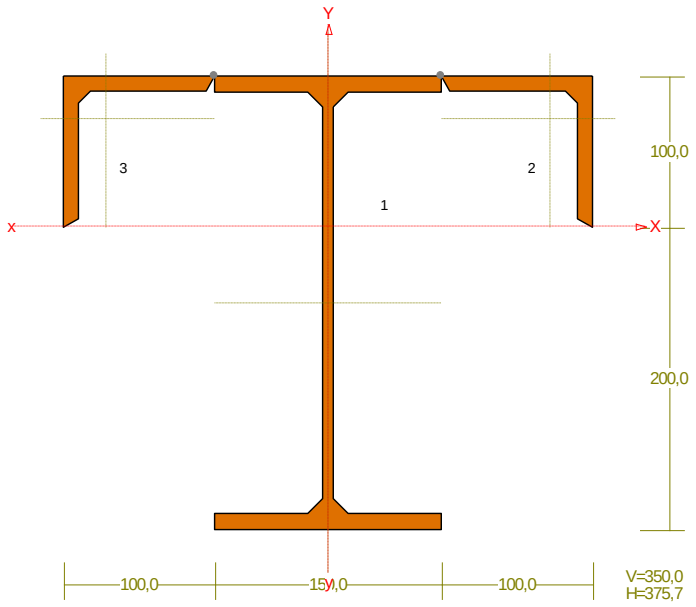
RM_Win v. 11.11 licencja nr

NAZWA: P_OFFER

**PRZEKRÓJ Nr: 0** **Nazwa: "HKS 300-1"**



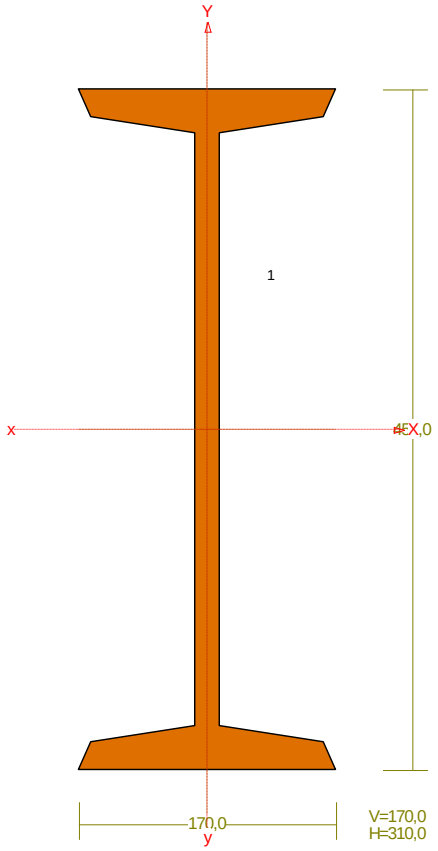

Skala 1:5

CHARAKTERYSTYKA PRZEKROJU: Materiał: 3 S 275

| | | | | |
|---|---|---|---|---|
| Gł.centr.osie bezwładn.[cm]: | Xc= | 17,5 | Yc= | 20,1 |
| | | | alfa= | 0,0 |
| Momenty bezwładności [cm4]: | Jx= | 12038,1 | Jy= | 9233,3 |
| Moment dewiacji [cm4]: | | | Dxy= | 0,0 |
| Gł.momenty bezwładn. [cm4]: | Ix= | 12038,1 | Iy= | 9233,3 |
| Promienie bezwładności [cm]: | ix= | 11,4 | iy= | 10,0 |
| Wskaźniki wytrzymał. [cm3]: | Wx= | 1212,6 | Wy= | 527,6 |
| | Wx= | -599,7 | Wy= | -527,6 |
| Powierzchnia przek. [cm2]: | | | F= | 92,2 |
| Masa [kg/m]: | | | m= | 72,4 |
| Moment bezwładn.dla zginania w płaszcz.ukł. [cm4]: | | | Jzg= | 12038,1 |

| Nr. | Oznaczenie | Fi: [deg] | Xs: [cm] | Ys: [cm] | Sx: [cm3] | Sy: [cm3] | F: [cm2] |
|---|---|---|---|---|---|---|---|
| 1 | I 300 PE | 0 | 0,00 | -5,07 | -272,9 | 0,0 | 53,8 |
| 2 | L 100x100x10 | 180 | 14,68 | 7,11 | 136,5 | 281,9 | 19,2 |
| 3 | L 100x100x10 | 180 | -14,68 | 7,11 | 136,5 | -281,9 | 19,2 |

**PRZEKRÓJ Nr: 1** **Nazwa: "I450"**



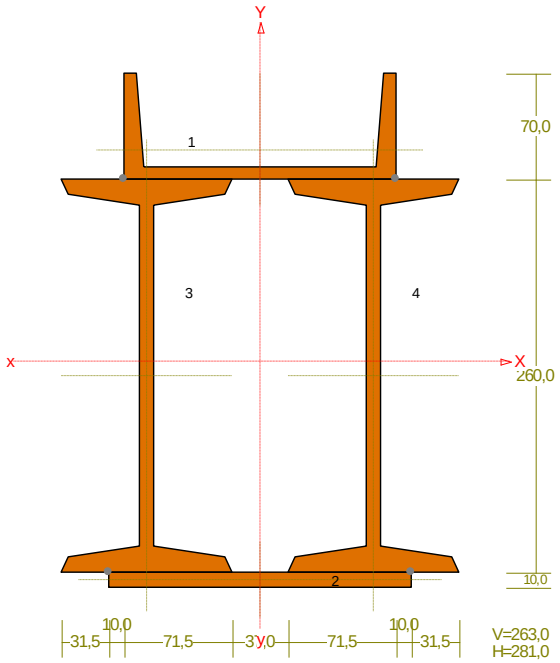

Skala 1:5

CHARAKTERYSTYKA PRZEKROJU: Materiał: 2 S 235

| | | | | | |
|---|---|---|---|---|---|
| Gł.centr.osie bezwładn.[cm]: | Xc= | 8,5 | Yc= | 22,5 |
| | | | alfa= | 0,0 |
| Momenty bezwładności [cm4]: | Jx= | 45850,0 | Jy= | 1730,0 |
| Moment dewiacji [cm4]: | | | Dxy= | 0,0 |
| Gł.momenty bezwładn. [cm4]: | Ix= | 45850,0 | Iy= | 1730,0 |
| Promienie bezwładności [cm]: | ix= | 17,7 | iy= | 3,4 |
| Wskaźniki wytrzymał. [cm3]: | Wx= | 2037,8 | Wy= | 203,5 |
| | Wx= | -2037,8 | Wy= | -203,5 |
| Powierzchnia przek. [cm2]: | | | F= | 147,0 |
| Masa [kg/m]: | | | m= | 115,4 |
| Moment bezwładn.dla zginania w płaszcz.ukł. [cm4]: | | | Jzg= | 45850,0 |

| Nr. | Oznaczenie | Fi: [deg] | Xs: [cm] | Ys: [cm] | Sx: [cm3] | Sy: [cm3] | F: [cm2] |
|---|---|---|---|---|---|---|---|
| 1 | I 450 | 0 | 0,00 | 0,00 | 0,0 | 0,0 | 147,0 |

**PRZEKRÓJ Nr: 2** **Nazwa: "2xI260"**



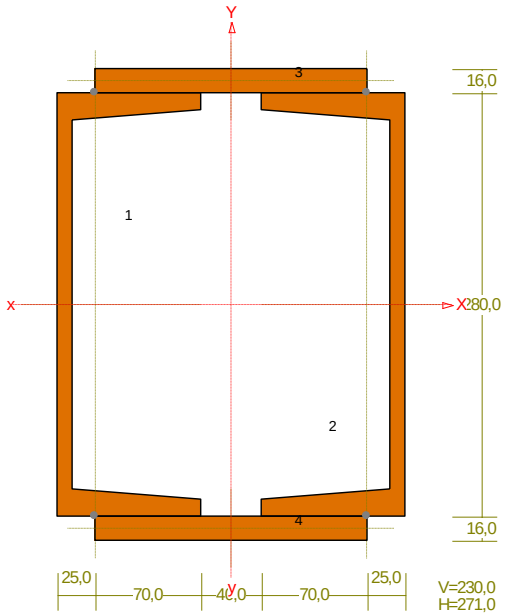

Skala 1:5

CHARAKTERYSTYKA PRZEKROJU: Materiał: 3 S 275

| | | | | |
|---|---|---|---|---|
| Gł.centr.osie bezwładn.[cm]: | Xc= | 13,2 | Yc= | 15,0 |
| | | | alfa= | 0,0 |
| Momenty bezwładności [cm4]: | Jx= | 21332,6 | Jy= | 8600,2 |
| Moment dewiacji [cm4]: | | | Dxy= | 0,0 |
| Gł.momenty bezwładn. [cm4]: | Ix= | 21332,6 | Iy= | 8600,2 |
| Promienie bezwładności [cm]: | ix= | 11,7 | iy= | 7,5 |
| Wskaźniki wytrzymał. [cm3]: | Wx= | 1120,1 | Wy= | 654,0 |
| | Wx= | -1426,5 | Wy= | -654,0 |
| Powierzchnia przek. [cm2]: | | | F= | 154,8 |
| Masa [kg/m]: | | | m= | 121,5 |
| Moment bezwładn.dla zginania w płaszcz.ukł. [cm4]: | | | Jzg= | 21332,6 |

| Nr. | Oznaczenie | Fi: [deg] | Xs: [cm] | Ys: [cm] | Sx: [cm3] | Sy: [cm3] | F: [cm2] |
|---|---|---|---|---|---|---|---|
| 1 | U 180 | 90 | 0,00 | 13,97 | 391,0 | 0,0 | 28,0 |
| 2 | B 200x10 | 0 | 0,00 | -14,45 | -289,1 | 0,0 | 20,0 |
| 3 | I 260 | 0 | -7,50 | -0,95 | -51,0 | -400,5 | 53,4 |
| 4 | I 260 | 0 | 7,50 | -0,95 | -51,0 | 400,5 | 53,4 |

**PRZEKRÓJ Nr: 3** **Nazwa: "2xC280"**



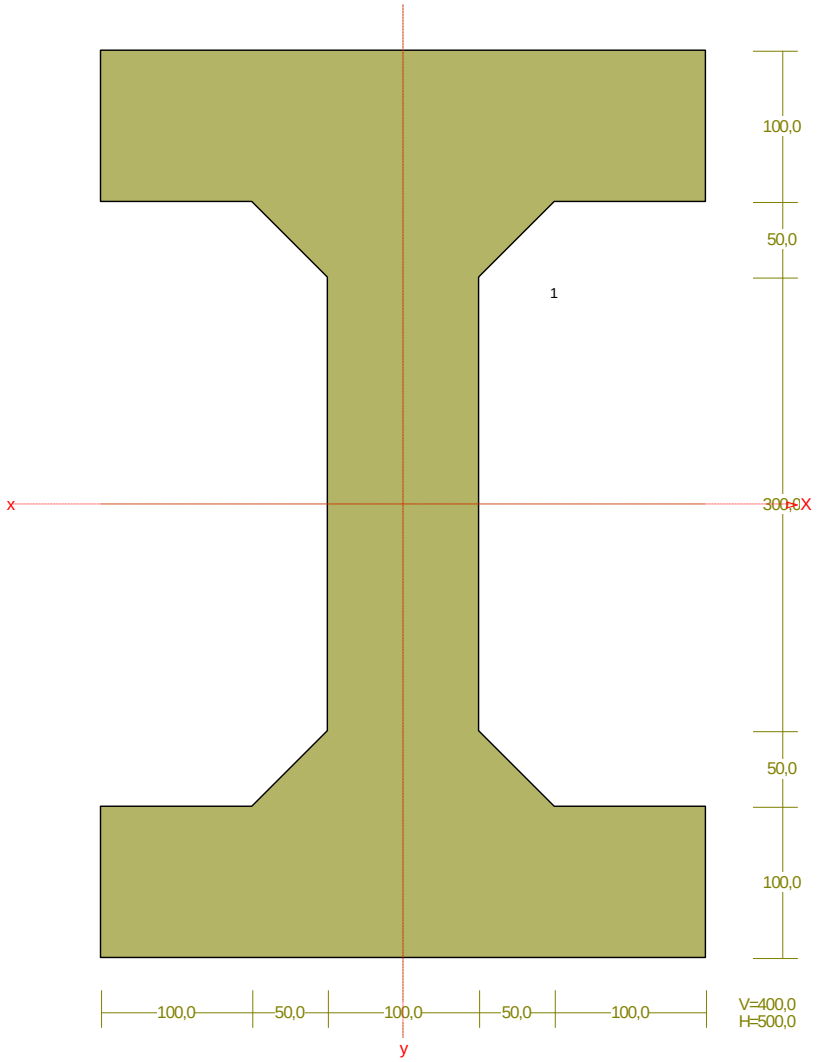

Skala 1:5

CHARAKTERYSTYKA PRZEKROJU: Materiał: 3 S 275

| | | | | | |
|---|---|---|---|---|---|
| Gł.centr.osie bezwładn.[cm]: | Xc= | 11,5 | Yc= | 15,6 |
| | | | alfa= | 0,0 |
| Momenty bezwładności [cm4]: | Jx= | 25189,0 | Jy= | 10930,3 |
| Moment dewiacji [cm4]: | | | Dxy= | 0,0 |
| Gł.momenty bezwładn. [cm4]: | Ix= | 25189,0 | Iy= | 10930,3 |
| Promienie bezwładności [cm]: | ix= | 12,4 | iy= | 8,2 |
| Wskaźniki wytrzymał. [cm3]: | Wx= | 1614,7 | Wy= | 950,5 |
| | Wx= | -1614,7 | Wy= | -950,5 |
| Powierzchnia przek. [cm2]: | | | F= | 164,2 |
| Masa [kg/m]: | | | m= | 128,9 |
| Moment bezwładn.dla zginania w płaszcz.ukł. [cm4]: | | | Jzg= | 25189,0 |

| Nr. | Oznaczenie | Fi: [deg] | Xs: [cm] | Ys: [cm] | Sx: [cm3] | Sy: [cm3] | F: [cm2] |
|---|---|---|---|---|---|---|---|
| 1 | U 280 | 0 | -8,97 | 0,00 | 0,0 | -478,1 | 53,3 |
| 2 | U 280 | 180 | 8,97 | 0,00 | 0,0 | 478,1 | 53,3 |
| 3 | B 180x16 | 0 | 0,00 | 14,80 | 426,2 | 0,0 | 28,8 |
| 4 | B 180x16 | 0 | 0,00 | -14,80 | -426,2 | 0,0 | 28,8 |

**PRZEKRÓJ Nr: 4** **Nazwa: "I 60x40 cm"**



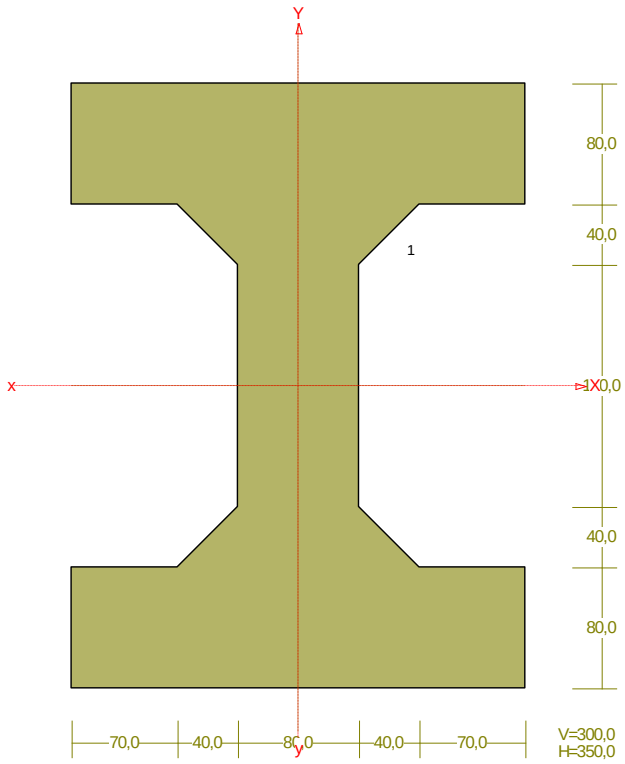

Skala 1:5

CHARAKTERYSTYKA PRZEKROJU: Materiał: 106 B10

| | | | | |
|---|---|---|---|---|
| Gł.centr.osie bezwładn.[cm]: | Xc= 20,0 | Yc= 30,0 | | |
| | | alfa= 0,0 | | |
| Momenty bezwładności [cm4]: | Jx= 593680,6 | Jy= 111580,6 | | |
| Moment dewiacji [cm4]: | | Dxy= 0,0 | | |
| Gł.momenty bezwładn. [cm4]: | Ix= 593680,6 | Iy= 111580,6 | | |
| Promienie bezwładności [cm]: | ix= 21,8 | iy= 9,4 | | |
| Wskaźniki wytrzymał. [cm3]: | Wx= 19789,4 | Wy= 5579,0 | | |
| | Wx= -19789,4 | Wy= -5579,0 | | |
| Powierzchnia przek. [cm2]: | | F= 1250,0 | | |
| Masa [kg/m]: | | m= 300,0 | | |
| Moment bezwładn.dla zginania w płaszcz.ukł. [cm4]: | | Jzg= 593680,6 | | |

| Nr. | Oznaczenie | Fi: [deg] | Xs: [cm] | Ys: [cm] | Sx: [cm3] | Sy: [cm3] | F: [cm2] |
|---|---|---|---|---|---|---|---|
| 1 | I *600x400 | 0 | 0,00 | 0,00 | 0,0 | 0,0 | 1250,0 |

**PRZEKRÓJ Nr: 5** **Nazwa: "I 40x30 cm"**



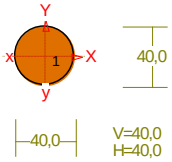

Skala 1:5

CHARAKTERYSTYKA PRZEKROJU: Materiał: 106 B10

| | | | | |
|---|---|---|---|---|
| Gł.centr.osie bezwładn.[cm]: | Xc= 15,0 | Yc= 20,0 | | |
| | | alfa= 0,0 | | |
| Momenty bezwładności [cm4]: | Jx= 141966,2 | Jy= 38040,9 | | |
| Moment dewiacji [cm4]: | | Dxy= 0,0 | | |
| Gł.momenty bezwładn. [cm4]: | Ix= 141966,2 | Iy= 38040,9 | | |
| Promienie bezwładności [cm]: | ix= 14,2 | iy= 7,4 | | |
| Wskaźniki wytrzymał. [cm3]: | Wx= 7098,3 | Wy= 2536,1 | | |
| | Wx= -7098,3 | Wy= -2536,1 | | |
| Powierzchnia przek. [cm2]: | | F= 704,0 | | |
| Masa [kg/m]: | | m= 169,0 | | |
| Moment bezwładn.dla zginania w płaszcz.ukł. [cm4]: | | Jzg= 141966,2 | | |

| Nr. | Oznaczenie | Fi: [deg] | Xs: [cm] | Ys: [cm] | Sx: [cm3] | Sy: [cm3] | F: [cm2] |
|---|---|---|---|---|---|---|---|
| 1 | I *400x300 | 0 | 0,00 | 0,00 | 0,0 | 0,0 | 704,0 |

