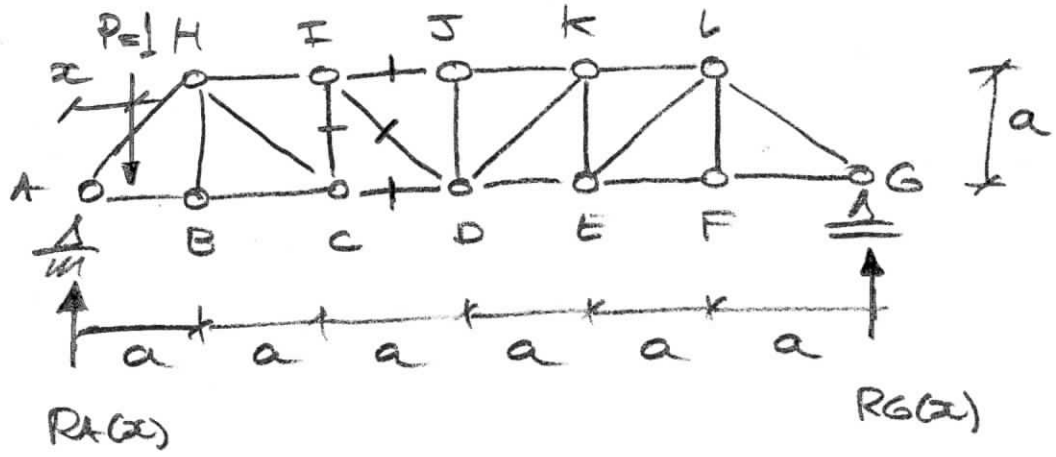
TE2-3.4

LI's N_{CD}, N_{DI}, N_{CI} e N_{IJ};



→ CAMINHO DE CARGA ABCDEFG;

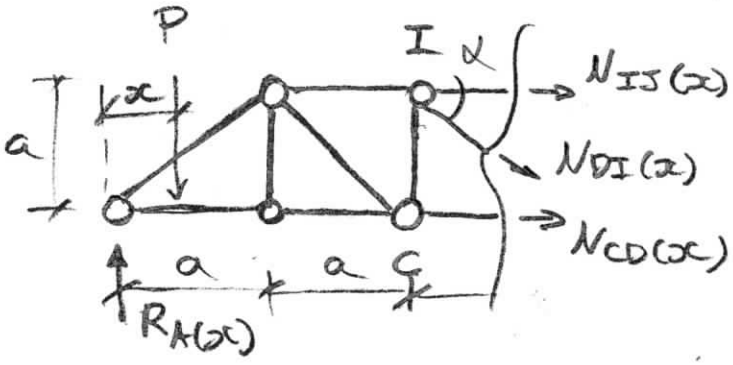
LI $R_A(x)$: $\Sigma M_G = 0$ ↻ $R_A(x) \times 6a - P(6a-x) = 0$

$R_A(x) = \frac{1}{6a}(6a-x)$ $\quad \boxed{R_A(x) = 1 - \frac{1}{6a}x}$

LI $R_G(x)$: $\Sigma F_V = 0$ ↑

$R_A(x) - P + R_G(x) = 0$ $\quad R_G(x) = P - R_A(x)$

$R_G(x) = 1 - \left(1 - \frac{1}{6a}x\right)$ $\quad \boxed{R_G(x) = \frac{1}{6a}x}$



$\alpha = 45°$ $\quad \cos\alpha = \sqrt{2}/2$ $\quad \operatorname{sen}\alpha = \sqrt{2}/2$

$\Sigma M_I = 0$ ↻

$-N_{CD}(x) \times a + R_A(x) \times 2a - P(2a-x) = 0$

- Para Pesq de CD:

$$N_{CD}^{Pesq}(x) = \frac{1}{a}(2a\,R_A(x) - P(2a-x))$$

$$N_{CD}^{Pesq}(x) = \frac{1}{a}\left(2a\left(1-\frac{1}{6a}x\right) - 2a + x\right)$$

