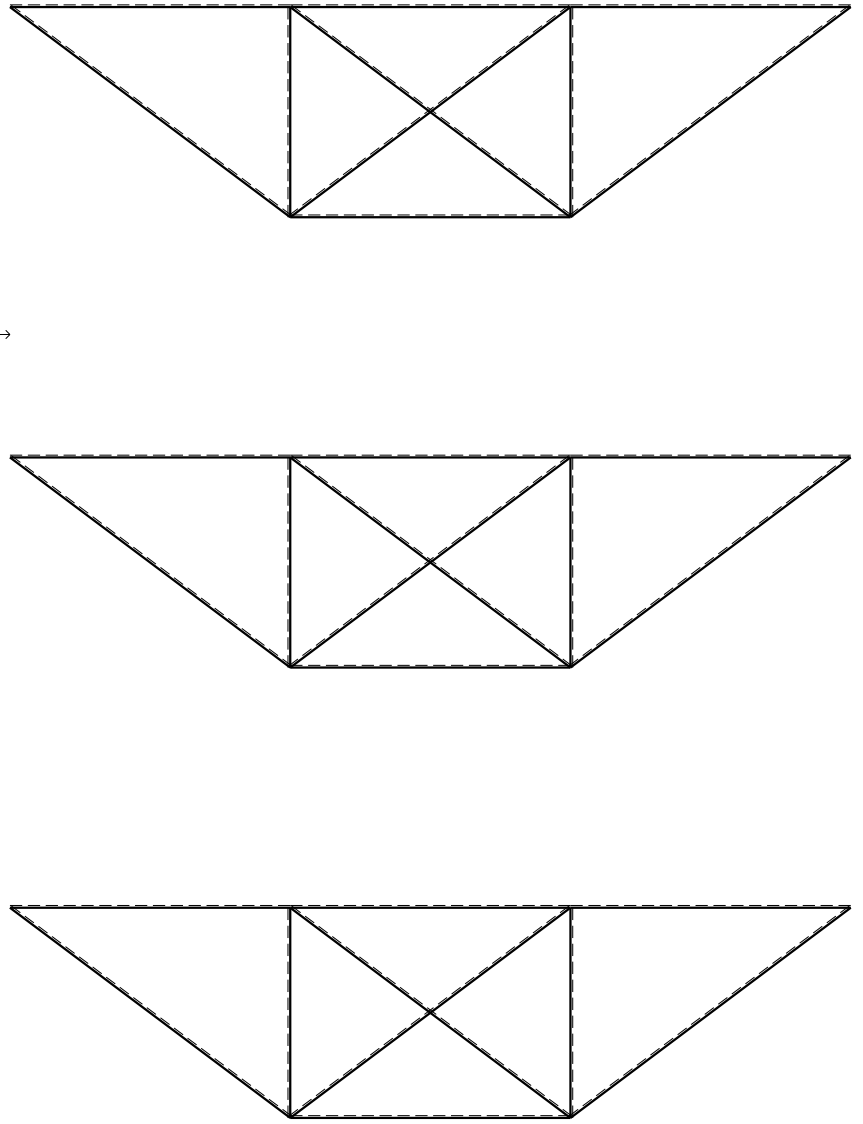
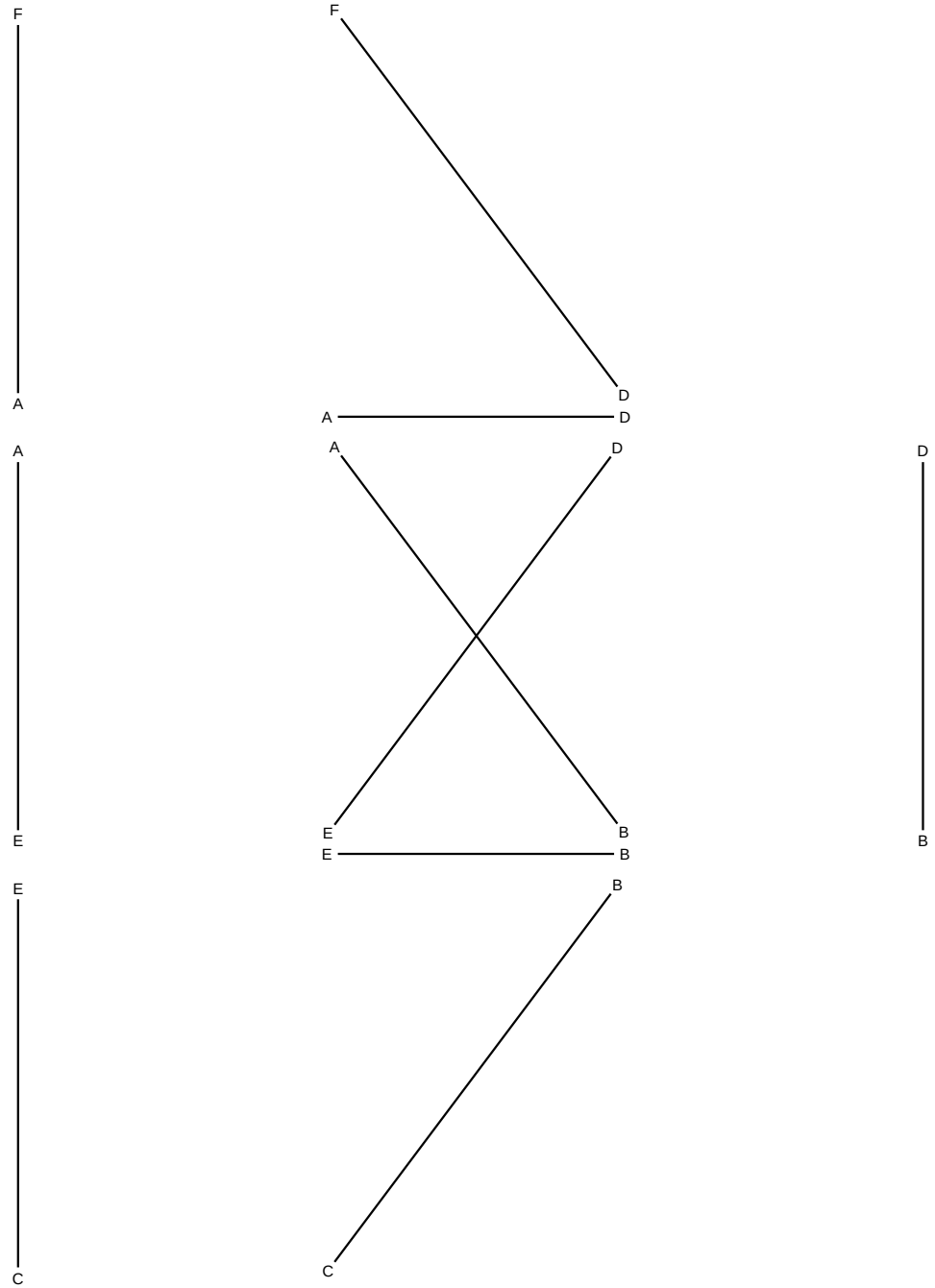


$V_A = F$ $u_E = ?$ $EA_{AB} = EA$ $EA_{DB} = EA$ $EA_{EB} = EA$ $EA_{AE} = EA$ $EA_{FD} = EA$

$V_E = -F$ $v_E = ?$ $EA_{BC} = EA$ $EA_{DA} = EA$ $EA_{FA} = EA$ $EA_{EC} = EA$ $EA_{DE} = EA$

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo E
Calcolare lo spostamento verticale del nodo E





REAZIONI

H_C = V_C = H_F = V_F =

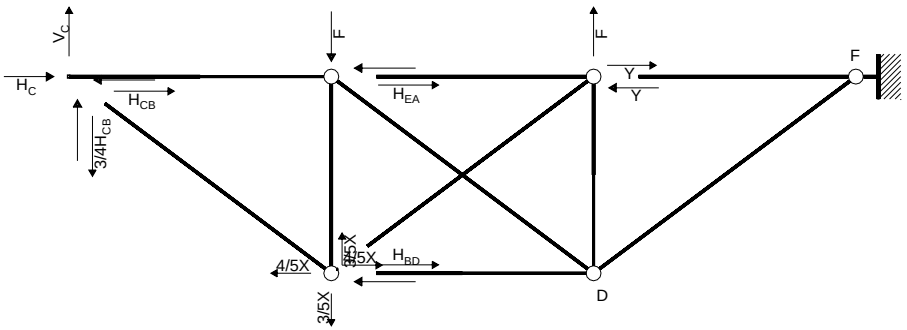
N_{AB} = N_{BC} = N_{DB} = N_{DA} = N_{EB} = N_{FA} = N_{AE} =

N_{EC} = N_{FD} = N_{DE} =

SPOSTAMENTI ASSOLUTI

u_E =

v_E =



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a F: aste FD DB DA DE AB EB AE EC BC

$-12V_Cb = -4Fb$

Rotazione intorno a D: aste DA AB AE

$-3H_{EA}b = 12/5Xb - 3Yb$

Rotazione intorno a D: aste DE EB EC BC

$-3H_Cb - 8V_Cb + 3H_{EA}b = -12/5Xb - 4Fb$

Rotazione intorno a E: aste EB BC

$3H_{CB}b - 3H_{BD}b = 12/5Xb$

Rotazione intorno a E: aste EC

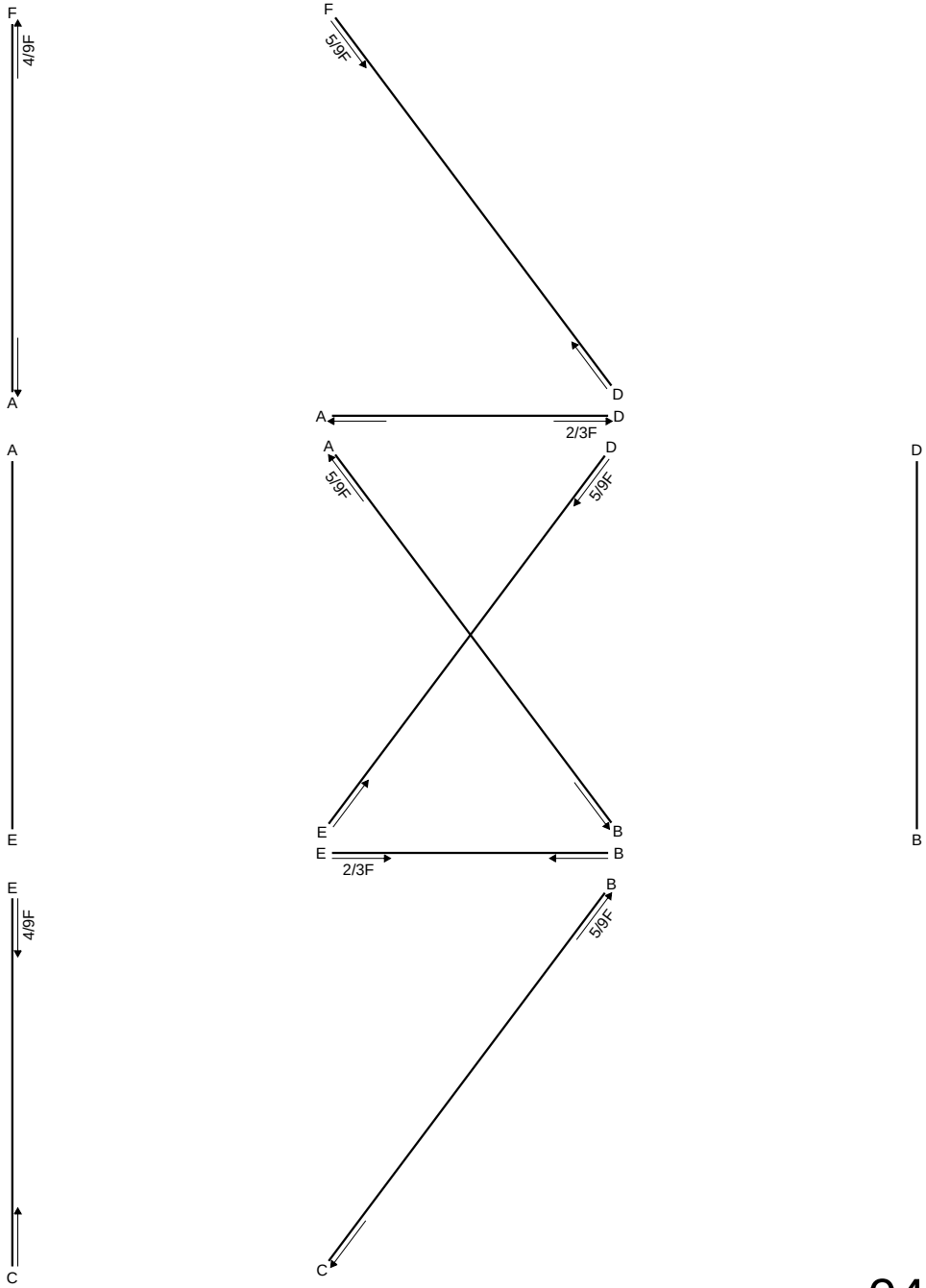
$-4V_Cb - 3H_{CB}b = 0$

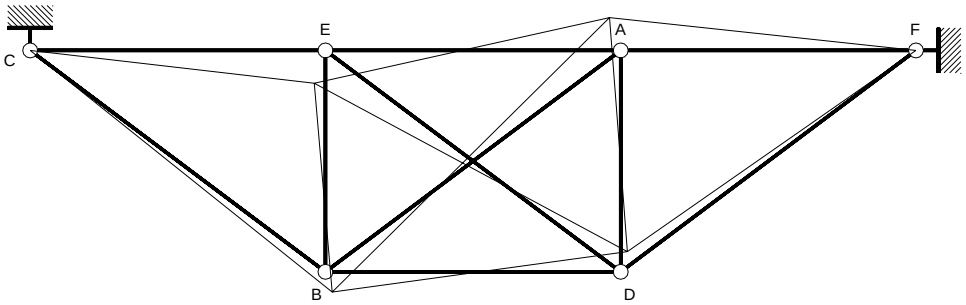
Matrice di equilibrio

	H_Cb	V_Cb	$H_{CB}b$	$H_{BD}b$	$H_{EA}b$		Xb	Yb	Fb
φ_{FD}	0	-12	0	0	0	=	0	0	-4
φ_{DA}	0	0	0	0	-3		12/5	-3	0
φ_{DE}	-3	-8	0	0	3		-12/5	0	-4
φ_{EB}	0	0	3	-3	0		12/5	0	0
φ_{EC}	0	-4	-3	0	0		0	0	0

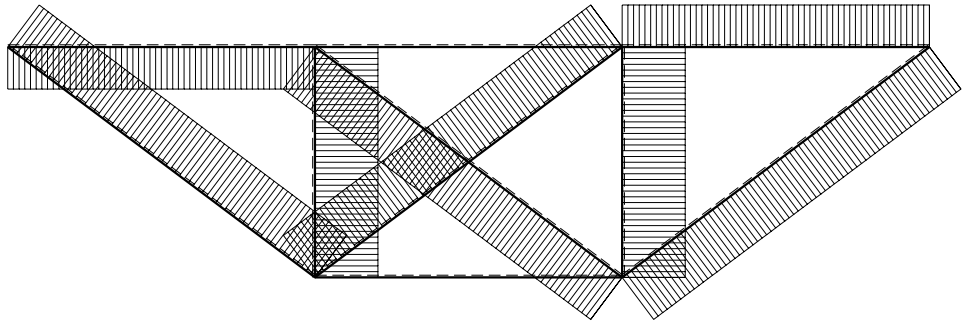
Soluzione del sistema

	Xb	Yb	Fb
V_Cb	0	0	1/3
$H_{EA}b$	-4/5	1	0
H_Cb =	0	1	4/9
$H_{BD}b$	-4/5	0	-4/9
$H_{CB}b$	0	0	-4/9





12 Fb/EA



0.8 F

REAZIONI

$H_C = 0$ $V_C = 1/3F$ $H_F = 0$ $V_F = -1/3F$

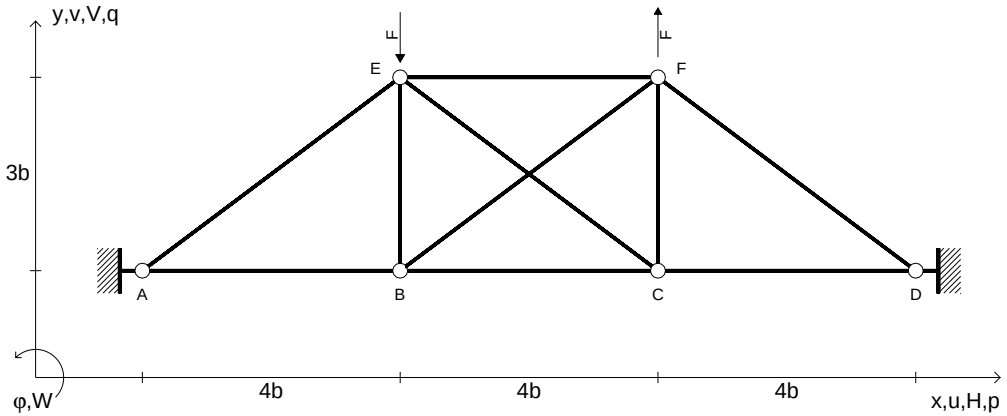
$N_{AB} = 5/9F$ $N_{BC} = 5/9F$ $N_{DB} = 0$ $N_{DA} = 2/3F$ $N_{EB} = -2/3F$ $N_{FA} = 4/9F$ $N_{AE} = 0$

$N_{EC} = -4/9F$ $N_{FD} = -5/9F$ $N_{DE} = -5/9F$

SPOSTAMENTI ASSOLUTI

$u_E = -16/9(Fb/EA)$

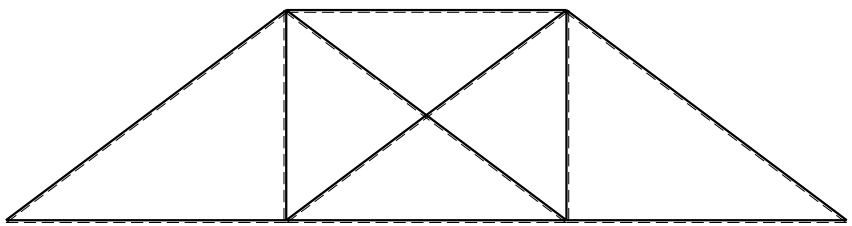
$v_E = -422/81(Fb/EA)$

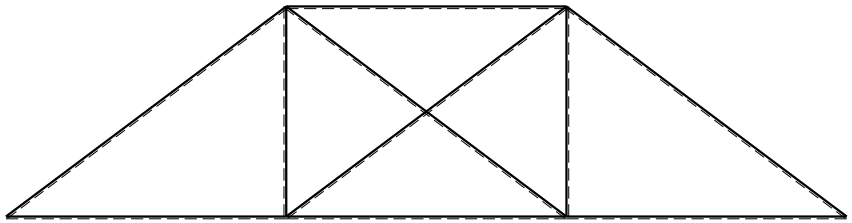


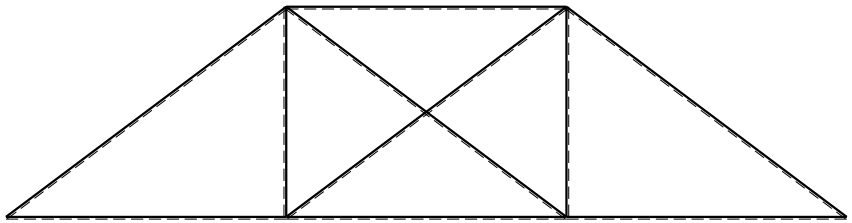
$V_E = -F$ $u_B = ?$ $EA_{AB} = EA$ $EA_{CD} = EA$ $EA_{EC} = EA$ $EA_{FD} = EA$ $EA_{EB} = EA$