**PRZEKRÓJ Nr: 6** **Nazwa: "R 30x15"**



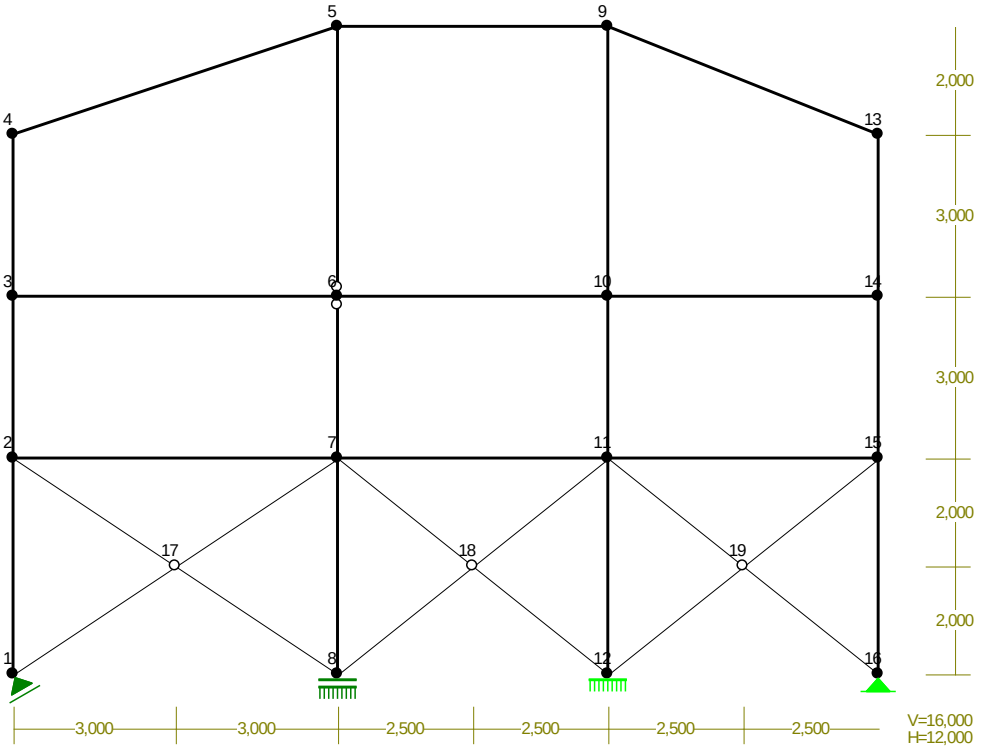

Skala 1:5

CHARAKTERYSTYKA PRZEKROJU: Materiał: 2 S 235

| | | | | | |
|---|---|---|---|---|---|
| Gł.centr.osie bezwładn.[cm]: | Xc= | 2,0 | Yc= | 2,0 |
| | | | alfa= | 0,0 |
| Momenty bezwładności [cm4]: | Jx= | 12,6 | Jy= | 12,6 |
| Moment dewiacji [cm4]: | | | Dxy= | 0,0 |
| Gł.momenty bezwładn. [cm4]: | Ix= | 12,6 | Iy= | 12,6 |
| Promienie bezwładności [cm]: | ix= | 1,0 | iy= | 1,0 |
| Wskaźniki wytrzymał. [cm3]: | Wx= | 6,3 | Wy= | 6,3 |
| | Wx= | -6,3 | Wy= | -6,3 |
| Powierzchnia przek. [cm2]: | | | F= | 12,6 |
| Masa [kg/m]: | | | m= | 9,9 |
| Moment bezwładn.dla zginania w płaszcz.ukł. [cm4]: | | | Jzg= | 12,6 |

| Nr. | Oznaczenie | Fi: [deg] | Xs: [cm] | Ys: [cm] | Sx: [cm3] | Sy: [cm3] | F: [cm2] |
|---|---|---|---|---|---|---|---|
| 1 | R *40x20 | 0 | 0,00 | 0,00 | 0,0 | 0,0 | 12,6 |

WĘZŁY:




**WĘZŁY:**

| Nr: | X [m]: | Y [m]: | Nr: | X [m]: | Y [m]: |
|---|---|---|---|---|---|
| 0 | 0,000 | 0,000 | 10 | 11,000 | 4,000 |
| 1 | 0,000 | 4,000 | 11 | 11,000 | 0,000 |
| 2 | 0,000 | 7,000 | 12 | 16,000 | 10,000 |
| 3 | 0,000 | 10,000 | 13 | 16,000 | 7,000 |
| 4 | 6,000 | 12,000 | 14 | 16,000 | 4,000 |
| 5 | 6,000 | 7,000 | 15 | 16,000 | 0,000 |
| 6 | 6,000 | 4,000 | 16 | 3,000 | 2,000 |
| 7 | 6,000 | 0,000 | 17 | 8,500 | 2,000 |
| 8 | 11,000 | 12,000 | 18 | 13,500 | 2,000 |
| 9 | 11,000 | 7,000 | | | |

**PODPORY:**

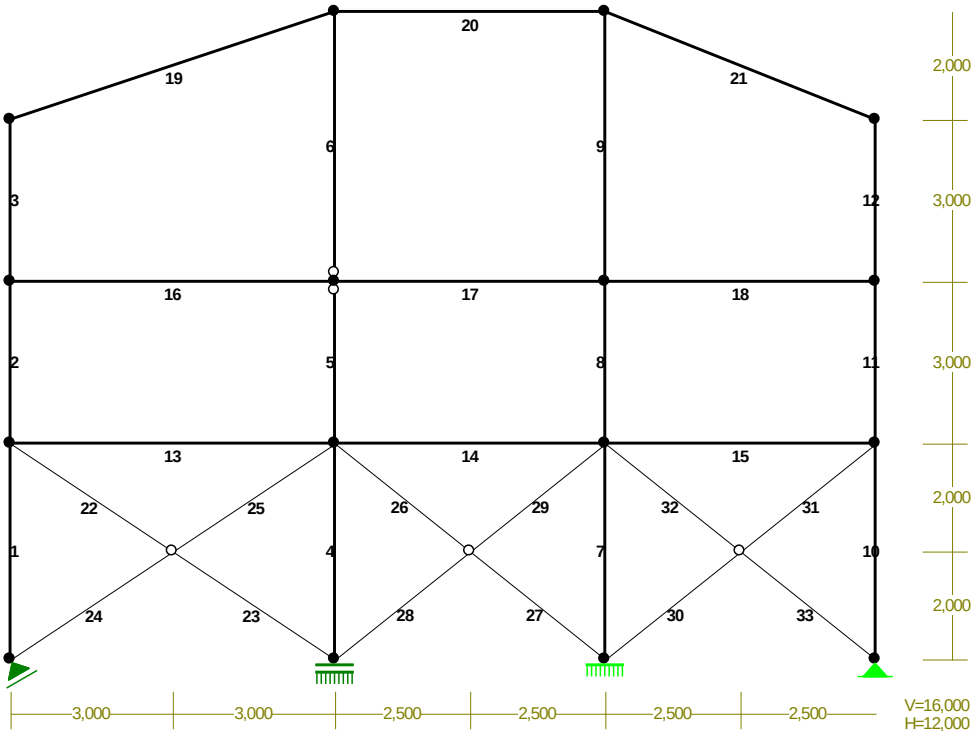
| Węzeł: | Rodzaj: | Kąt: | Podatności Dx(Do*): [ m / k N ] | Dy: [ m / k N ] | DFi: [rad/kNm] |
|---|---|---|---|---|---|
| 1 | przesuwna | 30,0 | 0* | | |
| 8 | zamoc.przesuwne | 90,0 | 0* | | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 12 | utwierdzenie | 90,0 | 0 | 0 | 0 |
| 16 | stała | 0,0 | 0 | 0 | |

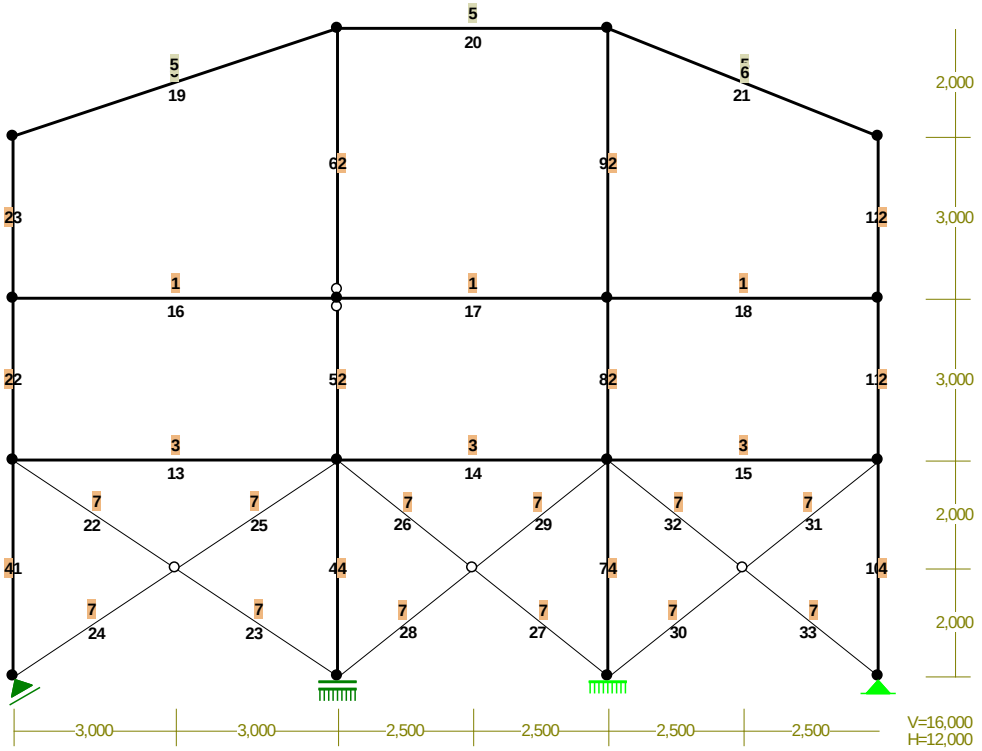
**OSIADANIA:**

| Węzeł: | Kąt: | Wx(Wo*)[m]: | Wy[m]: | FIo[grad]: |
|---|---|---|---|---|
| 11 | | 0,0000 | 0,0000 | -0,100 |
| 15 | | 0,0010 | 0,0000 | |

PRĘTY:



PRZEKROJE PRĘTÓW:




**PRĘTY UKŁADU:**

Typy prętów: 00 - sztyw.-sztyw.; 01 - sztyw.-przegub;
10 - przegub-sztyw.; 11 - przegub-przegub
22 - cięgno

| Pręt: | Typ: | A: | B: | Lx[m]: | Ly[m]: | L[m]: | Red.EJ: | Przekrój: |
|---|---|---|---|---|---|---|---|---|
| 1 | 00 | 0 | 1 | 0,000 | 4,000 | 4,000 | 1,000 | 4 2xC280 |
| 2 | 00 | 1 | 2 | 0,000 | 3,000 | 3,000 | 1,000 | 2 I450 |
| 3 | 00 | 2 | 3 | 0,000 | 3,000 | 3,000 | 1,000 | 2 I450 |
| 4 | 00 | 6 | 7 | 0,000 | -4,000 | 4,000 | 1,000 | 4 2xC280 |
| 5 | 10 | 5 | 6 | 0,000 | -3,000 | 3,000 | 1,000 | 2 I450 |
| 6 | 01 | 4 | 5 | 0,000 | -5,000 | 5,000 | 1,000 | 2 I450 |
| 7 | 00 | 10 | 11 | 0,000 | -4,000 | 4,000 | 1,000 | 4 2xC280 |
| 8 | 00 | 9 | 10 | 0,000 | -3,000 | 3,000 | 1,000 | 2 I450 |
| 9 | 00 | 8 | 9 | 0,000 | -5,000 | 5,000 | 1,000 | 2 I450 |
| 10 | 00 | 14 | 15 | 0,000 | -4,000 | 4,000 | 1,000 | 4 2xC280 |
| 11 | 00 | 13 | 14 | 0,000 | -3,000 | 3,000 | 1,000 | 2 I450 |
| 12 | 00 | 12 | 13 | 0,000 | -3,000 | 3,000 | 1,000 | 2 I450 |
| 13 | 00 | 1 | 6 | 6,000 | 0,000 | 6,000 | 1,000 | 3 2xI260 |
| 14 | 00 | 6 | 10 | 5,000 | 0,000 | 5,000 | 1,000 | 3 2xI260 |
| 15 | 00 | 10 | 14 | 5,000 | 0,000 | 5,000 | 1,000 | 3 2xI260 |
| 16 | 00 | 2 | 5 | 6,000 | 0,000 | 6,000 | 1,000 | 1 HKS 300-1 |
| 17 | 00 | 5 | 9 | 5,000 | 0,000 | 5,000 | 1,000 | 1 HKS 300-1 |
| 18 | 00 | 9 | 13 | 5,000 | 0,000 | 5,000 | 1,000 | 1 HKS 300-1 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 19 | 00 | 3 | 4 | 6,000 | 2,000 | 6,325 | 1,000 | 6-5 |
| 20 | 00 | 4 | 8 | 5,000 | 0,000 | 5,000 | 1,000 | 5 I 60x40 cm |
| 21 | 00 | 8 | 12 | 5,000 | -2,000 | 5,385 | 1,000 | 5-6 |
| 22 | 22 | 1 | 16 | 3,000 | -2,000 | 3,606 | 1,000 | 7 R 30x15 |
| 23 | 22 | 16 | 7 | 3,000 | -2,000 | 3,606 | 1,000 | 7 R 30x15 |
| 24 | 22 | 0 | 16 | 3,000 | 2,000 | 3,606 | 1,000 | 7 R 30x15 |
| 25 | 22 | 16 | 6 | 3,000 | 2,000 | 3,606 | 1,000 | 7 R 30x15 |
| 26 | 22 | 6 | 17 | 2,500 | -2,000 | 3,202 | 1,000 | 7 R 30x15 |
| 27 | 22 | 17 | 11 | 2,500 | -2,000 | 3,202 | 1,000 | 7 R 30x15 |
| 28 | 22 | 7 | 17 | 2,500 | 2,000 | 3,202 | 1,000 | 7 R 30x15 |
| 29 | 22 | 17 | 10 | 2,500 | 2,000 | 3,202 | 1,000 | 7 R 30x15 |
| 30 | 22 | 11 | 18 | 2,500 | 2,000 | 3,202 | 1,000 | 7 R 30x15 |
| 31 | 22 | 18 | 14 | 2,500 | 2,000 | 3,202 | 1,000 | 7 R 30x15 |
| 32 | 22 | 10 | 18 | 2,500 | -2,000 | 3,202 | 1,000 | 7 R 30x15 |
| 33 | 22 | 18 | 15 | 2,500 | -2,000 | 3,202 | 1,000 | 7 R 30x15 |

**WIELKOŚCI PRZEKROJOWE:**

| Nr. | A[cm2] | Ix[cm4] | Iy[cm4] | Wg[cm3] | Wd[cm3] | h[cm] | Materiał: |
|---|---|---|---|---|---|---|---|
| 1 | 92,2 | 12038 | 9233 | 1213 | 600 | 30,0 | 3 S 275 |
| 2 | 147,0 | 45850 | 1730 | 2038 | 2038 | 45,0 | 2 S 235 |
| 3 | 154,8 | 21333 | 8600 | 1120 | 1426 | 34,0 | 3 S 275 |
| 4 | 164,2 | 25189 | 10930 | 1615 | 1615 | 31,2 | 3 S 275 |
| 5 | 1250,0 | 593681 | 111581 | 19789 | 19789 | 60,0 | 1,1E+2 B10 |
| 6 | 704,0 | 141966 | 38041 | 7098 | 7098 | 40,0 | 1,1E+2 B10 |
| 7 | 12,6 | 13 | 13 | 6 | 6 | 4,0 | 2 S 235 |

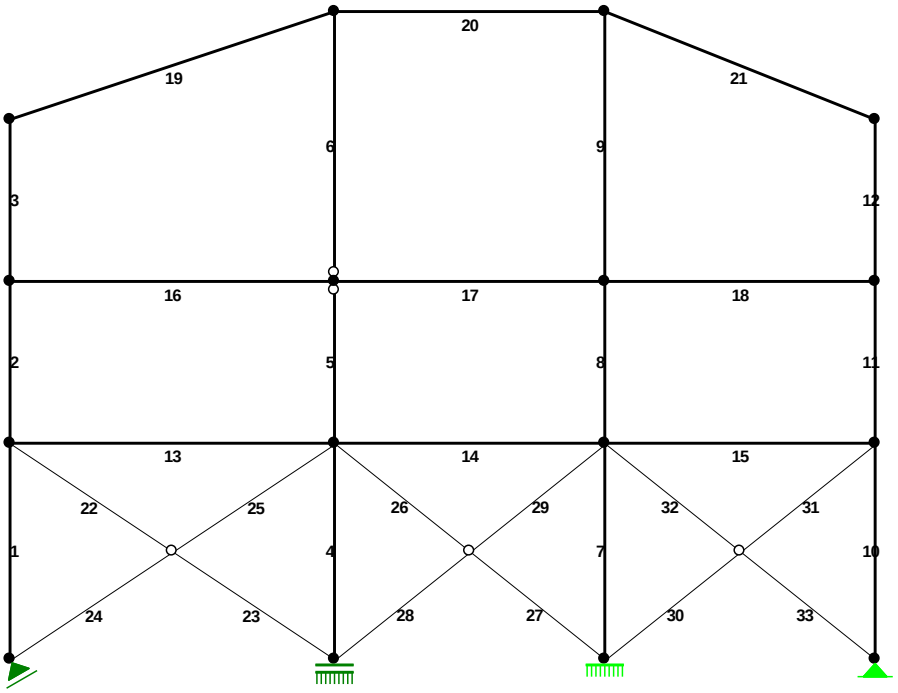
**STAŁE MATERIAŁOWE:**

| Materiał: | Moduł E: [kN/mm2] | Napręż.gr.: [N/mm2] | AlfaT: [1/K] |
|---|---|---|---|
| 2 S 235 | 210 | 235,000 | 0 |
| 3 S 275 | 210 | 275,000 | 0 |
| 1,1E+2 B10 | 18 | 5,800 | 0 |

**ZESTAWIENIE MATERIAŁU:**

| Oznaczenie: | Materiał: | | Długość[m] | Masa[t] |
|---|---|---|---|---|
| U 280 | S 275 | 8x 4,00 | = 32,00 | 1,339 |
| B 180x16 | S 275 | 8x 4,00 | = 32,00 | 0,723 |
| I 450 | S 235 | 6x 3,00 + 2x 5,00 | = 28,00 | 3,231 |
| U 180 | S 275 | 1x 6,00 + 2x 5,00 | = 16,00 | 0,352 |
| B 200x10 | S 275 | 1x 6,00 + 2x 5,00 | = 16,00 | 0,251 |
| I 260 | S 275 | 2x 6,00 + 4x 5,00 | = 32,00 | 1,341 |
| I 300 PE | S 275 | 1x 6,00 + 2x 5,00 | = 16,00 | 0,676 |
| L 100x100x10 | S 275 | 2x 6,00 + 4x 5,00 | = 32,00 | 0,482 |
| I *600x400 | B10 | 1x 5,00 | = 5,00 | 1,500 |
| R *40x20 | S 235 | 4x 3,61 + 8x 3,20 | = 40,03 | 0,395 |
| Pozostałe przekroje | | | = 11,71 | 2,746 |
| MASA CAŁKOWITA USTROJU: | | | | **13,036** |