$$N_{CD}^{Pesq}(x) = \frac{1}{a}\left(2a - \frac{2}{6}x - 2a + x\right)$$

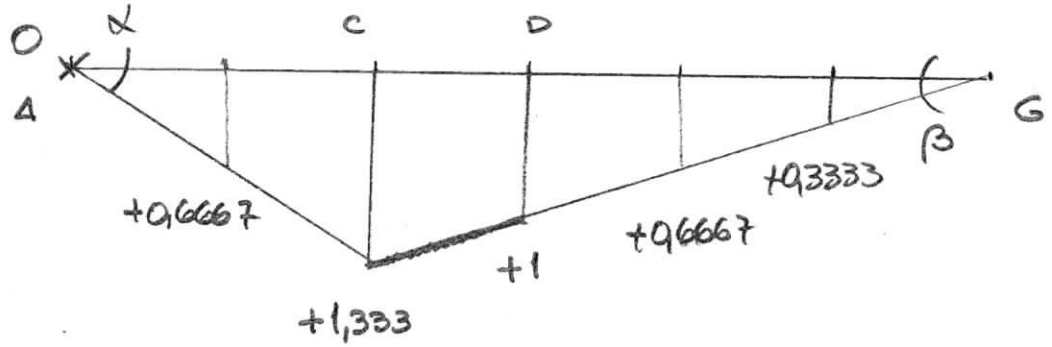
$$\boxed{N_{CD}^{Pesq}(x) = \frac{2}{3a}x}$$

- Para Pdist de CD:

$$N_{CD}^{Pdist}(x) = \frac{1}{a}\left(2a - \frac{2}{6}x\right) = 2 - \frac{1}{3a}x$$

$$\boxed{N_{CD}^{Pdist}(x) = 2 - \frac{1}{3a}x}$$

- ESBOÇO DA LI DE N_{CD}:



$$tg\alpha = \frac{2}{3a}$$

$$tg\beta = \frac{1}{3a}$$

$$\Sigma F_V = 0 \quad \uparrow \oplus \qquad -N_{DI}(x)\cos\alpha - P + R_A(x) = 0$$

$$N_{DI}(x) = \frac{1}{\cos\alpha}\left(R_A(x) - P\right)$$

- Para Pesq CD:

$$N_{DI}^{Pesq}(x) = \frac{2}{\sqrt{2}}\left(1 - \frac{1}{6a}x - 1\right) = \frac{x}{3\sqrt{2}a}$$

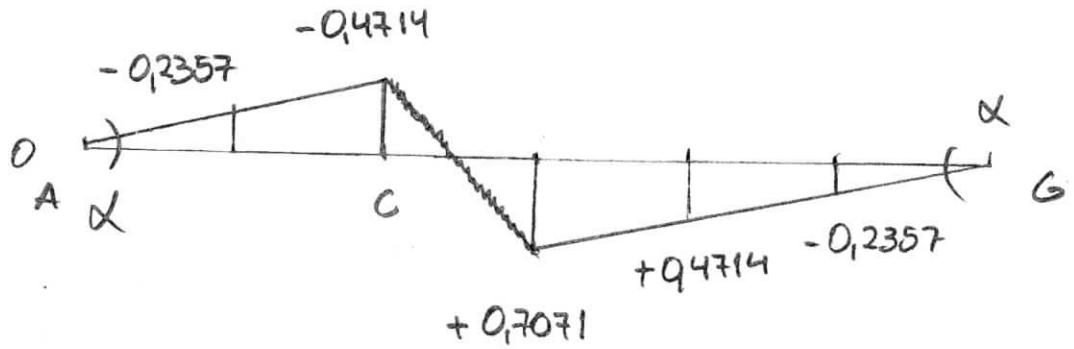
$$\boxed{N_{DI}^{Pesq}(x) = -\frac{x}{3\sqrt{2}a}}$$

