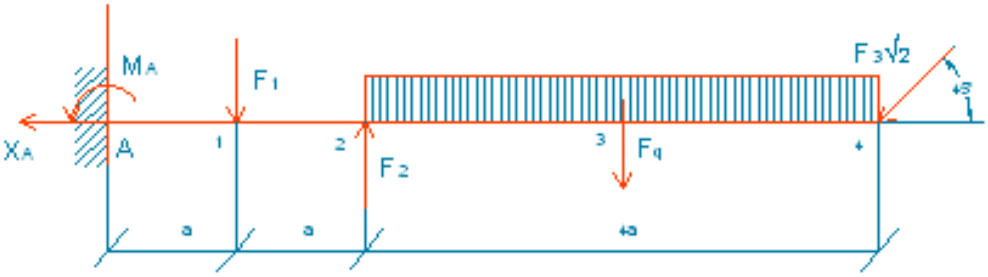


F1=F2=F3=10kN
a=0.1m
q=10kN/m
XA=F3√2·√2/2=10kN
YA=F3√2·√2/2=10kN
Fq=q·4a=10·0,4=4kN

1. *Otpori oslonca*

1. $\sum_{i=1}^{n} x_i = -XA - X3 = 0$
2. $\sum_{i=1}^{n} y_i = 0 \Rightarrow Y_A - F_1 + F_2 - F_q - Y_3 = 0$
3. $\sum_{i=1}^{n} M_a^{F_i} = 0 \Rightarrow -Ma + F_1 a - F_2 2a + F_q 4a + Y3 \cdot 6a = 0$

Rešenje:

1. $XA = 10kN$
2. $Y_A = 14kN$
3. $-Ma = 2 - 1 - 1{,}6 - 6$

$Ma = 6{,}6kNm$

Momenti u karakterističnim tačkama

M_A:

$M_{Ad}^{\ l} = -Ma = -6{,}6(kN)$

M_1 :

$M_{1d}^{\ l} = Ya \cdot a - Ma = 1{,}4 - 6{,}6 = -5{,}2(kN)$

$M_{2d}^{\ l}$:

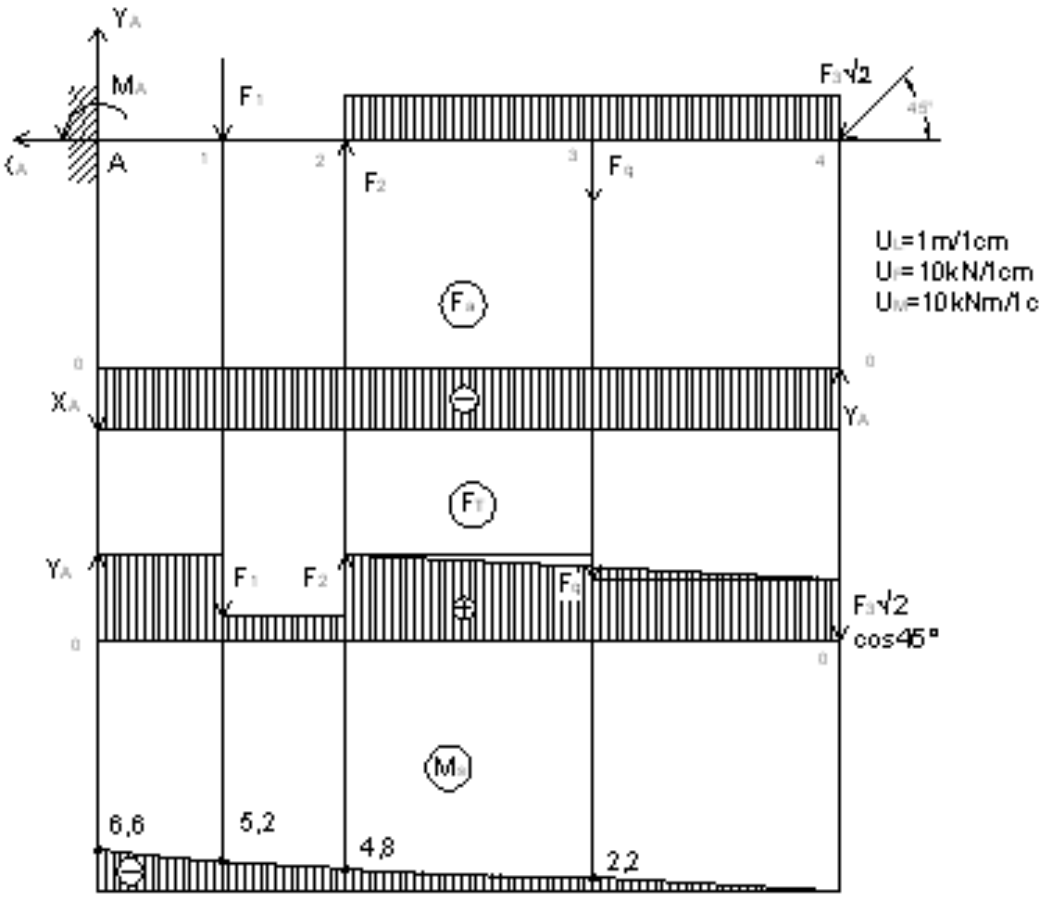
$M_{2d}^{\ l} = Ya \cdot 2a - Ma - F_1 a = -6{,}6 + 2{,}8 - 1 = -4{,}8(kN)$