OBCIĄŻENIA:




**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: | CW "Ciężar własny" | | | Stałe | γf= 1,35/1,00 | |
| Grupa: | V "Naciąg cięgien" | | | Stałe | γf= 1,35/1,00 | |
| 22 | Temp. | | -20,000 | -20,000 | | |
| 23 | Temp. | | -20,000 | -20,000 | | |
| 24 | Temp. | | -20,000 | -20,000 | | |
| 25 | Temp. | | -20,000 | -20,000 | | |
| 26 | Temp. | | -20,000 | -20,000 | | |
| 27 | Temp. | | -20,000 | -20,000 | | |
| 28 | Temp. | | -20,000 | -20,000 | | |
| 29 | Temp. | | -20,000 | -20,000 | | |
| 30 | Temp. | | -20,000 | -20,000 | | |
| 31 | Temp. | | -20,000 | -20,000 | | |
| 32 | Temp. | | -20,000 | -20,000 | | |
| 33 | Temp. | | -20,000 | -20,000 | | |
| Grupa: | A "Obciążenia stropów" | | | Zmienne | γf= 1,50 | |
| 13 | Skupione | 0,0 | 50,000 | | 1,80 | |
| 13 | Skupione | 0,0 | 50,000 | | 4,20 | |
| 14 | Liniowe | 0,0 | 50,000 | 50,000 | 1,50 | 3,50 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15 | Trapezowe | 0,0 | 30,000 | | 1,50 | 3,50 |
| 16 | Skupione | 0,0 | 50,000 | | 1,80 | |
| 16 | Skupione | 0,0 | 50,000 | | 4,20 | |
| 16 | Liniowe | 0,0 | 30,000 | 15,000 | 1,20 | 4,80 |
| 17 | Liniowe | 0,0 | 50,000 | 50,000 | 1,50 | 3,50 |
| 18 | Moment | | 100,000 | | 2,00 | |
| 18 | Skupione | 0,0 | 100,000 | | 3,50 | |

Grupa: L "Wiatr z lewej" Zmienne γf= 1,50

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Skupione | 90,0 | 20,000 | | 4,00 | |
| 2 | Skupione | 90,0 | 20,000 | | 3,00 | |
| 3 | Skupione | 90,0 | 10,000 | | 3,00 | |

Grupa: P "Wiatr z prawej" Zmienne γf= 1,50

| | | | | | | |
|---|---|---|---|---|---|---|
| 11 | Skupione | -90,0 | 20,000 | | 0,00 | |
| 11 | Skupione | -90,0 | 20,000 | | 3,00 | |
| 12 | Skupione | -90,0 | 10,000 | | 0,00 | |

Grupa: S "Śnieg" Zmienne γf= 1,50

| | | | | | | |
|---|---|---|---|---|---|---|
| 19 | Liniowe-Y | 0,0 | 20,000 | 20,000 | 0,00 | 6,32 |
| 20 | Liniowe-Y | 0,0 | 20,000 | 20,000 | 0,00 | 5,00 |
| 21 | Liniowe-Y | 0,0 | 20,000 | 20,000 | 0,00 | 5,39 |

Grupa: T "Temperatura" Zmienne γf= 1,50

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Temp. | | 0,000 | 20,000 | | |
| 2 | Temp. | | 0,000 | 20,000 | | |
| 3 | Temp. | | 0,000 | 20,000 | | |

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**W Y N I K I wg PN-EN 1900**

**Teoria I-go rzędu**

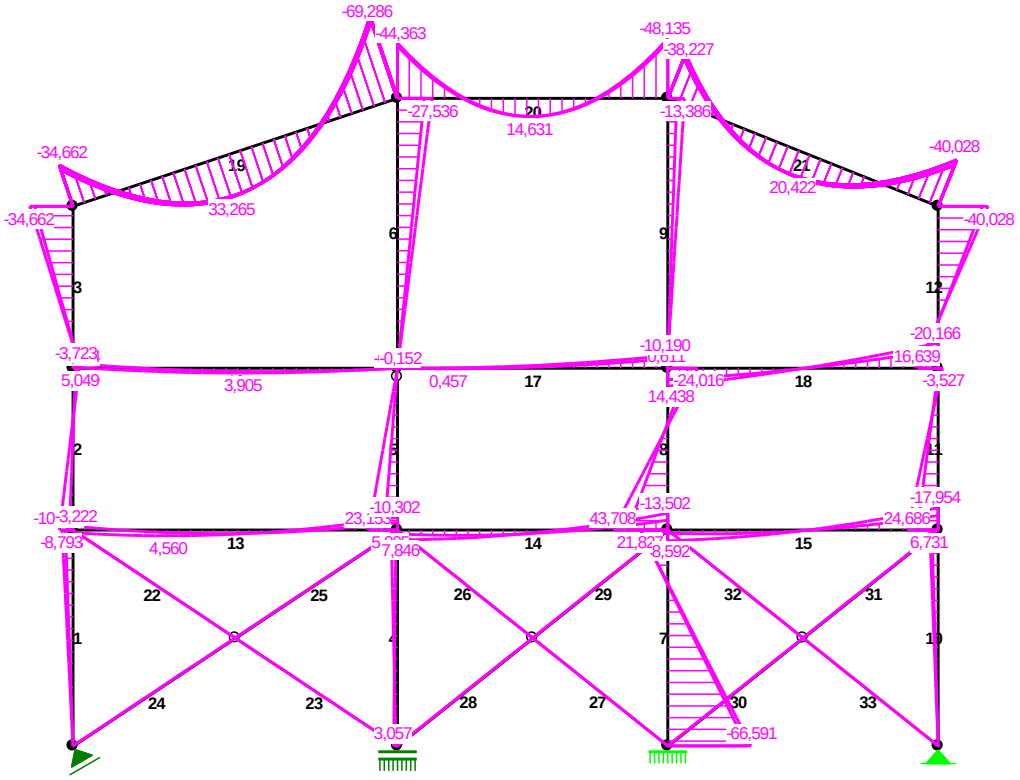
RM_Win v. 11.11 licencja nr 90001

==========

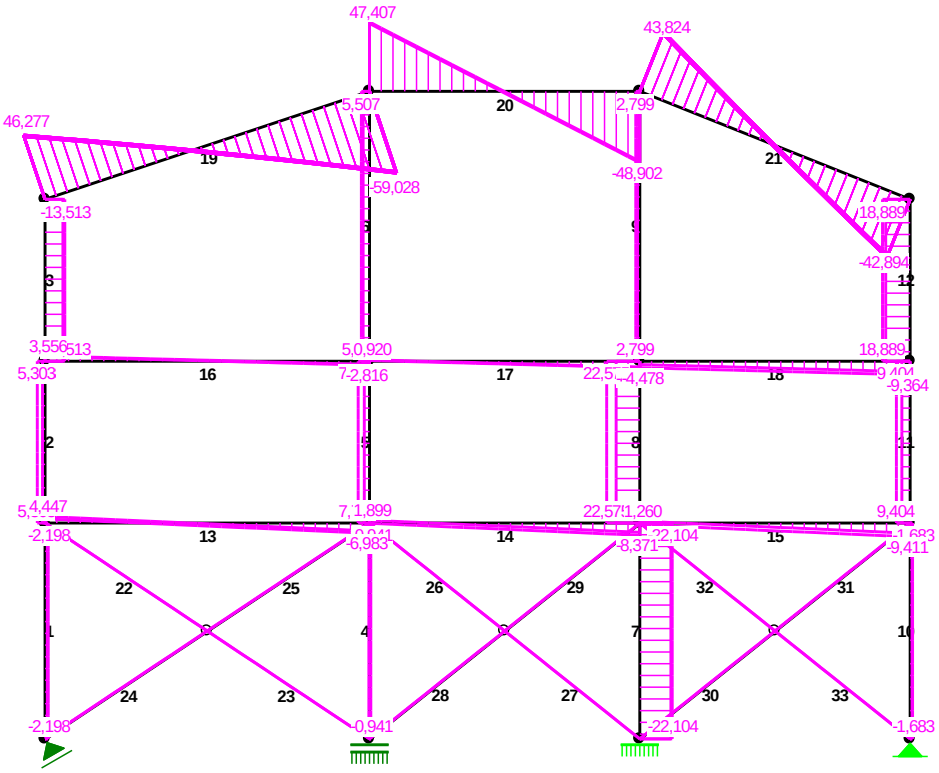
**OBCIĄŻENIOWE WSPÓŁ. BEZPIECZ.:**

| Grupa: | Znaczenie: | | γf: | ψ0/ψ1/ψ2: |
|---|---|---|---|---|
| CW-"Ciężar własny" | Stałe | | 1,35/1,00 | |
| V -"Naciąg cięgien" | Stałe | | 1,35/1,00 | |
| L -"Wiatr z lewej" | Zmienne | 2 | 1,50 | 0,6/0,2/0 |
| S -"Śnieg" | Zmienne | 3 | 1,50 | 0,5/0,2/0 |

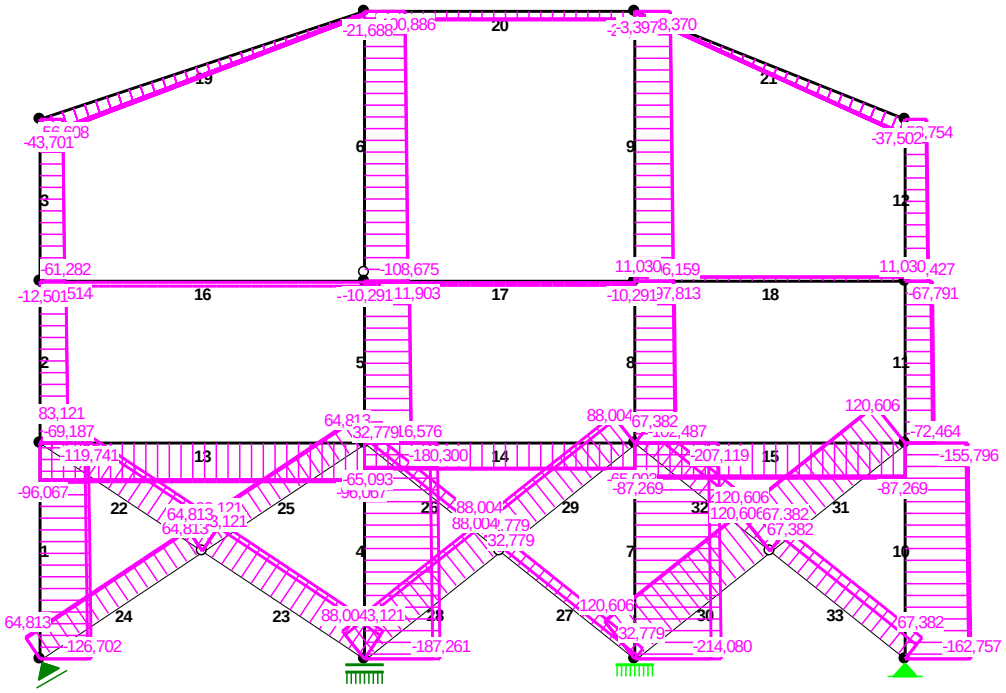
MOMENTY:


-69,286
-44,363
-48,135
-38,227
-27,536
20
14,631
-13,386
-34,662
19
21
20,422
-40,028
-34,662
33,265
-40,028
6
9
3
12
-3,723
-0,152
-10,190
-20,166
5,049
3,905
0,457
17
-24,016
18
16,639
-3,527
14,438
2
8
-10,302
-13,502
-17,954
-10
-3,222
43,708
24,686
-8,793
4,560
13
7,846
14
21,827
-8,592
15
6,731
22
25
26
29
32
31
1
7
10
24
23
28
27
30
33
3,057
-66,591

TNĄCE:


47,407
43,824
46,277
5,507
2,799
-59,028
-48,902
-13,513
18,889
-42,894
3,556
5,0,920
2,799
18,889
5,303
-2,816
-4,478
-9,364
4,447
1,899
1,260
9,404
-2,198
-6,983
-8,371
-22,104
-9,411
-0,941
-1,683

NORMALNE:




**SIŁY PRZEKROJOWE:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| Pręt: | | x/L: | x[m]: | M[kNm]: | Q[kN]: | N[kN]: |
|---|---|---|---|---|---|---|
| 1 | a | 0,00 | 0,000 | 0,000 | -1,533 | -126,702 |
| | b | 0,00 | 0,000 | 0,000 | -2,198 | -117,866 |
| | a | 1,00 | 4,000 | -6,131 | -1,533 | -119,741 |
| | b | 1,00 | 4,000 | -8,793 | -2,198 | -110,906 |
| 2 | a | 0,00 | 0,000 | -2,909 | 1,688 | -69,187 |
| | b | 0,00 | 0,000 | -10,861 | 5,303 | -69,002 |
| | a | 1,00 | 3,000 | 2,155 | 1,688 | -64,514 |
| | b | 1,00 | 3,000 | 5,049 | 5,303 | -64,329 |
| 3 | a | 0,00 | 0,000 | 5,878 | -13,513 | -60,958 |
| | b | 0,00 | 0,000 | 5,894 | -12,195 | -61,282 |
| | a | 1,00 | 3,000 | -34,662 | -13,513 | -56,285 |
| | b | 1,00 | 3,000 | -30,692 | -12,195 | -56,608 |
| 4 | a | 0,00 | 0,000 | 1,292 | 0,441 | -180,300 |
| | b | 0,00 | 0,000 | 5,005 | -0,941 | -162,234 |
| | a | 1,00 | 4,000 | 3,057 | 0,441 | -187,261 |
| | b | 1,00 | 4,000 | 1,240 | -0,941 | -169,194 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | a | 0,00 | 0,000 | 0,000 | 3,484 | -111,903 |
| | b | 0,00 | 0,000 | 0,000 | 7,718 | -110,544 |
| | a | 1,00 | 3,000 | 10,451 | 3,484 | -116,576 |
| | b | 1,00 | 3,000 | 23,153 | 7,718 | -115,217 |
| 6 | a | 0,00 | 0,000 | -21,470 | 4,294 | -100,886 |
| | b | 0,00 | 0,000 | -27,536 | 5,507 | -99,504 |
| | a | 1,00 | 5,000 | 0,000 | 4,294 | -108,675 |
| | b | 1,00 | 5,000 | 0,000 | 5,507 | -107,293 |
| 7 | a | 0,00 | 0,000 | 21,827 | -22,104 | -207,119 |
| | b | 0,00 | 0,000 | 21,614 | -21,222 | -182,213 |
| | a | 1,00 | 4,000 | -66,591 | -22,104 | -214,080 |
| | b | 1,00 | 4,000 | -63,272 | -21,222 | -189,173 |
| 8 | a | 0,00 | 0,000 | -16,275 | 16,175 | -97,813 |
| | b | 0,00 | 0,000 | -24,016 | 22,575 | -94,738 |
| | a | 1,00 | 3,000 | 32,249 | 16,175 | -102,487 |
| | b | 1,00 | 3,000 | 43,708 | 22,575 | -99,411 |
| 9 | a | 0,00 | 0,000 | -7,226 | 1,536 | -88,370 |
| | b | 0,00 | 0,000 | -13,386 | 2,799 | -86,976 |
| | a | 1,00 | 5,000 | 0,452 | 1,536 | -96,159 |
| | b | 1,00 | 5,000 | 0,611 | 2,799 | -94,766 |
| 10 | a | 0,00 | 0,000 | 5,023 | -1,256 | -150,129 |
| | b | 0,00 | 0,000 | 6,731 | -1,683 | -155,796 |
| | a | 1,00 | 4,000 | 0,000 | -1,256 | -157,090 |
| | b | 1,00 | 4,000 | 0,000 | -1,683 | -162,757 |
| 11 | a | 0,00 | 0,000 | -0,233 | 5,653 | -63,171 |
| | b | 0,00 | 0,000 | -3,527 | 9,404 | -67,791 |
| | a | 1,00 | 3,000 | 16,727 | 5,653 | -67,845 |
| | b | 1,00 | 3,000 | 24,686 | 9,404 | -72,464 |
| 12 | a | 0,00 | 0,000 | -35,656 | 16,684 | -51,302 |
| | b | 0,00 | 0,000 | -40,028 | 18,889 | -53,754 |
| | a | 1,00 | 3,000 | 14,395 | 16,684 | -55,975 |
| | b | 1,00 | 3,000 | 16,639 | 18,889 | -58,427 |
| 13 | a | 0,00 | 0,000 | -3,222 | 4,447 | -90,382 |
| | b | 0,00 | 0,000 | 2,068 | 2,860 | -96,067 |
| | b | 0,29 | 1,734 | **4,560*** | 0,015 | -96,067 |
| | a | 0,45 | 2,719 | 2,804 | -0,014 | **-90,382*** |
| | a | 1,00 | 6,000 | -6,072 | -5,396 | -90,382 |
| | b | 1,00 | 6,000 | -10,302 | -6,983 | -96,067 |
| 14 | a | 0,00 | 0,000 | 3,087 | 1,899 | -65,093 |
| | b | 0,00 | 0,000 | 7,846 | -0,168 | -61,983 |
| | a | 0,23 | 1,152 | 4,186 | 0,009 | **-65,093*** |
| | a | 1,00 | 5,000 | -7,922 | -6,303 | -65,093 |
| | b | 1,00 | 5,000 | -13,502 | -8,371 | -61,983 |
| 15 | a | 0,00 | 0,000 | 2,500 | 1,260 | -87,269 |
| | b | 0,00 | 0,000 | 8,592 | -1,208 | -81,315 |
| | a | 0,15 | 0,762 | 2,984 | 0,011 | **-87,269*** |
| | a | 1,00 | 5,000 | -11,704 | -6,942 | -87,269 |
| | b | 1,00 | 5,000 | -17,954 | -9,411 | -81,315 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16 | a | 0,00 | 0,000 | -3,723 | 3,556 | -2,799 |
| | b | 0,00 | 0,000 | -0,845 | 3,047 | -12,501 |
| | b | 0,52 | 3,117 | **3,905*** | 0,001 | -12,501 |
| | a | 0,61 | 3,633 | 2,747 | 0,006 | **-2,799*** |
| | a | 1,00 | 6,000 | 0,024 | -2,307 | -2,799 |
| | b | 1,00 | 6,000 | -0,152 | -2,816 | -12,501 |
| 17 | a | 0,00 | 0,000 | 0,024 | 0,920 | -3,609 |
| | b | 0,00 | 0,000 | -0,152 | 0,435 | -10,291 |
| | a | 0,19 | 0,938 | **0,457*** | 0,004 | -3,609 |
| | b | 0,09 | 0,449 | -0,055 | -0,004 | **-10,291*** |
| | a | 1,00 | 5,000 | -7,588 | -3,965 | -3,609 |
| | b | 1,00 | 5,000 | -10,190 | -4,450 | -10,291 |
| 18 | a | 0,00 | 0,000 | 9,139 | -2,311 | 11,030 |
| | b | 0,00 | 0,000 | 14,438 | -4,478 | 9,485 |
| | a | 1,00 | 5,000 | -14,629 | -7,196 | 11,030 |
| | b | 1,00 | 5,000 | -20,166 | -9,364 | 9,485 |
| 19 | a | 0,00 | 0,000 | -34,662 | 46,277 | -39,157 |
| | b | 0,00 | 0,000 | -30,692 | 45,103 | -43,701 |
| | b | 0,45 | 2,816 | **33,265*** | 0,009 | -28,670 |
| | a | 1,00 | 6,325 | -65,833 | -57,854 | -4,446 |
| | b | 1,00 | 6,325 | -69,286 | -59,028 | -8,991 |
| 20 | a | 0,00 | 0,000 | -44,363 | 47,407 | -18,219 |
| | b | 0,00 | 0,000 | -41,751 | 46,348 | -21,688 |
| | b | 0,49 | 2,441 | **14,631*** | -0,161 | -21,688 |
| | a | 0,50 | 2,480 | 14,624 | 0,154 | **-18,219*** |
| | a | 1,00 | 5,000 | -45,453 | -47,843 | -18,219 |
| | b | 1,00 | 5,000 | -48,135 | -48,902 | -21,688 |
| 21 | a | 0,00 | 0,000 | -38,227 | 43,824 | -0,439 |
| | b | 0,00 | 0,000 | -34,748 | 42,367 | -3,397 |
| | a | 0,50 | 2,698 | **20,422*** | 0,011 | -17,964 |
| | a | 1,00 | 5,385 | -35,656 | -41,436 | -34,543 |
| | b | 1,00 | 5,385 | -40,028 | -42,894 | -37,502 |
| 22 | a | 0,00 | 0,000 | 0,000 | 0,000 | 83,121 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 70,387 |
| | a | 1,00 | 3,606 | 0,000 | 0,000 | 83,121 |
| | b | 1,00 | 3,606 | 0,000 | 0,000 | 70,387 |
| 23 | a | 0,00 | 0,000 | 0,000 | 0,000 | 83,121 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 70,387 |
| | a | 1,00 | 3,606 | 0,000 | 0,000 | 83,121 |
| | b | 1,00 | 3,606 | 0,000 | 0,000 | 70,387 |
| 24 | a | 0,00 | 0,000 | 0,000 | 0,000 | 64,813 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 60,963 |
| | a | 1,00 | 3,606 | 0,000 | 0,000 | 64,813 |
| | b | 1,00 | 3,606 | 0,000 | 0,000 | 60,963 |
| 25 | a | 0,00 | 0,000 | 0,000 | 0,000 | 64,813 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 60,963 |
| | a | 1,00 | 3,606 | 0,000 | 0,000 | 64,813 |
| | b | 1,00 | 3,606 | 0,000 | 0,000 | 60,963 |
| 26 | a | 0,00 | 0,000 | 0,000 | 0,000 | 32,779 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 10,222 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 32,779 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 10,222 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27 | a | 0,00 | 0,000 | 0,000 | 0,000 | 32,779 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 10,222 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 32,779 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 10,222 |
| 28 | a | 0,00 | 0,000 | 0,000 | 0,000 | 88,004 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 76,206 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 88,004 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 76,206 |
| 29 | a | 0,00 | 0,000 | 0,000 | 0,000 | 88,004 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 76,206 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 88,004 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 76,206 |
| 30 | a | 0,00 | 0,000 | 0,000 | 0,000 | 120,606 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 118,332 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 120,606 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 118,332 |
| 31 | a | 0,00 | 0,000 | 0,000 | 0,000 | 120,606 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 118,332 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 120,606 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 118,332 |
| 32 | a | 0,00 | 0,000 | 0,000 | 0,000 | 67,382 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 44,875 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 67,382 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 44,875 |
| 33 | a | 0,00 | 0,000 | 0,000 | 0,000 | 67,382 |
| | b | 0,00 | 0,000 | 0,000 | 0,000 | 44,875 |
| | a | 1,00 | 3,202 | 0,000 | 0,000 | 67,382 |
| | b | 1,00 | 3,202 | 0,000 | 0,000 | 44,875 |

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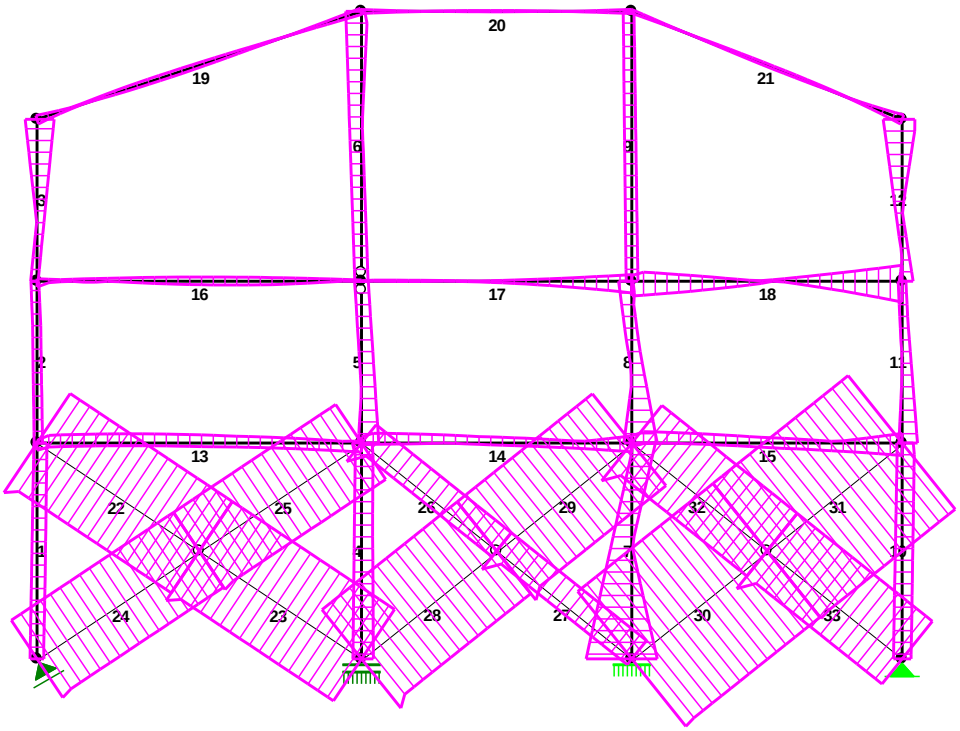
* = Wartości ekstremalne

NAPRĘŻENIA:




**NAPRĘŻENIA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| Pręt: | | x/L: | x[m]: | SigmaG: [MPa] | SigmaD: | SigmaMax/Ro: |
|---|---|---|---|---|---|---|
| **2 S 235** | | | | | | |
| 2 | a | 0,00 | 0,000 | -3,279 | -6,134 | 0,026 |
| | b | 0,00 | 0,000 | 0,636 | -10,024 | **0,043*** |
| | a | 1,00 | 3,000 | -5,446 | -3,331 | 0,023 |
| | b | 1,00 | 3,000 | -6,854 | -1,898 | 0,029 |
| 3 | a | 0,00 | 0,000 | -7,031 | -1,262 | 0,030 |
| | b | 0,00 | 0,000 | -7,061 | -1,276 | 0,030 |
| | a | 1,00 | 3,000 | 13,181 | -20,838 | **0,089*** |
| | b | 1,00 | 3,000 | 11,211 | -18,912 | 0,080 |
| 5 | a | 0,00 | 0,000 | -7,612 | -7,612 | 0,032 |
| | b | 0,00 | 0,000 | -7,520 | -7,520 | 0,032 |
| | a | 1,00 | 3,000 | -13,059 | -2,802 | 0,056 |
| | b | 1,00 | 3,000 | -19,200 | 3,524 | **0,082*** |
| 6 | a | 0,00 | 0,000 | 3,673 | -17,399 | 0,074 |
| | b | 0,00 | 0,000 | 6,744 | -20,282 | **0,086*** |

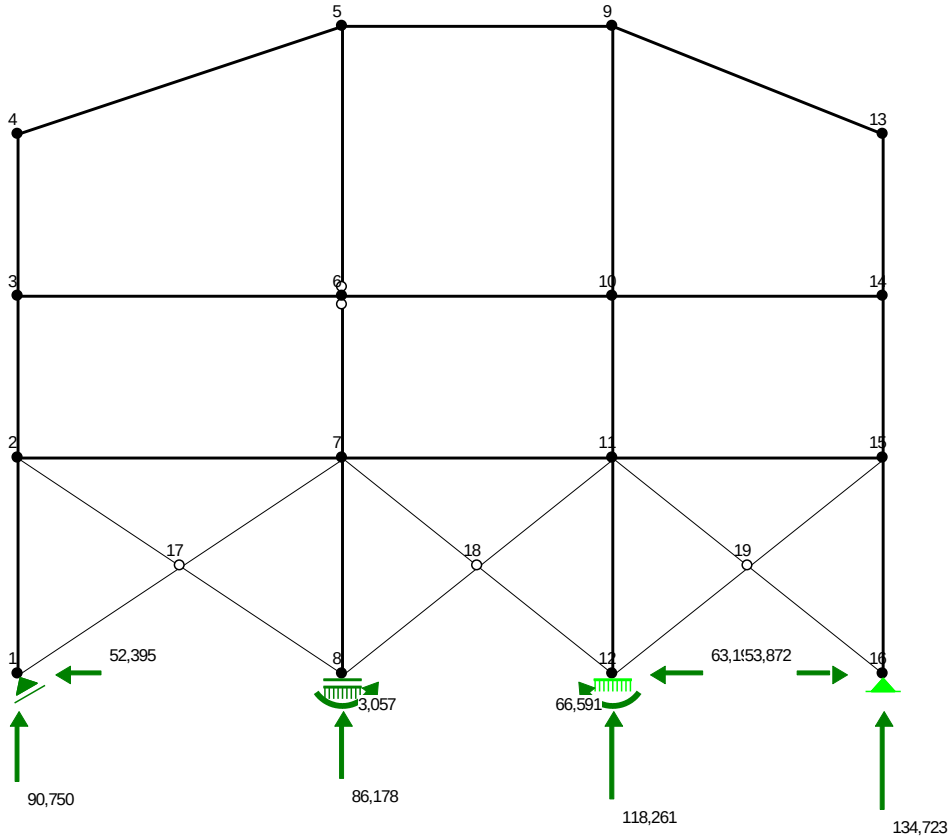
| | | | | | | |
|---|---|---|---|---|---|---|
| | a | 1,00 | 5,000 | -7,393 | -7,393 | 0,031 |
| | b | 1,00 | 5,000 | -7,299 | -7,299 | 0,031 |
| 8 | a | 0,00 | 0,000 | 1,333 | -14,641 | 0,062 |
| | b | 0,00 | 0,000 | 5,341 | -18,230 | 0,078 |
| | a | 1,00 | 3,000 | -22,798 | 8,854 | 0,097 |
| | b | 1,00 | 3,000 | -28,212 | 14,686 | **0,120*** |
| 9 | a | 0,00 | 0,000 | -2,466 | -9,557 | 0,041 |
| | b | 0,00 | 0,000 | 0,652 | -12,486 | **0,053*** |
| | a | 1,00 | 5,000 | -6,763 | -6,319 | 0,029 |
| | b | 1,00 | 5,000 | -6,747 | -6,147 | 0,029 |
| 11 | a | 0,00 | 0,000 | -4,183 | -4,412 | 0,019 |
| | b | 0,00 | 0,000 | -2,881 | -6,342 | 0,027 |
| | a | 1,00 | 3,000 | -12,824 | 3,593 | 0,055 |
| | b | 1,00 | 3,000 | -17,044 | 7,184 | **0,073*** |
| 12 | a | 0,00 | 0,000 | 14,007 | -20,987 | 0,089 |
| | b | 0,00 | 0,000 | 15,986 | -23,299 | **0,099*** |
| | a | 1,00 | 3,000 | -10,872 | 3,256 | 0,046 |
| | b | 1,00 | 3,000 | -12,140 | 4,191 | 0,052 |
| 22 | a | 0,00 | 0,000 | 66,145 | 66,145 | **0,281*** |
| | b | 0,00 | 0,000 | 56,012 | 56,012 | 0,238 |
| | a | 1,00 | 3,606 | 66,145 | 66,145 | **0,281*** |
| | b | 1,00 | 3,606 | 56,012 | 56,012 | 0,238 |
| 23 | a | 0,00 | 0,000 | 66,145 | 66,145 | **0,281*** |
| | b | 0,00 | 0,000 | 56,012 | 56,012 | 0,238 |
| | a | 1,00 | 3,606 | 66,145 | 66,145 | **0,281*** |
| | b | 1,00 | 3,606 | 56,012 | 56,012 | 0,238 |
| 24 | a | 0,00 | 0,000 | 51,576 | 51,576 | **0,219*** |
| | b | 0,00 | 0,000 | 48,513 | 48,513 | 0,206 |
| | a | 1,00 | 3,606 | 51,576 | 51,576 | **0,219*** |
| | b | 1,00 | 3,606 | 48,513 | 48,513 | 0,206 |
| 25 | a | 0,00 | 0,000 | 51,576 | 51,576 | **0,219*** |
| | b | 0,00 | 0,000 | 48,513 | 48,513 | 0,206 |
| | a | 1,00 | 3,606 | 51,576 | 51,576 | **0,219*** |
| | b | 1,00 | 3,606 | 48,513 | 48,513 | 0,206 |
| 26 | a | 0,00 | 0,000 | 26,084 | 26,084 | **0,111*** |
| | b | 0,00 | 0,000 | 8,134 | 8,134 | 0,035 |
| | a | 1,00 | 3,202 | 26,084 | 26,084 | **0,111*** |
| | b | 1,00 | 3,202 | 8,134 | 8,134 | 0,035 |
| 27 | a | 0,00 | 0,000 | 26,084 | 26,084 | **0,111*** |
| | b | 0,00 | 0,000 | 8,134 | 8,134 | 0,035 |
| | a | 1,00 | 3,202 | 26,084 | 26,084 | **0,111*** |
| | b | 1,00 | 3,202 | 8,134 | 8,134 | 0,035 |
| 28 | a | 0,00 | 0,000 | 70,031 | 70,031 | **0,298*** |
| | b | 0,00 | 0,000 | 60,642 | 60,642 | 0,258 |
| | a | 1,00 | 3,202 | 70,031 | 70,031 | **0,298*** |
| | b | 1,00 | 3,202 | 60,642 | 60,642 | 0,258 |
| 29 | a | 0,00 | 0,000 | 70,031 | 70,031 | **0,298*** |
| | b | 0,00 | 0,000 | 60,642 | 60,642 | 0,258 |
| | a | 1,00 | 3,202 | 70,031 | 70,031 | **0,298*** |
| | b | 1,00 | 3,202 | 60,642 | 60,642 | 0,258 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | a | 0,00 | 0,000 | 95,976 | 95,976 | **0,408*** |
| | b | 0,00 | 0,000 | 94,166 | 94,166 | 0,401 |
| | a | 1,00 | 3,202 | 95,976 | 95,976 | **0,408*** |
| | b | 1,00 | 3,202 | 94,166 | 94,166 | 0,401 |
| 31 | a | 0,00 | 0,000 | 95,976 | 95,976 | **0,408*** |
| | b | 0,00 | 0,000 | 94,166 | 94,166 | 0,401 |
| | a | 1,00 | 3,202 | 95,976 | 95,976 | **0,408*** |
| | b | 1,00 | 3,202 | 94,166 | 94,166 | 0,401 |
| 32 | a | 0,00 | 0,000 | 53,621 | 53,621 | **0,228*** |
| | b | 0,00 | 0,000 | 35,711 | 35,711 | 0,152 |
| | a | 1,00 | 3,202 | 53,621 | 53,621 | **0,228*** |
| | b | 1,00 | 3,202 | 35,711 | 35,711 | 0,152 |
| 33 | a | 0,00 | 0,000 | 53,621 | 53,621 | **0,228*** |
| | b | 0,00 | 0,000 | 35,711 | 35,711 | 0,152 |
| | a | 1,00 | 3,202 | 53,621 | 53,621 | **0,228*** |
| | b | 1,00 | 3,202 | 35,711 | 35,711 | 0,152 |
| **3 S 275** | | | | | | |
| 1 | a | 0,00 | 0,000 | -7,716 | -7,716 | 0,028 |
| | b | 0,00 | 0,000 | -7,178 | -7,178 | 0,026 |
| | a | 1,00 | 4,000 | -3,495 | -11,090 | 0,040 |
| | b | 1,00 | 4,000 | -1,309 | -12,200 | **0,044*** |
| 4 | a | 0,00 | 0,000 | -11,781 | -10,180 | 0,043 |
| | b | 0,00 | 0,000 | -12,980 | -6,781 | 0,047 |
| | a | 1,00 | 4,000 | -13,297 | -9,511 | **0,048*** |
| | b | 1,00 | 4,000 | -11,072 | -9,536 | 0,040 |
| 7 | a | 0,00 | 0,000 | -26,132 | 0,904 | 0,095 |
| | b | 0,00 | 0,000 | -24,483 | 2,289 | 0,089 |
| | a | 1,00 | 4,000 | 28,203 | -54,279 | **0,197*** |
| | b | 1,00 | 4,000 | 27,665 | -50,706 | 0,184 |
| 10 | a | 0,00 | 0,000 | -12,254 | -6,032 | 0,045 |
| | b | 0,00 | 0,000 | -13,657 | -5,319 | **0,050*** |
| | a | 1,00 | 4,000 | -9,567 | -9,567 | 0,035 |
| | b | 1,00 | 4,000 | -9,912 | -9,912 | 0,036 |
| 13 | a | 0,00 | 0,000 | -2,962 | -8,097 | 0,029 |
| | b | 0,00 | 0,000 | -8,052 | -4,756 | 0,029 |
| | a | 1,00 | 6,000 | -0,418 | -10,095 | 0,037 |
| | b | 1,00 | 6,000 | 2,992 | -13,428 | **0,049*** |
| 14 | a | 0,00 | 0,000 | -6,961 | -2,041 | 0,025 |
| | b | 0,00 | 0,000 | -11,009 | 1,496 | 0,040 |
| | a | 1,00 | 5,000 | 2,868 | -9,759 | 0,035 |
| | b | 1,00 | 5,000 | 8,050 | -13,469 | **0,049*** |
| 15 | a | 0,00 | 0,000 | -7,870 | -3,885 | 0,029 |
| | b | 0,00 | 0,000 | -12,924 | 0,770 | 0,047 |
| | a | 1,00 | 5,000 | 4,811 | -13,842 | 0,050 |
| | b | 1,00 | 5,000 | 10,777 | -17,839 | **0,065*** |
| 16 | a | 0,00 | 0,000 | 2,766 | -6,511 | **0,024*** |
| | b | 0,00 | 0,000 | -0,659 | -2,766 | 0,010 |
| | a | 1,00 | 6,000 | -0,323 | -0,264 | 0,001 |
| | b | 1,00 | 6,000 | -1,231 | -1,609 | 0,006 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17 | a | 0,00 | 0,000 | -0,411 | -0,352 | 0,001 |
| | b | 0,00 | 0,000 | -0,991 | -1,369 | 0,005 |
| | a | 1,00 | 5,000 | 5,866 | -13,044 | 0,047 |
| | b | 1,00 | 5,000 | 7,287 | -18,107 | **0,066*** |
| 18 | a | 0,00 | 0,000 | -6,340 | 16,435 | 0,060 |
| | b | 0,00 | 0,000 | -10,877 | 25,103 | 0,091 |
| | a | 1,00 | 5,000 | 13,260 | -23,196 | 0,084 |
| | b | 1,00 | 5,000 | 17,659 | -32,597 | **0,119*** |
| **106** | **B10** | | | | | |
| 19 | a | 0,00 | 0,000 | 4,327 | -5,439 | **0,938*** |
| | b | 0,00 | 0,000 | 3,703 | -4,945 | 0,853 |
| | a | 1,00 | 6,325 | 3,291 | -3,362 | 0,580 |
| | b | 1,00 | 6,325 | 3,429 | -3,573 | 0,616 |
| 20 | a | 0,00 | 0,000 | 2,096 | -2,388 | 0,412 |
| | b | 0,00 | 0,000 | 1,936 | -2,283 | 0,394 |
| | a | 1,00 | 5,000 | 2,151 | -2,443 | 0,421 |
| | b | 1,00 | 5,000 | 2,259 | -2,606 | **0,449*** |
| 21 | a | 0,00 | 0,000 | 1,928 | -1,935 | 0,334 |
| | b | 0,00 | 0,000 | 1,729 | -1,783 | 0,307 |
| | a | 1,00 | 5,385 | 4,532 | -5,514 | 0,951 |
| | b | 1,00 | 5,385 | 5,106 | -6,172 | 1,064 |

* = Wartości ekstremalne

REAKCJE PODPOROWE:




**REAKCJE PODPOROWE:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

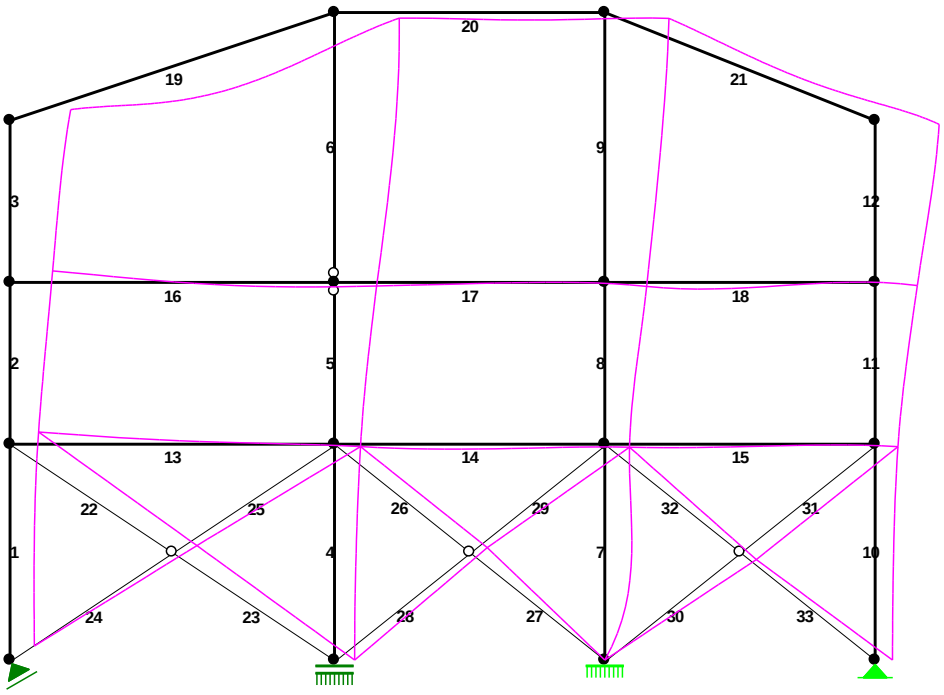
| Węzeł: | | H[kN]: | V[kN]: | Wypadkowa[kN]: | M[kNm]: |
|---|---|---|---|---|---|
| 1 | a | -52,395 | 90,750 | 104,789 | |
| | b | -48,526 | 84,050 | 97,052 | |
| 8 | a | 0,000 | 86,178 | 86,178 | 3,057 |
| | b | 0,000 | 82,546 | 82,546 | 1,240 |
| 12 | a | -46,478 | 118,261 | 127,066 | -66,591 |
| | b | -63,198 | 108,866 | 125,881 | -63,272 |
| 16 | a | 53,872 | 114,996 | 126,990 | |
| | b | 36,725 | 134,723 | 139,639 | |

**PRZEMIESZCZENIA WĘZŁÓW:** T.I rzędu
Obciążenia char.: Osiadania+CW+V+**L**+0,5·S

| Węzeł: | Ux[m]: | Uy[m]: | Wypadkowe[m]: | Fi[rad]([deg]): |
|---|---|---|---|---|
| 1 | 0,00140 | 0,00081 | 0,00162 | 0,00002 ( 0,001) |
| 2 | 0,00165 | 0,00071 | 0,00179 | -0,00022 ( -0,013) |
| 3 | 0,00246 | 0,00066 | 0,00255 | -0,00028 ( -0,016) |

| | | | | |
|---|---|---|---|---|
| 4 | 0,00350 | 0,00062 | 0,00355 | -0,00055 ( -0,032) |
| 5 | 0,00374 | -0,00033 | 0,00375 | 0,00005 ( 0,003) |
| 6 | 0,00243 | -0,00021 | 0,00244 | 0,00007 ( 0,004) |
| 7 | 0,00150 | -0,00014 | 0,00151 | -0,00017 ( -0,010) |
| 8 | 0,00117 | 0,00000 | 0,00117 | 0,00000 ( 0,000) |
| 9 | 0,00370 | -0,00034 | 0,00372 | -0,00010 ( -0,006) |
| 10 | 0,00241 | -0,00024 | 0,00243 | -0,00033 ( -0,019) |
| 11 | 0,00143 | -0,00017 | 0,00144 | -0,00007 ( -0,004) |
| 12 | 0,00000 | 0,00000 | 0,00000 | -0,00175 ( -0,100) |
| 13 | 0,00369 | -0,00023 | 0,00370 | -0,00020 ( -0,011) |
| 14 | 0,00243 | -0,00019 | 0,00244 | -0,00044 ( -0,025) |
| 15 | 0,00132 | -0,00014 | 0,00132 | -0,00021 ( -0,012) |
| 16 | 0,00100 | 0,00000 | 0,00100 | -0,00001 ( -0,001) |
| 17 | 0,00142 | 0,00038 | 0,00147 | |
| 18 | 0,00102 | 0,00026 | 0,00105 | |
| 19 | 0,00094 | -0,00043 | 0,00103 | |

PRZEMIESZCZENIA:




**DEFORMACJE:** T.I rzędu
Obciążenia char.: Osiadania+CW+V+**L**+0,5·S

| Pręt: | Wa[m]: | Wb[m]: | FIa[deg]: | FIb[deg]: | f[m]: | L/f: |
|---|---|---|---|---|---|---|
| 1 | -0,0014 | -0,0016 | 0,001 | -0,013 | 0,0001 | 31900,0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | -0,0016 | -0,0025 | -0,013 | -0,016 | 0,0000 | 136970,7 |
| 3 | -0,0025 | -0,0035 | -0,016 | -0,032 | 0,0001 | 27334,4 |
| 4 | 0,0015 | 0,0012 | -0,010 | 0,000 | 0,0001 | 45828,5 |
| 5 | 0,0024 | 0,0015 | -0,022 | -0,010 | 0,0001 | 38451,5 |
| 6 | 0,0037 | 0,0024 | 0,003 | -0,024 | 0,0003 | 16691,7 |
| 7 | 0,0014 | 0,0000 | -0,004 | -0,100 | 0,0009 | 4373,2 |
| 8 | 0,0024 | 0,0014 | -0,019 | -0,004 | 0,0001 | 26029,1 |
| 9 | 0,0037 | 0,0024 | -0,006 | -0,019 | 0,0001 | 33444,1 |
| 10 | 0,0013 | 0,0010 | -0,012 | -0,001 | 0,0001 | 40020,7 |
| 11 | 0,0024 | 0,0013 | -0,025 | -0,012 | 0,0001 | 33612,4 |
| 12 | 0,0037 | 0,0024 | -0,011 | -0,025 | 0,0001 | 29161,7 |
| 13 | 0,0007 | -0,0001 | -0,013 | -0,010 | 0,0001 | 44139,2 |
| 14 | -0,0001 | -0,0002 | -0,010 | -0,004 | 0,0001 | 36869,6 |
| 15 | -0,0002 | -0,0001 | -0,004 | -0,012 | 0,0001 | 46109,9 |
| 16 | 0,0007 | -0,0002 | -0,016 | 0,004 | 0,0004 | 16933,2 |
| 17 | -0,0002 | -0,0002 | 0,004 | -0,019 | 0,0002 | 21756,4 |
| 18 | -0,0002 | -0,0002 | -0,019 | -0,025 | 0,0002 | 23651,5 |
| 19 | -0,0005 | -0,0015 | -0,032 | 0,003 | 0,0013 | 4741,9 |
| 20 | -0,0003 | -0,0003 | 0,003 | -0,006 | 0,0001 | 47642,9 |
| 21 | 0,0011 | 0,0012 | -0,006 | -0,011 | 0,0004 | 12162,5 |
| 22 | 0,0015 | 0,0011 | -0,006 | -0,006 | 0,0000 | 2,42E+19 |
| 23 | 0,0011 | 0,0006 | -0,007 | -0,007 | 0,0000 | 2,66E+19 |
| 24 | -0,0001 | -0,0005 | -0,006 | -0,006 | 0,0000 | INF |
| 25 | -0,0005 | -0,0009 | -0,008 | -0,008 | 0,0000 | 5,26E+19 |
| 26 | 0,0008 | 0,0008 | 0,000 | 0,000 | 0,0000 | 4,30E+19 |
| 27 | 0,0008 | 0,0000 | -0,015 | -0,015 | 0,0000 | 3,15E+19 |
| 28 | -0,0007 | -0,0004 | 0,005 | 0,005 | 0,0000 | 3,78E+19 |
| 29 | -0,0004 | -0,0010 | -0,011 | -0,011 | 0,0000 | 2,78E+19 |
| 30 | 0,0000 | -0,0009 | -0,016 | -0,016 | 0,0000 | 3,63E+19 |
| 31 | -0,0009 | -0,0009 | 0,000 | 0,000 | 0,0000 | 5,91E+19 |
| 32 | 0,0008 | 0,0003 | -0,009 | -0,009 | 0,0000 | 5,91E+19 |
| 33 | 0,0003 | 0,0006 | 0,007 | 0,007 | 0,0000 | 5,56E+19 |

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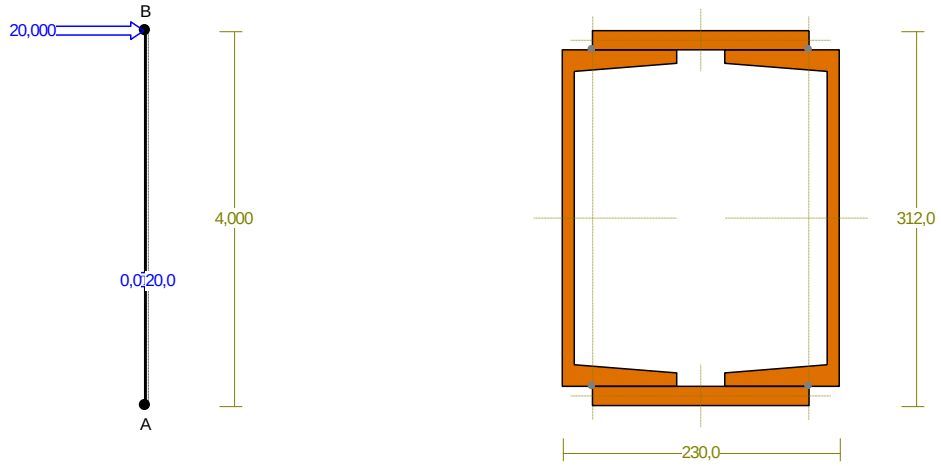
**PRĘT NR 1**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

---

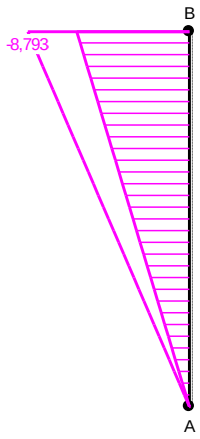
GEOMETRIA PRĘTA: PRZEKRÓJ: 4
Począ(A):0 Koniec(B):1 "2xC280"
Sztywne Sztywne MATERIAŁ: 3 S 275
Długość: 4,000 Kąt: 90,00

| Rzuty | | Imperfekcje | |
|---|---|---|---|
| H: 0,000 | V: 4,000 | wo/L= 0,0000 | fo/L= 0,0000 |

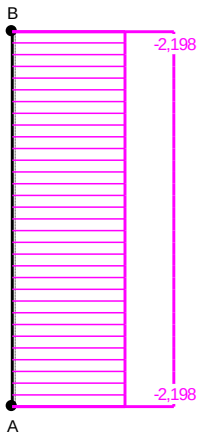
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: L "Wiatr z lewej" | | | | Zmienne | γf= 1,50 | |
| 1 | Skupione | 90,0 | 20,000 | | 4,00 | |
| Grupa: T "Temperatura" | | | | Zmienne | γf= 1,50 | |
| 1 | Temp. | | 0,000 | 20,000 | | |

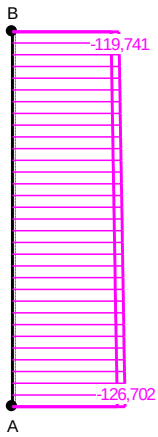
M




Q




N




W


**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

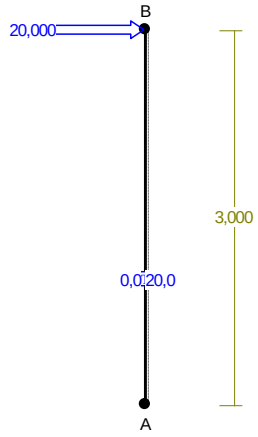
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)

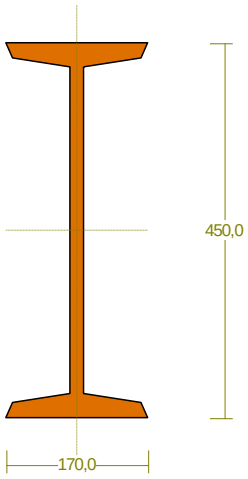
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | -1,533 | -126,702 | -0,0014 | -7,716 | -7,716 |
| | b | 0,000 | -2,198 | -117,866 | -0,0015 | -7,178 | -7,178 |
| 0,10 | a | -0,613 | -1,533 | -126,005 | -0,0014 | -7,294 | -8,054 |
| | b | -0,879 | -2,198 | -117,170 | -0,0015 | -6,591 | -7,680 |
| 0,20 | a | -1,226 | -1,533 | -125,309 | -0,0014 | -6,872 | -8,391 |
| | b | -1,759 | -2,198 | -116,474 | -0,0015 | -6,004 | -8,183 |
| 0,30 | a | -1,839 | -1,533 | -124,613 | -0,0014 | -6,450 | -8,728 |
| | b | -2,638 | -2,198 | -115,778 | -0,0015 | -5,417 | -8,685 |
| 0,40 | a | -2,452 | -1,533 | -123,917 | -0,0014 | -6,028 | -9,066 |
| | b | -3,517 | -2,198 | -115,082 | -0,0015 | -4,830 | -9,187 |
| 0,50 | a | -3,066 | -1,533 | -123,221 | -0,0014 | -5,606 | -9,403 |
| | b | -4,396 | -2,198 | -114,386 | -0,0016 | -4,243 | -9,689 |
| 0,60 | a | -3,679 | -1,533 | -122,525 | -0,0014 | -5,184 | -9,740 |
| | b | -5,276 | -2,198 | -113,690 | -0,0016 | -3,656 | -10,191 |
| 0,70 | a | -4,292 | -1,533 | -121,829 | -0,0015 | -4,762 | -10,078 |
| | b | -6,155 | -2,198 | -112,994 | -0,0017 | -3,070 | -10,693 |
| 0,80 | a | -4,905 | -1,533 | -121,133 | -0,0015 | -4,339 | -10,415 |
| | b | -7,034 | -2,198 | -112,298 | -0,0017 | -2,483 | -11,196 |
| 0,90 | a | -5,518 | -1,533 | -120,437 | -0,0016 | -3,917 | -10,752 |
| | b | -7,914 | -2,198 | -111,602 | -0,0018 | -1,896 | -11,698 |
| 1,00 | a | -6,131 | -1,533 | -119,741 | -0,0016 | -3,495 | -11,090 |
| | b | -8,793 | -2,198 | -110,906 | -0,0020 | -1,309 | -12,200 |
| 0,00 | b | **0,000*** | -2,198 | -117,866 | | -7,178 | -7,178 |
| 0,00 | a | **0,000*** | -1,533 | -126,702 | | -7,716 | -7,716 |
| 1,00 | b | **-8,793*** | -2,198 | -110,906 | | -1,309 | -12,200 |
| 0,00 | a | 0,000 | **-1,533*** | -126,702 | | -7,716 | -7,716 |
| 1,00 | a | -6,131 | **-1,533*** | -119,741 | | -3,495 | -11,090 |
| 0,00 | b | 0,000 | **-2,198*** | -117,866 | | -7,178 | -7,178 |
| 1,00 | b | -8,793 | **-2,198*** | -110,906 | | -1,309 | -12,200 |
| 1,00 | b | -8,793 | -2,198 | **-110,906*** | | -1,309 | -12,200 |
| 0,00 | a | 0,000 | -1,533 | **-126,702*** | | -7,716 | -7,716 |
| 1,00 | b | -8,793 | -2,198 | -110,906 | | -3,495 | **-11,090*** |

* = Wartości ekstremalne

**PRĘT NR 2**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

---

GEOMETRIA PRĘTA: PRZEKRÓJ: 2
Początek(A):1 Koniec(B):2 "I450"
Sztywne Sztywne MATERIAŁ: 2 S 235
Długość: 3,000 Kąt: 90,00
Rzuty Imperfekcje
H: 0,000 V: 3,000 wo/L= 0,0000 fo/L= 0,0000

---

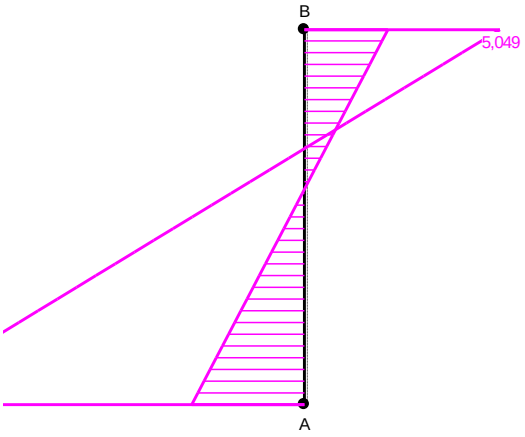
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

---

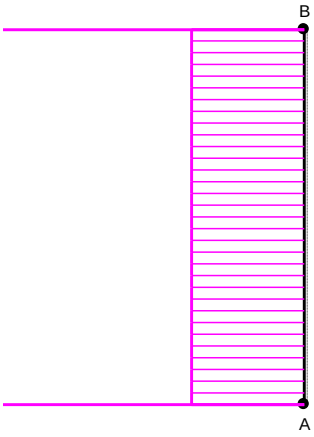
| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: | |
|---|---|---|---|---|---|---|---|
| Grupa: L "Wiatr z lewej" | | | | | Zmienne | γf= 1,50 | |
| 2 | Skupione | 90,0 | 20,000 | | 3,00 | | |
| Grupa: T "Temperatura" | | | | | Zmienne | γf= 1,50 | |
| 2 | Temp. | | 0,000 | 20,000 | | | |