- Para Polin CD:

$$N_{DI}^{Polin}(x) = \frac{2}{\sqrt{2}}\left(1 - \frac{1}{6a}x\right)$$

$$\boxed{N_{DI}^{Polin}(x) = \frac{2}{\sqrt{2}} - \frac{x}{3\sqrt{2}a}}$$

- ESBOÇO DA LI DE N_{DI}:



$$tg\alpha = \frac{\frac{\sqrt{2}}{2}}{3a} = \frac{\sqrt{2}}{6a}$$

$\Sigma F_H = 0 \rightarrow +$

$N_{IJ}(x) + N_{CD}(x) + N_{DI}(x)\cos\alpha = 0$

- Para Pesq de CD:

$$N_{IJ}^{Pesq}(x) = -N_{CD}^{Pesq}(x) - N_{DI}^{Pesq}(x)\,\sqrt{2}/2$$

$$N_{IJ}^{Pesq}(x) = -\left(\frac{2}{3a}x\right) - \left(\frac{-x}{3\sqrt{2}a}\right)\frac{\sqrt{2}}{2}$$

$$N_{IJ}^{Pesq}(x) = -\frac{2}{3a}x + \frac{x}{6a} = \frac{-4x+x}{6a} = -\frac{3x}{6a}$$

$$\boxed{N_{IJ}^{Pesq}(x) = -\frac{x}{2a}}$$

- Para Pdur de CD:

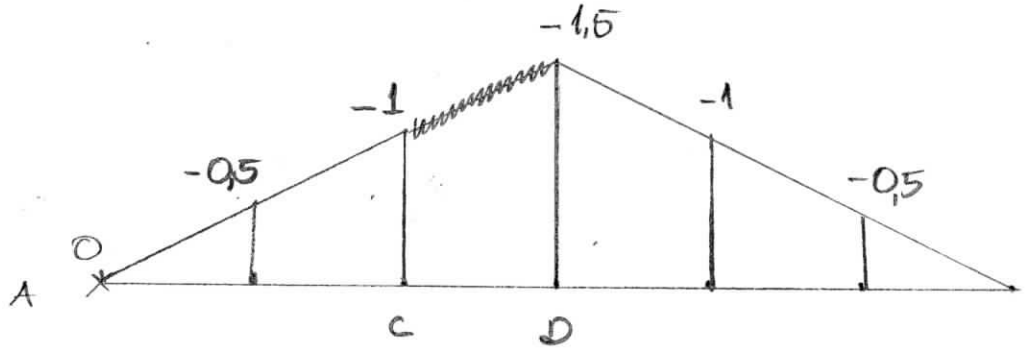
$$N_{IJ}^{Pdur}(x) = -N_{CD}^{Pdur}(x) - N_{DI}^{Pdur}(x)\,\sqrt{2}/2$$

$$N_{IJ}^{Pdur}(x) = -\left(2 - \frac{1}{3a}x\right) - \left(\frac{2}{\sqrt{2}} - \frac{x}{3\sqrt{2}a}\right)\frac{\sqrt{2}}{2}$$

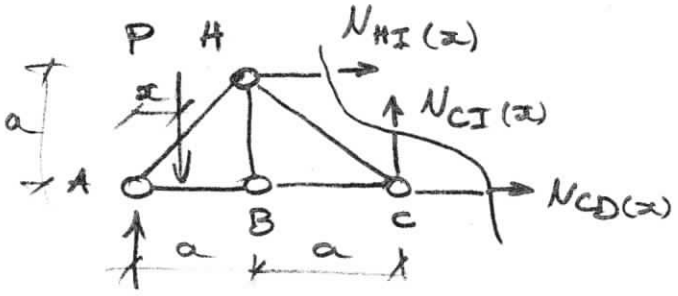
$$N_{IJ}^{Pdur}(x) = -2 + \frac{1}{3a}x - 1 + \frac{x}{6a} = -3 + \frac{x}{2a}$$

$$\boxed{N_{IJ}^{Por}(x) = -3 + \frac{x}{2a}}$$

- Esboço da LI N_{IJ}



Para a barra CI faz-se necessário um novo corte:



$$\Sigma FV = 0 \uparrow (+)$$

$$N_{CI}(x) - P + R_A(x) = 0$$

$$N_{CI}(x) = P - R_A(x)$$

Para Pesq de CD:

$$N_{CI}^{Pesq}(x) = 1 - \left(1 - \frac{1}{6a}x\right) = \frac{1}{6a}x$$

$$\boxed{N_{CI}^{Pesq}(x) : R_G(x) = \frac{1}{6a}x}$$

Para Pdun de CD:

$$\boxed{N_{CI}^{Pdun}(x) = -R_A(x) = -1 + \frac{1}{6a}x}$$

• ESBOÇO RA LI NCI:

