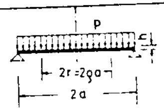
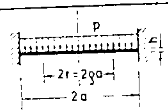
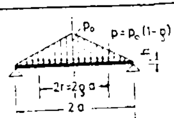
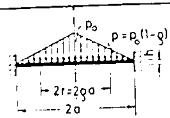
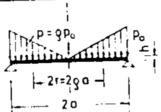
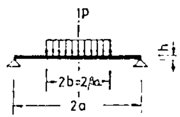
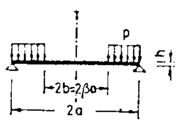
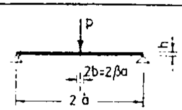
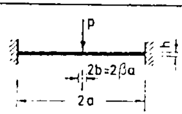
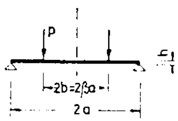
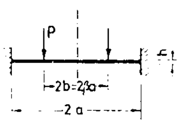
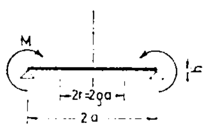
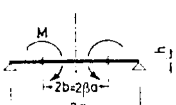
# prilog 5

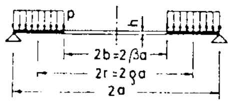
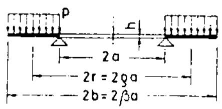
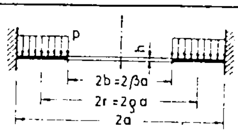
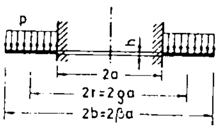
KRUŽNE I PRSTENASTE PLOČE OPTEREĆENE NA SAVIJANJE

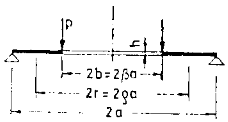
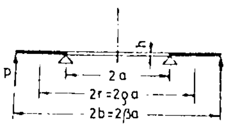
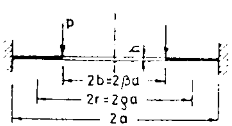
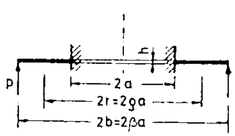


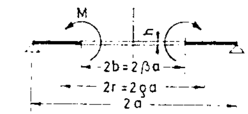
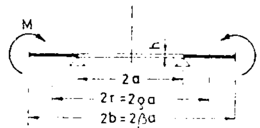
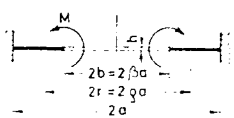
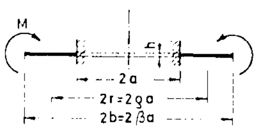
| KRUŽNA PLOČA | $\varrho$ | $w$ | $M_r$ | $M_\varphi$ | $Q_r$ |
|---|---|---|---|---|---|
|  | $\varrho$ | $\frac{pa^4}{64K}(1-\varrho^2)\left(\frac{5+\mu}{1+\mu}-\varrho^2\right)$ | $\frac{pa^2}{16}(3+\mu)(1-\varrho^2)$ | $\frac{pa^2}{16}[3+\mu-(1+3\mu)\varrho^2]$ | $-\frac{pa}{2}\varrho$ |
| | 0 | $\frac{pa^4}{64K}\frac{5+\mu}{1+\mu}$ | $\frac{pa^2}{16}(3+\mu)$ | $\frac{pa^2}{16}(3+\mu)$ | 0 |
| | 1 | 0 | 0 | $\frac{pa^2}{8}(1-\mu)$ | $-\frac{pa}{2}$ |
|  | $\varrho$ | $\frac{pa^4}{64K}(1-\varrho^2)^2$ | $\frac{pa^2}{16}[1+\mu-(3+\mu)\varrho^2]$ | $\frac{pa^2}{16}[1+\mu-(1+3\mu)\varrho^2]$ | $-\frac{pa}{2}\varrho$ |
| | 0 | $\frac{pa^4}{64K}$ | $\frac{pa^2}{16}(1+\mu)$ | $\frac{pa^2}{16}(1+\mu)$ | 0 |
| | 1 | 0 | $-\frac{pa^2}{8}$ | $-\frac{pa^2}{8}\mu$ | $-\frac{pa}{2}$ |
|  | $\varrho$ | $\frac{p_0a^4}{14\,400K}\left[\frac{3(183+43\mu)}{1+\mu}-\frac{10(71+29\mu)}{1+\mu}\varrho^2+225\varrho^4-64\varrho^5\right]$ | $\frac{p_0a^2}{720}[71+29\mu-45(3+\mu)\varrho^2+16(4+\mu)\varrho^3]$ | $\frac{p_0a^2}{720}[71+29\mu-45(1+3\mu)\varrho^2+ +16(1+4\mu)\varrho^3]$ | $-\frac{p_0a}{6}(3-2\varrho)\varrho$ |
| | 0 | $\frac{p_0a^4}{4800K}\frac{183+43\mu}{1+\mu}$ | $\frac{p_0a^2}{720}(71+29\mu)$ | $\frac{p_0a^2}{720}(71+29\mu)$ | 0 |
| | 1 | 0 | 0 | $\frac{7p_0a^2}{120}(1-\mu)$ | $-\frac{p_0a}{6}$ |
|  | $\varrho$ | $\frac{p_0a^4}{14\,400K}(129-290\varrho^2+225\varrho^4-64\varrho^5)$ | $\frac{p_0a^2}{720}[29(1+\mu)-45(3+\mu)\varrho^2+16(4+\mu)\varrho^3]$ | $\frac{p_0a^2}{720}[29(1+\mu)-45(1+3\mu)\varrho^2+ +16(1+4\mu)\varrho^3]$ | $-\frac{p_0a}{6}(3-2\varrho)\varrho$ |
| | 0 | $\frac{43p_0a^4}{4800K}$ | $\frac{29p_0a^2}{720}(1+\mu)$ | $\frac{29p_0a^2}{720}(1+\mu)$ | 0 |
| | 1 | 0 | $-\frac{7p_0a^2}{120}$ | $-\frac{7p_0a^2}{120}\mu$ | $-\frac{p_0a}{6}$ |
|  | $\varrho$ | $\frac{p_0a^4}{450K}\left[\frac{3(6+\mu)}{1+\mu}-\frac{5(4+\mu)}{1+\mu}\varrho^2+2\varrho^5\right]$ | $\frac{p_0a^2}{45}(4+\mu)(1-\varrho^3)$ | $\frac{p_0a^2}{45}[4+\mu-(1+4\mu)\varrho^3]$ | $-\frac{p_0a}{3}\varrho^2$ |
| | 0 | $\frac{p_0a^4}{150K}\frac{6+\mu}{1+\mu}$ | $\frac{p_0a^2}{45}(4+\mu)$ | $\frac{p_0a^2}{45}(4+\mu)$ | 0 |
| | 1 | 0 | 0 | $\frac{p_0a^2}{15}(1-\mu)$ | $-\frac{p_0a}{3}$ |

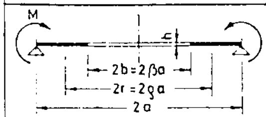
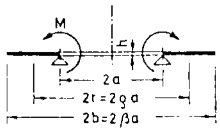
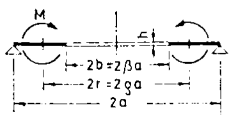
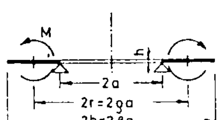
| KRUŽNA PLOČA | $\varrho$ | $w$ | Mr | Mφ | Qr |
|---|---|---|---|---|---|
|  | $\leq\beta$ | $\frac{pa^4}{64K}\left\{[4-5\beta^2+4(2+\beta^2)\ln\beta]\beta^2+2\frac{c_2}{1+\mu}(1-\varrho^2)+\varrho^4\right\}$ | $\frac{pa^2}{16}[c_2-(3+\mu)\varrho^2]$ | $\frac{pa^2}{16}[c_2-(1+3\mu)\varrho^2]$ | $-\frac{pa}{2}\varrho$ |
| | $\geq\beta$ | $\frac{pa^4}{32K}\beta^2\left[\frac{2(3+\mu)-(1-\mu)\beta^2}{1+\mu}(1-\varrho^2)+2\ln\varrho(2\varrho^2+\beta^2)\right]$ | $\frac{pa^2}{16}\beta^2\left[(1-\mu)\beta^2\left(\frac{1}{\varrho^2}-1\right)-4(1+\mu)\ln\varrho\right]$ | $\frac{pa^2}{16}(1-\mu)\beta^2\left[2(2-\beta^2)-\beta^2\left(\frac{1}{\varrho^2}-1\right)-4\frac{1+\mu}{1-\mu}\ln\varrho\right]$ | $-\frac{pb}{2}\frac{\beta}{\varrho}$ |
| $c_1=4-(1-\mu)\beta^2$, | 0 | $\frac{pa^2b^2}{64K(1+\mu)}c_3$ | $\frac{pa^2}{16}c_2$ | $\frac{pa^2}{16}c_2$ | 0 |
| $c_2=[c_1-4(1+\mu)\ln\beta]\beta^2$, | $\beta$ | $\frac{pa^4}{32K}\beta^2\left[\frac{2(3+\mu)-(1-\mu)\beta^2}{1+\mu}(1-\beta^2)+6\beta^2\ln\beta\right]$ | $\frac{pa^2}{16}[c_2-(3+\mu)\beta^2]$ | $\frac{pa^2}{16}[c_2-(1+3\mu)\beta^2]$ | $-\frac{pb}{2}$ |
| $c_3=4(3+\mu)-(7+3\mu)\beta^2+4(1+\mu)\beta^2\ln\beta$ | 1 | 0 | 0 | $\frac{pb^2}{8}(1-\mu)(2-\beta^2)$ | $-\frac{pb}{2}\beta$ |
|  | $\leq\beta$ | $\frac{pa^4}{64K(1+\mu)}(c_1-2c_2\varrho^2)$ | $\frac{pa^2}{16}c_2$ | $\frac{pa^2}{16}c_2$ | 0 |
| | $\geq\beta$ | $\frac{pa^4}{64K(1+\mu)}\{2[(3+\mu)(1-2\beta^2)+(1-\mu)\beta^4](1-\varrho^2)-(1+\mu)(1-\varrho^4)-4(1+\mu)(\beta^2+2\varrho^2)\beta^2\ln\varrho\}$ | $\frac{pa^2}{16}\left[(3+\mu)(1-\varrho^2)-(1-\mu)\beta^4\left(\frac{1}{\varrho^2}-1\right)+4(1+\mu)\beta^2\ln\varrho\right]$ | $\frac{pa^2}{16}\left[(1+3\mu)(1-\varrho^2)+(1-\mu)\beta^4\left(\frac{1}{\varrho^2}-1\right)+4(1+\mu)\beta^2\ln\varrho+2(1-\mu)(1-\beta^2)^2\right]$ | $-\frac{pa}{2}\left(\varrho-\frac{\beta^2}{\varrho}\right)$ |
| $c_1=[(5+\mu)-(7+3\mu)\beta^2](1-\beta^2)-4(1+\mu)\beta^4\ln\beta$, | 0 | $\frac{pa^4}{64K(1+\mu)}c_1$ | $\frac{pa^2}{16}c_2$ | $\frac{pa^2}{16}c_2$ | 0 |
| $c_2=[(3+\mu)-(1-\mu)\beta^2](1-\beta^2)+4(1+\mu)\beta^2\ln\beta$ | 1 | 0 | 0 | $\frac{pa^2}{8}(1-\mu)(1-\beta^2)^2$ | $-\frac{pa}{2}(1-\beta^2)$ |
|  | $\varrho$ | $\frac{Pa^2}{16\pi K}\left[\frac{3+\mu}{1+\mu}(1-\varrho^2)+2\varrho^2\ln\varrho\right]$ | $-\frac{P}{4\pi}(1+\mu)\ln\varrho$ | $\frac{P}{4\pi}[1-\mu-(1+\mu)\ln\varrho]$ | $-\frac{P}{2\pi a\varrho}$ |
| | 0 | $\frac{Pa^2}{16\pi K}\frac{3+\mu}{1+\mu}$ | $+\infty$; $\frac{P}{4\pi}[1-(1+\mu)\ln\beta]$ | $+\infty$; $\frac{P}{4\pi}[1-(1+\mu)\ln\beta]$ | $-\infty$; 0 |
| | 1 | 0 | 0 | $\frac{P}{4\pi}(1-\mu)$ | $-\frac{P}{2\pi a}$ |
|  | $\varrho$ | $\frac{Pa^2}{16\pi K}(1-\varrho^2+2\varrho^2\ln\varrho)$ | $-\frac{P}{4\pi}[1+(1+\mu)\ln\varrho]$ | $-\frac{P}{4\pi}[\mu+(1+\mu)\ln\varrho]$ | $-\frac{P}{2\pi a\varrho}$ |
| | 0 | $\frac{Pa^2}{16\pi K}$ | $+\infty$; $-\frac{P}{4\pi}(1+\mu)\ln\beta$ | $+\infty$; $-\frac{P}{4\pi}(1+\mu)\ln\beta$ | $-\infty$; 0 |
| | 1 | 0 | $-\frac{P}{4\pi}$ | $-\frac{P}{4\pi}\mu$ | $-\frac{P}{2\pi a}$ |

| KRUŽNA PLOČA | $\varrho$ | $w$ | Mr | M$\varphi$ | Qr |
|---|---|---|---|---|---|
|  $c_1 = (3+\mu)(1-\beta^2) + 2(1+\mu)\beta^2 \ln \beta$, $c_2 = (1-\mu)(1-\beta^2) - 2(1+\mu)\ln \beta$ | $\leq \beta$ | $\frac{Pa^2b}{8K(1+\mu)}(c_1 - c_2\varrho^2)$ | $\frac{Pb}{4} c_2$ | $\frac{Pb}{4} c_2$ | 0 |
| | $\geq \beta$ | $\frac{Pa^2b}{8K(1+\mu)}\{[(3+\mu)-(1-\mu)\beta^2](1-\varrho^2)+2(1+\mu)\beta^2 \ln \varrho + 2(1+\mu)\varrho^2 \ln \varrho\}$ | $\frac{Pb}{4}\left[(1-\mu)\beta^2\left(\frac{1}{\varrho^2}-1\right)-2(1+\mu)\ln\varrho\right]$ | $\frac{Pb}{4}\left\{(1-\mu)\left[2-\beta^2\left(\frac{1}{\varrho^2}+1\right)\right]-2(1+\mu)\ln\varrho\right\}$ | $-P\frac{\beta}{\varrho}$ |
| | 0 | $\frac{Pa^2b}{8K(1+\mu)} c_1$ | $\frac{Pb}{4} c_2$ | $\frac{Pb}{4} c_2$ | 0 |
| | 1 | 0 | 0 | $\frac{Pb}{2}(1-\mu)(1-\beta^2)$ | $-P\beta$ |
|  $c_1 = 1 - \beta^2(1 - 2\ln\beta)$, $c_2 = \beta^2 - 1 - 2\ln\beta$ | $\leq \beta$ | $\frac{Pa^2b}{8K}(c_1 - c_2\varrho^2)$ | $\frac{Pb}{4}(1+\mu) c_2$ | $\frac{Pb}{4}(1+\mu) c_2$ | 0 |
| | $\geq \beta$ | $\frac{Pa^2b}{8K}[(1+\beta^2)(1-\varrho^2)+2(\beta^2+\varrho^2)\ln\varrho]$ | $-\frac{Pb}{4}\left[2-(1-\mu)\frac{\beta^2}{\varrho^2}-(1+\mu)(\beta^2-2\ln\varrho)\right]$ | $-\frac{Pb}{4}\left[2\mu+(1-\mu)\frac{\beta^2}{\varrho^2}-(1+\mu)(\beta^2-2\ln\varrho)\right]$ | $-P\frac{\beta}{\varrho}$ |
| | 0 | $\frac{Pa^2b}{8K} c_1$ | $\frac{Pb}{4}(1+\mu) c_2$ | $\frac{Pb}{4}(1+\mu) c_2$ | 0 |
| | 1 | 0 | $-\frac{Pb}{2}(1-\beta^2)$ | $-\frac{Pb}{2}\mu(1-\beta^2)$ | $-P\beta$ |
|  | $\varrho$ | $\frac{Ma^2}{2K(1+\mu)}(1-\varrho^2)$ | $M$ | $M$ | 0 |
| | 1 | 0 | $M$ | $M$ | 0 |
|  $c_1 = 2\beta^2[1-(1+\mu)\ln\beta]$, $c_2 = 1+\mu+(1-\mu)\beta^2$ | $\leq \beta$ | $\frac{Ma^2}{4K(1+\mu)}(c_1 - c_2\varrho^2)$ | $\frac{M}{2} c_2$ | $\frac{M}{2} c_2$ | 0 |
| | $\geq \beta$ | $\frac{Ma^2}{4K}\beta^2\left[\frac{1-\mu}{1+\mu}(1-\varrho^2)-2\ln\varrho\right]$ | $-\frac{M}{2}(1-\mu)\left(1-\frac{1}{\varrho^2}\right)\beta^2$ | $\frac{M}{2}(1-\mu)\left(1+\frac{1}{\varrho^2}\right)\beta^2$ | 0 |
| | 0 | $\frac{Ma^2}{4K(1+\mu)} c_1$ | $\frac{M}{2} c_1$ | $\frac{M}{2} c_2$ | 0 |
| | 1 | 0 | 0 | $M(1-\mu)\beta^2$ | 0 |

| PRSTENASTA PLOČA | $\varrho$ | $w$ | Mr | M$\varphi$ | Qr |
|---|---|---|---|---|---|
| <br>$c_1 = 3+\mu+4(1+\mu)\frac{\beta^2}{1-\beta^2}\ln\beta,$<br>$c_2 = 3+\mu-4(1+\mu)\frac{\beta^2}{1-\beta^2}\ln\beta$<br> | $\varrho$ | $\frac{pa^4}{64K}\left\{\frac{2}{1+\mu}[(3+\mu)-\beta^2 c_2](1-\varrho^2)-(1-\varrho^4)-\right.$ $\left.-4\beta^2\ln\varrho\left(\frac{c_1}{1-\mu}+2\varrho^2\right)\right\}$ | $\frac{pa^2}{16}\left[(3+\mu)(1-\varrho^2)-\beta^2 c_1\left(\frac{1}{\varrho^2}-1\right)+\right.$ $\left.+4(1+\mu)\beta^2\ln\varrho\right]$ | $\frac{pa^2}{16}\left\{(1+3\mu)(1-\varrho^2)+\beta^2 c_1\left(\frac{1}{\varrho^2}-1\right)+\right.$ $+4(1+\mu)\beta^2\ln\varrho+2(1-\mu)-$ $\left.-2\beta^2[2(1-\mu)-c_1]\right\}$ | $-\frac{pa}{2}\left(\varrho-\frac{\beta^2}{\varrho}\right)$ |
| | $\beta$ | $\frac{pa^4}{64K}\left\{[5+\mu-(7+3\mu)\beta^2]\frac{1-\beta^2}{1+\mu}-\frac{4}{1-\mu}\beta^2 c_1\ln\beta\right\}$ | 0 | $\frac{pa^2}{8}[c_1-(1-\mu)\beta^2]$ | 0 |
| | 1 | 0 | 0 | $\frac{pa^2}{8}\{1-\mu-\beta^2[2(1-\mu)-c_1]\}$ | $-\frac{pa}{2}(1-\beta^2)$ |
| <br>$c_1 = 1+\mu+(1-\mu)\beta^2,$<br>$c_2 = 1-\mu+(1+\mu)\beta^2,$<br>$c_3 = 4(1+\mu)\beta^2\ln\beta,$<br>$c_4 = \frac{c_1+c_3}{c_2}\beta^2$<br> | $\varrho$ | $\frac{pa^4}{64K}[2(1-2\beta^2-c_4)(1-\varrho^2)-1+\varrho^4-4c_4\ln\varrho-8\beta^2\varrho^2\ln\varrho]$ | $-\frac{pa^2}{16}\left[2(1-2\beta^2+c_4)-(3+\mu)(1-\varrho^2)+\right.$ $\left.+(1-\mu)\left(\frac{1}{\varrho^2}-1\right)c_4-4(1+\mu)\beta^2\ln\varrho\right]$ | $-\frac{pa^2}{16}\left[2\mu(1-2\beta^2+c_4)-(1+3\mu)(1-\varrho^2)-\right.$ $\left.-(1-\mu)\left(\frac{1}{\varrho^2}-1\right)c_4-4(1+\mu)\beta^2\ln\varrho\right]$ | $-\frac{pa}{2}\left(\varrho-\frac{\beta^2}{\varrho}\right)$ |
| | $\beta$ | $\frac{pa^4}{64K}[(1-\beta^2)^2-2(1-\beta^2)(c_4+2\beta^2)-4(c_4+2\beta^4)\ln\beta]$ | 0 | $\frac{pa^2}{8}\frac{1-\mu^2}{c_2}(1-\beta^4+4\beta^2\ln\beta)$ | 0 |
| | 1 | 0 | $-\frac{pa^2}{8}(1-2\beta^2+c_4)$ | $-\frac{pa^2}{8}\mu(1-2\beta^2+c_4)$ | $-\frac{pa}{2}(1-\beta^2)$ |

| PRSTENASTA PLOČA | $\varrho$ | $\omega$ | Mr | M$\varphi$ | Qr |
|---|---|---|---|---|---|
|   $c = \frac{\beta^2}{1-\beta^2}\ln\beta$   | $\varrho$ | $\frac{Pa^2b}{8K}\left[\left(\frac{3+\mu}{1+\mu}-2c\right)(1-\varrho^2)+4\frac{1+\mu}{1-\mu}c\ln\varrho+2\varrho^2\ln\varrho\right]$ | $-\frac{Pb}{2}(1+\mu)\left[-c\left(\frac{1}{\varrho^2}-1\right)+\ln\varrho\right]$ | $-\frac{Pb}{2}(1+\mu)\left[c\left(\frac{1}{\varrho^2}-1\right)+\ln\varrho+\right.$ $\left.+2c-\frac{1-\mu}{1+\mu}\right]$ | $-P\frac{\beta}{\varrho}$ |
| | $\beta$ | $\frac{Pa^2b}{8K}\left[\frac{3+\mu}{1+\mu}(1-\beta^2)+4\frac{1+\mu}{1-\mu}c\ln\beta\right]$ | 0 | $-\frac{Pb}{2}(1+\mu)\left(2\frac{c}{\beta^2}-\frac{1-\mu}{1+\mu}\right)$ | $-P$ |
| | 1 | 0 | 0 | $-\frac{Pb}{2}(1+\mu)\left(2c-\frac{1-\mu}{1+\mu}\right)$ | $-P\beta$ |
|   $c_1 = 1-\mu+(1+\mu)\beta^2,$ $c_2 = [1+(1+\mu)\ln\beta]\frac{\beta^2}{c_1}$   | $\varrho$ | $\frac{Pa^2b}{8K}[(1+2c_2)(1-\varrho^2)+4c_2\ln\varrho+2\varrho^2\ln\varrho]$ | $-\frac{Pb}{2}\left[(1-2c_2)-(1-\mu)\left(\frac{1}{\varrho^2}-1\right)c_2+\right.$ $\left.+(1+\mu)\ln\varrho\right]$ | $-\frac{Pb}{2}\left[\mu(1-2c_2)+(1-\mu)\left(\frac{1}{\varrho^2}-1\right)c_2+\right.$ $\left.+(1+\mu)\ln\varrho\right]$ | $-P\frac{\beta}{\varrho}$ |
| | $\beta$ | $\frac{Pa^2b}{8K}[(1+2c_2)(1-\beta^2)+2(\beta^2+2c_2)\ln\beta]$ | 0 | $-\frac{Pb}{2}\frac{1-\mu^2}{c_1}(1-\beta^2+2\ln\beta)$ | $-P$ |
| | 1 | 0 | $-\frac{Pb}{2}(1-2c_2)$ | $-\frac{Pb}{2}\mu(1-2c_2)$ | $-P\beta$ |

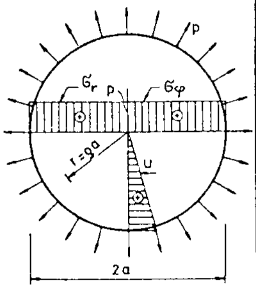
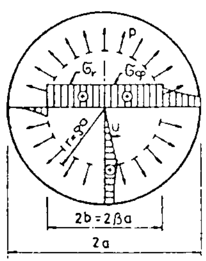
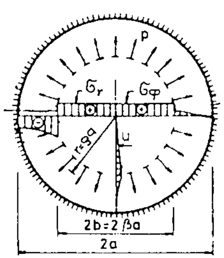
<table>
<tr><th>PRSTENASTA PLOČA</th><th>$\varrho$</th><th>$w$</th><th>Mr</th><th>Mφ</th><th>Qr</th></tr>
<tr><td rowspan="3"><br>$c = \frac{\beta^2}{1-\beta^2}$<br></td><td>$\varrho$</td><td>$-\frac{Ma^2c}{2K(1+\mu)}\left(1-\varrho^2-2\frac{1+\mu}{1-\mu}\ln\varrho\right)$</td><td>$Mc\left(\frac{1}{\varrho^2}-1\right)$</td><td>$-Mc\left(\frac{1}{\varrho^2}+1\right)$</td><td>0</td></tr>
<tr><td>$\beta$</td><td>$-\frac{Ma^2c}{2K(1+\mu)}\left(1-\beta^2-2\frac{1+\mu}{1-\mu}\ln\beta\right)$</td><td>$M$</td><td>$-Mc\left(\frac{1}{\beta^2}+1\right)$</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>$-2Mc$</td><td>0</td></tr>
<tr><td rowspan="3"><br>$c = \frac{\beta^2}{1-\mu+(1+\mu)\beta^2}$<br></td><td>$\varrho$</td><td>$\frac{Ma^2}{2K}c(1-\varrho^2+2\ln\varrho)$</td><td>$Mc\left[1+\mu+(1-\mu)\frac{1}{\varrho^2}\right]$</td><td>$Mc\left[1+\mu-(1-\mu)\frac{1}{\varrho^2}\right]$</td><td>0</td></tr>
<tr><td>$\beta$</td><td>$\frac{Ma^2}{2K}c(1-\beta^2+2\ln\beta)$</td><td>$M$</td><td>$Mc\left[1+\mu-(1-\mu)\frac{1}{\beta^2}\right]$</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>$2Mc$</td><td>$2Mc\mu$</td><td>0</td></tr>
</table>

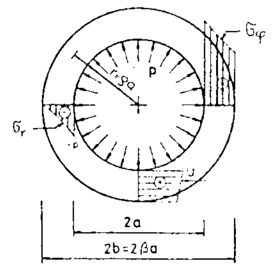
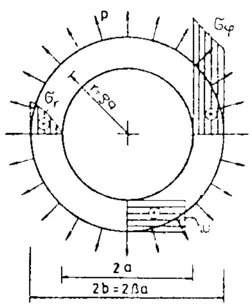
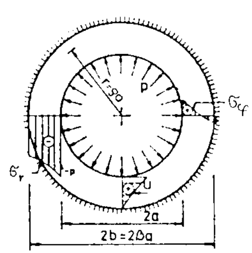
| PRSTENASTA PLOČA | $\varrho$ | $\omega$ | Mr | M$\varphi$ | Qr |
|---|---|---|---|---|---|
|  | $\varrho$ | $\frac{Ma^2c}{2K(1+\mu)}\left(1-\varrho^2-2\frac{1+\mu}{1-\mu}\beta^2\ln\varrho\right)$ | $Mc\left(1-\frac{\beta^2}{\varrho^2}\right)$ | $Mc\left(1+\frac{\beta^2}{\varrho^2}\right)$ | 0 |
| $c=\frac{1}{1-\beta^2}$ | $\beta$ | $\frac{Ma^2c}{2K(1+\mu)}\left(1-\beta^2-2\frac{1+\mu}{1-\mu}\beta^2\ln\beta\right)$ | 0 | $2Mc$ | 0 |
|  | 1 | 0 | $M$ | $Mc(1+\beta^2)$ | 0 |
|  | $\beta<1$: $\beta\leq\varrho\leq\beta_1$; $\beta>1$: $\beta\geq\varrho\geq\beta_1$ | $\frac{Ma^2}{4K(\beta^2-1)}\left[\beta_1^2(\beta^2-1)-\beta^2+\varrho^2+\frac{1-\mu}{1+\mu}\beta_1^2(\varrho^2-1)+\right.$ $\left.+2\beta_1^2\left(\ln\beta_1+\beta^2\ln\frac{\varrho}{\beta_1}\right)+2\frac{1+\mu}{1-\mu}\beta^2\ln\varrho\right]$ | $+\frac{M}{2(\beta^2-1)}[1+\mu+(1-\mu)\beta_1^2]\left(\frac{\beta^2}{\varrho^2}-1\right)$ | $-\frac{M}{2(\beta^2-1)}[1+\mu+(1-\mu)\beta_1^2]\left(\frac{\beta^2}{\varrho^2}+1\right)$ | 0 |
| | $\beta<1$: $\beta_1\leq\varrho\leq1$; $\beta>1$: $\beta_1\geq\varrho\geq1$ | $\frac{Ma^2}{4K(\beta^2-1)}\left[\left(\beta^2+\frac{1-\mu}{1+\mu}\beta_1^2\right)(\varrho^2-1)+\right.$ $\left.+2\left(\beta_1^2+\frac{1+\mu}{1-\mu}\beta^2\right)\ln\varrho\right]$ | $-\frac{M}{2(\beta^2-1)}[(1+\mu)\beta^2+(1-\mu)\beta_1^2]\left(1-\frac{1}{\varrho^2}\right)$ | $-\frac{M}{2(\beta^2-1)}[(1+\mu)\beta^2+(1-\mu)\beta_1^2]\left(1+\frac{1}{\varrho^2}\right)$ | 0 |
|  | $\beta$ | $\frac{Ma^2}{2K(\beta^2-1)}\left[\beta_1^2\left(\frac{\beta^2-1}{1+\mu}+\ln\beta_1+\beta^2\ln\frac{\beta}{\beta_1}\right)+\frac{1+\mu}{1-\mu}\right]$ | 0 | $-\frac{M}{\beta^2-1}[1+\mu+(1-\mu)\beta_1^2]$ | 0 |
| | $\beta_1$ | $\frac{Ma^2}{4K(\beta^2-1)}\left[\left(\beta^2+\frac{1-\mu}{1+\mu}\beta_1^2\right)(\beta_1^2-1)+\right.$ $\left.+2\left(\beta_1^2+\frac{1+\mu}{1-\mu}\beta^2\right)\ln\beta_1\right]$ | $\beta<1\begin{cases}M_{ra}=-\frac{M}{2(\beta^2-1)}[(1+\mu)\beta^2+(1-\mu)\beta_1^2]\left(1-\frac{1}{\beta_1^2}\right)\\ M_{ri}=+\frac{M}{2(\beta^2-1)}[1+\mu+(1-\mu)\beta_1^2]\left(\frac{\beta^2}{\beta_1^2}-1\right)\end{cases}$ | $\beta<1\begin{cases}M_{\varphi a}=-\frac{M}{2(\beta^2-1)}[(1+\mu)\beta^2+(1-\mu)\beta_1^2]\left(1+\frac{1}{\beta_1^2}\right)\\ M_{\varphi i}=-\frac{M}{2(\beta^2-1)}[1+\mu+(1-\mu)\beta_1^2]\left(\frac{\beta^2}{\beta_1^2}+1\right)\end{cases}$ | 0 |
| | 1 | 0 | 0 | $-\frac{M}{\beta^2-1}[(1+\mu)\beta^2+(1-\mu)\beta_1^2]$ | 0 |

# prilog 6

KRUŽNE I PRSTENASTE PLOČE OPTEREĆENE U SVOJOJ RAVNI

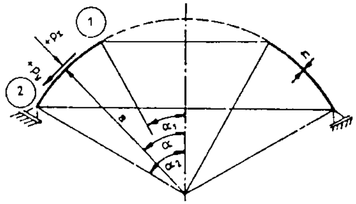


| KRUŽNA PLOČA | $\varrho$ | u | $\sigma_r$ | $\sigma_\varphi$ |
|---|---|---|---|---|
|   | $\varrho$ | $\frac{p\varrho a}{E}(1-\mu)$ | $p$ | $p$ |
| | 1 | $\frac{pa}{E}(1-\mu)$ | $p$ | $p$ |
|   | $\leq\beta$ | $\frac{p\varrho a}{2E}[\beta^2(1-\mu)+1+\mu](1-\mu)$ | $\frac{p}{2}[\beta^2(1-\mu)+1+\mu]$ | $\frac{p}{2}[\beta^2(1-\mu)+1+\mu]$ |
| | $\geq\beta$ | $\frac{p\varrho a}{2E}\left[1-\mu+(1+\mu)\frac{1}{\varrho^2}\right](1-\mu)\beta^2$ | $-\frac{p\beta^2}{2}(1-\mu)\left(\frac{1}{\varrho^2}-1\right)$ | $\frac{p\beta^2}{2}(1-\mu)\left(\frac{1}{\varrho^2}+1\right)$ |
| | $\beta$ | $\frac{p\beta a}{2E}[\beta^2(1-\mu)+1+\mu](1-\mu)$ | $\sigma_{ri}=\frac{p}{2}[\beta^2(1-\mu)+1+\mu]$;<br>$\sigma_{ra}=-\frac{p}{2}(1-\mu)(1-\beta^2)$ | $\sigma_{\varphi i}=\frac{p}{2}[\beta^2(1-\mu)+1+\mu]$;<br>$\sigma_{\varphi a}=\frac{p}{2}(1-\mu)(1+\beta^2)$ |
| | 1 | $\frac{pa}{E}\beta^2(1-\mu)$ | 0 | $p\beta^2(1-\mu)$ |
|   | $\leq\beta$ | $\frac{p\varrho a}{2E}(1-\mu^2)(1-\beta^2)$ | $\frac{p}{2}(1+\mu)(1-\beta^2)$ | $\frac{p}{2}(1+\mu)(1-\beta^2)$ |
| | $\geq\beta$ | $\frac{p\varrho a}{2E}\left(\frac{1}{\varrho^2}-1\right)(1-\mu^2)\beta^2$ | $-\frac{p\beta^2}{2}\left(\frac{1-\mu}{\varrho^2}+1+\mu\right)$ | $\frac{p\beta^2}{2}\left(\frac{1-\mu}{\varrho^2}-1-\mu\right)$ |
| | $\beta$ | $\frac{p\beta a}{2E}(1-\mu^2)(1-\beta^2)$ | $\sigma_{ri}=\frac{p}{2}(1+\mu)(1-\beta^2)$<br>$\sigma_{ra}=-\frac{p}{2}[1-\mu+\beta^2(1+\mu)]$ | $\sigma_{\varphi i}=\frac{p}{2}(1+\mu)(1-\beta^2)$;<br>$\sigma_{\varphi a}=\frac{p}{2}[1-\mu-\beta^2(1+\mu)]$ |
| | 1 | 0 | $-p\beta^2$ | $-\mu p\beta^2$ |

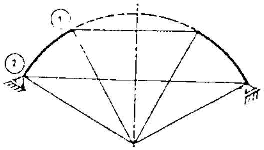
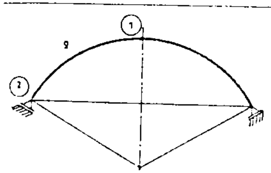
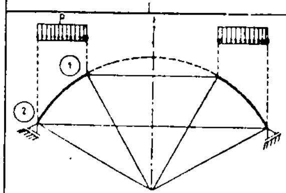
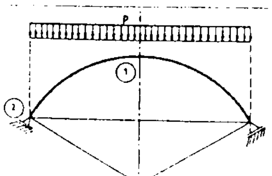
| PRSTENASTA PLOČA | $\varrho$ | u | $\sigma_r$ | $\sigma_\varphi$ |
|---|---|---|---|---|
|  | $\varrho$ | $\frac{p\varrho a}{E(\beta^2-1)}\left[1-\mu+(1+\mu)\frac{\beta^2}{\varrho^2}\right]$ | $\frac{p}{\beta^2-1}\left(1-\frac{\beta^2}{\varrho^2}\right)$ | $\frac{p}{\beta^2-1}\left(1+\frac{\beta^2}{\varrho^2}\right)$ |
| | $1$ | $\frac{pa}{E(\beta^2-1)}\left[1-\mu+(1+\mu)\beta^2\right]$ | $-p$ | $p\frac{\beta^2+1}{\beta^2-1}$ |
| | $\beta$ | $\frac{2p\beta a}{E(\beta^2-1)}$ | $0$ | $\frac{2p}{\beta^2-1}$ |
|  | $\varrho$ | $\frac{p\beta^2\varrho a}{E(\beta^2-1)}\left(1-\mu+\frac{1+\mu}{\varrho^2}\right)$ | $\frac{p\beta^2}{\beta^2-1}\left(1-\frac{1}{\varrho^2}\right)$ | $\frac{p\beta^2}{\beta^2-1}\left(1+\frac{1}{\varrho^2}\right)$ |
| | $1$ | $\frac{2p\beta^2 a}{E(\beta^2-1)}$ | $0$ | $\frac{2p\beta^2}{\beta^2-1}$ |
| | $\beta$ | $\frac{p\beta a}{E(\beta^2-1)}\left[\beta^2(1-\mu)+1+\mu\right]$ | $p$ | $p\frac{\beta^2+1}{\beta^2-1}$ |
|  | $\varrho$ | $\frac{p\varrho a}{E}\,\frac{1-\mu^2}{\beta^2(1-\mu)+1+\mu}\left(\frac{\beta^2}{\varrho^2}-1\right)$ | $-p\,\frac{1+\mu+\frac{\beta^2}{\varrho^2}(1-\mu)}{1+\mu+\beta^2(1-\mu)}$ | $-p\,\frac{1+\mu-\frac{\beta^2}{\varrho^2}(1-\mu)}{1+\mu+\beta^2(1-\mu)}$ |
| | $1$ | $\frac{pa}{E}\,\frac{(\beta^2-1)(1-\mu^2)}{\beta^2(1-\mu)+1+\mu}$ | $-p$ | $-p\,\frac{1+\mu-\beta^2(1-\mu)}{1+\mu+\beta^2(1-\mu)}$ |
| | $\beta$ | | $-\frac{2p}{1+\mu+\beta^2(1-\mu)}$ | $-\frac{2\mu p}{1+\mu+\beta^2(1-\mu)}$ |

ROTACIONO SIMETRIČNE LJUSKE

# prilog 7

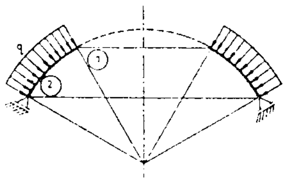
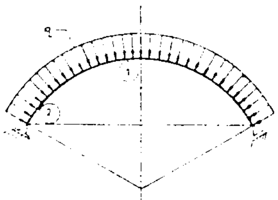
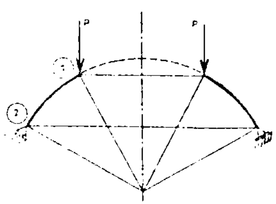


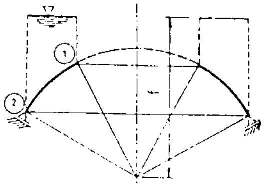
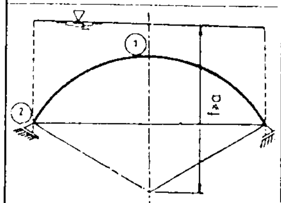
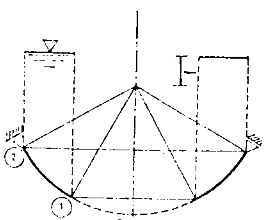
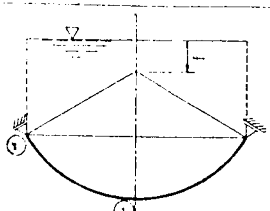
## tabela 1

| SFERNA LJUSKA | G | $N_{\alpha o}$ |
|---|---|---|
|  | $2a^2 g\pi\,(\cos\alpha_1 - \cos\alpha)$ | $-ag\,\dfrac{\cos\alpha_1 - \cos\alpha}{\sin^2\alpha}$ |
|  | $2a^2 g\pi\,(1-\cos\alpha)$ | $-\dfrac{ag}{1+\cos\alpha}$ |
|  | $a^2\pi p\,(\sin^2\alpha - \sin^2\alpha_1)$ | $-\dfrac{ap}{2}\left(1-\dfrac{\sin^2\alpha_1}{\sin^2\alpha}\right)$ |
|  | $a^2\pi p\sin^2\alpha$ | $-\dfrac{ap}{2}$ |



| $N_{\varphi o}$ | $\alpha$ | $\Delta r_o$ | $\chi_o$ |
|---|---|---|---|
| $ag\left(\dfrac{\cos\alpha_1 - \cos\alpha}{\sin^2\alpha} - \cos\alpha\right)$ | $\alpha$ | $\dfrac{a^2 g}{Eh}\left[(1+\mu)\,\dfrac{\cos\alpha_1 - \cos\alpha}{\sin^2\alpha} - \cos\alpha\right]\sin\alpha$ | $-\dfrac{ag}{Eh}(2+\mu)\sin\alpha$ |
| | $\alpha_1$ | $-\dfrac{a^2 g}{Eh}\sin\alpha_1\cos\alpha_1$ | $-\dfrac{ag}{Eh}(2+\mu)\sin\alpha_1$ |
| | $\alpha_2$ | $\dfrac{a^2 g}{Eh}\left[(1+\mu)\,\dfrac{\cos\alpha_1 - \cos\alpha_2}{\sin^2\alpha_2} - \cos\alpha_2\right]\sin\alpha$ | $-\dfrac{ag}{Eh}(2+\mu)\sin\alpha_2$ |
| $ag\left(\dfrac{1}{1+\cos\alpha} - \cos\alpha\right)$ | $\alpha$ | $\dfrac{a^2 g}{Eh}\left(\dfrac{1+\mu}{1+\cos\alpha} - \cos\alpha\right)\sin\alpha$ | $-\dfrac{ag}{Eh}(2+\mu)\sin\alpha$ |
| | $\alpha_2$ | $\dfrac{a^2 g}{Eh}\left(\dfrac{1+\mu}{1+\cos\alpha_2} - \cos\alpha_2\right)\sin\alpha_2$ | $-\dfrac{ag}{Eh}(2+\mu)\sin\alpha_2$ |
| $-\dfrac{ap}{2}\left(\dfrac{\sin^2\alpha_1}{\sin^2\alpha} + \cos 2\alpha\right)$ | $\alpha$ | $\dfrac{a^2 p}{Eh}\left[\dfrac{1+\mu}{2}\left(1-\dfrac{\sin^2\alpha_1}{\sin^2\alpha}\right) - \cos^2\alpha\right]\sin\alpha$ | $-\dfrac{ap}{Eh}(3+\mu)\sin\alpha\cos\alpha$ |
| | $\alpha_1$ | $-\dfrac{a^2 p}{Eh}\sin\alpha_1\cos^2\alpha_1$ | $-\dfrac{ap}{Eh}(3+\mu)\sin\alpha_1\cos\alpha_1$ |
| | $\alpha_2$ | $\dfrac{a^2 p}{Eh}\left[\dfrac{1+\mu}{2}\left(1-\dfrac{\sin^2\alpha_1}{\sin^2\alpha_2}\right) - \cos^2\alpha_2\right]\sin\alpha_2$ | $-\dfrac{ap}{Eh}(3+\mu)\sin\alpha_2\cos\alpha_2$ |
| $-\dfrac{ap}{2}\cos 2\alpha$ | $\alpha$ | $\dfrac{a^2 p}{Eh}\left(\dfrac{1+\mu}{2} - \cos^2\alpha\right)\sin\alpha$ | $-\dfrac{ap}{Eh}(3+\mu)\sin\alpha\cos\alpha$ |
| | $\alpha_2$ | $\dfrac{a^2 p}{Eh}\left(\dfrac{1+\mu}{2} - \cos^2\alpha_2\right)\sin\alpha_2$ | $-\dfrac{ap}{Eh}(3+\mu)\sin\alpha_2\cos\alpha_2$ |

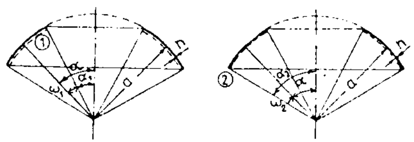
| SFERNA LJUSKA | G | $N_{\alpha 0}$ | $N_{\varphi 0}$ | | $\Delta r_0$ | $\chi_0$ |
|---|---|---|---|---|---|---|
|   | $a^2\pi q(\sin^2\alpha - \sin^2\alpha_1)$ | $-\frac{aq}{2}\left(1-\frac{\sin^2\alpha_1}{\sin^2\alpha}\right)$ | $-\frac{aq}{2}\left(1+\frac{\sin^2\alpha_1}{\sin^2\alpha}\right)$ | $\alpha$ | $-\frac{a^2q}{2Eh}\left[1-\mu+(1+\mu)\frac{\sin^2\alpha_1}{\sin^2\alpha}\right]\sin\alpha$ | 0 |
| | | | | $\alpha_1$ | $-\frac{a^2q}{Eh}\sin\alpha_1$ | 0 |
| | | | | $\alpha_2$ | $-\frac{a^2q}{2Eh}\left[1-\mu+(1+\mu)\frac{\sin^2\alpha_1}{\sin^2\alpha_2}\right]\sin\alpha_2$ | 0 |
|   | $a^2\pi q\sin^2\alpha$ | $-\frac{aq}{2}$ | $-\frac{aq}{2}$ | $\alpha$ | $-\frac{a^2q}{2Eh}(1-\mu)\sin\alpha$ | 0 |
| | | | | $\alpha_2$ | $-\frac{a^2q}{2Eh}(1-\mu)\sin\alpha_2$ | 0 |
|   $H_{10} = P\cot\alpha.$ | $2a\pi P\sin\alpha_1$ | $-P\frac{\sin\alpha_1}{\sin^2\alpha}$ | $+P\frac{\sin\alpha_1}{\sin^2\alpha}$ | $\alpha$ | $\frac{aP}{Eh}(1+\mu)\frac{\sin\alpha_1}{\sin\alpha}$ | 0 |
| | | | | $\alpha_1$ | $\frac{aP}{Eh}(1+\mu)$ | 0 |
| | | | | $\alpha_2$ | $\frac{aP}{Eh}(1+\mu)\frac{\sin\alpha_1}{\sin\alpha_2}$ | 0 |

| SFERNA LJUSKA | G | $N_{\alpha 0}$ |
|---|---|---|
|  $p_y = 0$, $p_z = \gamma(f - a\cos\alpha)$ | $\gamma a^3\pi\left[\frac{f}{a}(\sin^2\alpha - \sin^2\alpha_1) + \frac{2}{3}(\cos^3\alpha - \cos^3\alpha_1)\right]$ | $-\frac{\gamma a^2}{\sin^2\alpha}\left[\frac{f}{2a}(\sin^2\alpha - \sin^2\alpha_1) + \frac{1}{3}(\cos^3\alpha - \cos^3\alpha_1)\right]$ |
|  | $\gamma a^3\pi\left[\frac{f}{a}\sin^2\alpha + \frac{2}{3}(\cos^3\alpha - 1)\right]$ | $-\gamma a^2\left[\frac{f}{2a} - \frac{1}{3}\left(\cos\alpha + \frac{1}{1+\cos\alpha}\right)\right]$ |
|  $p_y = 0$, $p_z = -\gamma(f + a\cos\alpha)$ | $-\gamma a^3\pi\left[\frac{f}{a}(\sin^2\alpha - \sin^2\alpha_1) - \frac{2}{3}(\cos^3\alpha - \cos^3\alpha_1)\right]$ | $\frac{\gamma a^2}{\sin^2\alpha}\left[\frac{f}{2a}(\sin^2\alpha - \sin^2\alpha_1) - \frac{1}{3}(\cos^3\alpha - \cos^3\alpha_1)\right]$ |
|  | $-\gamma a^3\pi\left[\frac{f}{a}\sin^2\alpha - \frac{2}{3}(\cos^3\alpha - 1)\right]$ | $\gamma a^2\left[\frac{f}{2a} + \frac{1}{3}\left(\cos\alpha + \frac{1}{1+\cos\alpha}\right)\right]$ |



| $N_{\varphi 0}$ | $\alpha$ | $\Delta r_0$ | $\chi_0$ |
|---|---|---|---|
| $\frac{\gamma a^2}{\sin^2\alpha}\left[\frac{f}{2a}(\sin^2\alpha - \sin^2\alpha_1) + \frac{1}{3}(\cos^3\alpha - \cos^3\alpha_1) - \left(\frac{f}{a} - \cos\alpha\right)\sin^2\alpha\right]$ | $\alpha$ | $-\frac{\gamma a^3}{Eh}\left\{\frac{f}{a} - \cos\alpha - \frac{1+\mu}{\sin^2\alpha}\left[\frac{f}{2a}(\sin^2\alpha - \sin^2\alpha_1) + \frac{1}{3}(\cos^3\alpha - \cos^3\alpha_1)\right]\right\}\sin\alpha$ | $\frac{\gamma a^2}{Eh}\sin\alpha$ |
| | $\alpha_1$ | $-\frac{\gamma a^3}{Eh}\left(\frac{f}{a} - \cos\alpha_1\right)\sin\alpha_1$ | $\frac{\gamma a^2}{Eh}\sin\alpha_1$ |
| | $\alpha_2$ | $-\frac{\gamma a^3}{Eh}\left\{\frac{f}{a} - \cos\alpha_2 - \frac{1+\mu}{\sin^2\alpha_2}\left[\frac{f}{2a}(\sin^2\alpha_2 - \sin^2\alpha_1) + \frac{1}{3}(\cos^3\alpha_2 - \cos^3\alpha_1)\right]\right\}\sin\alpha_2$ | $\frac{\gamma a^2}{Eh}\sin\alpha_2$ |
| $-\gamma a^2\left[\frac{f}{2a} - \frac{1}{3}\left(2\cos\alpha - \frac{1}{1+\cos\alpha}\right)\right]$ | $\alpha$ | $-\frac{\gamma a^3}{Eh}\left[\frac{(1-\mu)f}{2a} - \cos\alpha + \frac{1+\mu}{3}\left(\cos\alpha + \frac{1}{1+\cos\alpha}\right)\right]\sin\alpha$ | $\frac{\gamma a^2}{Eh}\sin\alpha$ |
| | $\alpha_2$ | $-\frac{\gamma a^3}{Eh}\left[\frac{(1-\mu)f}{2a} - \cos\alpha_2 + \frac{1+\mu}{3}\left(\cos\alpha_2 + \frac{1}{1+\cos\alpha_2}\right)\right]\sin\alpha_2$ | $\frac{\gamma a^2}{Eh}\sin\alpha_2$ |
| $-\frac{\gamma a^2}{\sin^2\alpha}\left[\frac{f}{2a}(\sin^2\alpha - \sin^2\alpha_1) - \frac{1}{3}(\cos^3\alpha - \cos^3\alpha_1) + \left(\frac{f}{a} - \cos\alpha\right)\sin^2\alpha\right]$ | $\alpha$ | $\frac{\gamma a^3}{Eh}\left\{\frac{f}{a} + \cos\alpha - \frac{1+\mu}{\sin^2\alpha}\left[\frac{f}{2a}(\sin^2\alpha - \sin^2\alpha_1) - \frac{1}{3}(\cos^3\alpha - \cos^3\alpha_1)\right]\right\}\sin\alpha$ | $\frac{\gamma a^2}{Eh}\sin\alpha$ |
| | $\alpha_1$ | $\frac{\gamma a^3}{Eh}\left(\frac{f}{a} + \cos\alpha_1\right)\sin\alpha_1$ | $\frac{\gamma a^2}{Eh}\sin\alpha_1$ |
| | $\alpha_2$ | $\frac{\gamma a^3}{Eh}\left\{\frac{f}{a} + \cos\alpha_2 - \frac{1+\mu}{\sin^2\alpha_2}\left[\frac{f}{2a}(\sin^2\alpha_2 - \sin^2\alpha_1) - \frac{1}{3}(\cos^3\alpha_2 - \cos^3\alpha_1)\right]\right\}\sin\alpha_2$ | $\frac{\gamma a^2}{Eh}\sin\alpha_2$ |
| $\gamma a^2\left[\frac{f}{2a} + \frac{1}{3}\left(2\cos\alpha - \frac{1}{1+\cos\alpha}\right)\right]$ | $\alpha$ | $\frac{\gamma a^3}{Eh}\left[\frac{(1-\mu)f}{2a} + \cos\alpha - \frac{1+\mu}{3}\left(\cos\alpha + \frac{1}{1+\cos\alpha}\right)\right]\sin\alpha$ | $\frac{\gamma a^2}{Eh}\sin\alpha$ |
| | $\alpha_2$ | $\frac{\gamma a^3}{Eh}\left[\frac{(1-\mu)f}{2a} + \cos\alpha_2 - \frac{1+\mu}{3}\left(\cos\alpha_2 + \frac{1}{1+\cos\alpha_2}\right)\right]\sin\alpha_2$ | $\frac{\gamma a^2}{Eh}\sin\alpha_2$ |

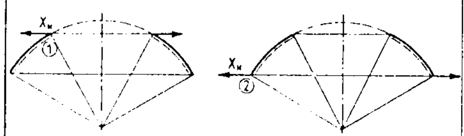
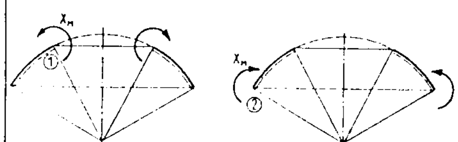
## tabela 2



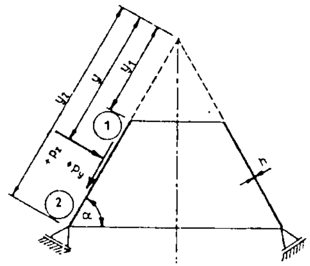
$h=\text{konst}$; $k=\sqrt{\frac{a}{h}\sqrt{3(1-\mu^2)}}$; $H_n=H_0+X_H$; $\omega_1=\alpha-\alpha_1$; $\omega_2=\alpha_2-\alpha$; $n=1\div 2$;

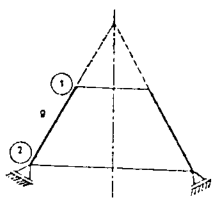
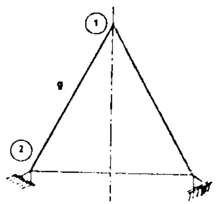
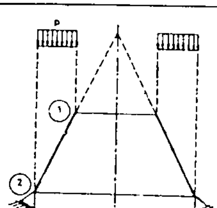
$\eta_1=e^{-k\omega_n}\cos k\omega_n$; $\eta_2=e^{-k\omega_n}\sin k\omega_n$; $\eta_3=\eta_1+\eta_2$; $\eta_4=\eta_1-\eta_2$.

$\alpha_n>30°$, $k(\alpha_2-\alpha_1)>6$

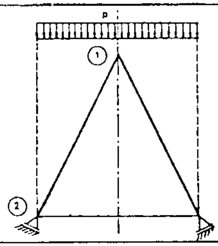
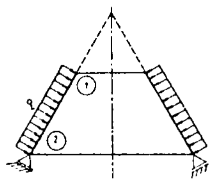
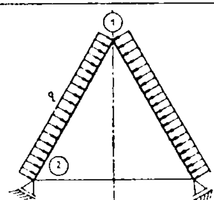
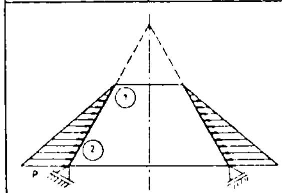
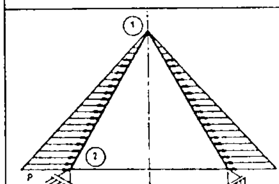
| SFERNA LJUSKA | $X_H$ | $X_M$ | $N_\alpha$ | $N_\varphi$ | $Q_\alpha$ | $M_\alpha$ | $\Delta r$ | $\chi$ |
|---|---|---|---|---|---|---|---|---|
|  $\Delta r_{nH}=\frac{2ak}{Eh}\sin^2\alpha_n$, $\chi_{nH}=\pm\frac{2k^2}{Eh}\sin\alpha_n$ | $X_H$ | 0 | $\mp X_H\sin\alpha_n\cot\alpha\,\eta_4$ | $2kX_H\sin\alpha_n\eta_1$ | $\pm X_H\sin\alpha_n\eta_4$ | $\frac{a}{k}X_H\sin\alpha_n\eta_2$ | $\frac{2ak}{Eh}X_H\sin\alpha_n\sin\alpha\,\eta_1$ | $\pm\frac{2k^2}{Eh}X_H\sin\alpha_n\eta_3$ |
|  $\Delta r_{nM}=\frac{2k^2}{Eh}\sin\alpha_n$, $\chi_{nM}=\pm\frac{4k^3}{aEh}$ | 0 | $X_M$ | $\pm\frac{2k}{a}X_M\cot\alpha\,\eta_2$ | $\frac{2k^2}{a}X_M\eta_4$ | $\mp\frac{2k}{a}X_M\eta_2$ | $X_M\eta_3$ | $\frac{2k^2}{Eh}X_M\sin\alpha\,\eta_4$ | $\pm\frac{4k^3}{aEh}X_M\eta_1$ |

## tabela 3



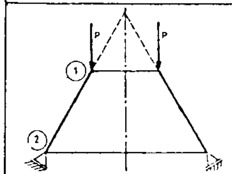
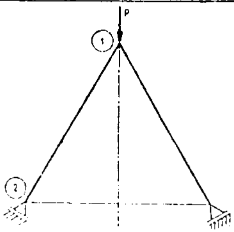
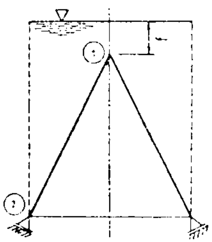
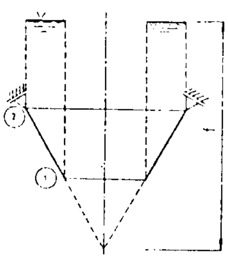

| KONUSNA LJUSKA | G | $N_{y0}$ |
|---|---|---|
|  | $g\pi(y^2 - y_1^2)\cos\alpha$ | $-\frac{gy}{2\sin\alpha}\left(1-\frac{y_1^2}{y^2}\right)$ |
|  | $gy^2\pi\cos\alpha$ | $-\frac{gy}{2\sin\alpha}$ |
|  | $p\pi(y^2 - y_1^2)\cos^2\alpha$ | $-\frac{py}{2}\left(1-\frac{y_1^2}{y^2}\right)\cot\alpha$ |

| $N_{\varphi 0}$ | y | $\Delta r_0$ | $\chi_0$ |
|---|---|---|---|
| $-gy\sin\alpha\cot^2\alpha$ | $y$ | $-\frac{gy^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y^2}\right)\right]\cos^2\alpha\cot\alpha$ | $-\frac{gy}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\frac{\cot\alpha}{\sin\alpha}$ |
| | $y_1$ | $-\frac{gy_1^2}{Eh}\cos^2\alpha\cot\alpha$ | $-\frac{gy_1}{Eh}[\mu-(2+\mu)\cos^2\alpha]\frac{\cot\alpha}{\sin\alpha}$ |
| | $y_2$ | $-\frac{gy_2^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y_2^2}\right)\right]\cos^2\alpha\cot\alpha$ | $-\frac{gy_2}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y_2^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\frac{\cot\alpha}{\sin\alpha}$ |
| $-gy\sin\alpha\cot^2\alpha$ | $y$ | $-\frac{gy^2}{Eh}\left(1-\frac{\mu}{2\cos^2\alpha}\right)\cos^2\alpha\cot\alpha$ | $-\frac{gy}{Eh}\left[\frac{1}{2}+\mu-(2+\mu)\cos^2\alpha\right]\frac{\cot\alpha}{\sin\alpha}$ |
| | $y_2$ | $-\frac{gy_2^2}{Eh}\left(1-\frac{\mu}{2\cos^2\alpha}\right)\cos^2\alpha\cot\alpha$ | $-\frac{gy_2}{Eh}\left[\frac{1}{2}+\mu-(2+\mu)\cos^2\alpha\right]\frac{\cot\alpha}{\sin\alpha}$ |
| $-py\frac{\cos^3\alpha}{\sin\alpha}$ | $y$ | $-\frac{py^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y^2}\right)\right]\frac{\cos^4\alpha}{\sin\alpha}$ | $-\frac{py}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\cot^2\alpha$ |
| | $y_1$ | $-\frac{py_1^2}{Eh}\frac{\cos^4\alpha}{\sin\alpha}$ | $-\frac{py_1}{Eh}[\mu-(2+\mu)\cos^2\alpha]\cot^2\alpha$ |
| | $y_2$ | $-\frac{py_2^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y_2^2}\right)\right]\frac{\cos^4\alpha}{\sin\alpha}$ | $-\frac{py_2}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y_2^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\cot^2\alpha$ |

| KONUSNA LJUSKA | G | $N_{y0}$ |
|---|---|---|
|  | $p\pi y^2 \cos^2\alpha$ | $-\frac{py}{2}\cot\alpha$ |
|  | $q\pi(y^2-y_1^2)\cos^2\alpha$ | $-\frac{q(y^2-y_1^2)}{2y}\cot\alpha$ |
|  | $q\pi y^2 \cos^2\alpha$ | $-\frac{qy}{2}\cot\alpha$ |
|  | 0 | 0 |
|  | 0 | 0 |

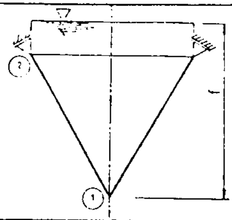


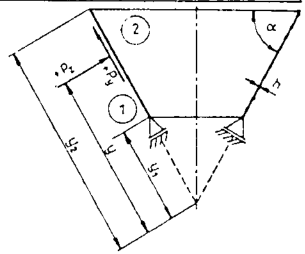
| $N_{\varphi 0}$ | $y$ | $\Delta r_0$ | $\chi_0$ |
|---|---|---|---|
| $-py\frac{\cos^3\alpha}{\sin\alpha}$ | $y$ | $-\frac{py^2}{Eh}\left(1-\frac{\mu}{2\cos^2\alpha}\right)\frac{\cos^4\alpha}{\sin\alpha}$ | $-\frac{py}{Eh}\left[\frac{1}{2}+\mu-(2+\mu)\cos^2\alpha\right]\cot^2\alpha$ |
| | $y_2$ | $-\frac{py_2^2}{Eh}\left(1-\frac{\mu}{2\cos^2\alpha}\right)\frac{\cos^4\alpha}{\sin\alpha}$ | $-\frac{py_2}{Eh}\left[\frac{1}{2}+\mu-(2+\mu)\cos^2\alpha\right]\cot^2\alpha$ |
| $-qy\cot\alpha$ | $y$ | $-\frac{qy^2}{2Eh}\left[2+\mu\left(\frac{y_1^2}{y^2}-1\right)\right]\frac{\cos^2\alpha}{\sin\alpha}$ | $\frac{qy}{2Eh}\left(3+\frac{y_1^2}{y^2}\right)\cot^2\alpha$ |
| | $y_1$ | $-\frac{qy_1^2}{Eh}\frac{\cos^2\alpha}{\sin\alpha}$ | $\frac{2qy_1}{Eh}\cot^2\alpha$ |
| | $y_2$ | $-\frac{qy_2^2}{2Eh}\left[2+\mu\left(\frac{y_1^2}{y_2^2}-1\right)\right]\frac{\cos^2\alpha}{\sin\alpha}$ | $\frac{qy_2}{2Eh}\left(3+\frac{y_1^2}{y_2^2}\right)\cot^2\alpha$ |
| $-qy\cot\alpha$ | $y$ | $-\frac{qy}{Eh}\left(1-\frac{\mu}{2}\right)\frac{\cos^2\alpha}{\sin\alpha}$ | $\frac{3qy}{2Eh}\cot^2\alpha$ |
| | $y_2$ | $-\frac{qy_2}{Eh}\left(1-\frac{\mu}{2}\right)\frac{\cos^2\alpha}{\sin\alpha}$ | $\frac{3qy_2}{2Eh}\cot^2\alpha$ |
| $-py\frac{y-y_1}{y_2-y_1}\sin\alpha\cos\alpha$ | $y$ | $-\frac{py^2}{Eh}\frac{y-y_1}{y_2-y_1}\sin\alpha\cos^2\alpha$ | $\frac{py}{Eh}\frac{3y-2y_1+\mu(y-y_1)}{y_2-y_1}\cos^2\alpha$ |
| | $y_1$ | 0 | $\frac{py_1^2}{Eh}\frac{\cos^2\alpha}{y_2-y_1}$ |
| | $y_2$ | $-\frac{py_2^2}{Eh}\sin\alpha\cos^2\alpha$ | $\frac{py_2}{Eh}\left(\frac{3y_2-2y_1}{y_2-y_1}+\mu\right)\cos^2\alpha$ |
| $-\frac{py^2}{y_2}\cos\alpha\sin\alpha$ | $y$ | $-\frac{py^3}{Ehy_2}\cos^2\alpha\sin\alpha$ | $\frac{py^2}{Ehy_2}(3+\mu)\cos^2\alpha$ |
| | $y_2$ | $-\frac{py_2^2}{Eh}\cos^2\alpha\sin\alpha$ | $\frac{py_2}{Eh}(3+\mu)\cos^2\alpha$ |

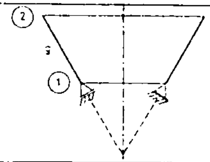
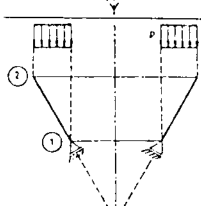
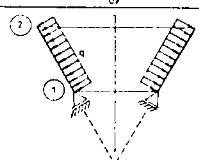
| KONUSNA LJUSKA | G | $N_{yo}$ |
|---|---|---|
|  $H_{10} = P\,\mathrm{ctg}\,\alpha$ | $2y_1\pi P\cos\alpha$ | $-\dfrac{y_1 P}{y\sin\alpha}$ |
|  | $P$ | $-\dfrac{P}{2\pi y\sin\alpha\cos\alpha}$ |
|  | $\gamma\pi y^2\left(f+\dfrac{2y}{3}\sin\alpha\right)\cos^2\alpha$ | $-\gamma y\left(\dfrac{f}{2}+\dfrac{y}{3}\sin\alpha\right)\cot\alpha$ |
|  | $-\gamma\pi\left[f(y^2-y_1^2)-\dfrac{2}{3}\cdot(y^3-y_1^3)\sin\alpha\right]\cos^2\alpha$ | $\dfrac{\gamma}{2y}\left[f(y^2-y_1^2)-\dfrac{2}{3}(y^3-y_1^3)\sin\alpha\right]\cot\alpha$ |



| $N_{\varphi o}$ | y | $\Delta r_o$ | $\chi_o$ |
|---|---|---|---|
| 0 | $y$ | $\mu\dfrac{y_1 P}{Eh}\cot\alpha$ | $-\dfrac{y_1 P}{Ehy}\dfrac{\cos\alpha}{\sin^2\alpha}$ |
| | $y_1$ | $\mu\dfrac{y_1 P}{Eh}\cot\alpha$ | $-\dfrac{P}{Eh}\dfrac{\cos\alpha}{\sin^2\alpha}$ |
| | $y_2$ | $\mu\dfrac{y_1 P}{Eh}\cot\alpha$ | $-\dfrac{y_1 P}{Ehy_2}\dfrac{\cos\alpha}{\sin^2\alpha}$ |
| 0 | $y$ | $\dfrac{\mu P}{2\pi Eh\sin\alpha}$ | $-\dfrac{P}{2\pi Ehy\sin^2\alpha}$ |
| | $y_2$ | $\dfrac{\mu P}{2\pi Eh\sin\alpha}$ | $-\dfrac{P}{2\pi Ehy_2\sin^2\alpha}$ |
| $-\gamma y\left(y+\dfrac{f}{\sin\alpha}\right)\cos\alpha$ | $y$ | $-\dfrac{\gamma y^2}{Eh}\left[y+\dfrac{f}{\sin\alpha}-\dfrac{\mu}{6}\left(\dfrac{3f}{\sin\alpha}+2y\right)\right]\cos^2\alpha$ | $\dfrac{\gamma y}{6Eh}(9f+16y\sin\alpha)\cot^2\alpha$ |
| | $y_2$ | $-\dfrac{\gamma y_2^2}{Eh}\left[y_2+\dfrac{f}{\sin\alpha}-\dfrac{\mu}{6}\left(\dfrac{3f}{\sin\alpha}+2y_2\right)\right]\cos^2\alpha$ | $\dfrac{\gamma y_2}{6Eh}(9f+16y_2\sin\alpha)\cot^2\alpha$ |
| $\gamma y\left(\dfrac{f}{\sin\alpha}-y\right)\cos\alpha$ | $y$ | $\dfrac{\gamma y}{Eh}\left\{y\left(\dfrac{f}{\sin\alpha}-y\right)-\dfrac{\mu}{2y}\left[\dfrac{f}{\sin\alpha}(y^2-y_1^2)-\dfrac{2}{3}(y^3-y_1^3)\right]\right\}\cos^2\alpha$ | $-\dfrac{\gamma}{Eh}\left[2fy-3y^2\sin\alpha-\dfrac{f}{2y}(y^2-y_1^2)+\dfrac{\sin\alpha}{3y}(y^3-y_1^3)\right]\cot^2\alpha$ |
| | $y_1$ | $\dfrac{\gamma y_1^2}{Eh}\left(\dfrac{f}{\sin\alpha}-y_1\right)\cos^2\alpha$ | $-\dfrac{\gamma y_1}{Eh}(2f-3y_1\sin\alpha)\cot^2\alpha$ |
| | $y_2$ | $\dfrac{\gamma y_2}{Eh}\left\{y_2\left(\dfrac{f}{\sin\alpha}-y_2\right)-\dfrac{\mu}{2y_2}\left[\dfrac{f}{\sin\alpha}(y_2^2-y_1^2)-\dfrac{2}{3}(y_2^3-y_1^3)\right]\right\}\cos^2\alpha$ | $-\dfrac{\gamma}{Eh}\left[2fy_2-3y_2^2\sin\alpha-\dfrac{f}{2y_2}(y_2^2-y_1^2)+\dfrac{\sin\alpha}{3y_2}(y_2^3-y_1^3)\right]\cot^2\alpha$ |

| KONUSNA LJUSKA | G | $N_{yo}$ |
|---|---|---|
|  | $-\gamma\pi y^2\left(f-\frac{2}{3}y\sin\alpha\right)\cos^2\alpha$ | $\gamma y\left(\frac{f}{2}-\frac{y}{3}\sin\alpha\right)\cot\alpha$ |

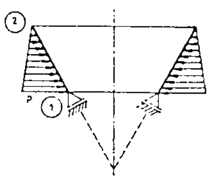
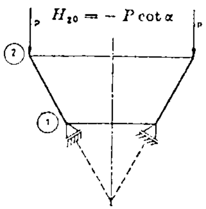
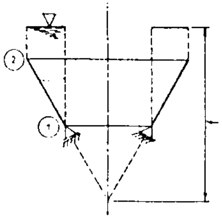



| KONUSNA LJUSKA | G | $N_{yo}$ |
|---|---|---|
|  | $g\pi(y_2^2-y^2)\cos\alpha$ | $\frac{gy}{2\sin\alpha}\left(1-\frac{y_1^2}{y^2}\right)$ |
|  | $p\pi(y_2^2-y^2)\cos^2\alpha$ | $\frac{py}{2}\left(1-\frac{y_1^2}{y^2}\right)\cot\alpha$ |
|  | $q\pi(y_2^2-y^2)\cos^2\alpha$ | $\frac{q(y^2-y_1^2)}{2y}\cot\alpha$ |



| $N_{\varphi o}$ | $r$ | $\Delta r_o$ | $\chi_o$ |
|---|---|---|---|
| $\gamma y\left(\frac{f}{\sin\alpha}-y\right)\cos\alpha$ | $y$ | $\frac{\gamma y^2}{Eh}\left[\left(\frac{f}{\sin\alpha}-y\right)-\frac{\mu}{6}\left(\frac{3f}{\sin\alpha}-2y\right)\right]\cos^2\alpha$ | $-\frac{\gamma y}{6Eh}(9f-16y\sin\alpha)\cot^2\alpha$ |
| | $y_2$ | $\frac{\gamma y_2^2}{Eh}\left[\left(\frac{f}{\sin\alpha}-y_2\right)-\frac{\mu}{6}\left(\frac{3f}{\sin\alpha}-2y_2\right)\right]\cos^2\alpha$ | $-\frac{\gamma y_2}{6Eh}(9f-16y_2\sin\alpha)\cot^2\alpha$ |

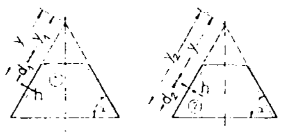
| $N_{\varphi o}$ | $r$ | $\Delta r_o$ | $\chi_o$ |
|---|---|---|---|
| $gy\sin\alpha\cot^2\alpha$ | $y$ | $\frac{gy^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y^2}\right)\right]\cos^2\alpha\cot\alpha$ | $\frac{gy}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\frac{\cot\alpha}{\sin\alpha}$ |
| | $y_1$ | $\frac{gy_1^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y_1^2}\right)\right]\cos^2\alpha\cot\alpha$ | $\frac{gy_1}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y_1^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\frac{\cot\alpha}{\sin\alpha}$ |
| | $y_2$ | $\frac{gy_2^2}{Eh}\cos^2\alpha\cot\alpha$ | $\frac{gy_2}{Eh}\left[\mu-(2+\mu)\cos^2\alpha\right]\frac{\cot\alpha}{\sin\alpha}$ |
| $py\frac{\cos^3\alpha}{\sin\alpha}$ | $y$ | $\frac{py^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y^2}\right)\right]\frac{\cos^4\alpha}{\sin\alpha}$ | $\frac{py}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\cot^2\alpha$ |
| | $y_1$ | $\frac{py_1^2}{Eh}\left[1-\frac{\mu}{2\cos^2\alpha}\left(1-\frac{y_1^2}{y_1^2}\right)\right]\frac{\cos^4\alpha}{\sin\alpha}$ | $\frac{py_1}{Eh}\left[\frac{1}{2}\left(1-\frac{y_1^2}{y_1^2}\right)+\mu-(2+\mu)\cos^2\alpha\right]\cot^2\alpha$ |
| | $y_2$ | $\frac{py_2^2}{Eh}\frac{\cos^4\alpha}{\sin\alpha}$ | $\frac{py_2}{Eh}\left[\mu-(2+\mu)\cos^2\alpha\right]\cot^2\alpha$ |
| $qy\cot\alpha$ | $y$ | $\frac{qy^2}{2Eh}\left[2+\mu\left(\frac{y_1^2}{y^2}-1\right)\right]\frac{\cos^2\alpha}{\sin\alpha}$ | $-\frac{qy}{2Eh}\left(3+\frac{y_1^2}{y^2}\right)\cot^2\alpha$ |
| | $y_1$ | $\frac{qy_1^2}{2Eh}\left[2+\mu\left(\frac{y_1^2}{y_1^2}-1\right)\right]\frac{\cos^2\alpha}{\sin\alpha}$ | $-\frac{qy}{2Eh}\left(3+\frac{y_1^2}{y_1^2}\right)\cot^2\alpha$ |
| | $y^2$ | $\frac{qy_2^2}{Eh}\frac{\cos^2\alpha}{\sin\alpha}$ | $-\frac{2qy_2}{Eh}\cot^2\alpha$ |

| KONUSNA LJUSKA | G | $N_{y0}$ |
|---|---|---|
|  | 0 | 0 |
|  | $2y_2\pi P\cos\alpha$ | $-\frac{y_2P}{y\sin\alpha}$ |
|  | $\gamma\pi\left[f(y_2^2-y^2)-\frac{2}{3}(y_2^3-y^3)\sin\alpha\right]\cos^2\alpha$ | $-\frac{\gamma}{2y}\left[f(y_2^2-y^2)-\frac{2}{3}(y_2^3-y^3)\sin\alpha\right]\cot\alpha$ |



| $N_{\varphi 0}$ | $y$ | $\Delta r_0$ | $\chi_0$ |
|---|---|---|---|
| $-py\frac{y_2-y}{y_2-y_1}\sin\alpha\cos\alpha$ | $y$ | $-\frac{py^2}{Eh}\frac{y_2-y}{y_2-y_1}\sin\alpha\cos^2\alpha$ | $\frac{py}{Eh}\frac{2y_2-3y+\mu(y_2-y)}{y_2-y_1}\cos^2\alpha$ |
| | $y_1$ | $-\frac{py_1^2}{Eh}\sin\alpha\cos^2\alpha$ | $\frac{py_1}{Eh}\left(\frac{2y_2-3y_1}{y_2-y_1}+\mu\right)\cos^2\alpha$ |
| | $y_2$ | 0 | $-\frac{py_2^2}{Eh}\frac{\cos^2\alpha}{y_2-y_1}$ |
| 0 | $y$ | $\mu\frac{y_2P}{Eh}\cot\alpha$ | $-\frac{y_2P}{Ehy}\frac{\cos\alpha}{\sin^2\alpha}$ |
| | $y_1$ | $\mu\frac{y_2P}{Eh}\cot\alpha$ | $-\frac{y_2P}{Ehy_1}\frac{\cos\alpha}{\sin^2\alpha}$ |
| | $y_2$ | $\mu\frac{y_2P}{Eh}\cot\alpha$ | $-\frac{P}{Eh}\frac{\cos\alpha}{\sin^2\alpha}$ |
| $\gamma y\left(\frac{f}{\sin\alpha}-y\right)\cos\alpha$ | $y$ | $\frac{\gamma y}{Eh}\left\{y\left(\frac{f}{\sin\alpha}-y\right)+\frac{\mu}{2y}\left[\frac{f}{\sin\alpha}(y_2^2-y^2)-\frac{2}{3}(y_2^3-y^3)\right]\right\}\cos^2\alpha$ | $\frac{\gamma}{Eh}\left[3y^2\sin\alpha-2fy-\frac{f}{2y}(y_2^2-y^2)+\frac{\sin\alpha}{3y}(y_2^3-y^3)\right]\cot^2\alpha$ |
| | $y_1$ | $\frac{\gamma y_1}{Eh}\left\{y_1\left(\frac{f}{\sin\alpha}-y_1\right)+\frac{\mu}{2y_1}\left[\frac{f}{\sin\alpha}(y_2^2-y_1^2)-\frac{2}{3}(y_2^3-y_1^3)\right]\right\}\cos^2\alpha$ | $\frac{\gamma}{Eh}\left[3y_1^2\sin\alpha-2fy_1-\frac{f}{2y_1}(y_2^2-y_1^2)+\frac{\sin\alpha}{3y_1}(y_2^3-y_1^3)\right]\cot^2\alpha$ |
| | $y_2$ | $\frac{\gamma y_2^2}{Eh}\left(\frac{f}{\sin\alpha}-y_2\right)\cos^2\alpha$ | $\frac{\gamma y_2}{Eh}(3y_2\sin\alpha-2f)\cot^2\alpha$ |

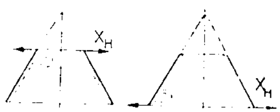
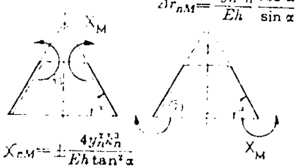
## tabela 4



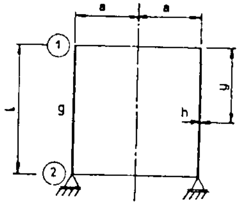
$h=$ konst.; $k_n=\sqrt{\dfrac{\tan\alpha}{y_n h}\sqrt{3(1-\mu^2)}}$ ; $d_1=y-y_1$; $d_2=y_2-y$; $H_n=H_0+X_H$; $n=1\div 2$;

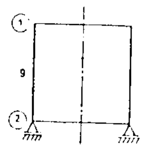
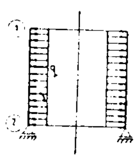
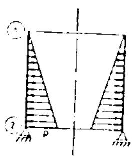
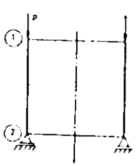
$\eta_1=e^{-k_n d_n}\cos k_n d_n$; $\eta_2=e^{-k_n d_n}\sin k_n d_n$ ; $\eta_3=\eta_1+\eta_2$; $\eta_4=\eta_1-\eta_2$.

$k_n(y_2-y_1)>6$.

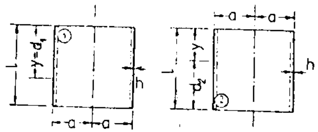
| KONUSNA LJUSKA | $X_H$ | $X_M$ | $N_y$ | $N_\varphi$ | $Q_y$ | $M_y$ | $\Delta r$ | $\chi$ |
|---|---|---|---|---|---|---|---|---|
| $\Delta r_{nH}=\dfrac{2y_n^2k_n}{Eh}\cos^2\alpha$,  $X_{nH}=\pm\dfrac{2y_n^2k_n^2}{Eh}\dfrac{\cos^2\alpha}{\sin\alpha}$ | $X_H$ | 0 | $\mp X_H\cos\alpha\,\eta_4$ | $2yk_nX_H\cos\alpha\,\eta_1$ | $\pm X_H\sin\alpha\,\eta_4$ | $\dfrac{\sin\alpha}{k_n}X_H\eta_2$ | $\dfrac{2y^2k_n}{Eh}X_H\cos^2\alpha\,\eta_1$ | $\pm\dfrac{2y_n^2k_n^2}{Eh}X_H\dfrac{\cos^2\alpha}{\sin\alpha}\eta_3$ |
| $\Delta r_{nM}=\dfrac{2y_n^2k_n^2}{Eh}\dfrac{\cos^2\alpha}{\sin\alpha}$  $X_{nM}=\pm\dfrac{4y_n^2k_n^3}{Eh\tan^2\alpha}$ | 0 | $X_M$ | $\pm 2k_nX_M\cot\alpha\,\eta_2$ | $2yk_nX_M\cot\alpha\,\eta_4$ | $\mp 2k_nX_M\eta_2$ | $X_M\eta_3$ | $\dfrac{2y^2k_n^2}{Eh}X_M\dfrac{\cos^2\alpha}{\sin\alpha}\eta_4$ | $\pm\dfrac{4y_n^2k_n^3}{Eh\tan^2\alpha}X_M\eta_1$ |

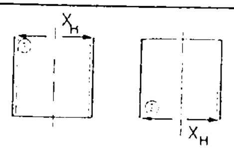
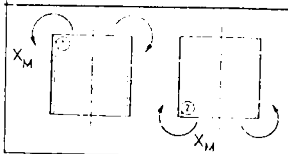
## tabela 5




| CILINDRIČNA LJUSKA | G | $N_{yo}$ | $N_{\varphi o}$ | y | $\Delta r_o$ | $\chi_o$ |
|---|---|---|---|---|---|---|
|  | $2a\pi g y$ | $-gy$ | $0$ | $y$ | $\mu \frac{ag}{Eh} y$ | $-\mu \frac{ag}{Eh}$ |
| | | | | $0$ | $0$ | $-\mu \frac{ag}{Eh}$ |
| | | | | $y_1=l$ | $\mu \frac{ag}{Eh} l$ | $-\mu \frac{ag}{Eh}$ |
|  | $0$ | $0$ | $aq$ | $y$ | $\frac{a^2 q}{Eh}$ | $0$ |
| | | | | $0$ | $\frac{a^2 q}{Eh}$ | $0$ |
| | | | | $y_2=l$ | $\frac{a^2 q}{Eh}$ | $0$ |
|  | $0$ | $0$ | $\frac{ap}{l} y$ | $y$ | $\frac{a^2 p}{Ehl} y$ | $-\frac{a^2 p}{Ehl}$ |
| | | | | $0$ | $0$ | $-\frac{a^2 p}{Ehl}$ |
| | | | | $y_1=l$ | $\frac{a^2 p}{Eh}$ | $-\frac{a^2 p}{Ehl}$ |
|  | $2a\pi P$ | $-P$ | $0$ | $y$ | $\mu \frac{aP}{Eh}$ | $0$ |
| | | | | $0$ | $\mu \frac{aP}{Eh}$ | $0$ |
| | | | | $y_2=l$ | $\mu \frac{aP}{Eh}$ | $0$ |

## tabela 6




| CILINDRIČNA LJUSKA | $X_H$ | $X_M$ | $N_\varphi$ |
|---|---|---|---|
|  | $X_H$ | 0 | $2akX_H\eta_1$ |
|  | 0 | $X_M$ | $2ak^2X_M\eta_4$ |



$h = \text{konst.}$; $k = \sqrt{\dfrac{\sqrt{3(1-\mu^2)}}{ah}}$; $\eta = \dfrac{y}{l}$; $d_1 = y$; $d_2 = l - y$; $n = 1 \div 2$;

$\eta_1 = e^{-kd_n}\cos kd_n$; $\eta_2 = e^{-kd_n}\sin kd_n$; $\eta_3 = \eta_1 + \eta_2$; $\eta_4 = \eta_1 - \eta_2$.

$kl > 6$.

| $Q_y$ | $M_y$ | $\Delta r$ | $\chi$ | NAPOMENA |
|---|---|---|---|---|
| $\pm X_H\eta_1$ | $\dfrac{1}{k}X_H\eta_2$ | $\dfrac{2a^2k}{Eh}X_H\eta_1$ | $\pm\dfrac{2a^2k^2}{Eh}X_H\eta_3$ | $\Delta r_{nH} = \dfrac{2a^2k}{Eh}$, $\chi_{nH} = \pm\dfrac{2a^2k^2}{Eh}$ |
| $\mp 2kX_M\eta_1$ | $X_M\eta_3$ | $\dfrac{2a^2k^2}{Eh}X_M\eta_4$ | $\pm\dfrac{4a^2k^3}{Eh}X_M\eta_1$ | $\Delta r_{nM} = \dfrac{2a^2k^2}{Eh}$, $\chi_{nM} = \pm\dfrac{4a^2k^3}{Eh}$ |