---

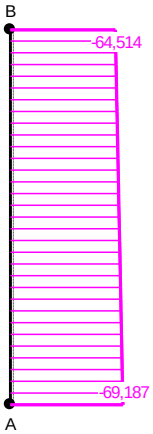
M Q




N




W





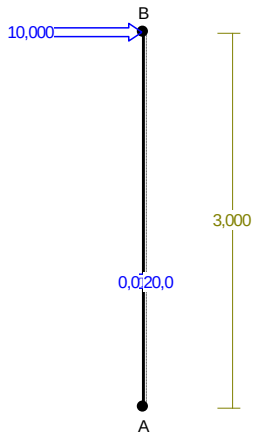
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

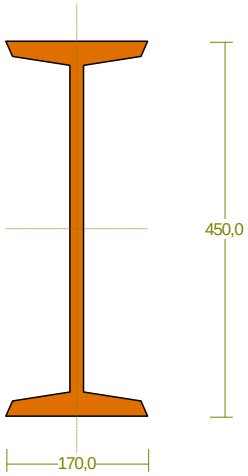
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -2,909 | 1,688 | -69,187 | -0,0016 | -3,279 | -6,134 |
| | b | -10,861 | 5,303 | -69,002 | -0,0020 | 0,636 | -10,024 |
| 0,10 | a | -2,403 | 1,688 | -68,720 | -0,0017 | -3,496 | -5,854 |
| | b | -9,270 | 5,303 | -68,535 | -0,0021 | -0,113 | -9,211 |
| 0,20 | a | -1,896 | 1,688 | -68,253 | -0,0018 | -3,712 | -5,574 |
| | b | -7,679 | 5,303 | -68,067 | -0,0022 | -0,862 | -8,399 |
| 0,30 | a | -1,390 | 1,688 | -67,785 | -0,0018 | -3,929 | -5,293 |
| | b | -6,088 | 5,303 | -67,600 | -0,0023 | -1,611 | -7,586 |
| 0,40 | a | -0,883 | 1,688 | -67,318 | -0,0019 | -4,146 | -5,013 |
| | b | -4,497 | 5,303 | -67,133 | -0,0024 | -2,360 | -6,774 |
| 0,50 | a | -0,377 | 1,688 | -66,851 | -0,0020 | -4,363 | -4,733 |
| | b | -2,906 | 5,303 | -66,665 | -0,0026 | -3,109 | -5,961 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | 0,130 | 1,688 | -66,383 | -0,0020 | -4,579 | -4,452 |
| | b | -1,315 | 5,303 | -66,198 | -0,0027 | -3,858 | -5,149 |
| 0,70 | a | 0,636 | 1,688 | -65,916 | -0,0021 | -4,796 | -4,172 |
| | b | 0,276 | 5,303 | -65,731 | -0,0028 | -4,607 | -4,336 |
| 0,80 | a | 1,142 | 1,688 | -65,449 | -0,0022 | -5,013 | -3,892 |
| | b | 1,867 | 5,303 | -65,263 | -0,0030 | -5,356 | -3,523 |
| 0,90 | a | 1,649 | 1,688 | -64,981 | -0,0022 | -5,230 | -3,611 |
| | b | 3,458 | 5,303 | -64,796 | -0,0031 | -6,105 | -2,711 |
| 1,00 | a | 2,155 | 1,688 | -64,514 | -0,0023 | -5,446 | -3,331 |
| | b | 5,049 | 5,303 | -64,329 | -0,0033 | -6,854 | -1,898 |
| 1,00 | b | **5,049*** | 5,303 | -64,329 | | -6,854 | -1,898 |
| 0,00 | b | **-10,861*** | 5,303 | -69,002 | | 0,636 | -10,024 |
| 1,00 | b | 5,049 | **5,303*** | -64,329 | | -6,854 | -1,898 |
| 0,00 | b | -10,861 | **5,303*** | -69,002 | | 0,636 | -10,024 |
| 1,00 | a | 2,155 | **1,688*** | -64,514 | | -5,446 | -3,331 |
| 0,00 | a | -2,909 | **1,688*** | -69,187 | | -3,279 | -6,134 |
| 1,00 | b | 5,049 | 5,303 | **-64,329*** | | -6,854 | -1,898 |
| 0,00 | a | -2,909 | 1,688 | **-69,187*** | | -3,279 | -6,134 |
| 0,00 | b | -10,861 | 5,303 | -69,002 | | -3,279 | **-6,134*** |

* = Wartości ekstremalne

**PRĘT NR 3**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

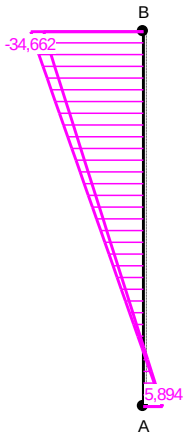
GEOMETRIA PRĘTA: PRZEKRÓJ: 2
Początek(A):2 Koniec(B):3 "I450"
Sztywne Sztywne MATERIAŁ: 2 S 235
Długość: 3,000 Kąt: 90,00
Rzuty Imperfekcje
H: 0,000 V: 3,000 wo/L= 0,0000 fo/L= 0,0000

**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

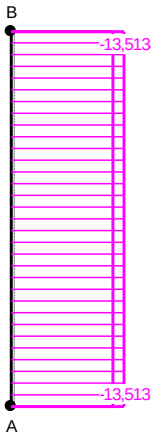
| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: L "Wiatr z lewej" | | | | Zmienne | γf= 1,50 | |
| 3 | Skupione | 90,0 | 10,000 | | 3,00 | |

Grupa: T "Temperatura" Zmienne γf= 1,50
3 Temp. 0,000 20,000

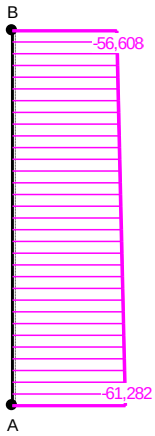
M




Q




N




W

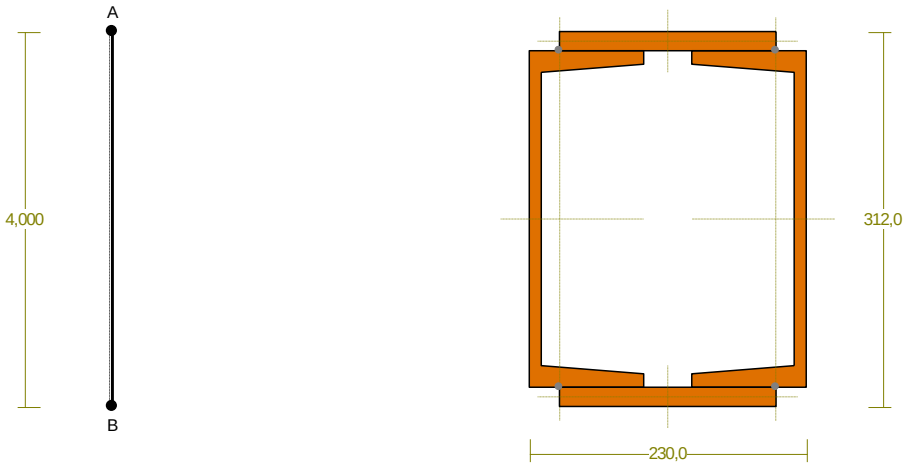

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 5,878 | -13,513 | -60,958 | -0,0023 | -7,031 | -1,262 |
| | b | 5,894 | -12,195 | -61,282 | -0,0033 | -7,061 | -1,276 |
| 0,10 | a | 1,824 | -13,513 | -60,491 | -0,0024 | -5,010 | -3,220 |
| | b | 2,236 | -12,195 | -60,814 | -0,0034 | -5,234 | -3,040 |
| 0,20 | a | -2,230 | -13,513 | -60,024 | -0,0024 | -2,989 | -5,177 |
| | b | -1,423 | -12,195 | -60,347 | -0,0035 | -3,407 | -4,803 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,30 | a | -6,284 | -13,513 | -59,556 | -0,0025 | -0,968 | -7,135 |
| | b | -5,082 | -12,195 | -59,880 | -0,0036 | -1,580 | -6,567 |
| 0,40 | a | -10,338 | -13,513 | -59,089 | -0,0025 | 1,053 | -9,093 |
| | b | -8,740 | -12,195 | -59,412 | -0,0038 | 0,247 | -8,331 |
| 0,50 | a | -14,392 | -13,513 | -58,621 | -0,0026 | 3,075 | -11,050 |
| | b | -12,399 | -12,195 | -58,945 | -0,0039 | 2,075 | -10,094 |
| 0,60 | a | -18,446 | -13,513 | -58,154 | -0,0027 | 5,096 | -13,008 |
| | b | -16,057 | -12,195 | -58,478 | -0,0041 | 3,902 | -11,858 |
| 0,70 | a | -22,500 | -13,513 | -57,687 | -0,0028 | 7,117 | -14,966 |
| | b | -19,716 | -12,195 | -58,010 | -0,0042 | 5,729 | -13,622 |
| 0,80 | a | -26,554 | -13,513 | -57,219 | -0,0030 | 9,138 | -16,923 |
| | b | -23,375 | -12,195 | -57,543 | -0,0044 | 7,556 | -15,385 |
| 0,90 | a | -30,608 | -13,513 | -56,752 | -0,0031 | 11,159 | -18,881 |
| | b | -27,033 | -12,195 | -57,076 | -0,0046 | 9,383 | -17,149 |
| 1,00 | a | -34,662 | -13,513 | -56,285 | -0,0033 | 13,181 | -20,838 |
| | b | -30,692 | -12,195 | -56,608 | -0,0049 | 11,211 | -18,912 |
| 0,00 | b | **5,894*** | -12,195 | -61,282 | | -7,061 | -1,276 |
| 1,00 | a | **-34,662*** | -13,513 | -56,285 | | 13,181 | -20,838 |
| 0,00 | b | 5,894 | **-12,195*** | -61,282 | | -7,061 | -1,276 |
| 1,00 | b | -30,692 | **-12,195*** | -56,608 | | 11,211 | -18,912 |
| 0,00 | a | 5,878 | **-13,513*** | -60,958 | | -7,031 | -1,262 |
| 1,00 | a | -34,662 | **-13,513*** | -56,285 | | 13,181 | -20,838 |
| 1,00 | a | -34,662 | -13,513 | **-56,285*** | | 13,181 | -20,838 |
| 0,00 | b | 5,894 | -12,195 | **-61,282*** | | -7,061 | -1,276 |
| 1,00 | b | -30,692 | -12,195 | -56,608 | | 13,181 | **-20,838*** |

* = Wartości ekstremalne

**PRĘT NR 4**



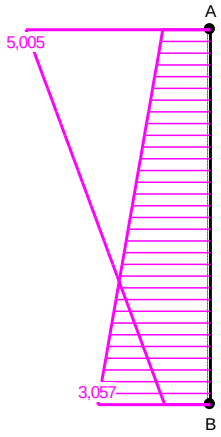

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA:
Początek(A):6 Koniec(B):7
Sztywne Sztywne
Długość: 4,000 Kąt: -90,00
Rzuty
H: 0,000 V: 4,000

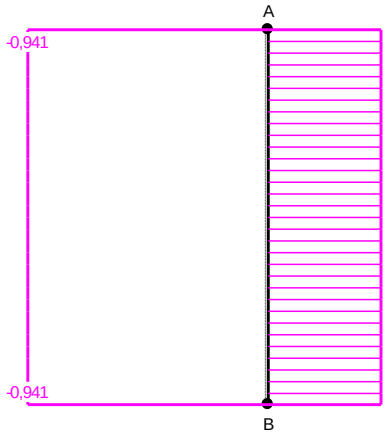
PRZEKRÓJ: 4
"2xC280"
MATERIAŁ: 3 S 275

Imperfekcje
wo/L= 0,0000 fo/L= 0,0000

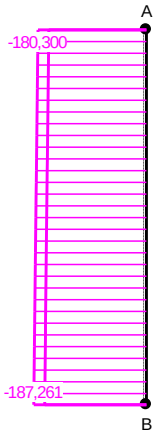
M Q




N




W





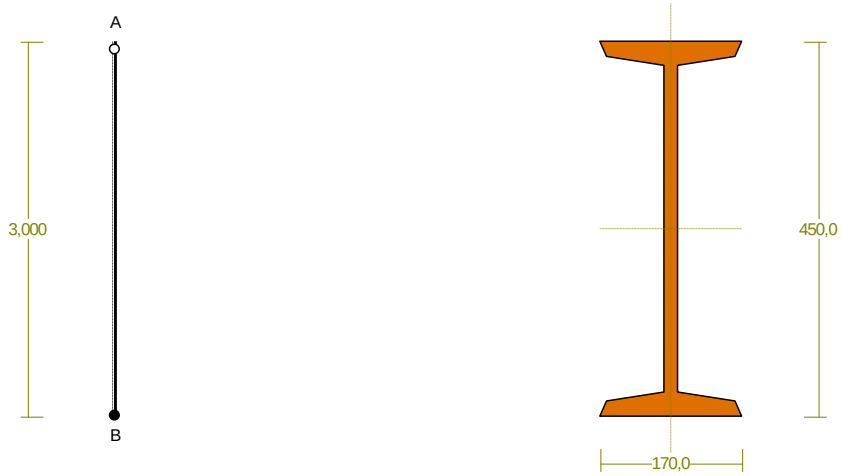
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 1,292 | 0,441 | -180,300 | 0,0015 | -11,781 | -10,180 |
| | b | 5,005 | -0,941 | -162,234 | 0,0018 | -12,980 | -6,781 |
| 0,10 | a | 1,469 | 0,441 | -180,996 | 0,0014 | -11,932 | -10,113 |
| | b | 4,628 | -0,941 | -162,930 | 0,0017 | -12,789 | -7,056 |
| 0,20 | a | 1,645 | 0,441 | -181,692 | 0,0013 | -12,084 | -10,046 |
| | b | 4,252 | -0,941 | -163,626 | 0,0016 | -12,598 | -7,332 |
| 0,30 | a | 1,822 | 0,441 | -182,388 | 0,0013 | -12,236 | -9,980 |
| | b | 3,875 | -0,941 | -164,322 | 0,0016 | -12,408 | -7,607 |
| 0,40 | a | 1,998 | 0,441 | -183,084 | 0,0012 | -12,387 | -9,913 |
| | b | 3,499 | -0,941 | -165,018 | 0,0015 | -12,217 | -7,883 |
| 0,50 | a | 2,174 | 0,441 | -183,780 | 0,0012 | -12,539 | -9,846 |
| | b | 3,122 | -0,941 | -165,714 | 0,0015 | -12,026 | -8,158 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | 2,351 | 0,441 | -184,476 | 0,0012 | -12,691 | -9,779 |
| | b | 2,746 | -0,941 | -166,410 | 0,0015 | -11,835 | -8,434 |
| 0,70 | a | 2,527 | 0,441 | -185,172 | 0,0011 | -12,842 | -9,712 |
| | b | 2,369 | -0,941 | -167,106 | 0,0014 | -11,644 | -8,710 |
| 0,80 | a | 2,704 | 0,441 | -185,868 | 0,0011 | -12,994 | -9,645 |
| | b | 1,993 | -0,941 | -167,802 | 0,0014 | -11,454 | -8,985 |
| 0,90 | a | 2,880 | 0,441 | -186,565 | 0,0011 | -13,146 | -9,578 |
| | b | 1,616 | -0,941 | -168,498 | 0,0014 | -11,263 | -9,261 |
| 1,00 | a | 3,057 | 0,441 | -187,261 | 0,0011 | -13,297 | -9,511 |
| | b | 1,240 | -0,941 | -169,194 | 0,0014 | -11,072 | -9,536 |
| 0,00 | b | **5,005*** | -0,941 | -162,234 | | -12,980 | -6,781 |
| 1,00 | b | **1,240*** | -0,941 | -169,194 | | -11,072 | -9,536 |
| 1,00 | a | 3,057 | **0,441*** | -187,261 | | -13,297 | -9,511 |
| 0,00 | a | 1,292 | **0,441*** | -180,300 | | -11,781 | -10,180 |
| 0,00 | b | 5,005 | **-0,941*** | -162,234 | | -12,980 | -6,781 |
| 1,00 | b | 1,240 | **-0,941*** | -169,194 | | -11,072 | -9,536 |
| 0,00 | b | 5,005 | -0,941 | **-162,234*** | | -12,980 | -6,781 |
| 1,00 | a | 3,057 | 0,441 | **-187,261*** | | -13,297 | -9,511 |
| 1,00 | b | 1,240 | -0,941 | -169,194 | | **-13,297*** | -9,511 |

* = Wartości ekstremalne

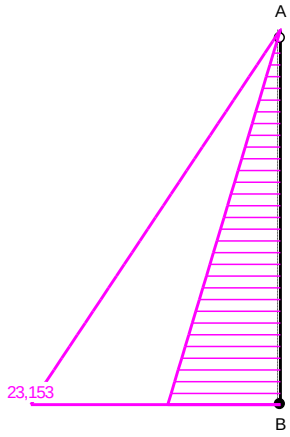
**PRĘT NR 5**



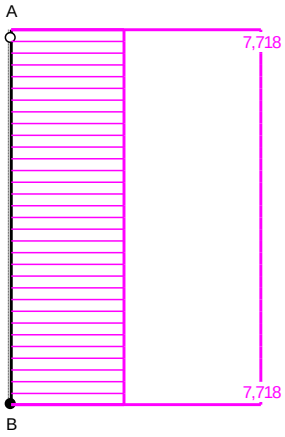

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 2
Początek(A):5 Koniec(B):6 "I450"
Przegub Sztywne MATERIAŁ: 2 S 235
Długość: 3,000 Kąt: -90,00
Rzuty Imperfekcje
H: 0,000 V: 3,000 wo/L= 0,0000 fo/L= 0,0000

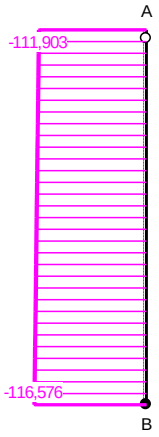
M Q




N




W





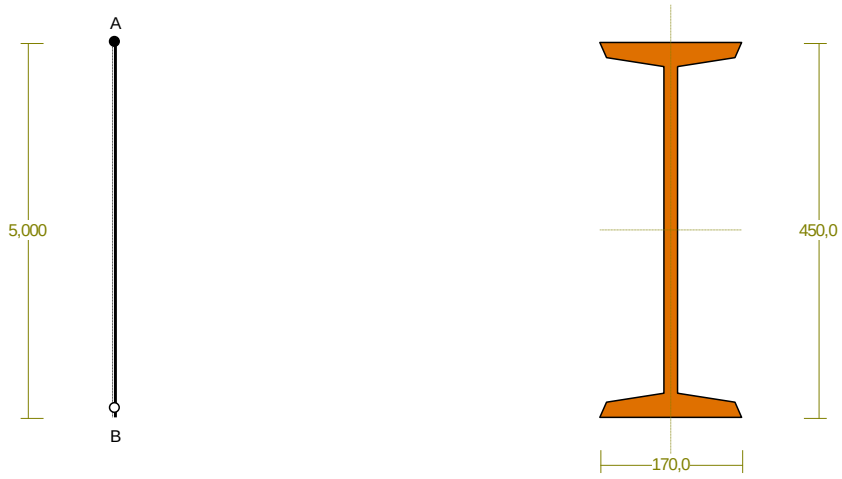
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 3,484 | -111,903 | 0,0023 | -7,612 | -7,612 |
| | b | 0,000 | 7,718 | -110,544 | 0,0032 | -7,520 | -7,520 |
| 0,10 | a | 1,045 | 3,484 | -112,370 | 0,0022 | -8,157 | -7,131 |
| | b | 2,315 | 7,718 | -111,011 | 0,0030 | -8,688 | -6,416 |
| 0,20 | a | 2,090 | 3,484 | -112,837 | 0,0021 | -8,702 | -6,650 |
| | b | 4,631 | 7,718 | -111,479 | 0,0029 | -9,856 | -5,311 |
| 0,30 | a | 3,135 | 3,484 | -113,305 | 0,0020 | -9,246 | -6,169 |
| | b | 6,946 | 7,718 | -111,946 | 0,0027 | -11,024 | -4,207 |
| 0,40 | a | 4,180 | 3,484 | -113,772 | 0,0019 | -9,791 | -5,688 |
| | b | 9,261 | 7,718 | -112,413 | 0,0025 | -12,192 | -3,102 |
| 0,50 | a | 5,225 | 3,484 | -114,239 | 0,0018 | -10,336 | -5,207 |
| | b | 11,577 | 7,718 | -112,881 | 0,0024 | -13,360 | -1,998 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | 6,270 | 3,484 | -114,707 | 0,0017 | -10,880 | -4,726 |
| | b | 13,892 | 7,718 | -113,348 | 0,0022 | -14,528 | -0,894 |
| 0,70 | a | 7,316 | 3,484 | -115,174 | 0,0017 | -11,425 | -4,245 |
| | b | 16,207 | 7,718 | -113,815 | 0,0021 | -15,696 | 0,211 |
| 0,80 | a | 8,361 | 3,484 | -115,641 | 0,0016 | -11,970 | -3,764 |
| | b | 18,523 | 7,718 | -114,283 | 0,0020 | -16,864 | 1,315 |
| 0,90 | a | 9,406 | 3,484 | -116,109 | 0,0015 | -12,514 | -3,283 |
| | b | 20,838 | 7,718 | -114,750 | 0,0019 | -18,032 | 2,420 |
| 1,00 | a | 10,451 | 3,484 | -116,576 | 0,0015 | -13,059 | -2,802 |
| | b | 23,153 | 7,718 | -115,217 | 0,0018 | -19,200 | 3,524 |
| 1,00 | b | **23,153*** | 7,718 | -115,217 | | -19,200 | 3,524 |
| 0,00 | b | **0,000*** | 7,718 | -110,544 | | -7,520 | -7,520 |
| 0,00 | a | **0,000*** | 3,484 | -111,903 | | -7,612 | -7,612 |
| 1,00 | b | 23,153 | **7,718*** | -115,217 | | -19,200 | 3,524 |
| 0,00 | b | 0,000 | **7,718*** | -110,544 | | -7,520 | -7,520 |
| 1,00 | a | 10,451 | **3,484*** | -116,576 | | -13,059 | -2,802 |
| 0,00 | a | 0,000 | **3,484*** | -111,903 | | -7,612 | -7,612 |
| 0,00 | b | 0,000 | 7,718 | **-110,544*** | | -7,520 | -7,520 |
| 1,00 | a | 10,451 | 3,484 | **-116,576*** | | -13,059 | -2,802 |
| 1,00 | b | 23,153 | 7,718 | -115,217 | | **-13,059*** | -2,802 |

* = Wartości ekstremalne

**PRĘT NR 6**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

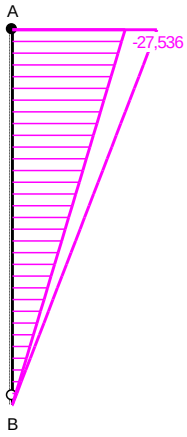
GEOMETRIA PRĘTA:
Początek(A):4 Koniec(B):5
Sztywne Przegub
Długość: 5,000 Kąt: -90,00

Rzuty
H: 0,000 V: 5,000

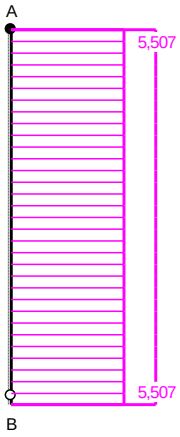
PRZEKRÓJ: 2
"I450"
MATERIAŁ: 2 S 235

Imperfekcje
wo/L= 0,0000 fo/L= 0,0000

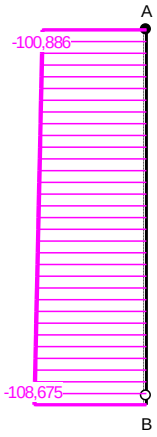
M Q




N




W





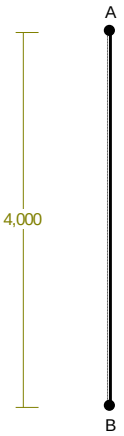
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

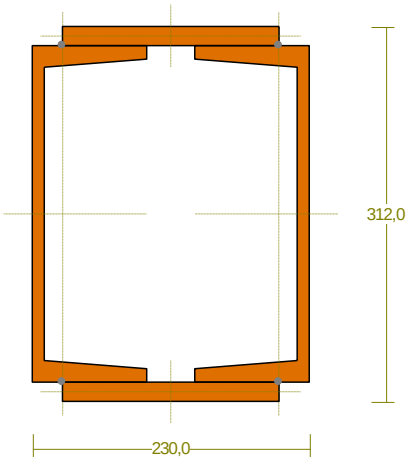
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -21,470 | 4,294 | -100,886 | 0,0036 | 3,673 | -17,399 |
| | b | -27,536 | 5,507 | -99,504 | 0,0051 | 6,744 | -20,282 |
| 0,10 | a | -19,323 | 4,294 | -101,665 | 0,0036 | 2,566 | -16,398 |
| | b | -24,782 | 5,507 | -100,283 | 0,0051 | 5,339 | -18,983 |
| 0,20 | a | -17,176 | 4,294 | -102,444 | 0,0036 | 1,460 | -15,398 |
| | b | -22,029 | 5,507 | -101,062 | 0,0051 | 3,935 | -17,685 |
| 0,30 | a | -15,029 | 4,294 | -103,223 | 0,0035 | 0,353 | -14,397 |
| | b | -19,275 | 5,507 | -101,841 | 0,0050 | 2,531 | -16,387 |
| 0,40 | a | -12,882 | 4,294 | -104,002 | 0,0034 | -0,753 | -13,397 |
| | b | -16,521 | 5,507 | -102,620 | 0,0048 | 1,127 | -15,088 |
| 0,50 | a | -10,735 | 4,294 | -104,781 | 0,0033 | -1,860 | -12,396 |
| | b | -13,768 | 5,507 | -103,399 | 0,0046 | -0,278 | -13,790 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | -8,588 | 4,294 | -105,560 | 0,0031 | -2,967 | -11,395 |
| | b | -11,014 | 5,507 | -104,177 | 0,0044 | -1,682 | -12,492 |
| 0,70 | a | -6,441 | 4,294 | -106,339 | 0,0029 | -4,073 | -10,395 |
| | b | -8,261 | 5,507 | -104,956 | 0,0041 | -3,086 | -11,194 |
| 0,80 | a | -4,294 | 4,294 | -107,118 | 0,0027 | -5,180 | -9,394 |
| | b | -5,507 | 5,507 | -105,735 | 0,0038 | -4,490 | -9,895 |
| 0,90 | a | -2,147 | 4,294 | -107,897 | 0,0025 | -6,286 | -8,394 |
| | b | -2,754 | 5,507 | -106,514 | 0,0035 | -5,895 | -8,597 |
| 1,00 | a | 0,000 | 4,294 | -108,675 | 0,0023 | -7,393 | -7,393 |
| | b | 0,000 | 5,507 | -107,293 | 0,0032 | -7,299 | -7,299 |
| 1,00 | b | **0,000*** | 5,507 | -107,293 | | -7,299 | -7,299 |
| 1,00 | a | **0,000*** | 4,294 | -108,675 | | -7,393 | -7,393 |
| 0,00 | b | **-27,536*** | 5,507 | -99,504 | | 6,744 | -20,282 |
| 1,00 | b | 0,000 | **5,507*** | -107,293 | | -7,299 | -7,299 |
| 0,00 | b | -27,536 | **5,507*** | -99,504 | | 6,744 | -20,282 |
| 1,00 | a | 0,000 | **4,294*** | -108,675 | | -7,393 | -7,393 |
| 0,00 | a | -21,470 | **4,294*** | -100,886 | | 3,673 | -17,399 |
| 0,00 | b | -27,536 | 5,507 | **-99,504*** | | 6,744 | -20,282 |
| 1,00 | a | 0,000 | 4,294 | **-108,675*** | | -7,393 | -7,393 |
| 0,00 | b | -27,536 | 5,507 | -99,504 | | 3,673 | **-17,399*** |

* = Wartości ekstremalne

**PRĘT NR 7**

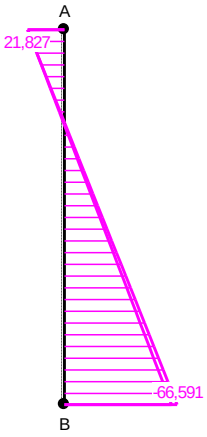


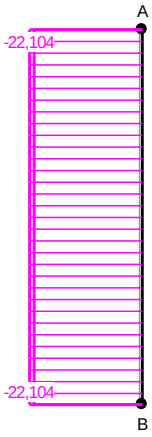

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 4
Początek(A):10 Koniec(B):11 "2xC280"
Sztywne Sztywne MATERIAŁ: 3 S 275
Długość: 4,000 Kąt: -90,00
Rzuty Imperfekcje
H: 0,000 V: 4,000 wo/L= 0,0000 fo/L= 0,0000

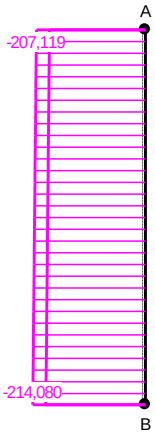
M Q




N




W





**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

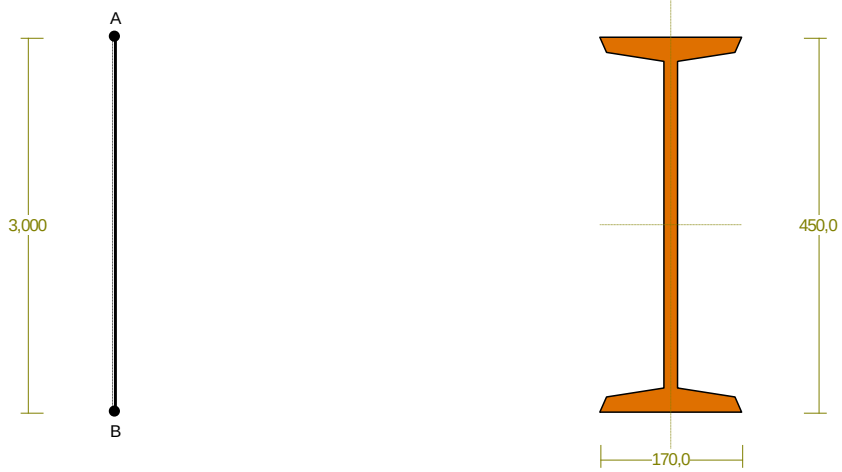
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 21,827 | -22,104 | -207,119 | 0,0014 | -26,132 | 0,904 |
| | b | 21,614 | -21,222 | -182,213 | 0,0017 | -24,483 | 2,289 |
| 0,10 | a | 12,985 | -22,104 | -207,815 | 0,0014 | -20,698 | -4,614 |
| | b | 13,125 | -21,222 | -182,909 | 0,0017 | -19,268 | -3,011 |
| 0,20 | a | 4,143 | -22,104 | -208,511 | 0,0014 | -15,265 | -10,133 |
| | b | 4,637 | -21,222 | -183,605 | 0,0017 | -14,053 | -8,310 |
| 0,30 | a | -4,699 | -22,104 | -209,207 | 0,0015 | -9,831 | -15,651 |
| | b | -3,852 | -21,222 | -184,301 | 0,0017 | -8,839 | -13,610 |
| 0,40 | a | -13,540 | -22,104 | -209,903 | 0,0015 | -4,398 | -21,169 |
| | b | -12,340 | -21,222 | -184,997 | 0,0017 | -3,624 | -18,909 |
| 0,50 | a | -22,382 | -22,104 | -210,599 | 0,0015 | 1,036 | -26,687 |
| | b | -20,829 | -21,222 | -185,693 | 0,0016 | 1,591 | -24,209 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | -31,224 | -22,104 | -211,295 | 0,0015 | 6,469 | -32,206 |
| | b | -29,318 | -21,222 | -186,389 | 0,0015 | 6,806 | -29,508 |
| 0,70 | a | -40,066 | -22,104 | -211,991 | 0,0013 | 11,903 | -37,724 |
| | b | -37,806 | -21,222 | -187,085 | 0,0013 | 12,020 | -34,808 |
| 0,80 | a | -48,908 | -22,104 | -212,687 | 0,0010 | 17,336 | -43,242 |
| | b | -46,295 | -21,222 | -187,781 | 0,0010 | 17,235 | -40,107 |
| 0,90 | a | -57,749 | -22,104 | -213,384 | 0,0006 | 22,770 | -48,761 |
| | b | -54,783 | -21,222 | -188,477 | 0,0006 | 22,450 | -45,407 |
| 1,00 | a | -66,591 | -22,104 | -214,080 | 0,0000 | 28,203 | -54,279 |
| | b | -63,272 | -21,222 | -189,173 | 0,0000 | 27,665 | -50,706 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,00 | a | **21,827*** | -22,104 | -207,119 | | -26,132 | 0,904 |
| 1,00 | a | **-66,591*** | -22,104 | -214,080 | | 28,203 | -54,279 |
| 0,00 | b | 21,614 | **-21,222*** | -182,213 | | -24,483 | 2,289 |
| 1,00 | b | -63,272 | **-21,222*** | -189,173 | | 27,665 | -50,706 |
| 0,00 | a | 21,827 | **-22,104*** | -207,119 | | -26,132 | 0,904 |
| 1,00 | a | -66,591 | **-22,104*** | -214,080 | | 28,203 | -54,279 |
| 0,00 | b | 21,614 | -21,222 | **-182,213*** | | -24,483 | 2,289 |
| 1,00 | a | -66,591 | -22,104 | **-214,080*** | | 28,203 | -54,279 |
| 1,00 | b | -63,272 | -21,222 | -189,173 | | 28,203 | **-54,279*** |

* = Wartości ekstremalne

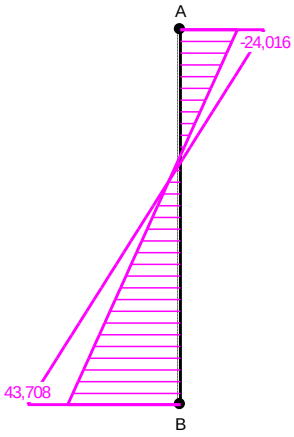
**PRĘT NR 8**



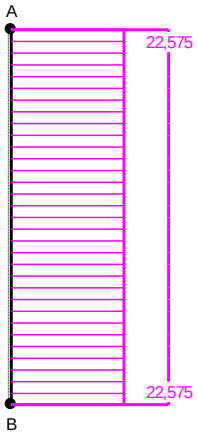

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 2
Początek(A):9 Koniec(B):10 "I450"
Sztywne Sztywne MATERIAŁ: 2 S 235
Długość: 3,000 Kąt: -90,00
Rzuty Imperfekcje
H: 0,000 V: 3,000 wo/L= 0,0000 fo/L= 0,0000

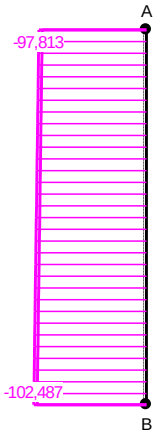
M Q




N




W





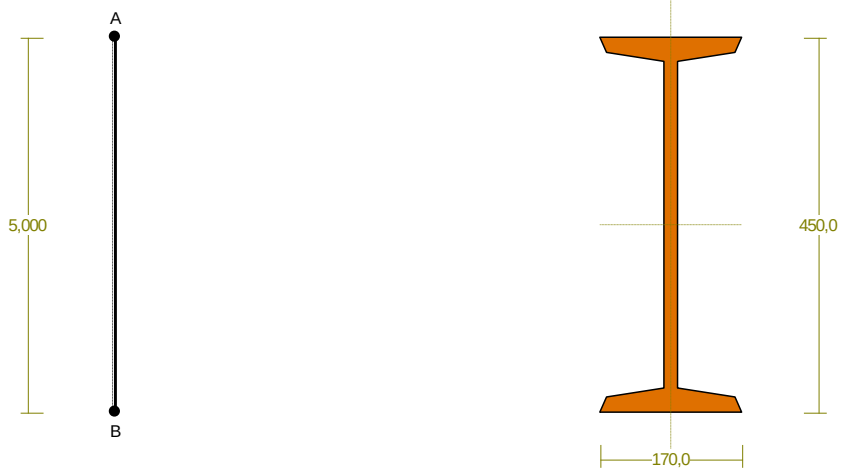
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -16,275 | 16,175 | -97,813 | 0,0023 | 1,333 | -14,641 |
| | b | -24,016 | 22,575 | -94,738 | 0,0032 | 5,341 | -18,230 |
| 0,10 | a | -11,423 | 16,175 | -98,281 | 0,0022 | -1,080 | -12,291 |
| | b | -17,244 | 22,575 | -95,205 | 0,0030 | 1,986 | -14,939 |
| 0,20 | a | -6,570 | 16,175 | -98,748 | 0,0021 | -3,493 | -9,942 |
| | b | -10,471 | 22,575 | -95,673 | 0,0029 | -1,370 | -11,647 |
| 0,30 | a | -1,718 | 16,175 | -99,215 | 0,0020 | -5,906 | -7,592 |
| | b | -3,699 | 22,575 | -96,140 | 0,0027 | -4,725 | -8,355 |
| 0,40 | a | 3,135 | 16,175 | -99,683 | 0,0018 | -8,319 | -5,243 |
| | b | 3,073 | 22,575 | -96,607 | 0,0025 | -8,080 | -5,064 |
| 0,50 | a | 7,987 | 16,175 | -100,150 | 0,0017 | -10,732 | -2,893 |
| | b | 9,846 | 22,575 | -97,075 | 0,0023 | -11,435 | -1,772 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | 12,839 | 16,175 | -100,617 | 0,0016 | -13,145 | -0,544 |
| | b | 16,618 | 22,575 | -97,542 | 0,0022 | -14,791 | 1,520 |
| 0,70 | a | 17,692 | 16,175 | -101,085 | 0,0015 | -15,558 | 1,805 |
| | b | 23,391 | 22,575 | -98,009 | 0,0020 | -18,146 | 4,811 |
| 0,80 | a | 22,544 | 16,175 | -101,552 | 0,0015 | -17,971 | 4,155 |
| | b | 30,163 | 22,575 | -98,477 | 0,0019 | -21,501 | 8,103 |
| 0,90 | a | 27,397 | 16,175 | -102,019 | 0,0014 | -20,385 | 6,504 |
| | b | 36,936 | 22,575 | -98,944 | 0,0018 | -24,856 | 11,395 |
| 1,00 | a | 32,249 | 16,175 | -102,487 | 0,0014 | -22,798 | 8,854 |
| | b | 43,708 | 22,575 | -99,411 | 0,0017 | -28,212 | 14,686 |
| 1,00 | b | **43,708*** | 22,575 | -99,411 | | -28,212 | 14,686 |
| 0,00 | b | **-24,016*** | 22,575 | -94,738 | | 5,341 | -18,230 |
| 1,00 | b | 43,708 | **22,575*** | -99,411 | | -28,212 | 14,686 |
| 0,00 | b | -24,016 | **22,575*** | -94,738 | | 5,341 | -18,230 |
| 1,00 | a | 32,249 | **16,175*** | -102,487 | | -22,798 | 8,854 |
| 0,00 | a | -16,275 | **16,175*** | -97,813 | | 1,333 | -14,641 |
| 0,00 | b | -24,016 | 22,575 | **-94,738*** | | 5,341 | -18,230 |
| 1,00 | a | 32,249 | 16,175 | **-102,487*** | | -22,798 | 8,854 |
| 1,00 | b | 43,708 | 22,575 | -99,411 | | **-22,798*** | 8,854 |