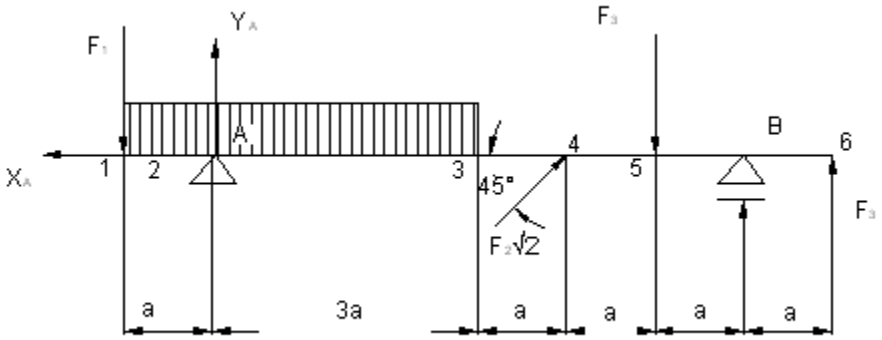
M_{4l}^{d}:

$M_{4l}^{d} = Y3 \cdot 2a - Fq'a = -2{,}2(kN)$

M_{Bl}^{d}:

$M_{Bl}^{d} = 0$


YA
MA
F1
F3√2
45°
XA
A
1
2
3
4
F2
F3
UL=1m/1cm
UF=10kN/1cm
UM=10kNm/1c
FA
0
XA
YA
F1
YA
F1
F2
F3
F3√2
cos45°
MF
6,6
5,2
4,8
2,2



$F_1 = F_2 = F_3 = 31[kN]$

$a = 1;$

q=31[kN/m]

$F_q' = a \cdot q = 31[kN];$

$F_q'' = 3a \cdot q = 93[kN];$

2. *Otpori oslonca*

4. $\sum_{i=1}^{n} x_i = -XA + F_2\sqrt{2}cos45° = 0$
5. $\sum_{i=1}^{n} y_i = 0 \Rightarrow -F_1 - F_q' + Y_A - F_q'' + F_2\sqrt{2}cos45° - F_3 + F_B + F_3 = 0$
6. $\sum_{i=1}^{n} M_a^{F_i} = 0 \Rightarrow -F_1 a - F_q'\left(\frac{1}{2}\right)a + Y_A - F_q''\left(\frac{3}{2}\right)a - F_2\sqrt{2}cos45° \cdot 4a - F_3 5a - F_B 6a - F_3 7a = 0$

Rešenje:

1. $XA = 31kN$
2. $Y_A = 108{,}5kN$
3. $F_B = -15{,}5kN$

$F_A = \sqrt{{x_a}^2 + {y_a}^2} = \sqrt{108{,}5^2 + 31^2} = 112{,}8[kN]$

$\tan \propto_a = \frac{y_a}{x_a} = \frac{108{,}5}{31} = 3{,}5$

$\propto_a = 74{,}05^0$

Momenti u karakterističnim tačkama

M_1 :

$M_{1d}^{\ l} = 0$

$M_{2d}^{\ l}$:

$M_{2d}^{\ l} = -F1 \cdot \frac{a}{2} - F_{q2}\left(\frac{a}{4}\right) = -15{,}5 - 3{,}875 = -19{,}375(kN)$

M_A:

$M_{Ad}^{\ l} = -F1 \cdot a - F_q'\left(\frac{a}{2}\right) = -31 - 15{,}5 = -46{,}5(kN)$

M_{3d}^{l}:

$M_{3d}^{l} = F3 \cdot 4a + F_B\ 3a + F3 \cdot 2a + F2\sqrt{2}cos45° \cdot a = 139{,}5(kN)$

M_{4l}^{d}:

$M_{4l}^{d} = F3 \cdot 3a + F_B\ 2a + F3 \cdot a = 93(kN)$

M_{5l}^{d}:

$M_{5l}^{d} = F3 \cdot 2a + F_B\ a = 77{,}5(kN)$

M_{Bl}^{d}:

$M_{Bl}^{d} = F3 \cdot a = 31(kN)$

M_{6l}^{d}:

$M_{6l}^{d} = 0;$