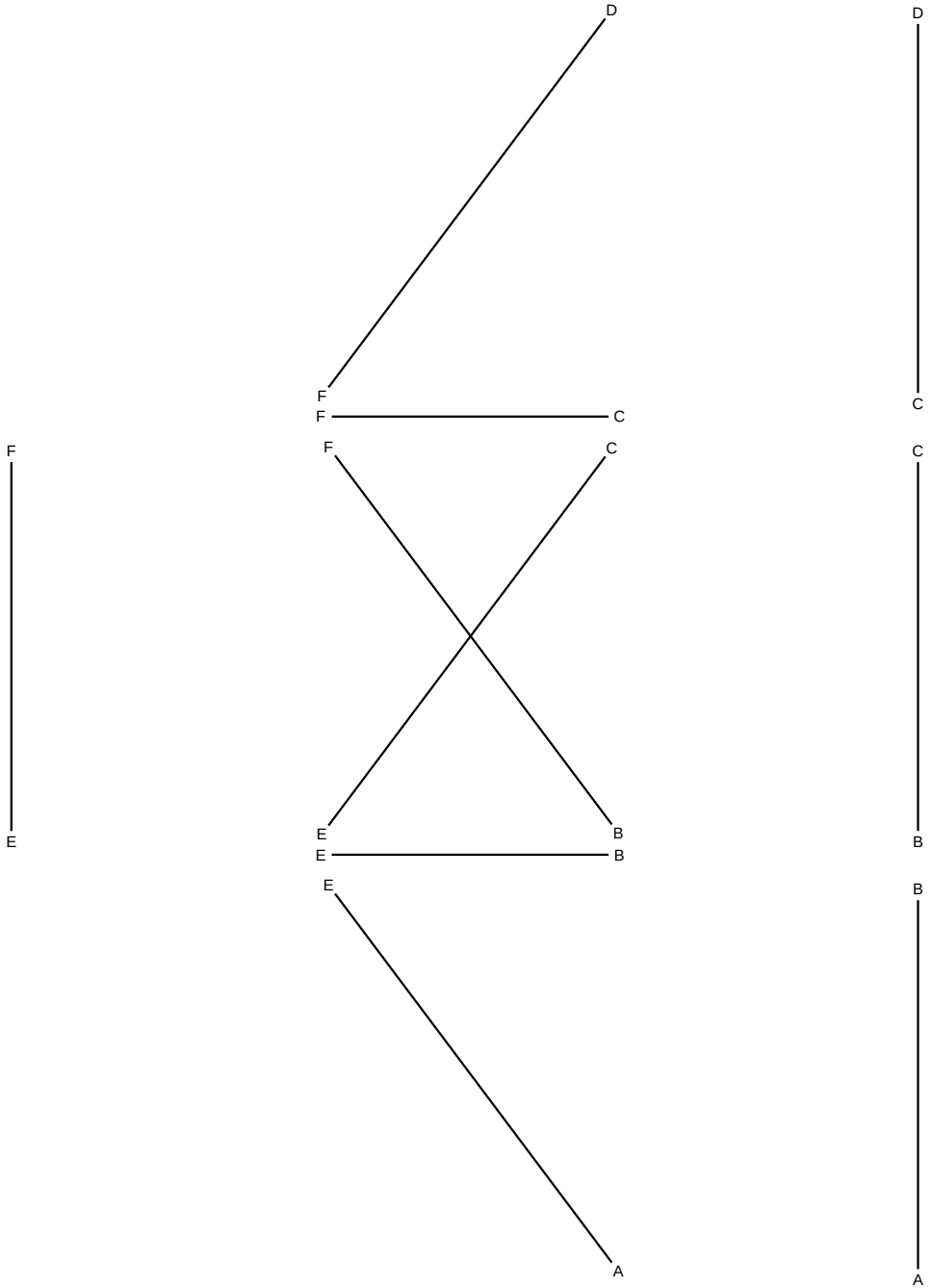
$V_F = F$ $v_B = ?$ $EA_{BC} = EA$ $EA_{AE} = EA$ $EA_{BF} = EA$ $EA_{EF} = EA$ $EA_{CF} = EA$

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo B
Calcolare lo spostamento verticale del nodo B









REAZIONI

H_A = V_A = H_D = V_D =

N_{AB} = N_{BC} = N_{CD} = N_{AE} = N_{EC} = N_{BF} = N_{FD} =

N_{EF} = N_{EB} = N_{CF} =

SPOSTAMENTI ASSOLUTI

u_B =

v_B =

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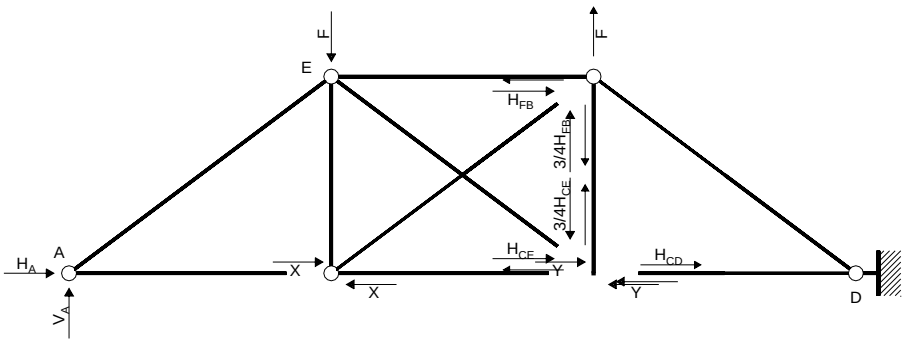


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a D: aste DF FE FC EA EC EB AB BC BF

$-12V_Ab = -4Fb$

Rotazione intorno a F: aste FE EA EC EB AB BC BF

$3H_Ab -8V_Ab +3H_{CE}b = -3Yb -4Fb$

Rotazione intorno a F: aste FC

$-3H_{CD}b -3H_{CE}b = 3Yb$

Rotazione intorno a E: aste EA AB

$3H_Ab -4V_Ab = -3Xb$

Rotazione intorno a E: aste EB BC BF

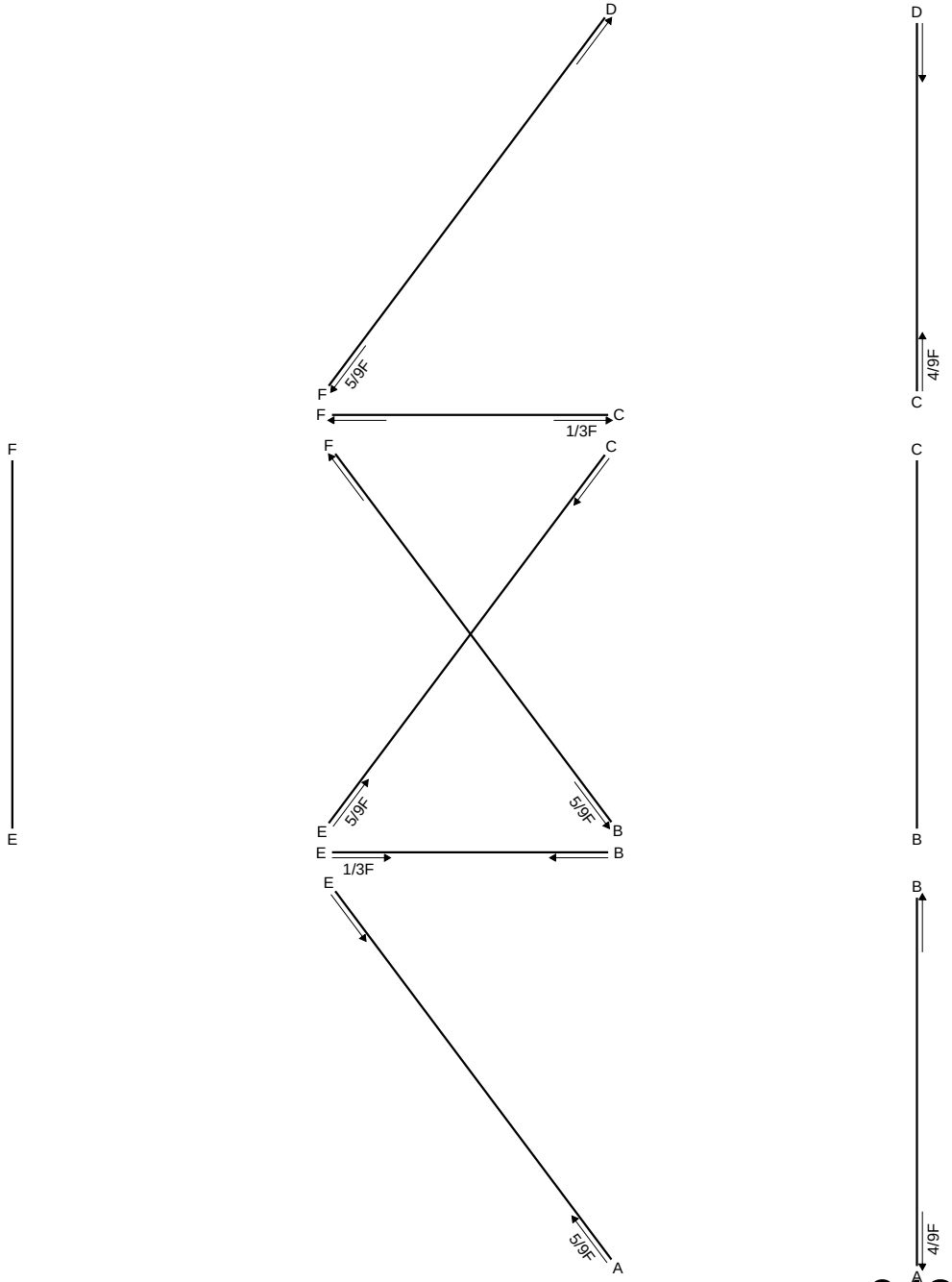
$3H_{FB}b = 3Xb -3Yb$

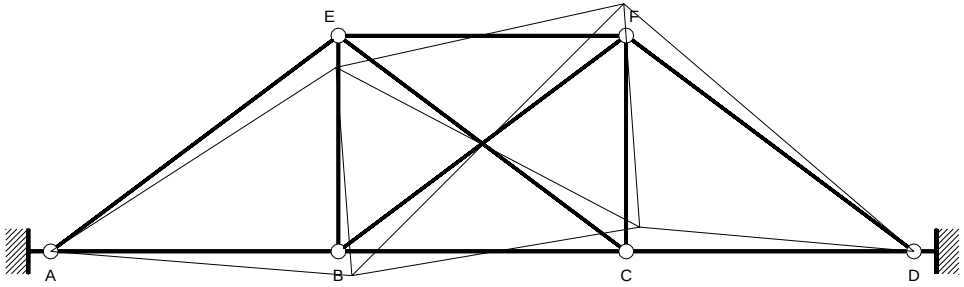
Matrice di equilibrio

	H_Ab	V_Ab	$H_{CD}b$	$H_{CE}b$	$H_{FB}b$		Xb	Yb	Fb
φ_{DF}	0	-12	0	0	0	=	0	0	-4
φ_{FE}	3	-8	0	3	0		0	-3	-4
φ_{FC}	0	0	-3	-3	0		0	3	0
φ_{EA}	3	-4	0	0	0		-3	0	0
φ_{EB}	0	0	0	0	3		3	-3	0

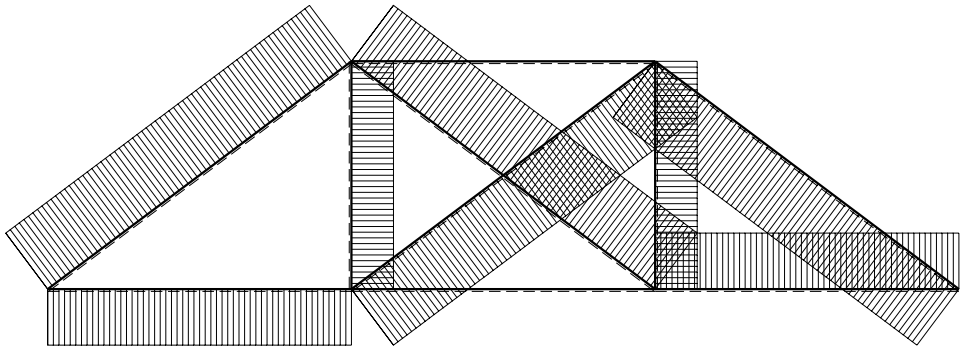
Soluzione del sistema

		Xb	Yb	Fb
V_Ab		0	0	1/3
H_Ab		-1	0	4/9
$H_{CD}b$	=	-1	0	8/9
$H_{CE}b$		1	-1	-8/9
$H_{FB}b$		1	-1	0





10 Fb/EA



0.6 F

REAZIONI

$H_A = 0$ $V_A = 1/3F$ $H_D = 0$ $V_D = -1/3F$

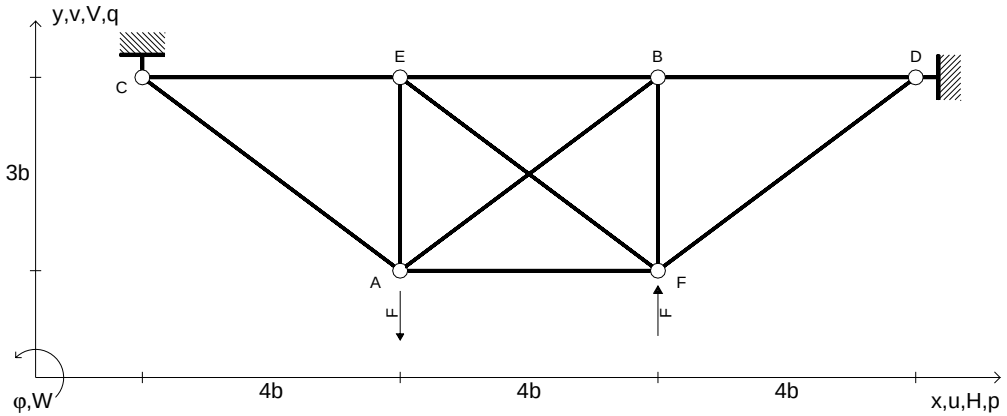
$N_{AB} = 4/9F$ $N_{BC} = 0$ $N_{CD} = -4/9F$ $N_{AE} = -5/9F$ $N_{EC} = -5/9F$ $N_{BF} = 5/9F$ $N_{FD} = 5/9F$

$N_{EF} = 0$ $N_{EB} = -1/3F$ $N_{CF} = 1/3F$

SPOSTAMENTI ASSOLUTI

$u_B = 16/9(Fb/EA)$

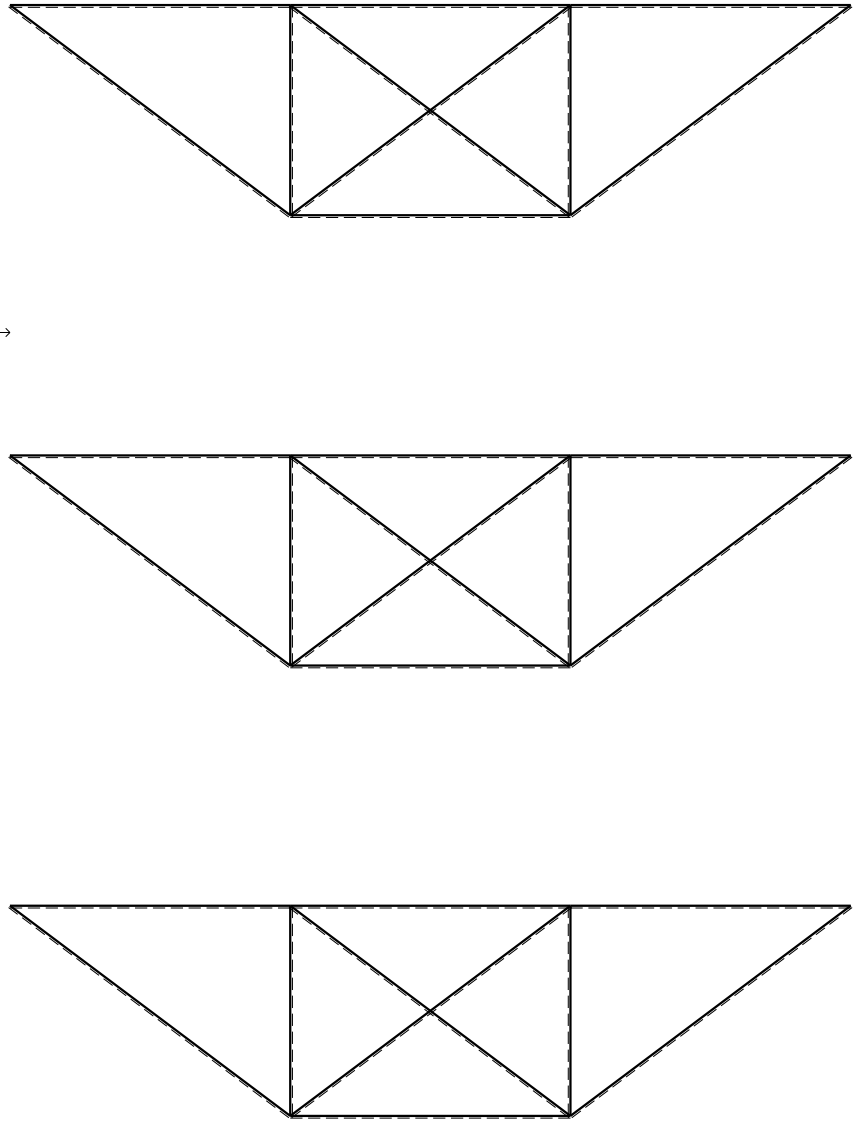
$v_B = -260/81(Fb/EA)$

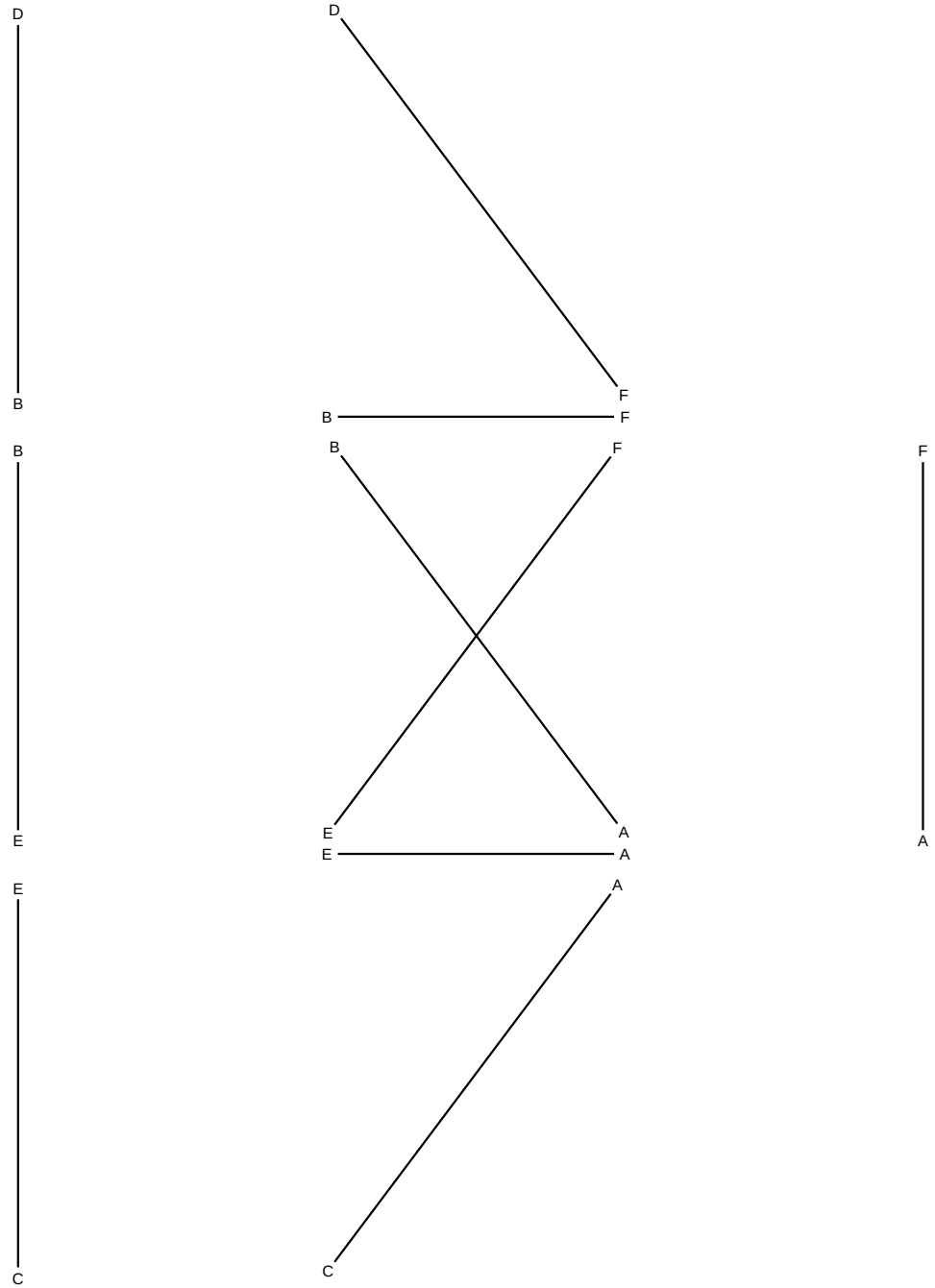


V_A = -F u_E = ? EA_{AB} = EA EA_{BD} = EA EA_{CE} = EA EA_{AE} = EA EA_{FD} = EA

V_F = F v_E = ? EA_{CA} = EA EA_{EB} = EA EA_{BF} = EA EA_{AF} = EA EA_{EF} = EA

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo E
Calcolare lo spostamento verticale del nodo E





REAZIONI

H_C = V_C = H_D = V_D =

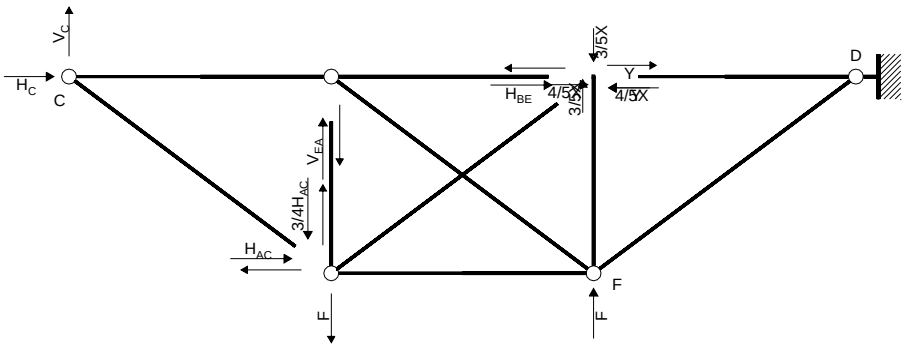
N_{AB} = N_{CA} = N_{BD} = N_{EB} = N_{CE} = N_{BF} = N_{AE} =

N_{AF} = N_{FD} = N_{EF} =

SPOSTAMENTI ASSOLUTI

u_E =

v_E =



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a D: aste DF FB FA FE AB EB EC AE CA

$-12V_Cb = -4Fb$

Rotazione intorno a F: aste FB

$3H_{BE}b = -12/5Xb - 3Yb$

Rotazione intorno a F: aste FA AB AE

$-3H_{AC}b - 4V_{EA}b = 12/5Xb - 4Fb$

Rotazione intorno a F: aste FE EB EC CA

$-3H_Cb - 8V_Cb + 3H_{AC}b - 3H_{BE}b + 4V_{EA}b = 0$

Rotazione intorno a E: aste EC CA

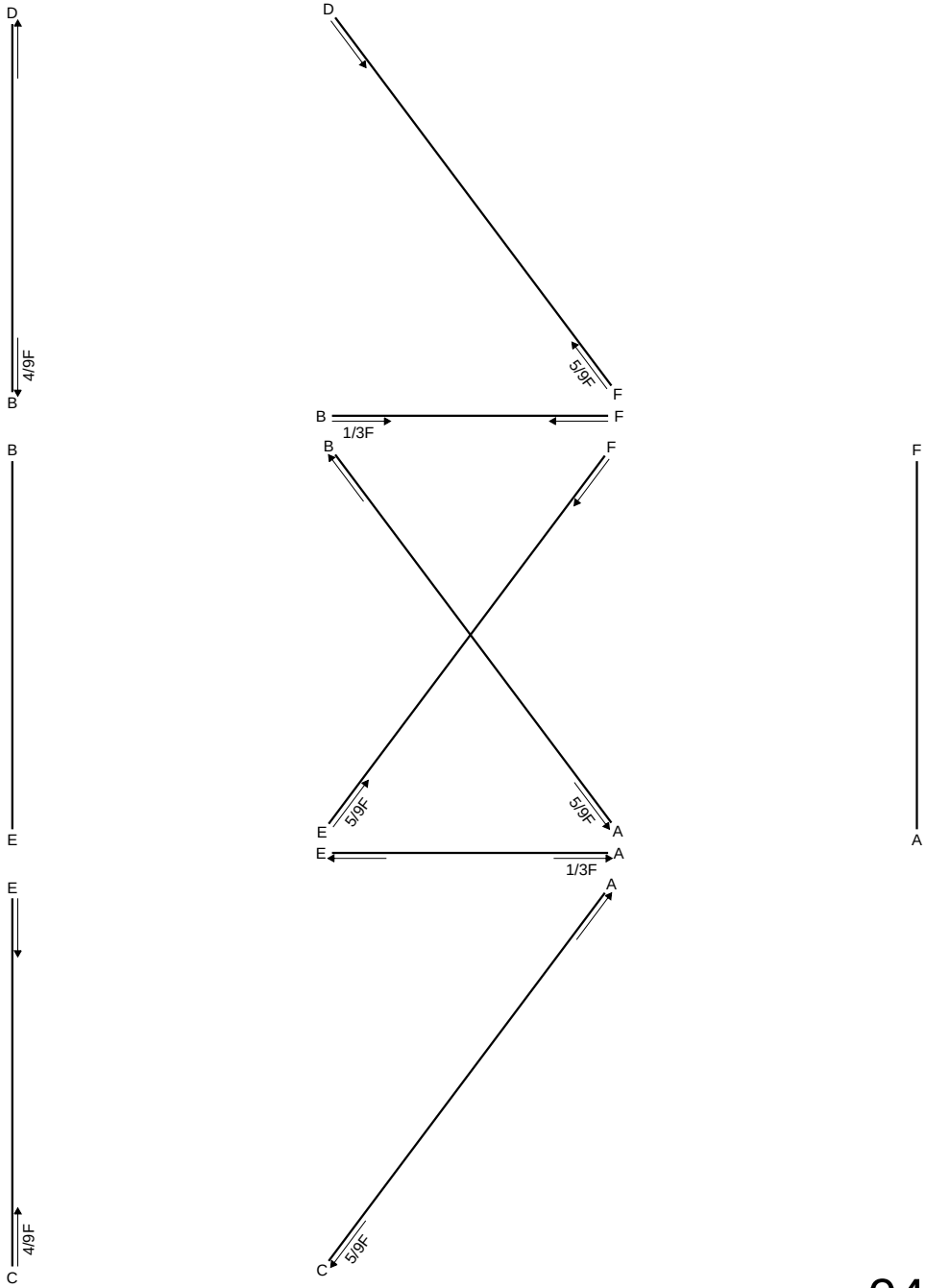
$-4V_Cb + 3H_{AC}b = 0$

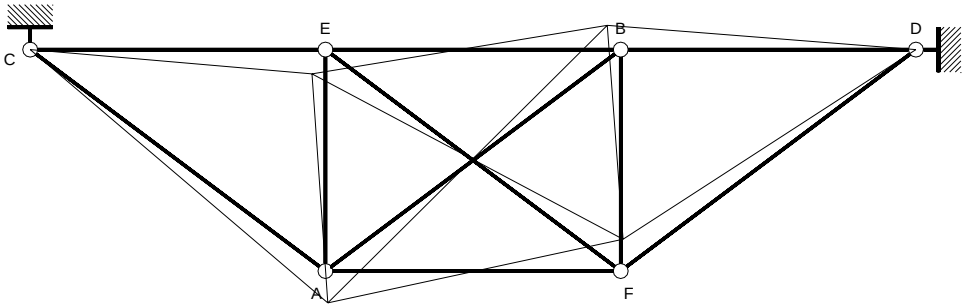
Matrice di equilibrio

	H_Cb	V_Cb	$H_{AC}b$	$H_{BE}b$	$V_{EA}b$		Xb	Yb	Fb
φ_{DF}	0	-12	0	0	0	=	0	0	-4
φ_{FB}	0	0	0	3	0		-12/5	-3	0
φ_{FA}	0	0	-3	0	-4		12/5	0	-4
φ_{FE}	-3	-8	3	-3	4		0	0	0
φ_{EC}	0	-4	3	0	0		0	0	0

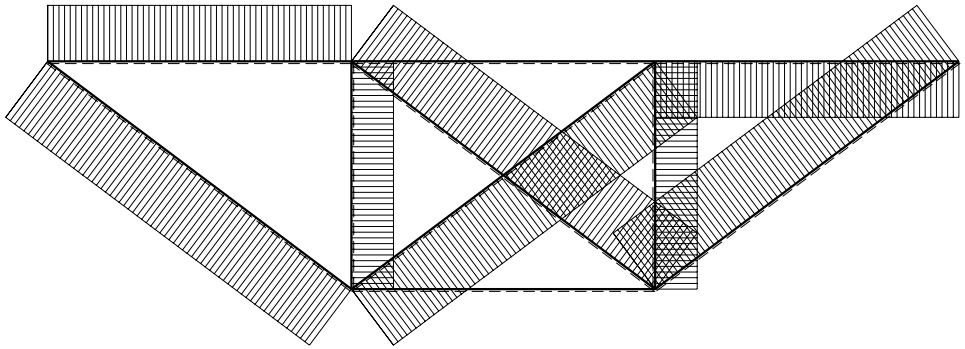
Soluzione del sistema

	Xb	Yb	Fb
V_Cb	0	0	1/3
$H_{BE}b$	-4/5	-1	0
$H_{AC}b$ =	0	0	4/9
H_Cb	0	1	4/9
$V_{EA}b$	-3/5	0	2/3





10 Fb/EA



0.6 F

REAZIONI

$H_C = 0$ $V_C = 1/3F$ $H_D = 0$ $V_D = -1/3F$

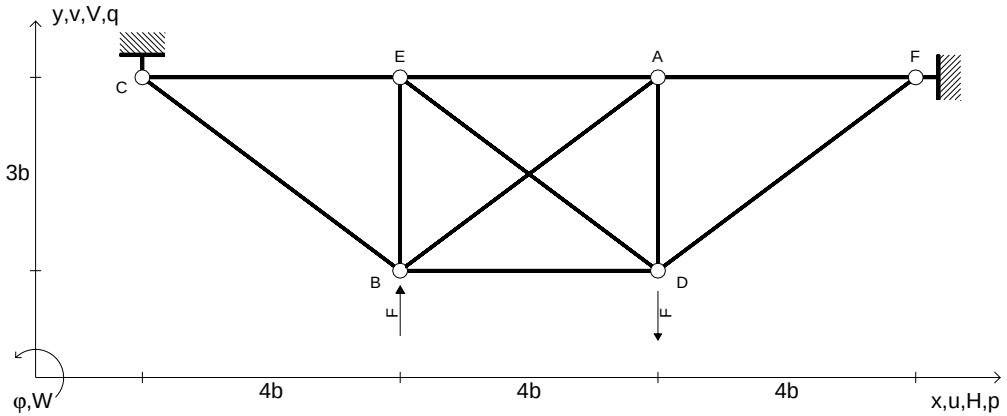
$N_{AB} = 5/9F$ $N_{CA} = 5/9F$ $N_{BD} = 4/9F$ $N_{EB} = 0$ $N_{CE} = -4/9F$ $N_{BF} = -1/3F$ $N_{AE} = 1/3F$

$N_{AF} = 0$ $N_{FD} = -5/9F$ $N_{EF} = -5/9F$

SPOSTAMENTI ASSOLUTI

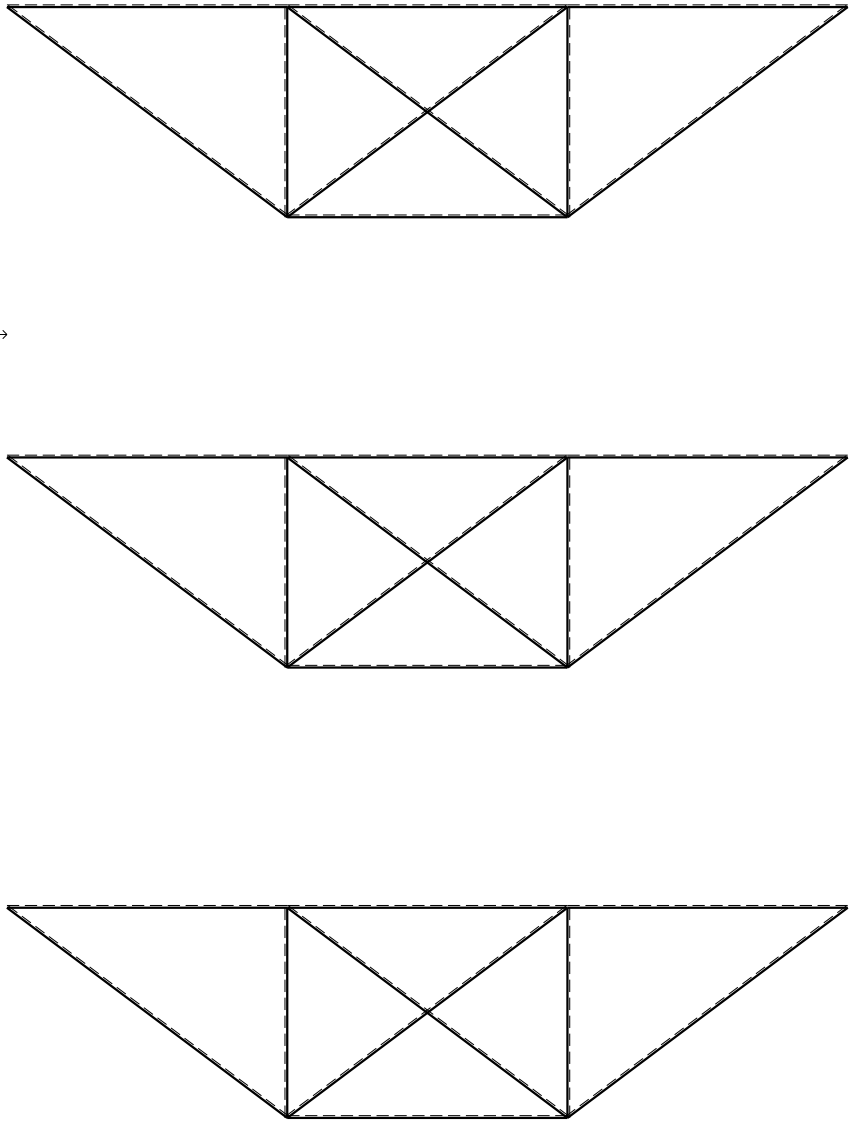
$u_E = -16/9(Fb/EA)$

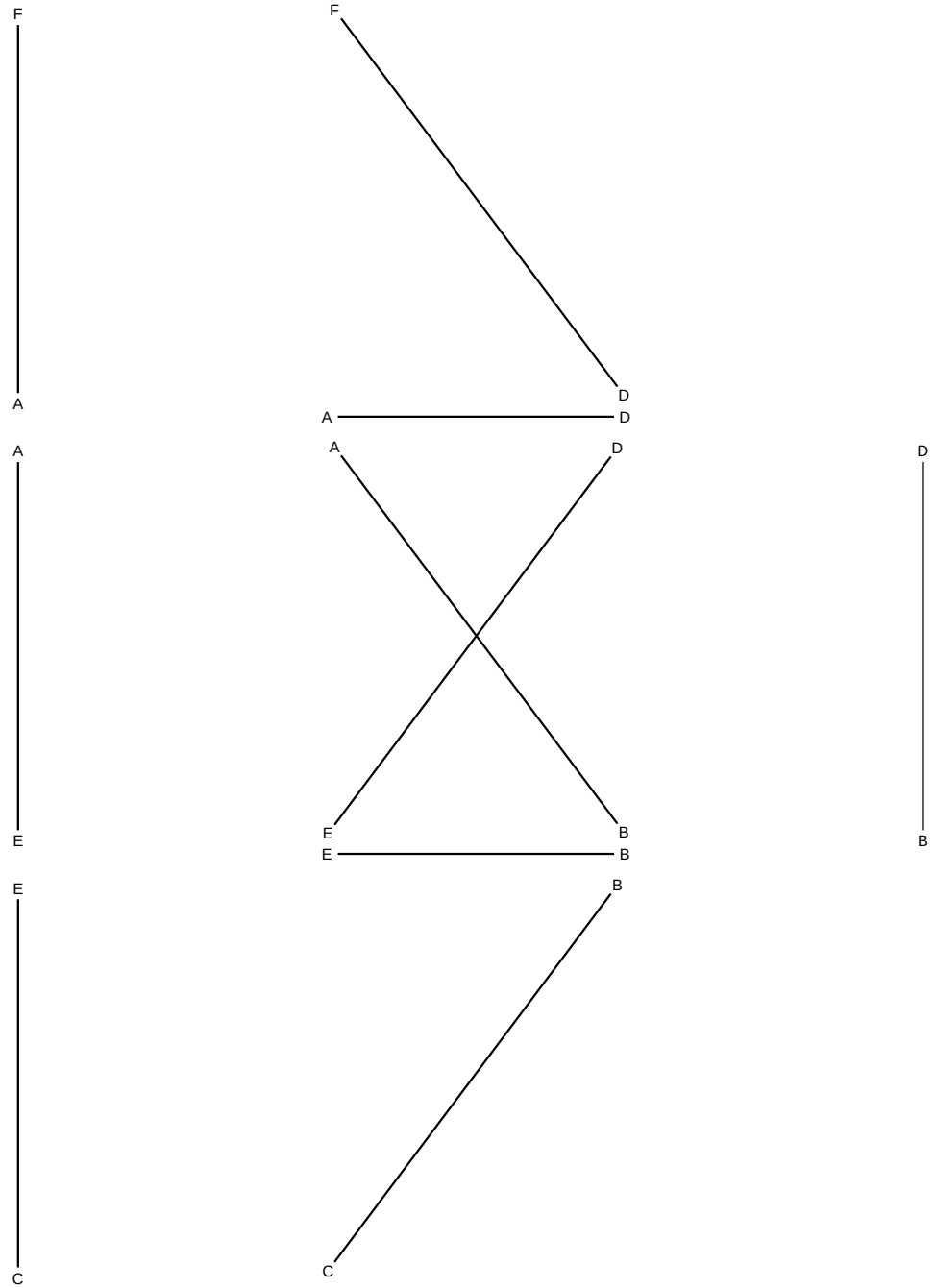
$v_E = -260/81(Fb/EA)$



$V_D = -F$	$u_A = ?$	$EA_{AB} = EA$	$EA_{DB} = EA$	$EA_{EB} = EA$	$EA_{AE} = EA$	$EA_{FD} = EA$
$V_B = F$	$v_A = ?$	$EA_{BC} = EA$	$EA_{DA} = EA$	$EA_{FA} = EA$	$EA_{EC} = EA$	$EA_{DE} = EA$

Svolgere l’analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo A
Calcolare lo spostamento verticale del nodo A





REAZIONI

H_C = V_C = H_F = V_F =

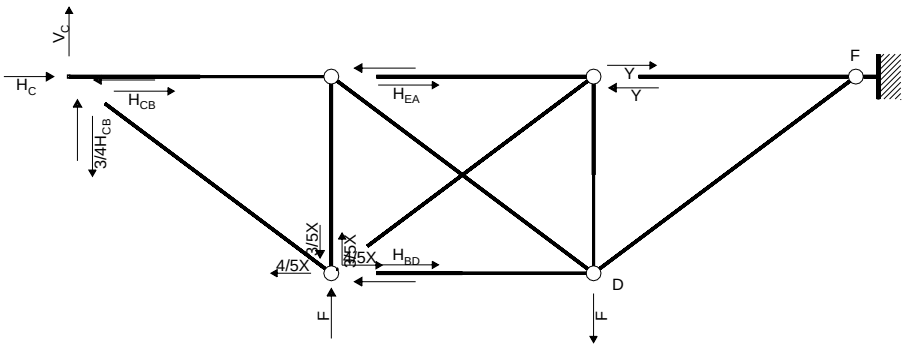
N_{AB} = N_{BC} = N_{DB} = N_{DA} = N_{EB} = N_{FA} = N_{AE} =

N_{EC} = N_{FD} = N_{DE} =

SPOSTAMENTI ASSOLUTI

u_A =

v_A =



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a F: aste FD DB DA DE AB EB AE EC BC

$-12V_Cb = 4Fb$

Rotazione intorno a D: aste DA AB AE

$-3H_{EA}b = 12/5Xb - 3Yb$

Rotazione intorno a D: aste DE EB EC BC

$-3H_Cb - 8V_Cb + 3H_{EA}b = -12/5Xb + 4Fb$

Rotazione intorno a E: aste EB BC

$3H_{CB}b - 3H_{BD}b = 12/5Xb$

Rotazione intorno a E: aste EC

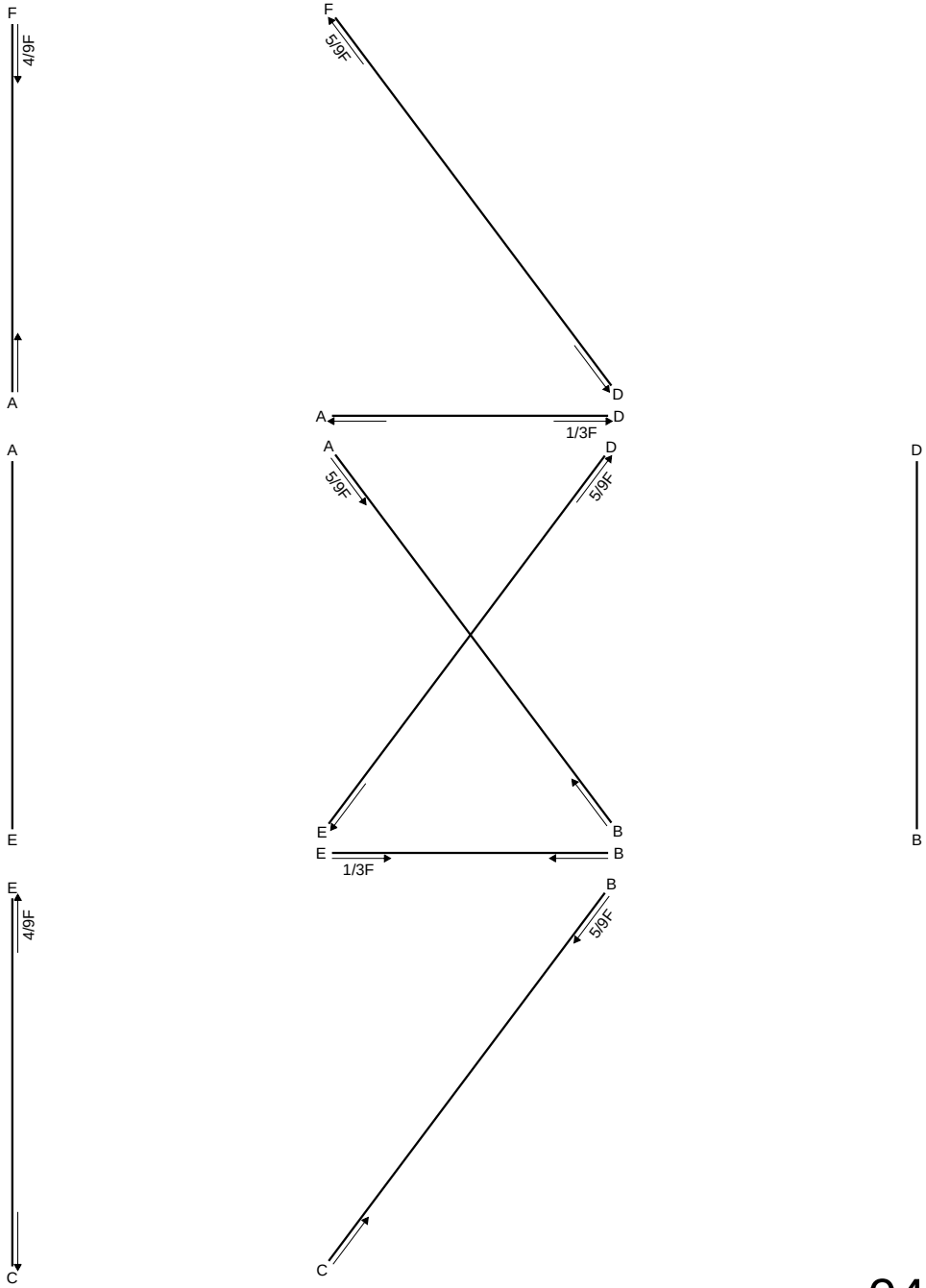
$-4V_Cb - 3H_{CB}b = 0$

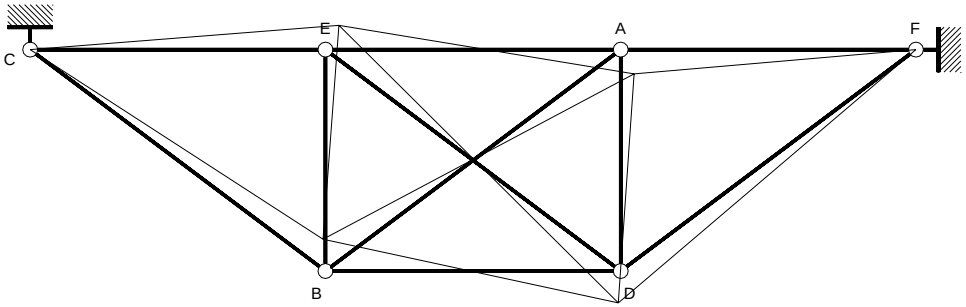
Matrice di equilibrio

	H_Cb	V_Cb	$H_{CB}b$	$H_{BD}b$	$H_{EA}b$		Xb	Yb	Fb
φ_{FD}	0	-12	0	0	0		0	0	4
φ_{DA}	0	0	0	0	-3		12/5	-3	0
φ_{DE}	-3	-8	0	0	3	=	-12/5	0	4
φ_{EB}	0	0	3	-3	0		12/5	0	0
φ_{EC}	0	-4	-3	0	0		0	0	0

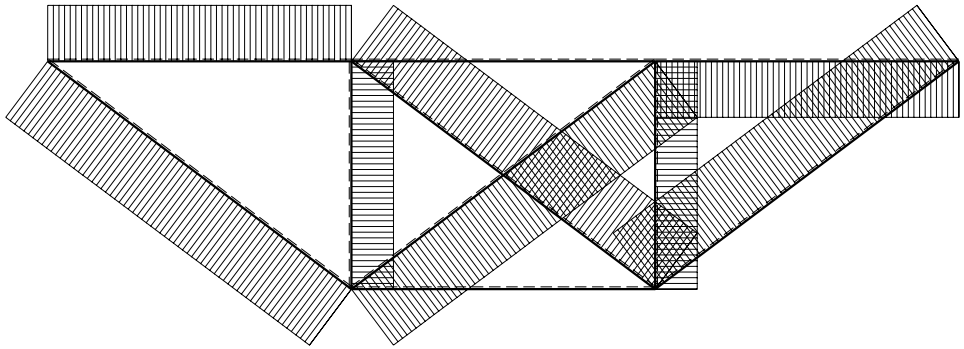
Soluzione del sistema

	Xb	Yb	Fb
V_Cb	0	0	-1/3
$H_{EA}b$	-4/5	1	0
H_Cb =	0	1	-4/9
$H_{BD}b$	-4/5	0	4/9
$H_{CB}b$	0	0	4/9





10 Fb/EA



0.6 F

REAZIONI

$H_C = 0$ $V_C = -1/3F$ $H_F = 0$ $V_F = 1/3F$

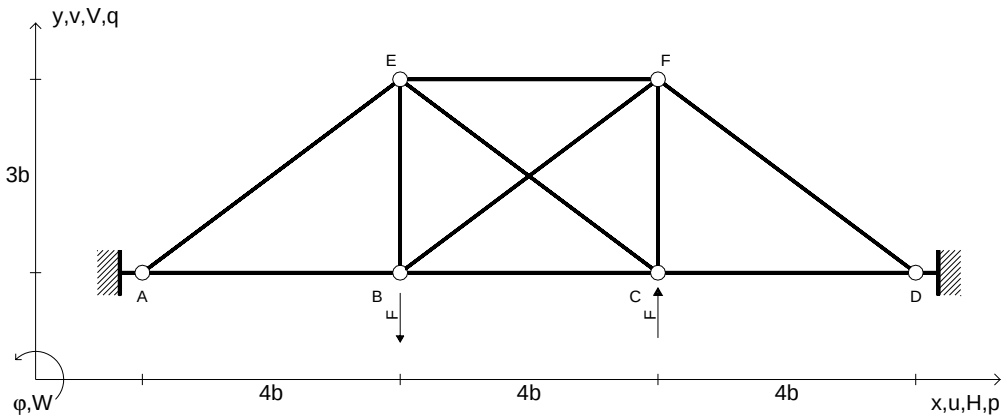
$N_{AB} = -5/9F$ $N_{BC} = -5/9F$ $N_{DB} = 0$ $N_{DA} = 1/3F$ $N_{EB} = -1/3F$ $N_{FA} = -4/9F$ $N_{AE} = 0$

$N_{EC} = 4/9F$ $N_{FD} = 5/9F$ $N_{DE} = 5/9F$

SPOSTAMENTI ASSOLUTI

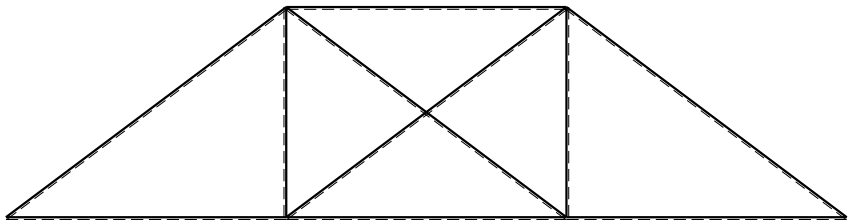
$u_A = 16/9(Fb/EA)$

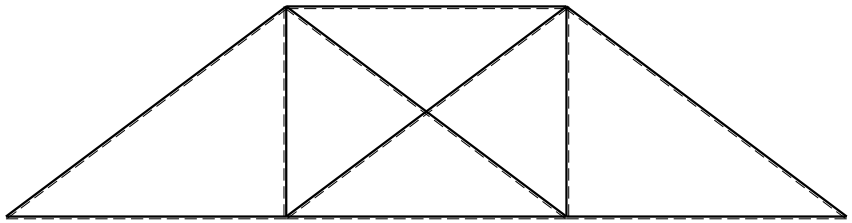
$v_A = -260/81(Fb/EA)$

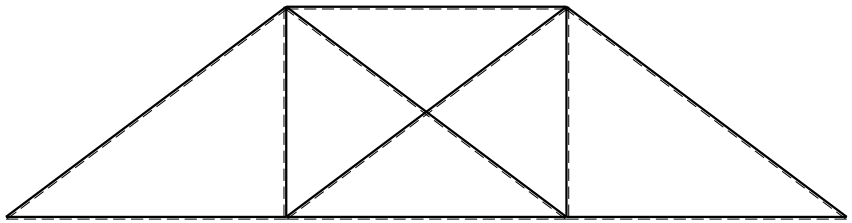


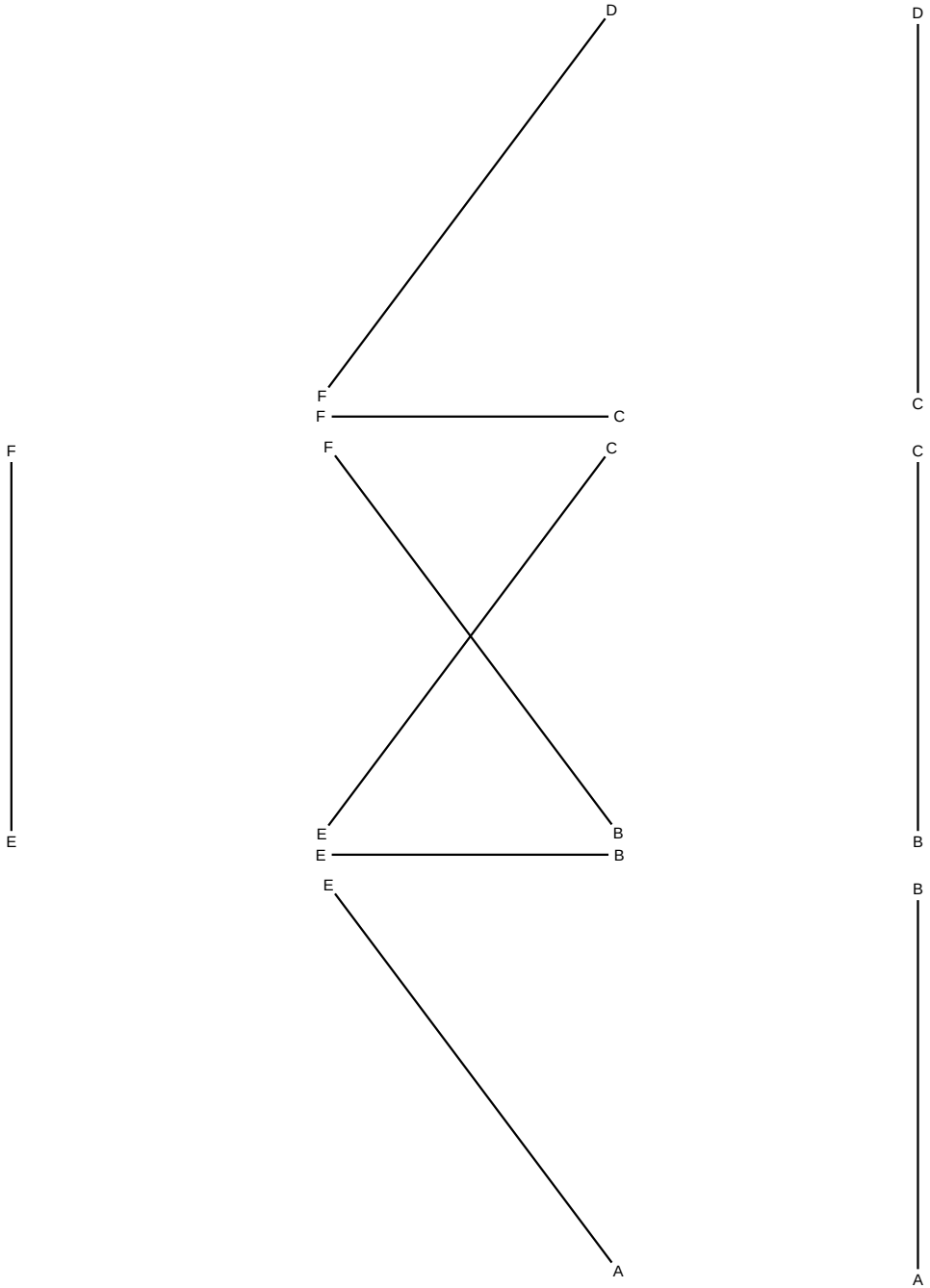
V_B = -F u_B = ? EA_{AB} = EA EA_{CD} = EA EA_{EC} = EA EA_{FD} = EA EA_{EB} = EA
V_C = F v_B = ? EA_{BC} = EA EA_{AE} = EA EA_{BF} = EA EA_{EF} = EA EA_{CF} = EA

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo B
Calcolare lo spostamento verticale del nodo B









REAZIONI

H_A = V_A = H_D = V_D =

N_{AB} = N_{BC} = N_{CD} = N_{AE} = N_{EC} = N_{BF} = N_{FD} =

N_{EF} = N_{EB} = N_{CF} =

SPOSTAMENTI ASSOLUTI

u_B =

v_B =

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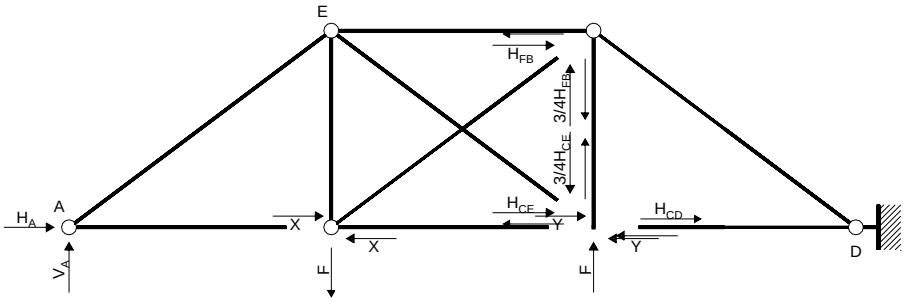


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a D: aste DF FE FC EA EC EB AB BC BF

$-12V_Ab = -4Fb$

Rotazione intorno a F: aste FE EA EC EB AB BC BF

$3H_Ab -8V_Ab +3H_{CE}b = -3Yb -4Fb$

Rotazione intorno a F: aste FC

$-3H_{CD}b -3H_{CE}b = 3Yb$

Rotazione intorno a E: aste EA AB

$3H_Ab -4V_Ab = -3Xb$

Rotazione intorno a E: aste EB BC BF

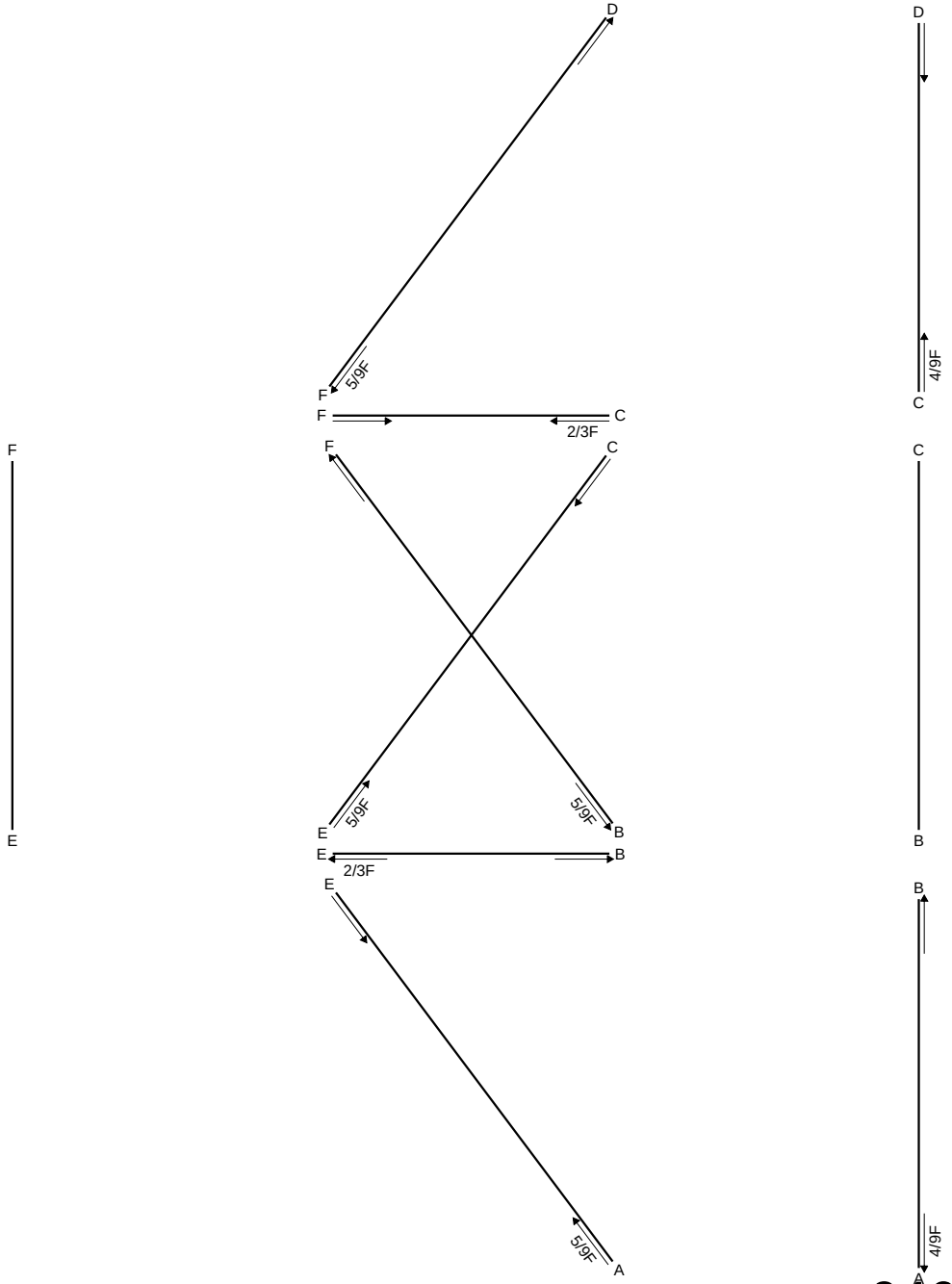
$3H_{FB}b = 3Xb -3Yb$

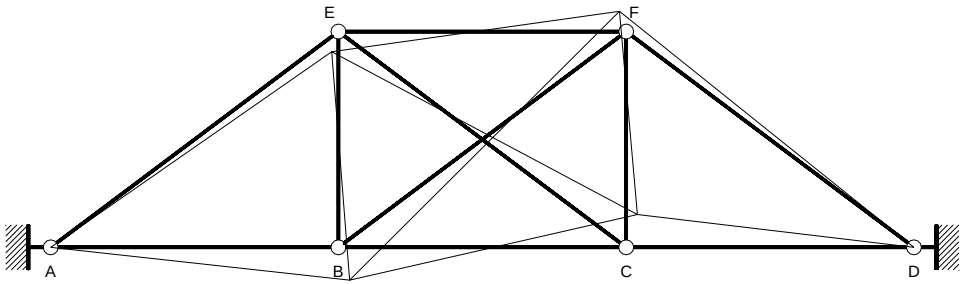
Matrice di equilibrio

	H_Ab	V_Ab	$H_{CD}b$	$H_{CE}b$	$H_{FB}b$		Xb	Yb	Fb
φ_{DF}	0	-12	0	0	0	=	0	0	-4
φ_{FE}	3	-8	0	3	0		0	-3	-4
φ_{FC}	0	0	-3	-3	0		0	3	0
φ_{EA}	3	-4	0	0	0		-3	0	0
φ_{EB}	0	0	0	0	3		3	-3	0

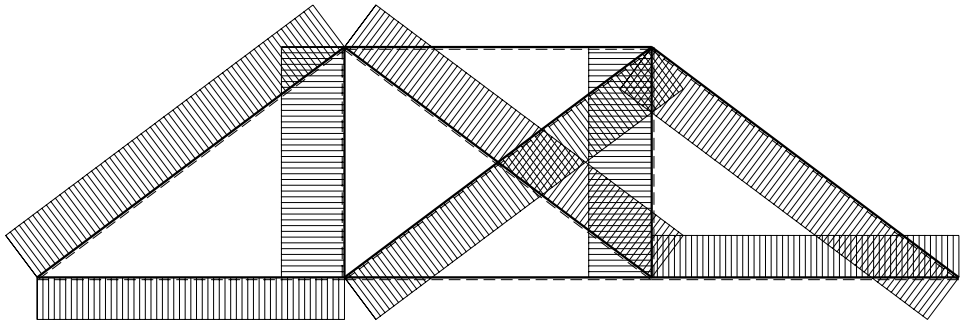
Soluzione del sistema

	Xb	Yb	Fb
V_Ab	0	0	1/3
H_Ab	-1	0	4/9
$H_{CD}b$ =	-1	0	8/9
$H_{CE}b$	1	-1	-8/9
$H_{FB}b$	1	-1	0





⟷ 12 Fb/EA



⟷ 0.8 F

REAZIONI

$H_A = 0$ $V_A = 1/3F$ $H_D = 0$ $V_D = -1/3F$

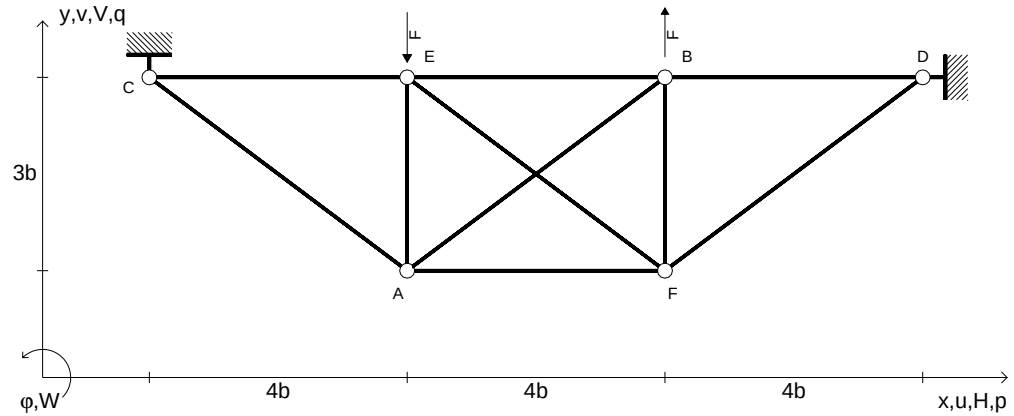
$N_{AB} = 4/9F$ $N_{BC} = 0$ $N_{CD} = -4/9F$ $N_{AE} = -5/9F$ $N_{EC} = -5/9F$ $N_{BF} = 5/9F$ $N_{FD} = 5/9F$

$N_{EF} = 0$ $N_{EB} = 2/3F$ $N_{CF} = -2/3F$

SPOSTAMENTI ASSOLUTI

$u_B = 16/9(Fb/EA)$

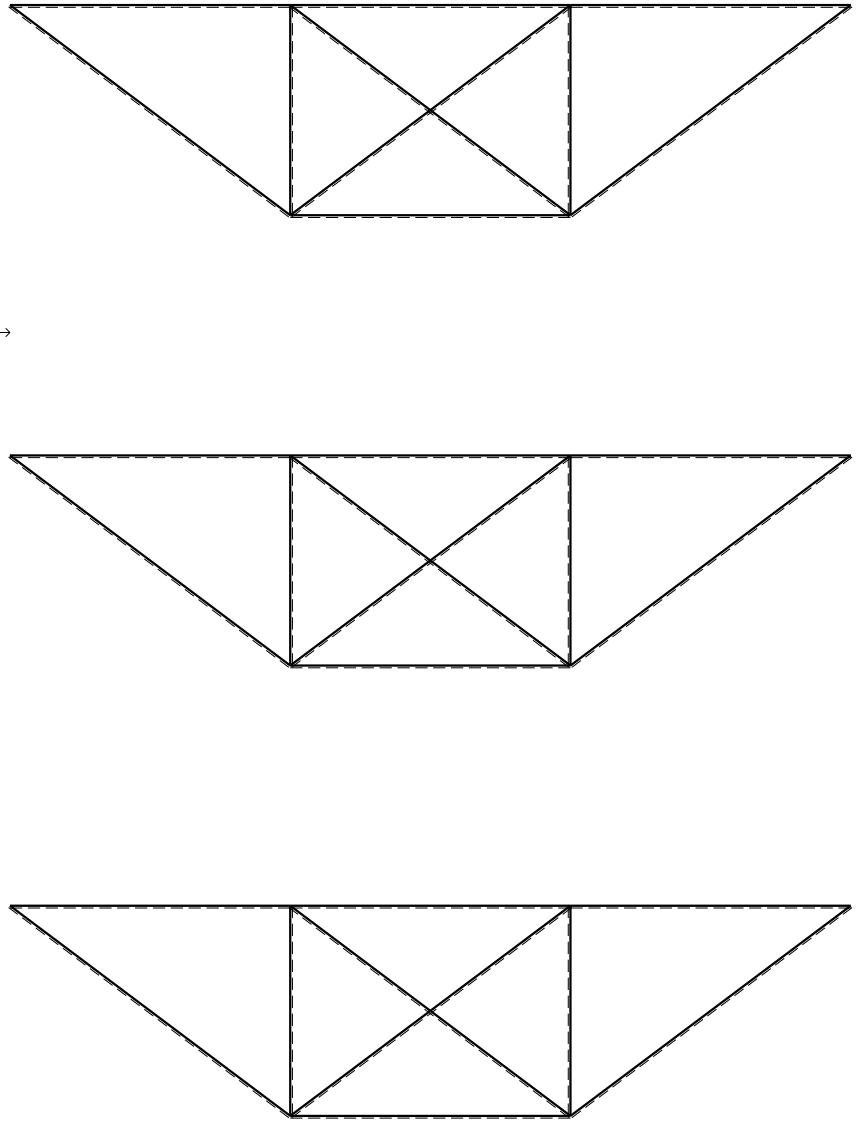
$v_B = -422/81(Fb/EA)$

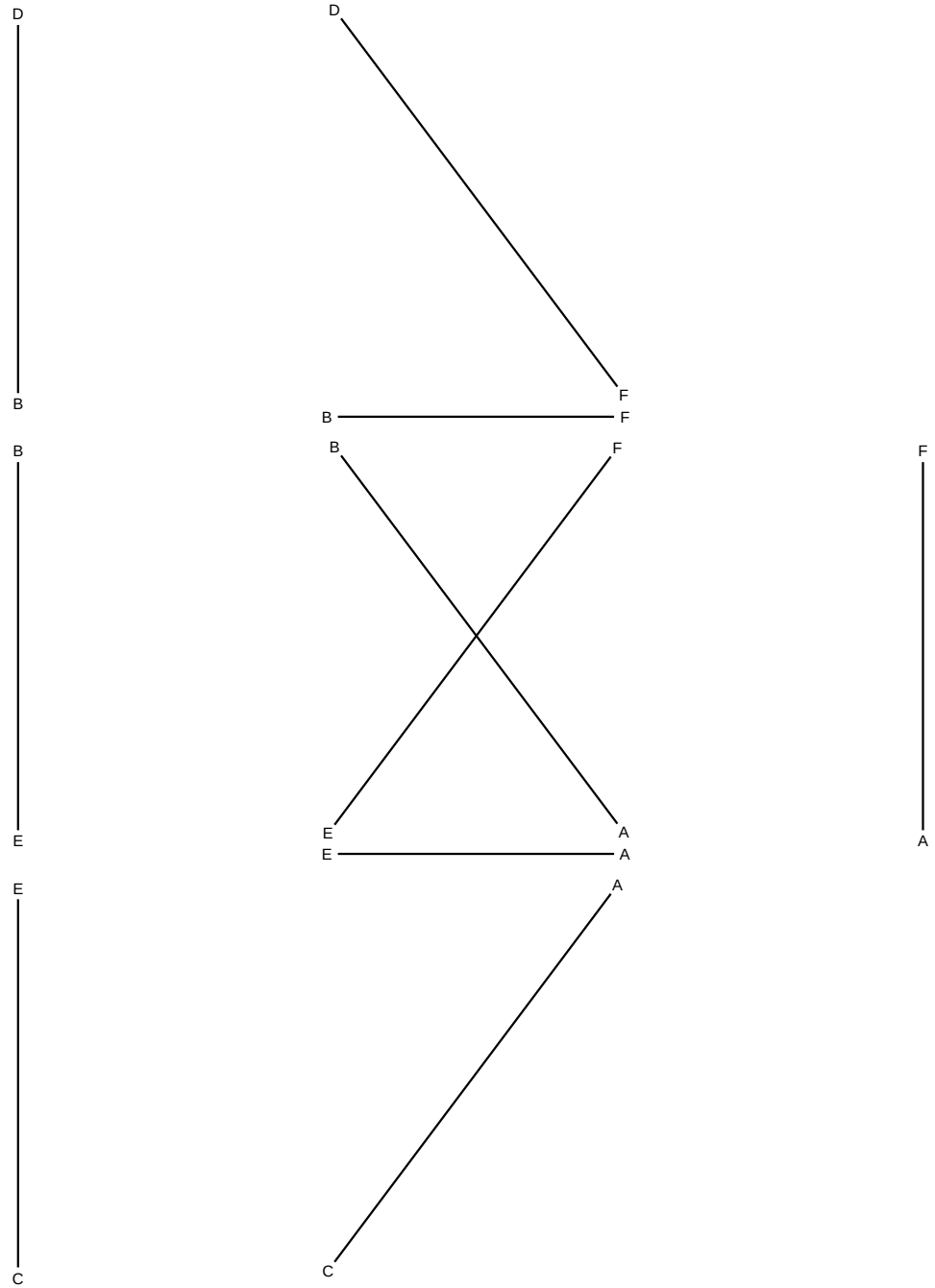


V_E = -F u_E = ? EA_{AB} = EA EA_{BD} = EA EA_{CE} = EA EA_{AE} = EA EA_{FD} = EA

V_B = F v_E = ? EA_{CA} = EA EA_{EB} = EA EA_{BF} = EA EA_{AF} = EA EA_{EF} = EA

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo E
Calcolare lo spostamento verticale del nodo E





REAZIONI

H_C = V_C = H_D = V_D =

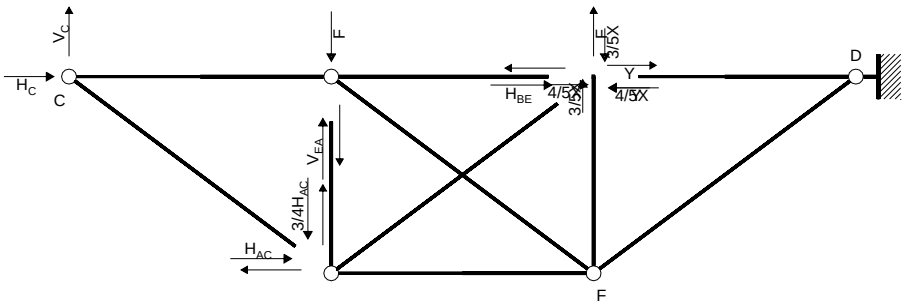
N_{AB} = N_{CA} = N_{BD} = N_{EB} = N_{CE} = N_{BF} = N_{AE} =

N_{AF} = N_{FD} = N_{EF} =

SPOSTAMENTI ASSOLUTI

u_E =

v_E =



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a D: aste DF FB FA FE AB EB EC AE CA

$-12V_Cb = -4Fb$

Rotazione intorno a F: aste FB

$3H_{BE}b = -12/5Xb -3Yb$

Rotazione intorno a F: aste FA AB AE

$-3H_{AC}b -4V_{EA}b = 12/5Xb$

Rotazione intorno a F: aste FE EB EC CA

$-3H_Cb -8V_Cb +3H_{AC}b -3H_{BE}b +4V_{EA}b = -4Fb$

Rotazione intorno a E: aste EC CA

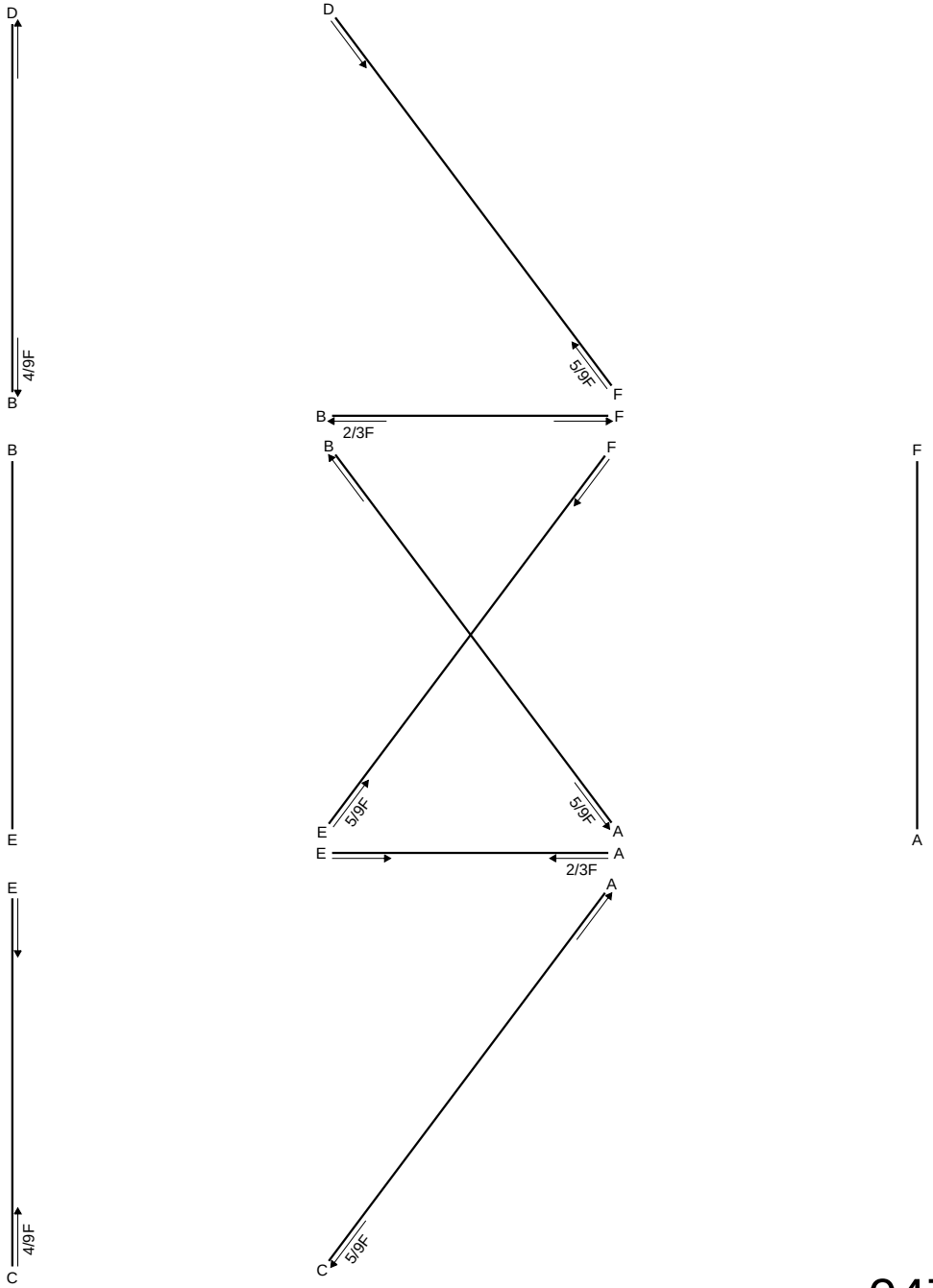
$-4V_Cb +3H_{AC}b = 0$

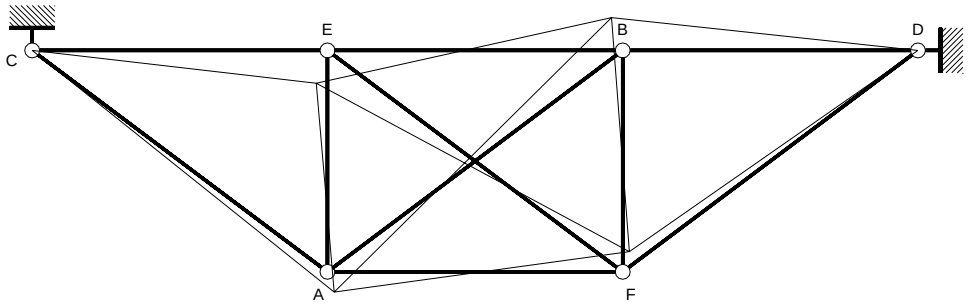
Matrice di equilibrio

$$\begin{array}{c} \\ \varphi_{DF} \\ \varphi_{FB} \\ \varphi_{FA} \\ \varphi_{FE} \\ \varphi_{EC} \end{array} \begin{bmatrix} H_Cb & V_Cb & H_{AC}b & H_{BE}b & V_{EA}b \\ 0 & -12 & 0 & 0 & 0 \\ 0 & 0 & 0 & 3 & 0 \\ 0 & 0 & -3 & 0 & -4 \\ -3 & -8 & 3 & -3 & 4 \\ 0 & -4 & 3 & 0 & 0 \end{bmatrix} = \begin{bmatrix} Xb & Yb & Fb \\ 0 & 0 & -4 \\ -12/5 & -3 & 0 \\ 12/5 & 0 & 0 \\ 0 & 0 & -4 \\ 0 & 0 & 0 \end{bmatrix}$$

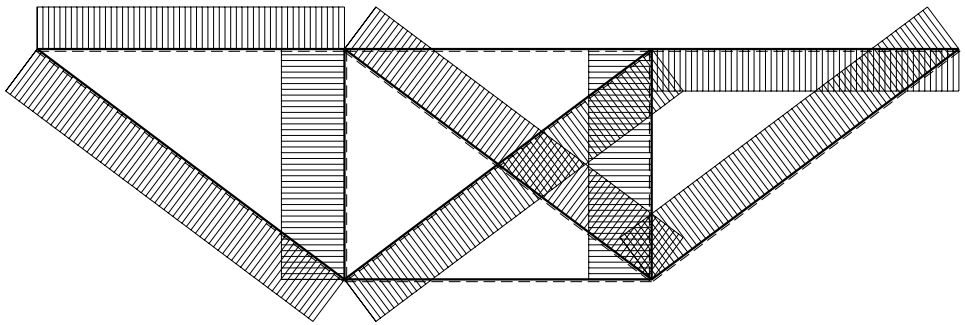
Soluzione del sistema

$$\begin{bmatrix} V_Cb \\ H_{BE}b \\ H_{AC}b \\ H_Cb \\ V_{EA}b \end{bmatrix} = \begin{array}{c} \begin{bmatrix} Xb & Yb & Fb \end{bmatrix} \\ \begin{bmatrix} 0 & 0 & 1/3 \\ -4/5 & -1 & 0 \\ 0 & 0 & 4/9 \\ 0 & 1 & 4/9 \\ -3/5 & 0 & -1/3 \end{bmatrix} \end{array}$$





12 Fb/EA



0.8 F

REAZIONI

$H_C = 0$ $V_C = 1/3F$ $H_D = 0$ $V_D = -1/3F$

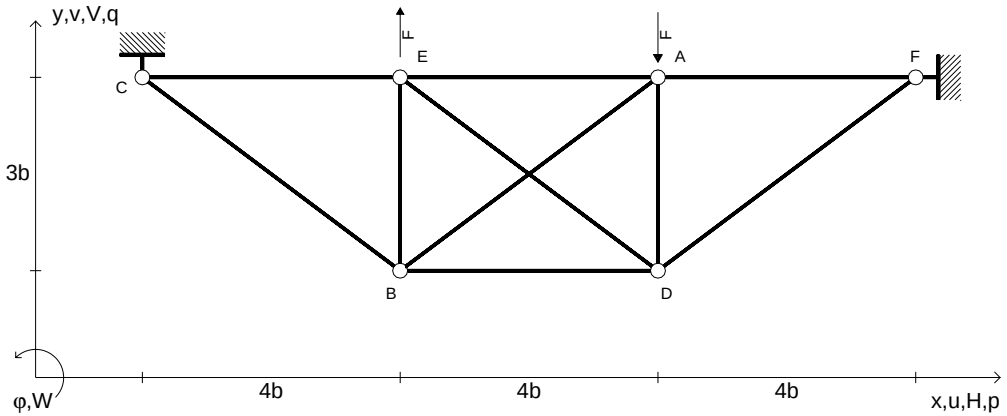
$N_{AB} = 5/9F$ $N_{CA} = 5/9F$ $N_{BD} = 4/9F$ $N_{EB} = 0$ $N_{CE} = -4/9F$ $N_{BF} = 2/3F$ $N_{AE} = -2/3F$

$N_{AF} = 0$ $N_{FD} = -5/9F$ $N_{EF} = -5/9F$

SPOSTAMENTI ASSOLUTI

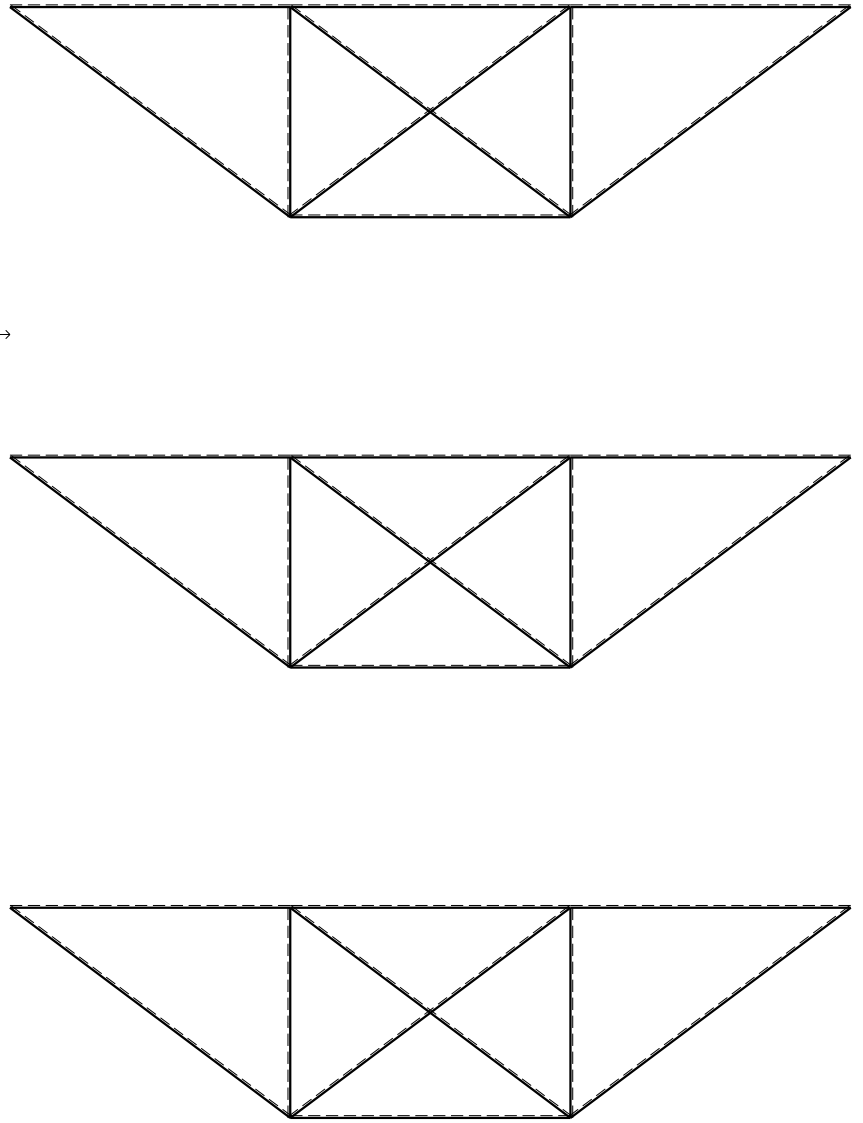
$u_E = -16/9(Fb/EA)$

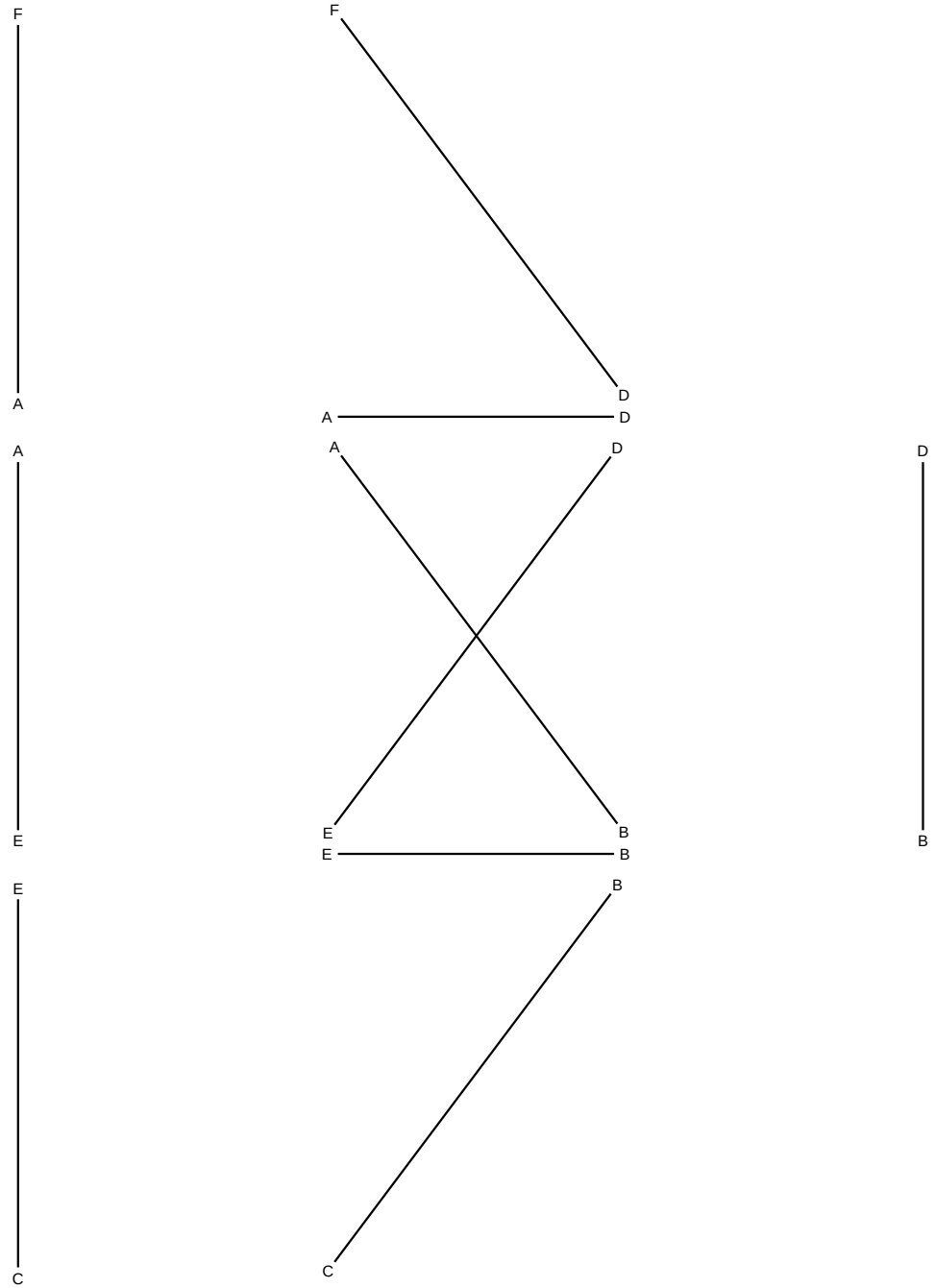
$v_E = -422/81(Fb/EA)$



V_A = -F u_A = ? EA_{AB} = EA EA_{DB} = EA EA_{EB} = EA EA_{AE} = EA EA_{FD} = EA
V_E = F v_A = ? EA_{BC} = EA EA_{DA} = EA EA_{FA} = EA EA_{EC} = EA EA_{DE} = EA

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo A
Calcolare lo spostamento verticale del nodo A





REAZIONI

H_C = V_C = H_F = V_F =

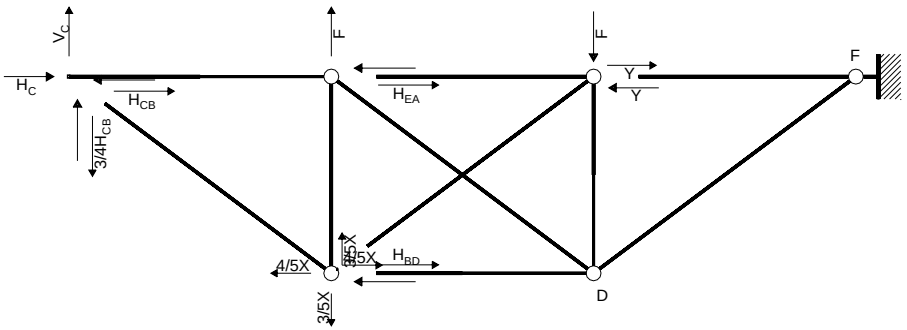
N_{AB} = N_{BC} = N_{DB} = N_{DA} = N_{EB} = N_{FA} = N_{AE} =

N_{EC} = N_{FD} = N_{DE} =

SPOSTAMENTI ASSOLUTI

u_A =

v_A =



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a F: aste FD DB DA DE AB EB AE EC BC

$-12V_Cb = 4Fb$

Rotazione intorno a D: aste DA AB AE

$-3H_{EA}b = 12/5Xb - 3Yb$

Rotazione intorno a D: aste DE EB EC BC

$-3H_Cb - 8V_Cb + 3H_{EA}b = -12/5Xb + 4Fb$

Rotazione intorno a E: aste EB BC

$3H_{CB}b - 3H_{BD}b = 12/5Xb$

Rotazione intorno a E: aste EC

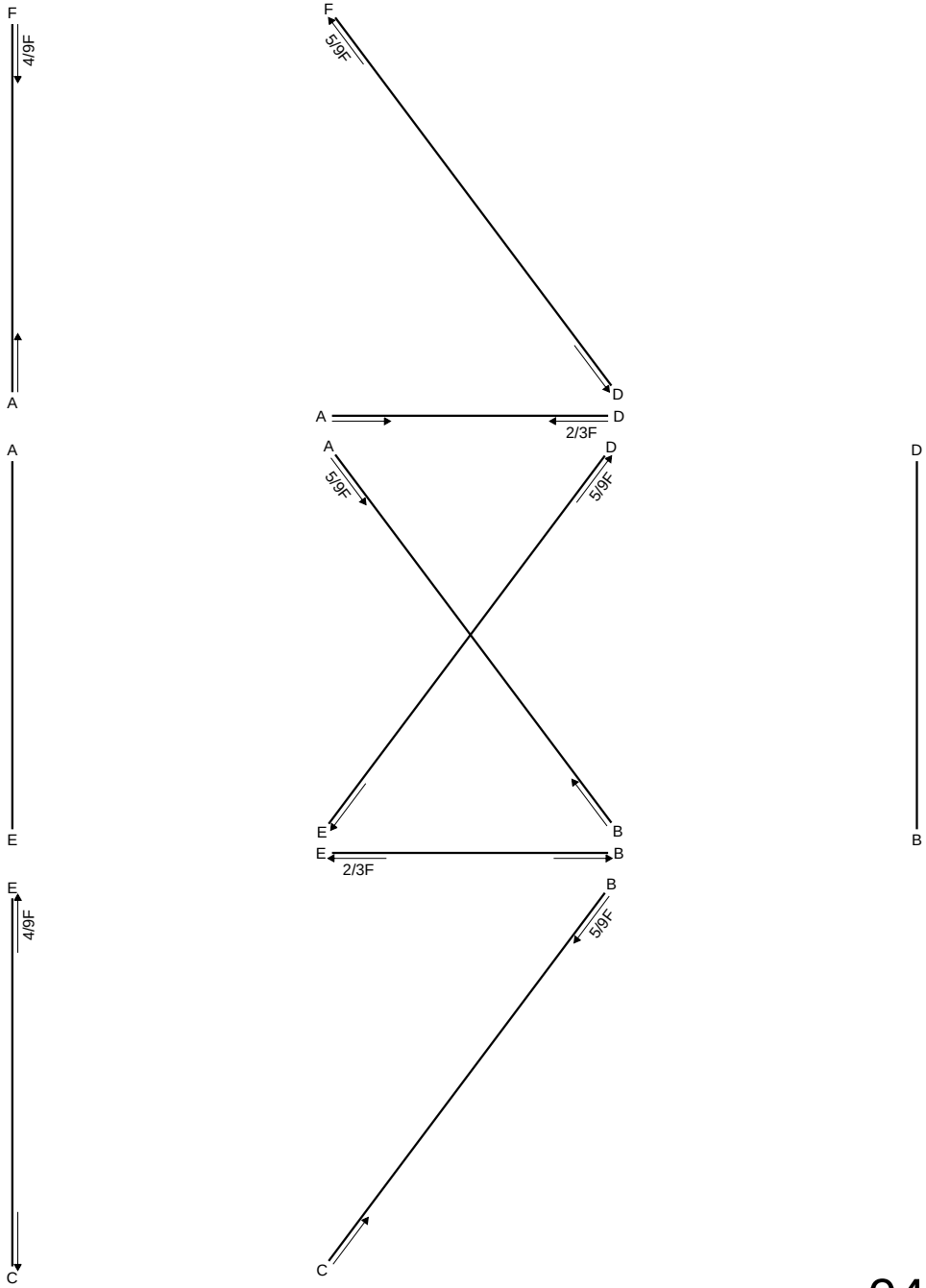
$-4V_Cb - 3H_{CB}b = 0$

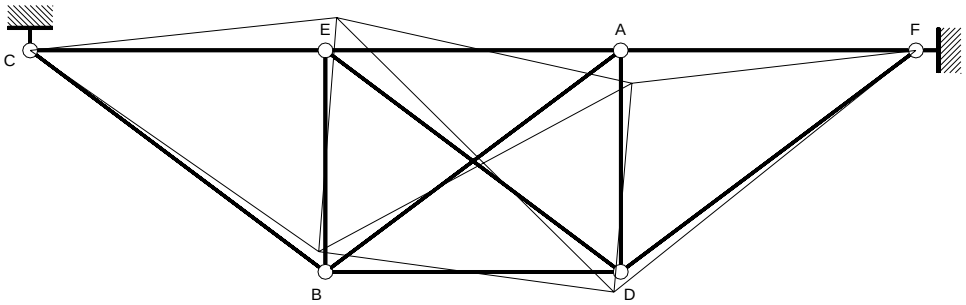
Matrice di equilibrio

	H_Cb	V_Cb	$H_{CB}b$	$H_{BD}b$	$H_{EA}b$		Xb	Yb	Fb
φ_{FD}	0	-12	0	0	0		0	0	4
φ_{DA}	0	0	0	0	-3		12/5	-3	0
φ_{DE}	-3	-8	0	0	3	=	-12/5	0	4
φ_{EB}	0	0	3	-3	0		12/5	0	0
φ_{EC}	0	-4	-3	0	0		0	0	0

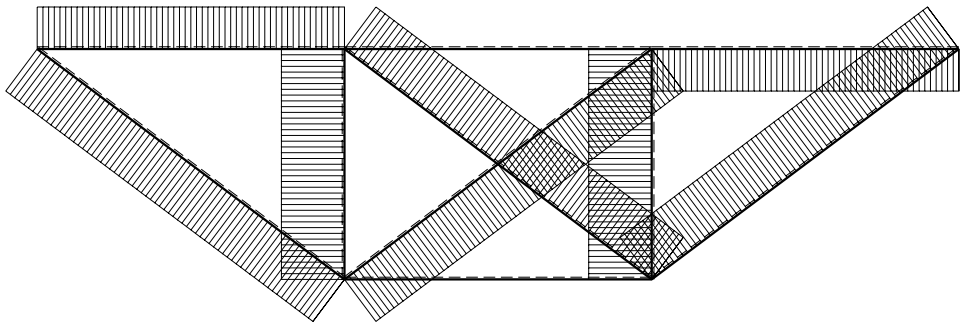
Soluzione del sistema

	Xb	Yb	Fb
V_Cb	0	0	-1/3
$H_{EA}b$	-4/5	1	0
H_Cb =	0	1	-4/9
$H_{BD}b$	-4/5	0	4/9
$H_{CB}b$	0	0	4/9





12 Fb/EA



0.8 F

REAZIONI

$H_C = 0$ $V_C = -1/3F$ $H_F = 0$ $V_F = 1/3F$

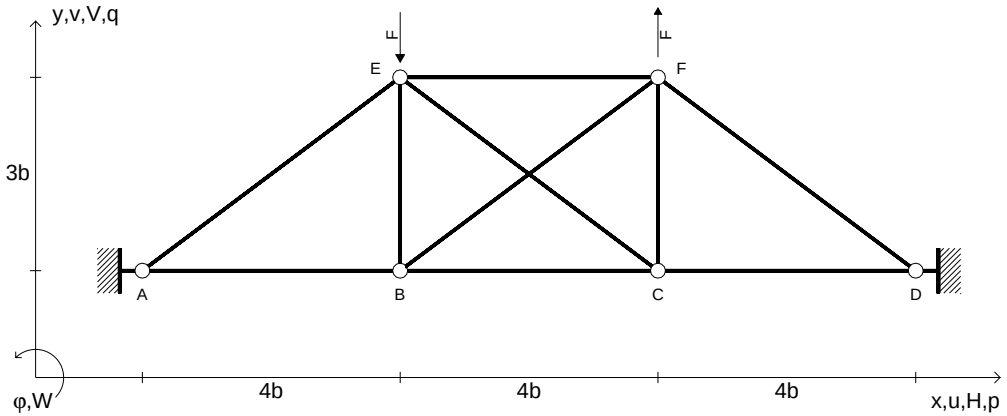
$N_{AB} = -5/9F$ $N_{BC} = -5/9F$ $N_{DB} = 0$ $N_{DA} = -2/3F$ $N_{EB} = 2/3F$ $N_{FA} = -4/9F$ $N_{AE} = 0$

$N_{EC} = 4/9F$ $N_{FD} = 5/9F$ $N_{DE} = 5/9F$

SPOSTAMENTI ASSOLUTI

$u_A = 16/9(Fb/EA)$

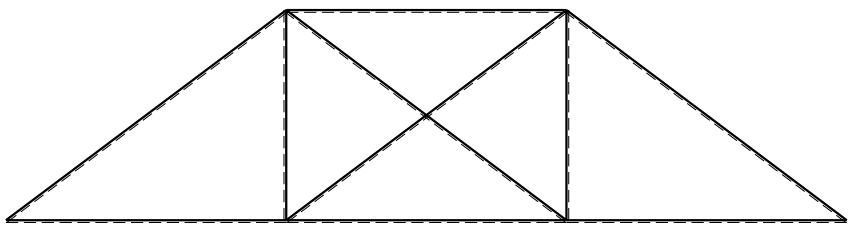
$v_A = -422/81(Fb/EA)$

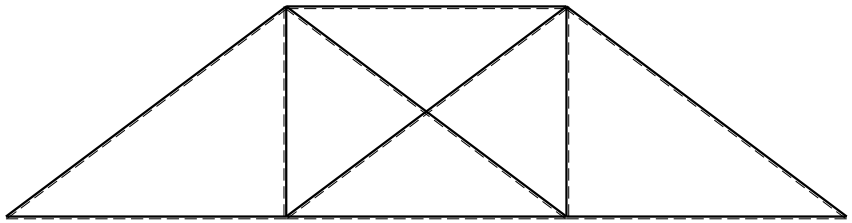


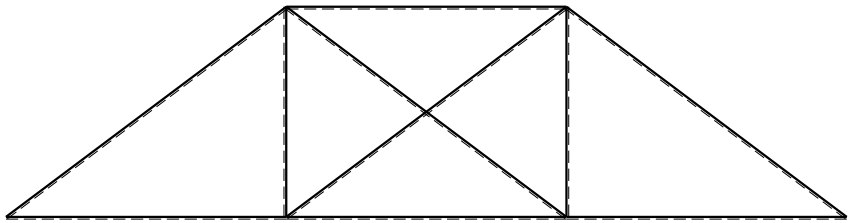
$V_E = -F$ $u_C = ?$ $EA_{AB} = EA$ $EA_{CD} = EA$ $EA_{EC} = EA$ $EA_{FD} = EA$ $EA_{EB} = EA$

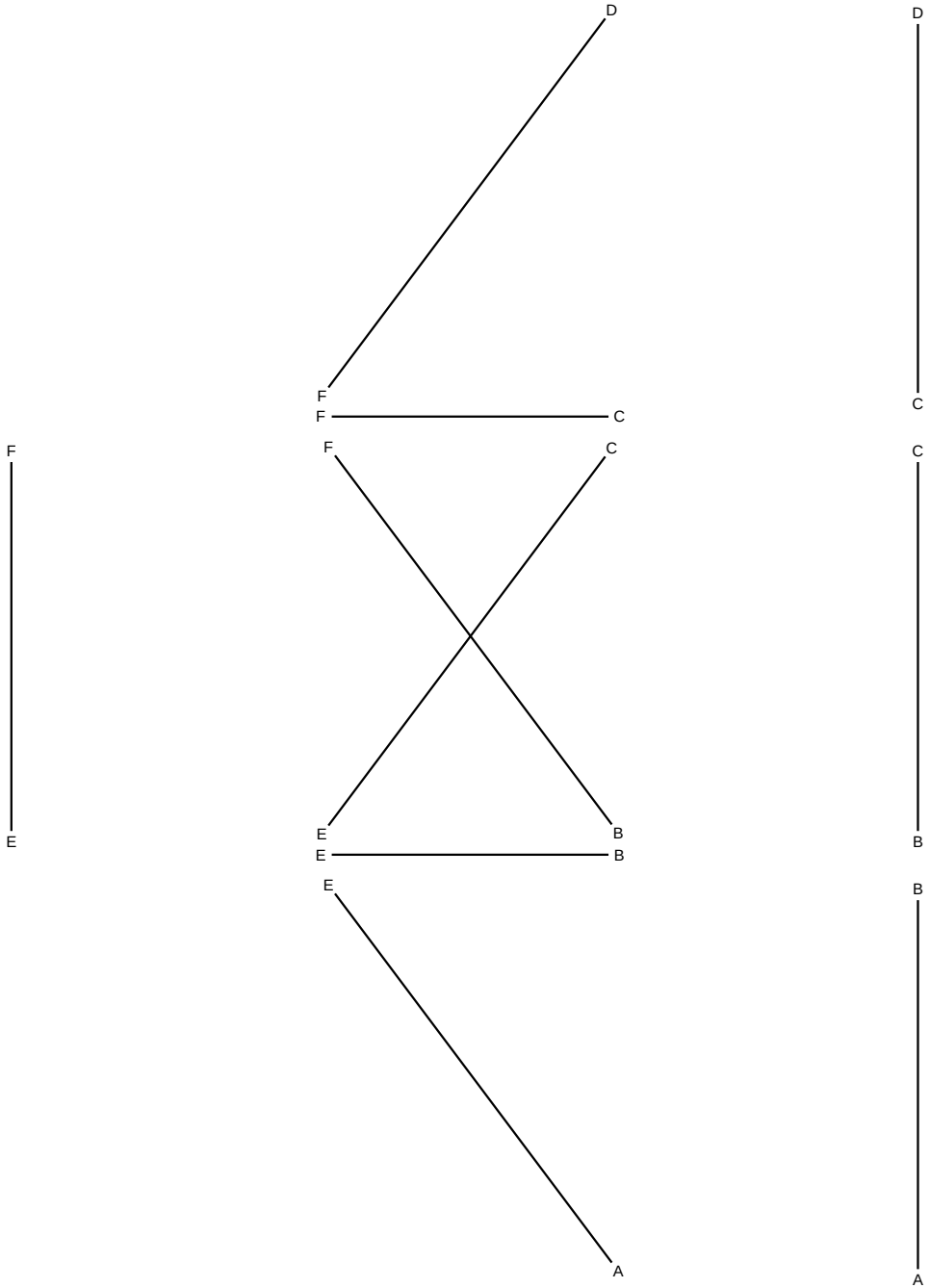
$V_F = F$ $v_C = ?$ $EA_{BC} = EA$ $EA_{AE} = EA$ $EA_{BF} = EA$ $EA_{EF} = EA$ $EA_{CF} = EA$

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo C
Calcolare lo spostamento verticale del nodo C









REAZIONI

H_A = V_A = H_D = V_D =

N_{AB} = N_{BC} = N_{CD} = N_{AE} = N_{EC} = N_{BF} = N_{FD} =

N_{EF} = N_{EB} = N_{CF} =

SPOSTAMENTI ASSOLUTI

u_C =

v_C =

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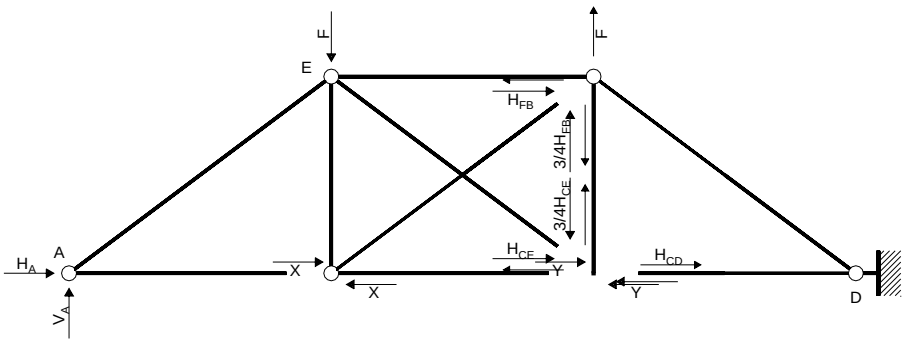


EQUAZIONI DI EQUILIBRIO

Rotazione intorno a D: aste DF FE FC EA EC EB AB BC BF

$-12V_Ab = -4Fb$

Rotazione intorno a F: aste FE EA EC EB AB BC BF

$3H_Ab -8V_Ab +3H_{CE}b = -3Yb -4Fb$

Rotazione intorno a F: aste FC

$-3H_{CD}b -3H_{CE}b = 3Yb$

Rotazione intorno a E: aste EA AB

$3H_Ab -4V_Ab = -3Xb$

Rotazione intorno a E: aste EB BC BF

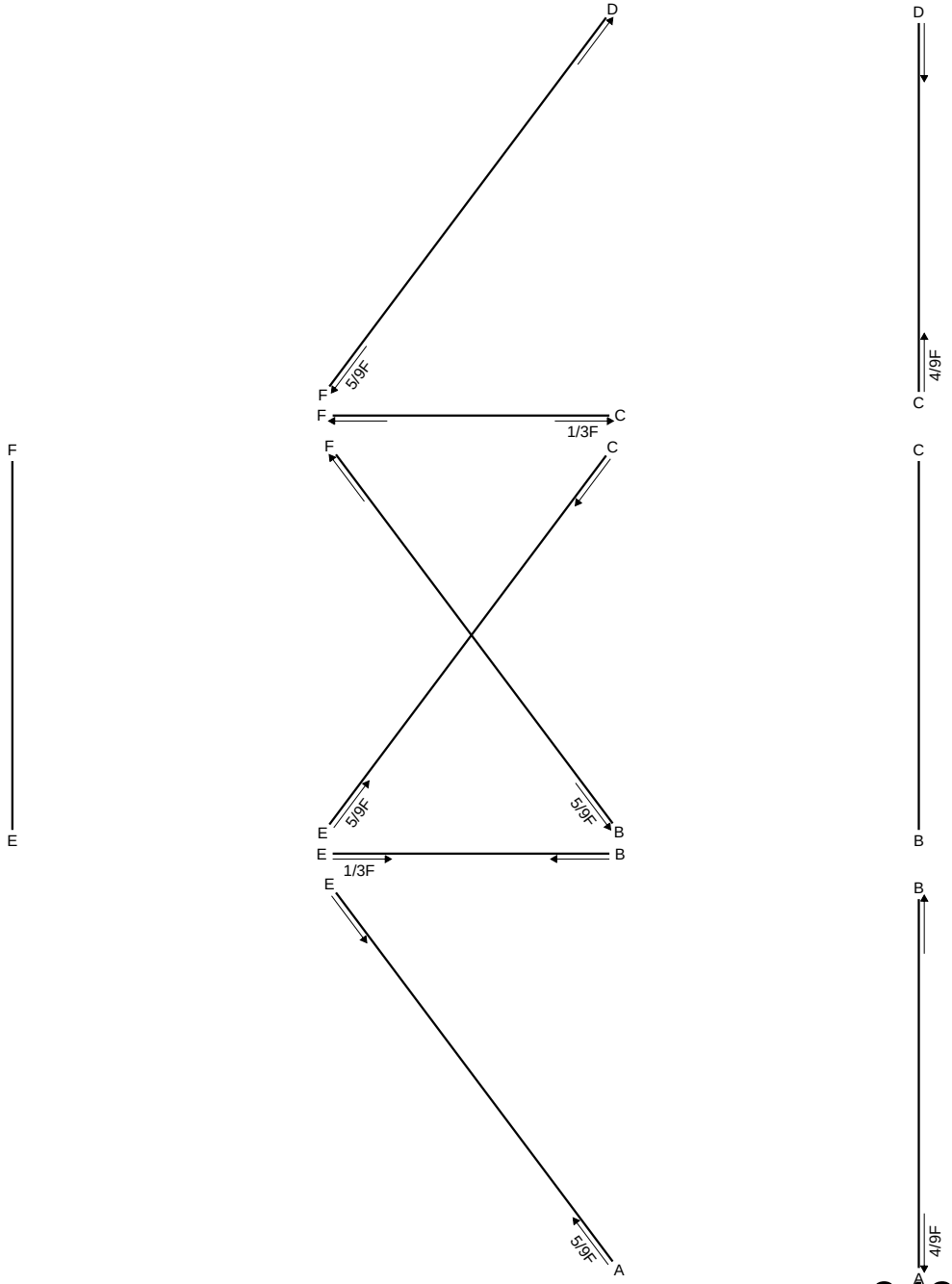
$3H_{FB}b = 3Xb -3Yb$

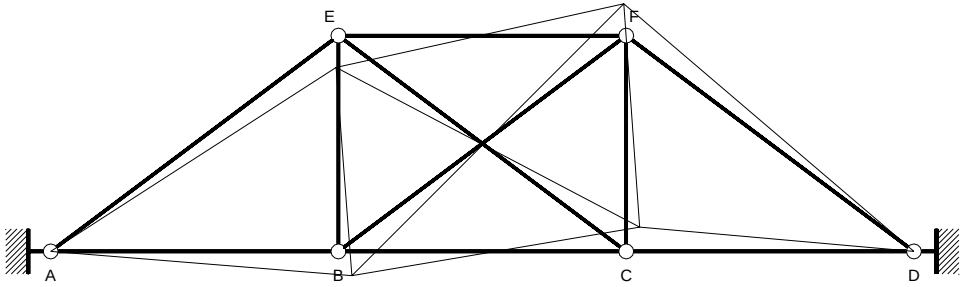
Matrice di equilibrio

	H_Ab	V_Ab	$H_{CD}b$	$H_{CE}b$	$H_{FB}b$		Xb	Yb	Fb
φ_{DF}	0	-12	0	0	0	=	0	0	-4
φ_{FE}	3	-8	0	3	0		0	-3	-4
φ_{FC}	0	0	-3	-3	0		0	3	0
φ_{EA}	3	-4	0	0	0		-3	0	0
φ_{EB}	0	0	0	0	3		3	-3	0

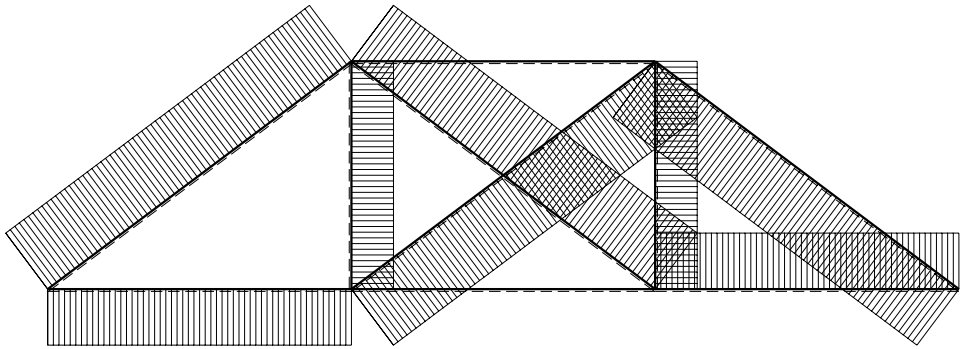
Soluzione del sistema

		Xb	Yb	Fb
V_Ab		0	0	1/3
H_Ab		-1	0	4/9
$H_{CD}b$	=	-1	0	8/9
$H_{CE}b$		1	-1	-8/9
$H_{FB}b$		1	-1	0





10 Fb/EA



0.6 F

REAZIONI

$H_A = 0$ $V_A = 1/3F$ $H_D = 0$ $V_D = -1/3F$

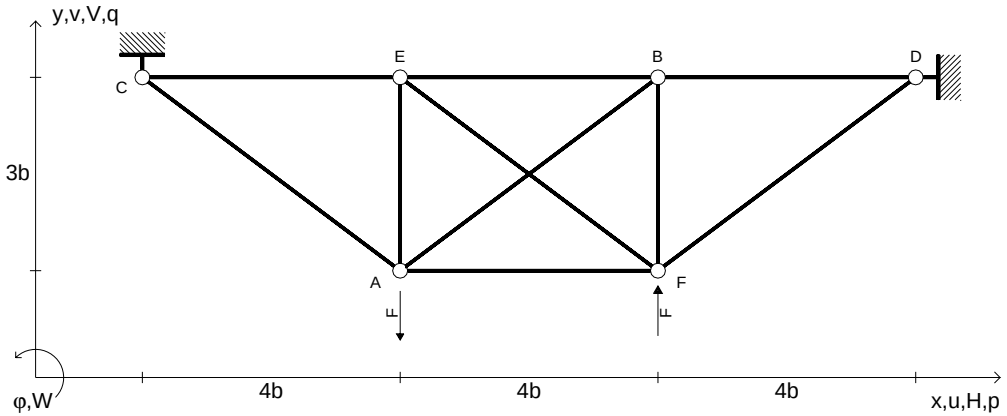
$N_{AB} = 4/9F$ $N_{BC} = 0$ $N_{CD} = -4/9F$ $N_{AE} = -5/9F$ $N_{EC} = -5/9F$ $N_{BF} = 5/9F$ $N_{FD} = 5/9F$

$N_{EF} = 0$ $N_{EB} = -1/3F$ $N_{CF} = 1/3F$

SPOSTAMENTI ASSOLUTI

$u_C = 16/9(Fb/EA)$

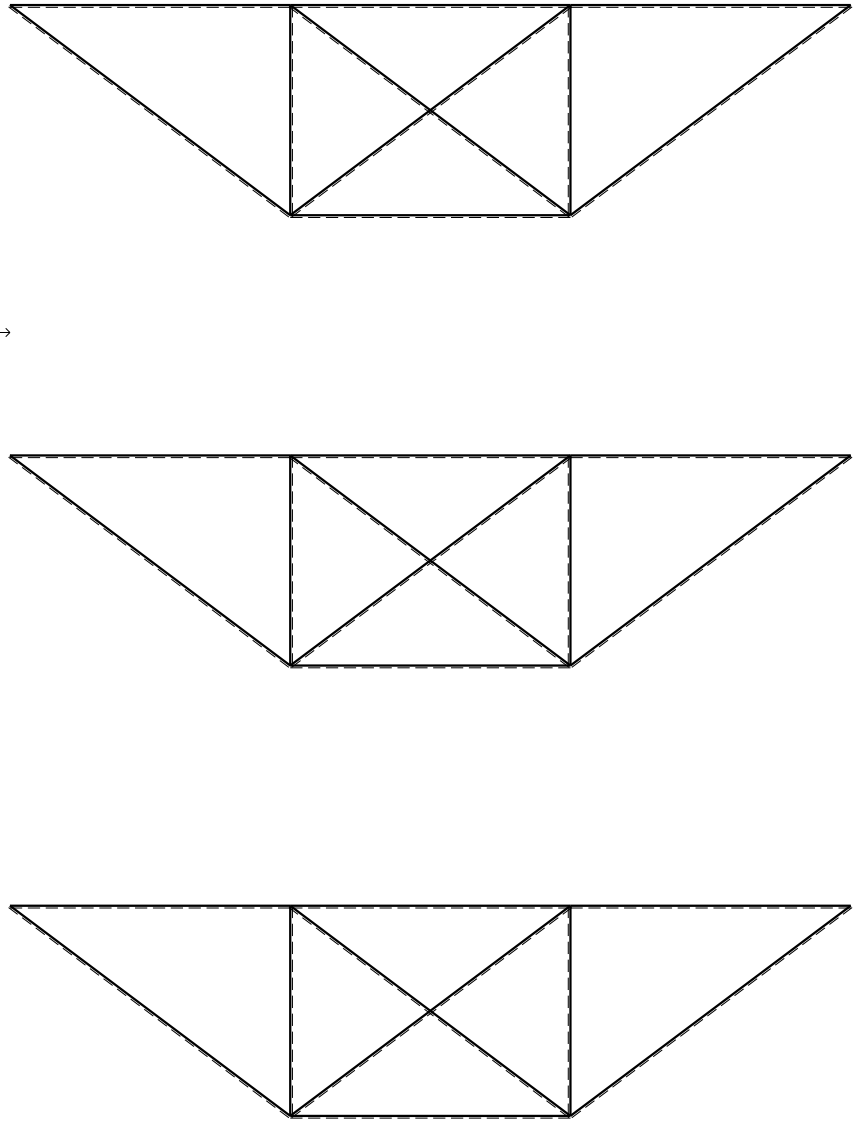
$v_C = 260/81(Fb/EA)$

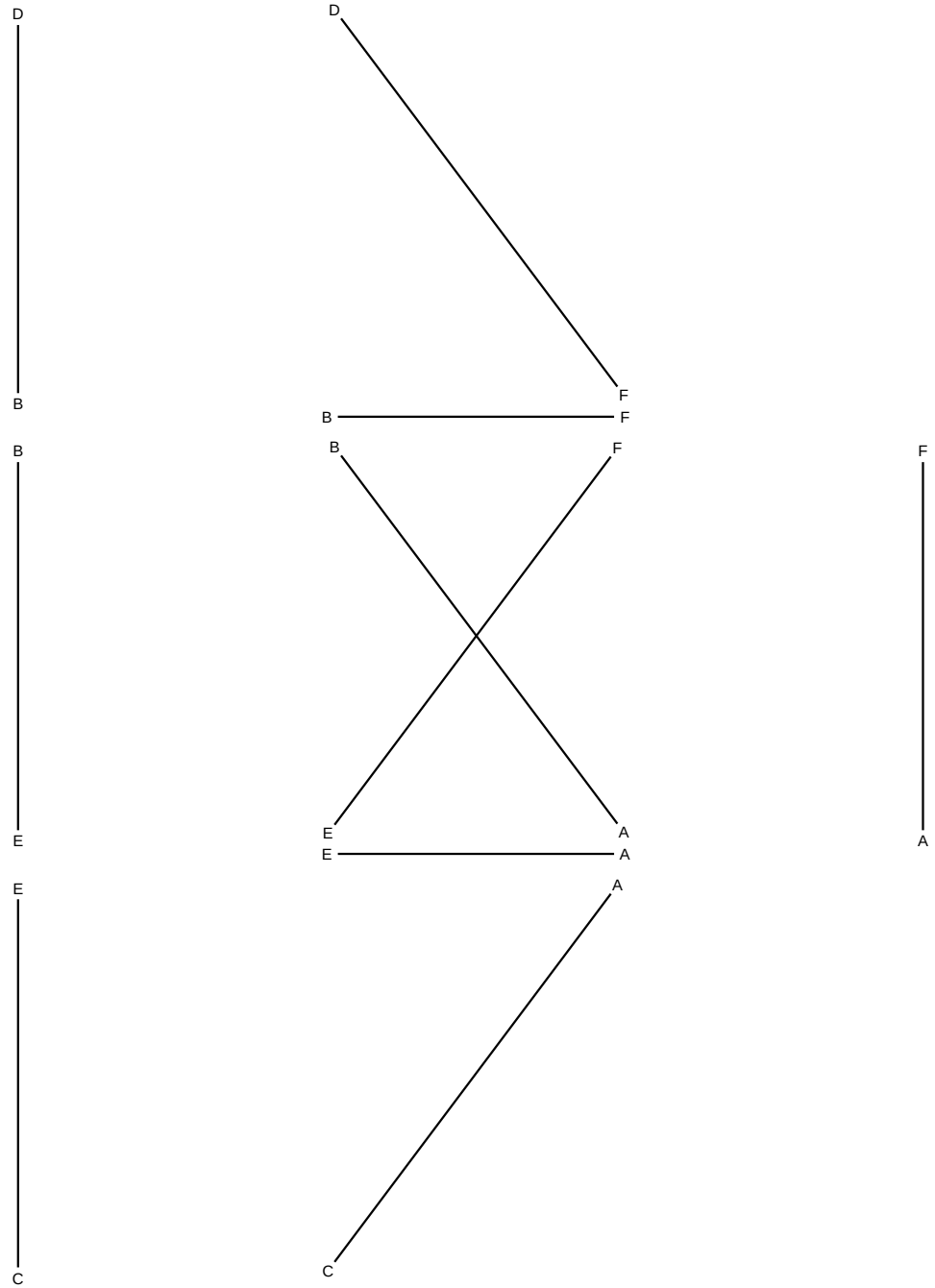


V_A = -F u_B = ? EA_{AB} = EA EA_{BD} = EA EA_{CE} = EA EA_{AE} = EA EA_{FD} = EA

V_F = F v_B = ? EA_{CA} = EA EA_{EB} = EA EA_{BF} = EA EA_{AF} = EA EA_{EF} = EA

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo B
Calcolare lo spostamento verticale del nodo B





REAZIONI

H_C = V_C = H_D = V_D =

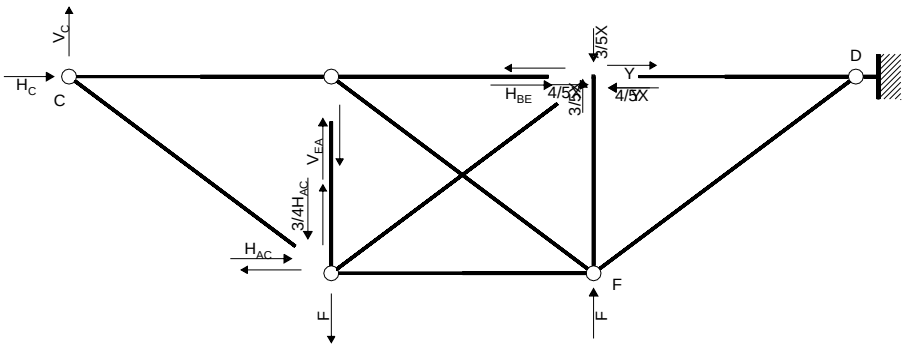
N_{AB} = N_{CA} = N_{BD} = N_{EB} = N_{CE} = N_{BF} = N_{AE} =

N_{AF} = N_{FD} = N_{EF} =

SPOSTAMENTI ASSOLUTI

u_B =

v_B =



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a D: aste DF FB FA FE AB EB EC AE CA

$-12V_Cb = -4Fb$

Rotazione intorno a F: aste FB

$3H_{BE}b = -12/5Xb - 3Yb$

Rotazione intorno a F: aste FA AB AE

$-3H_{AC}b - 4V_{EA}b = 12/5Xb - 4Fb$

Rotazione intorno a F: aste FE EB EC CA

$-3H_Cb - 8V_Cb + 3H_{AC}b - 3H_{BE}b + 4V_{EA}b = 0$

Rotazione intorno a E: aste EC CA

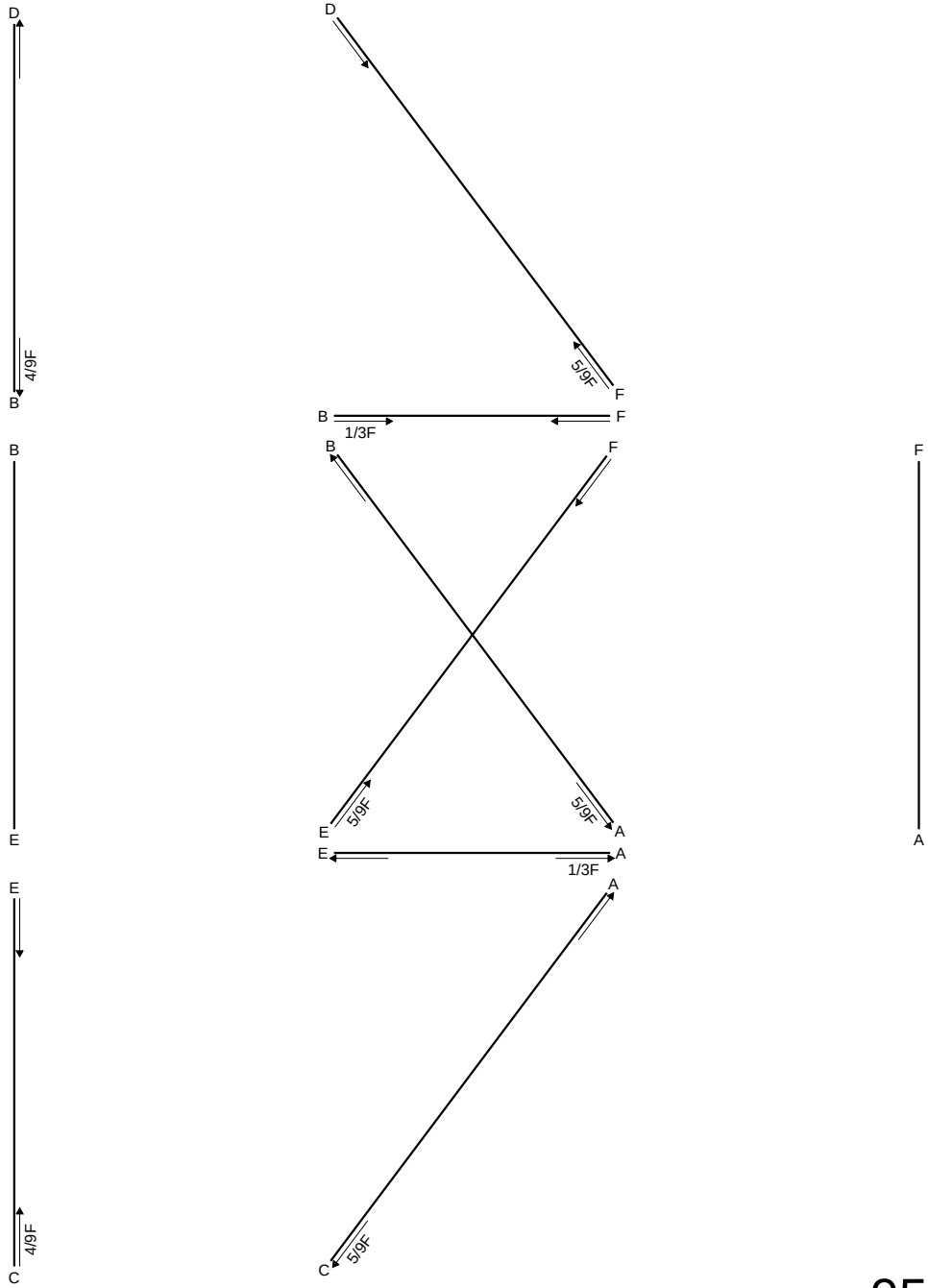
$-4V_Cb + 3H_{AC}b = 0$

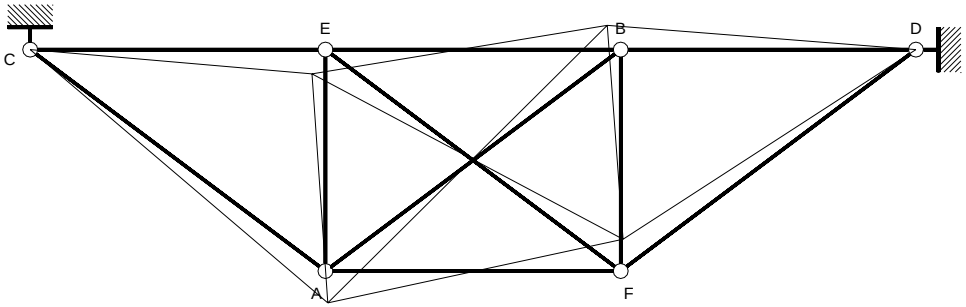
Matrice di equilibrio

	H_Cb	V_Cb	$H_{AC}b$	$H_{BE}b$	$V_{EA}b$		Xb	Yb	Fb
φ_{DF}	0	-12	0	0	0	=	0	0	-4
φ_{FB}	0	0	0	3	0		-12/5	-3	0
φ_{FA}	0	0	-3	0	-4		12/5	0	-4
φ_{FE}	-3	-8	3	-3	4		0	0	0
φ_{EC}	0	-4	3	0	0		0	0	0

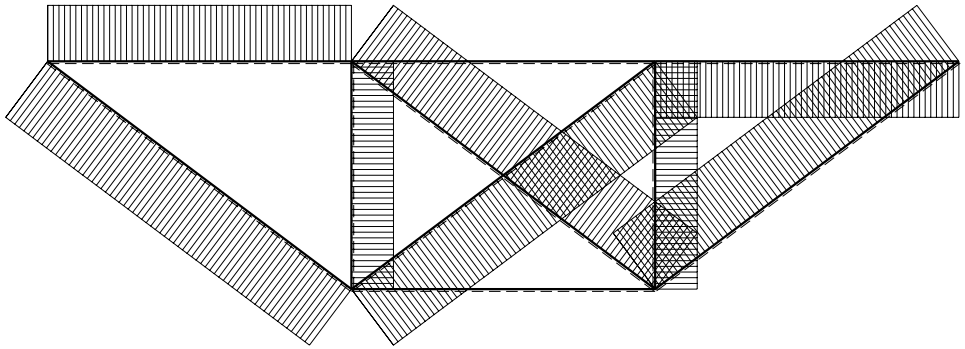
Soluzione del sistema

	Xb	Yb	Fb
V_Cb	0	0	1/3
$H_{BE}b$	-4/5	-1	0
$H_{AC}b$ =	0	0	4/9
H_Cb	0	1	4/9
$V_{EA}b$	-3/5	0	2/3





10 Fb/EA



0.6 F

REAZIONI

$H_C = 0$ $V_C = 1/3F$ $H_D = 0$ $V_D = -1/3F$

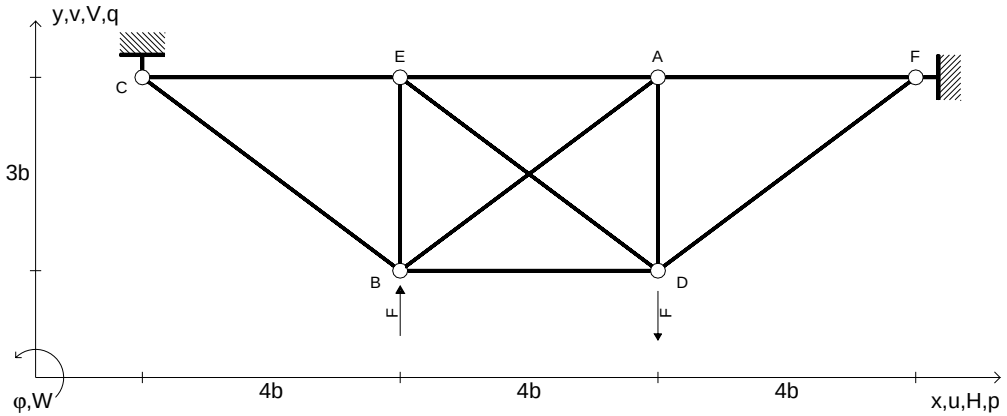
$N_{AB} = 5/9F$ $N_{CA} = 5/9F$ $N_{BD} = 4/9F$ $N_{EB} = 0$ $N_{CE} = -4/9F$ $N_{BF} = -1/3F$ $N_{AE} = 1/3F$

$N_{AF} = 0$ $N_{FD} = -5/9F$ $N_{EF} = -5/9F$

SPOSTAMENTI ASSOLUTI

$u_B = -16/9(Fb/EA)$

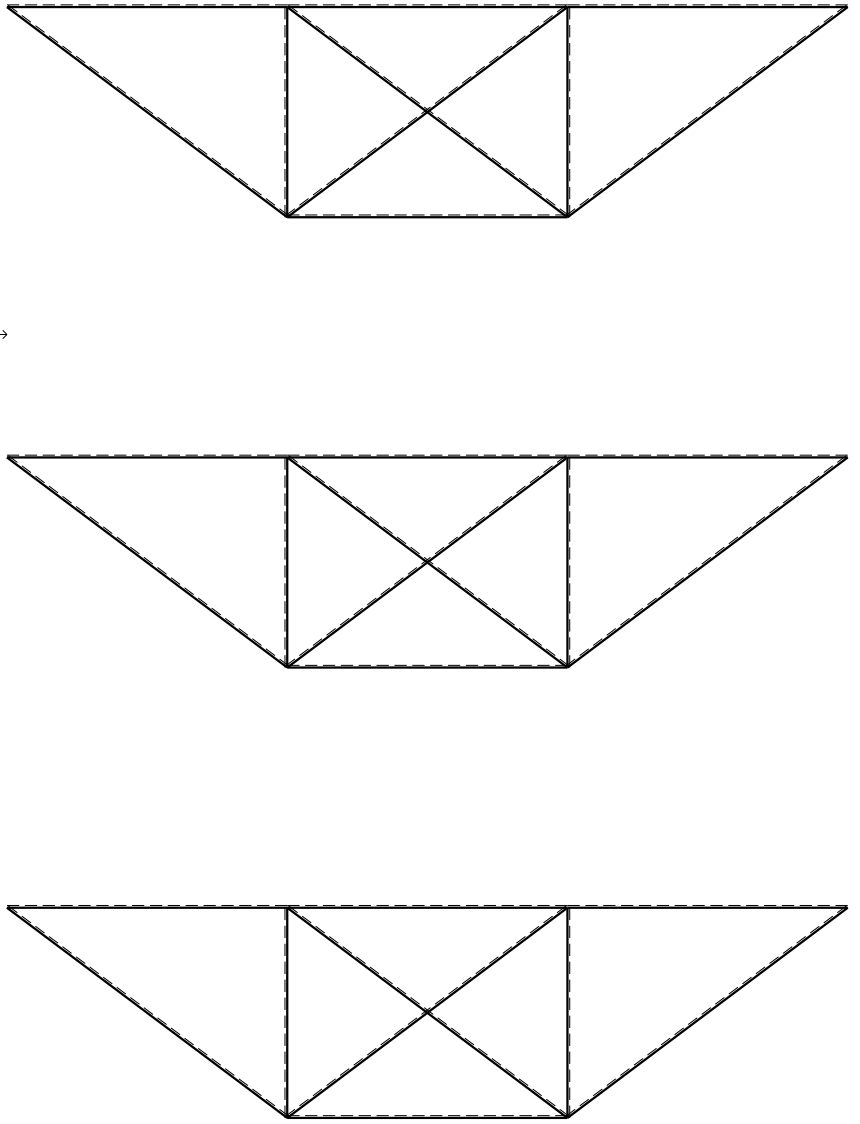
$v_B = 260/81(Fb/EA)$

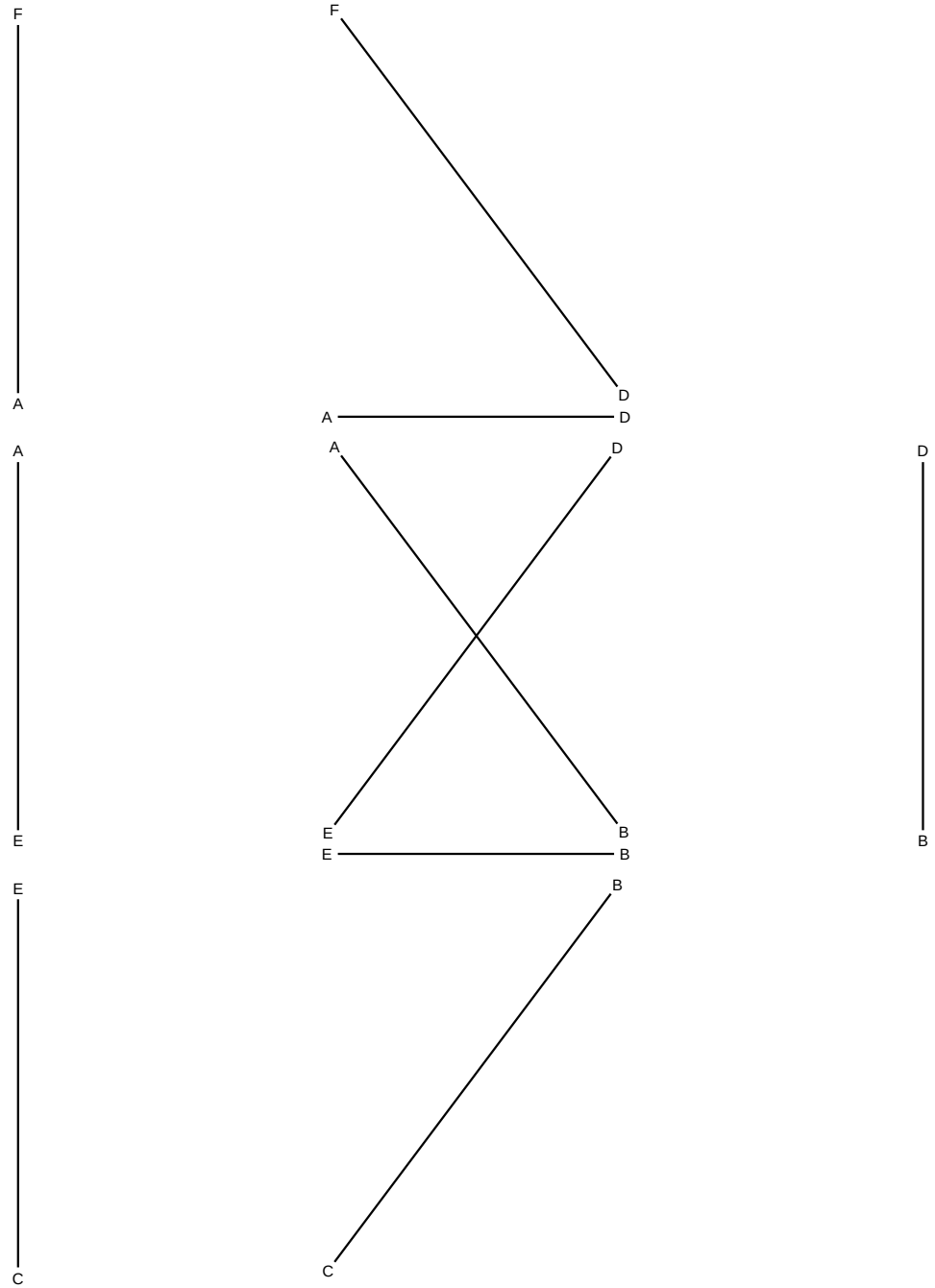


$V_D = -F$ $u_E = ?$ $EA_{AB} = EA$ $EA_{DB} = EA$ $EA_{EB} = EA$ $EA_{AE} = EA$ $EA_{FD} = EA$

$V_B = F$ $v_E = ?$ $EA_{BC} = EA$ $EA_{DA} = EA$ $EA_{FA} = EA$ $EA_{EC} = EA$ $EA_{DE} = EA$

Svolgere l'analisi cinematica.
Riportare la soluzione su questo foglio.
Carichi e deformazioni date hanno verso efficace in disegno.
Calcolare reazioni vincolari della struttura e delle aste.
Tracciare i diagrammi delle azioni interne nelle aste.
A_{YZ} - x_{YZ} - θ_{YZ} riferimento locale asta YZ con origine in Y.
Calcolare lo spostamento orizzont. del nodo E
Calcolare lo spostamento verticale del nodo E





REAZIONI

H_C = V_C = H_F = V_F =

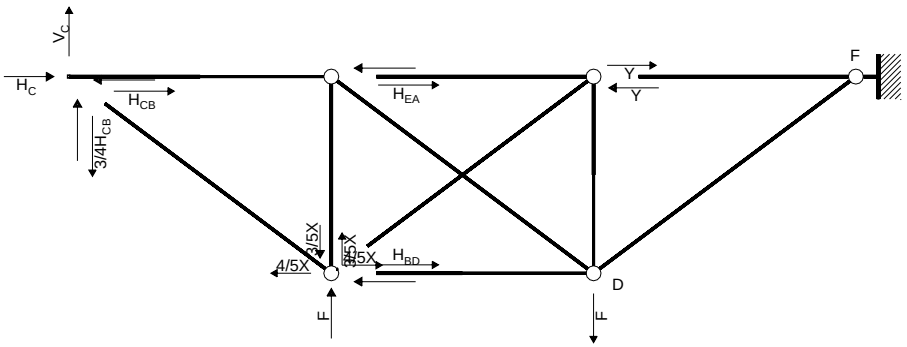
N_{AB} = N_{BC} = N_{DB} = N_{DA} = N_{EB} = N_{FA} = N_{AE} =

N_{EC} = N_{FD} = N_{DE} =

SPOSTAMENTI ASSOLUTI

u_E =

v_E =



EQUAZIONI DI EQUILIBRIO

Rotazione intorno a F: aste FD DB DA DE AB EB AE EC BC

$-12V_Cb = 4Fb$

Rotazione intorno a D: aste DA AB AE

$-3H_{EA}b = 12/5Xb - 3Yb$

Rotazione intorno a D: aste DE EB EC BC

$-3H_Cb - 8V_Cb + 3H_{EA}b = -12/5Xb + 4Fb$

Rotazione intorno a E: aste EB BC

$3H_{CB}b - 3H_{BD}b = 12/5Xb$

Rotazione intorno a E: aste EC

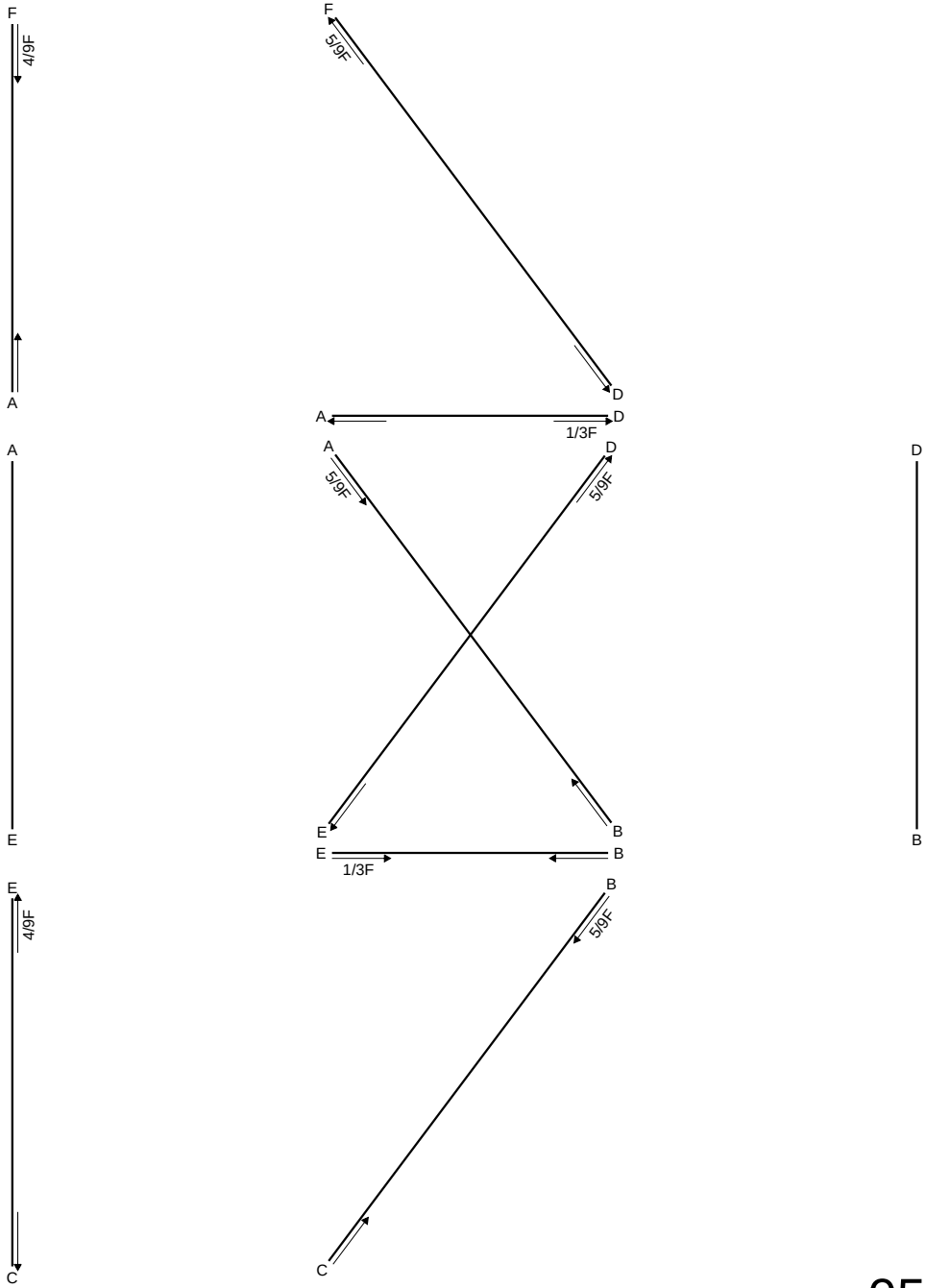
$-4V_Cb - 3H_{CB}b = 0$

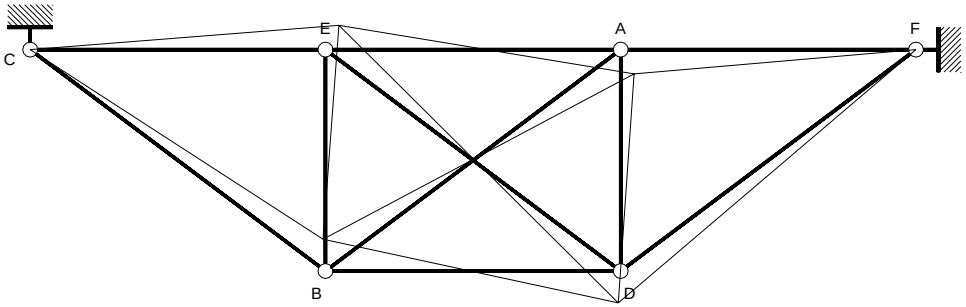
Matrice di equilibrio

	H_Cb	V_Cb	$H_{CB}b$	$H_{BD}b$	$H_{EA}b$		Xb	Yb	Fb
φ_{FD}	0	-12	0	0	0		0	0	4
φ_{DA}	0	0	0	0	-3		12/5	-3	0
φ_{DE}	-3	-8	0	0	3	=	-12/5	0	4
φ_{EB}	0	0	3	-3	0		12/5	0	0
φ_{EC}	0	-4	-3	0	0		0	0	0

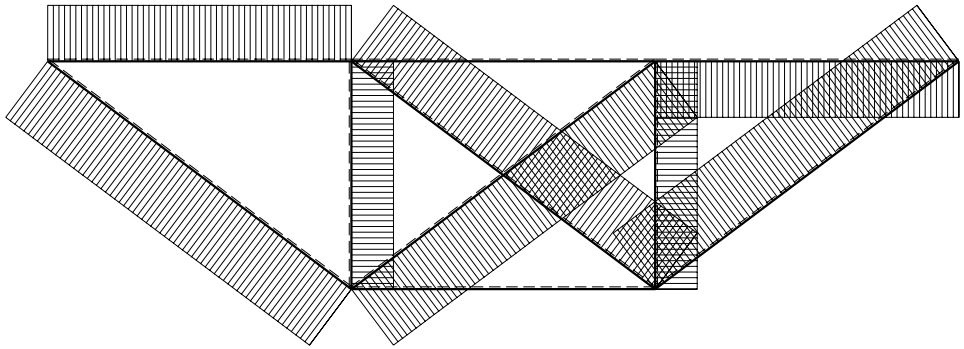
Soluzione del sistema

	Xb	Yb	Fb
V_Cb	0	0	-1/3
$H_{EA}b$	-4/5	1	0
H_Cb =	0	1	-4/9
$H_{BD}b$	-4/5	0	4/9
$H_{CB}b$	0	0	4/9





10 Fb/EA



0.6 F

REAZIONI

$H_C = 0$ $V_C = -1/3F$ $H_F = 0$ $V_F = 1/3F$

$N_{AB} = -5/9F$ $N_{BC} = -5/9F$ $N_{DB} = 0$ $N_{DA} = 1/3F$ $N_{EB} = -1/3F$ $N_{FA} = -4/9F$ $N_{AE} = 0$

$N_{EC} = 4/9F$ $N_{FD} = 5/9F$ $N_{DE} = 5/9F$

SPOSTAMENTI ASSOLUTI

$u_E = 16/9(Fb/EA)$

$v_E = 260/81(Fb/EA)$