* = Wartości ekstremalne

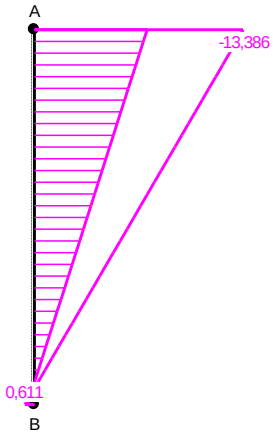
**PRĘT NR 9**



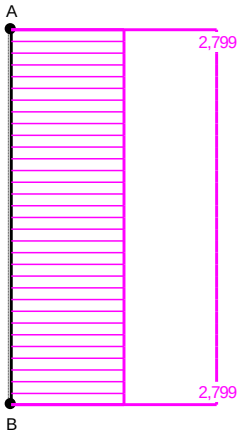

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 2 "I450"
Początek(A):8 Koniec(B):9 MATERIAŁ: 2 S 235
Sztywne Sztywne
Długość: 5,000 Kąt: -90,00
Rzuty Imperfekcje
H: 0,000 V: 5,000 wo/L= 0,0000 fo/L= 0,0000

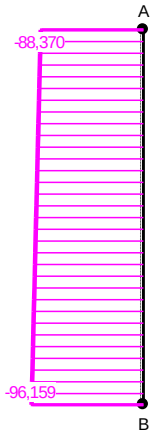
M Q




N




W





**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

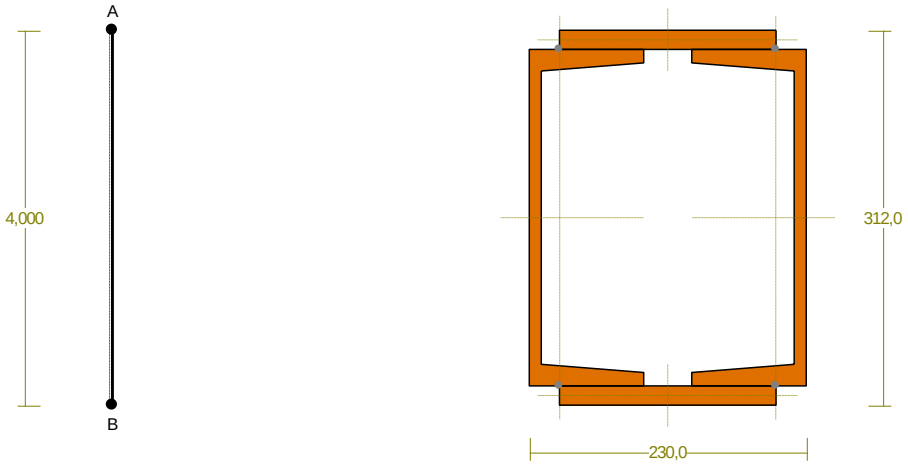
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -7,226 | 1,536 | -88,370 | 0,0035 | -2,466 | -9,557 |
| | b | -13,386 | 2,799 | -86,976 | 0,0050 | 0,652 | -12,486 |
| 0,10 | a | -6,458 | 1,536 | -89,149 | 0,0034 | -2,896 | -9,234 |
| | b | -11,987 | 2,799 | -87,755 | 0,0050 | -0,088 | -11,852 |
| 0,20 | a | -5,690 | 1,536 | -89,928 | 0,0034 | -3,325 | -8,910 |
| | b | -10,587 | 2,799 | -88,534 | 0,0048 | -0,827 | -11,218 |
| 0,30 | a | -4,922 | 1,536 | -90,707 | 0,0032 | -3,755 | -8,586 |
| | b | -9,187 | 2,799 | -89,313 | 0,0047 | -1,567 | -10,584 |
| 0,40 | a | -4,154 | 1,536 | -91,486 | 0,0031 | -4,185 | -8,262 |
| | b | -7,787 | 2,799 | -90,092 | 0,0045 | -2,307 | -9,950 |
| 0,50 | a | -3,387 | 1,536 | -92,264 | 0,0030 | -4,615 | -7,938 |
| | b | -6,388 | 2,799 | -90,871 | 0,0043 | -3,047 | -9,316 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | -2,619 | 1,536 | -93,043 | 0,0029 | -5,044 | -7,615 |
| | b | -4,988 | 2,799 | -91,650 | 0,0041 | -3,787 | -8,682 |
| 0,70 | a | -1,851 | 1,536 | -93,822 | 0,0027 | -5,474 | -7,291 |
| | b | -3,588 | 2,799 | -92,429 | 0,0039 | -4,527 | -8,048 |
| 0,80 | a | -1,083 | 1,536 | -94,601 | 0,0026 | -5,904 | -6,967 |
| | b | -2,188 | 2,799 | -93,208 | 0,0037 | -5,267 | -7,415 |
| 0,90 | a | -0,316 | 1,536 | -95,380 | 0,0024 | -6,334 | -6,643 |
| | b | -0,789 | 2,799 | -93,987 | 0,0034 | -6,007 | -6,781 |
| 1,00 | a | 0,452 | 1,536 | -96,159 | 0,0023 | -6,763 | -6,319 |
| | b | 0,611 | 2,799 | -94,766 | 0,0032 | -6,747 | -6,147 |
| 1,00 | b | **0,611*** | 2,799 | -94,766 | | -6,747 | -6,147 |
| 0,00 | b | **-13,386*** | 2,799 | -86,976 | | 0,652 | -12,486 |
| 1,00 | b | 0,611 | **2,799*** | -94,766 | | -6,747 | -6,147 |
| 0,00 | b | -13,386 | **2,799*** | -86,976 | | 0,652 | -12,486 |
| 1,00 | a | 0,452 | **1,536*** | -96,159 | | -6,763 | -6,319 |
| 0,00 | a | -7,226 | **1,536*** | -88,370 | | -2,466 | -9,557 |
| 0,00 | b | -13,386 | 2,799 | **-86,976*** | | 0,652 | -12,486 |
| 1,00 | a | 0,452 | 1,536 | **-96,159*** | | -6,763 | -6,319 |
| 0,00 | b | -13,386 | 2,799 | -86,976 | | -2,466 | **-9,557*** |

* = Wartości ekstremalne

**PRĘT NR 10**



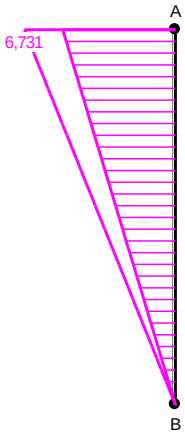

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA:
Począ(A):14 Koniec(B):15
Sztywne Sztywne
Długość: 4,000 Kąt: -90,00
Rzuty
H: 0,000 V: 4,000

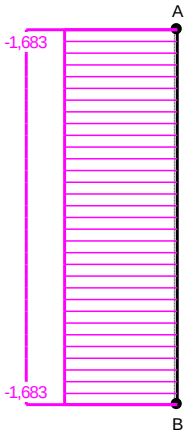
PRZEKRÓJ: 4
"2xC280"
MATERIAŁ: 3 S 275

Imperfekcje
wo/L= 0,0000 fo/L= 0,0000

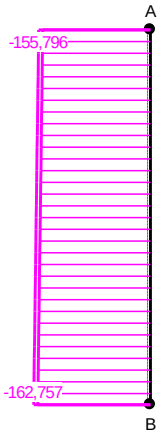
M Q




N




W





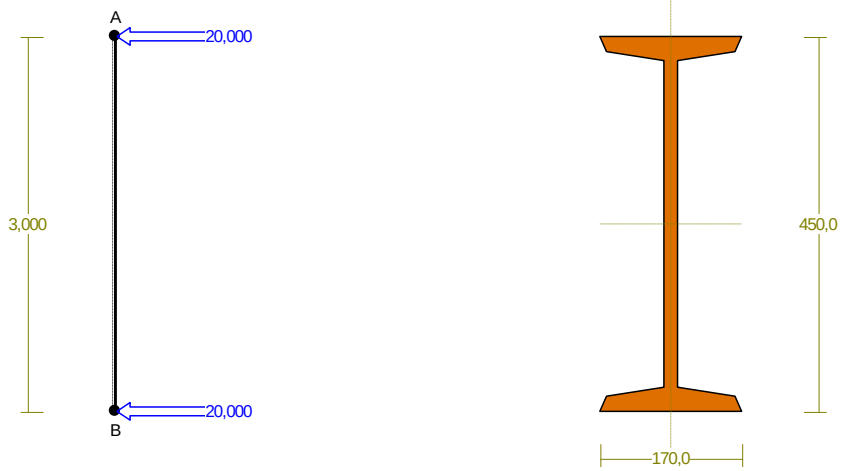
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 5,023 | -1,256 | -150,129 | 0,0012 | -12,254 | -6,032 |
| | b | 6,731 | -1,683 | -155,796 | 0,0016 | -13,657 | -5,319 |
| 0,10 | a | 4,521 | -1,256 | -150,825 | 0,0012 | -11,985 | -6,386 |
| | b | 6,058 | -1,683 | -156,492 | 0,0015 | -13,282 | -5,779 |
| 0,20 | a | 4,019 | -1,256 | -151,521 | 0,0011 | -11,717 | -6,739 |
| | b | 5,385 | -1,683 | -157,188 | 0,0014 | -12,908 | -6,238 |
| 0,30 | a | 3,516 | -1,256 | -152,217 | 0,0011 | -11,448 | -7,093 |
| | b | 4,712 | -1,683 | -157,884 | 0,0013 | -12,534 | -6,697 |
| 0,40 | a | 3,014 | -1,256 | -152,913 | 0,0010 | -11,179 | -7,446 |
| | b | 4,039 | -1,683 | -158,580 | 0,0012 | -12,159 | -7,156 |
| 0,50 | a | 2,512 | -1,256 | -153,609 | 0,0010 | -10,910 | -7,800 |
| | b | 3,366 | -1,683 | -159,276 | 0,0012 | -11,785 | -7,616 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | 2,009 | -1,256 | -154,305 | 0,0010 | -10,642 | -8,153 |
| | b | 2,692 | -1,683 | -159,972 | 0,0011 | -11,410 | -8,075 |
| 0,70 | a | 1,507 | -1,256 | -155,001 | 0,0010 | -10,373 | -8,507 |
| | b | 2,019 | -1,683 | -160,668 | 0,0011 | -11,036 | -8,534 |
| 0,80 | a | 1,005 | -1,256 | -155,697 | 0,0010 | -10,104 | -8,860 |
| | b | 1,346 | -1,683 | -161,365 | 0,0010 | -10,661 | -8,994 |
| 0,90 | a | 0,502 | -1,256 | -156,394 | 0,0010 | -9,836 | -9,213 |
| | b | 0,673 | -1,683 | -162,061 | 0,0010 | -10,287 | -9,453 |
| 1,00 | a | 0,000 | -1,256 | -157,090 | 0,0010 | -9,567 | -9,567 |
| | b | 0,000 | -1,683 | -162,757 | 0,0010 | -9,912 | -9,912 |
| 0,00 | b | **6,731*** | -1,683 | -155,796 | | -13,657 | -5,319 |
| 1,00 | b | **0,000*** | -1,683 | -162,757 | | -9,912 | -9,912 |
| 1,00 | a | **0,000*** | -1,256 | -157,090 | | -9,567 | -9,567 |
| 0,00 | a | 5,023 | **-1,256*** | -150,129 | | -12,254 | -6,032 |
| 1,00 | a | 0,000 | **-1,256*** | -157,090 | | -9,567 | -9,567 |
| 0,00 | b | 6,731 | **-1,683*** | -155,796 | | -13,657 | -5,319 |
| 1,00 | b | 0,000 | **-1,683*** | -162,757 | | -9,912 | -9,912 |
| 0,00 | a | 5,023 | -1,256 | **-150,129*** | | -12,254 | -6,032 |
| 1,00 | b | 0,000 | -1,683 | **-162,757*** | | -9,912 | -9,912 |
| 0,00 | b | 6,731 | -1,683 | -155,796 | | **-12,254*** | -6,032 |

* = Wartości ekstremalne

**PRĘT NR 11**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

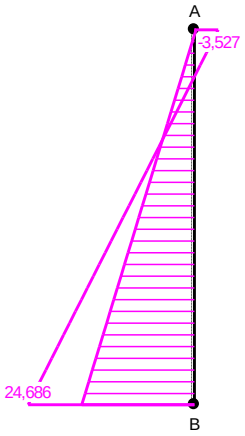
GEOMETRIA PRĘTA: PRZEKRÓJ: 2
Początek(A):13 Koniec(B):14 "I450"
Sztywne Sztywne MATERIAŁ: 2 S 235
Długość: 3,000 Kąt: -90,00
Rzuty Imperfekcje
H: 0,000 V: 3,000 wo/L= 0,0000 fo/L= 0,0000

**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

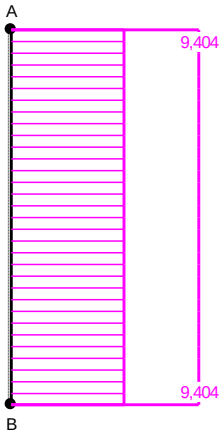
| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: P | "Wiatr z prawej" | | Zmienne | γf= 1,50 | | |

| | | | | |
|---|---|---|---|---|
| 11 | Skupione | -90,0 | 20,000 | 0,00 |
| 11 | Skupione | -90,0 | 20,000 | 3,00 |

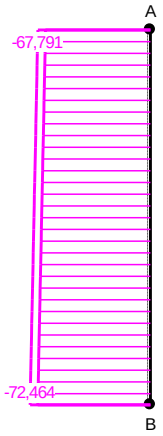
M




Q




N




W


**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

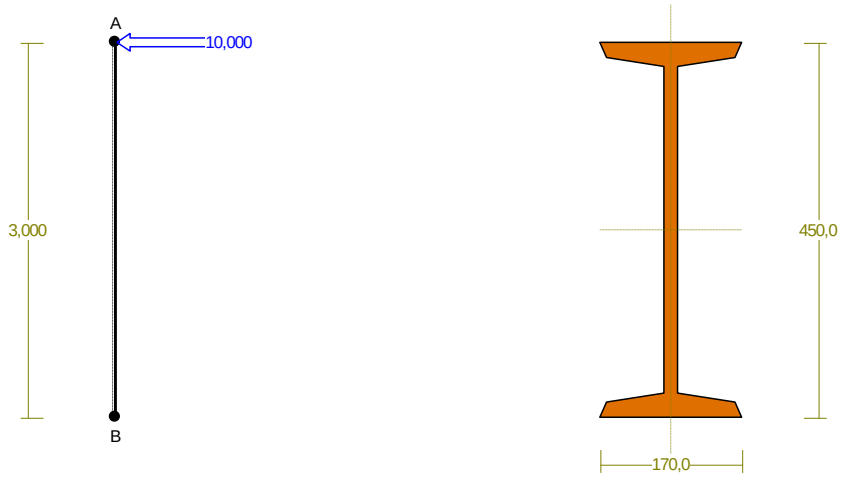
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -0,233 | 5,653 | -63,171 | 0,0023 | -4,183 | -4,412 |
| | b | -3,527 | 9,404 | -67,791 | 0,0032 | -2,881 | -6,342 |
| 0,10 | a | 1,463 | 5,653 | -63,639 | 0,0022 | -5,047 | -3,611 |
| | b | -0,706 | 9,404 | -68,258 | 0,0030 | -4,297 | -4,990 |
| 0,20 | a | 3,159 | 5,653 | -64,106 | 0,0020 | -5,911 | -2,811 |
| | b | 2,115 | 9,404 | -68,726 | 0,0028 | -5,713 | -3,637 |
| 0,30 | a | 4,855 | 5,653 | -64,573 | 0,0019 | -6,775 | -2,010 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 4,937 | 9,404 | -69,193 | 0,0026 | -7,130 | -2,284 |
| 0,40 | a | 6,551 | 5,653 | -65,041 | 0,0018 | -7,639 | -1,210 |
| | b | 7,758 | 9,404 | -69,660 | 0,0024 | -8,546 | -0,932 |
| 0,50 | a | 8,247 | 5,653 | -65,508 | 0,0017 | -8,503 | -0,409 |
| | b | 10,579 | 9,404 | -70,128 | 0,0023 | -9,962 | 0,421 |
| 0,60 | a | 9,943 | 5,653 | -65,975 | 0,0016 | -9,367 | 0,391 |
| | b | 13,401 | 9,404 | -70,595 | 0,0021 | -11,378 | 1,774 |
| 0,70 | a | 11,639 | 5,653 | -66,443 | 0,0015 | -10,231 | 1,192 |
| | b | 16,222 | 9,404 | -71,062 | 0,0019 | -12,795 | 3,126 |
| 0,80 | a | 13,335 | 5,653 | -66,910 | 0,0014 | -11,095 | 1,992 |
| | b | 19,043 | 9,404 | -71,530 | 0,0018 | -14,211 | 4,479 |
| 0,90 | a | 15,031 | 5,653 | -67,378 | 0,0013 | -11,960 | 2,793 |
| | b | 21,864 | 9,404 | -71,997 | 0,0017 | -15,627 | 5,832 |
| 1,00 | a | 16,727 | 5,653 | -67,845 | 0,0012 | -12,824 | 3,593 |
| | b | 24,686 | 9,404 | -72,464 | 0,0016 | -17,044 | 7,184 |
| 1,00 | b | **24,686*** | 9,404 | -72,464 | | -17,044 | 7,184 |
| 0,00 | b | **-3,527*** | 9,404 | -67,791 | | -2,881 | -6,342 |
| 1,00 | b | 24,686 | **9,404*** | -72,464 | | -17,044 | 7,184 |
| 0,00 | b | -3,527 | **9,404*** | -67,791 | | -2,881 | -6,342 |
| 1,00 | a | 16,727 | **5,653*** | -67,845 | | -12,824 | 3,593 |
| 0,00 | a | -0,233 | **5,653*** | -63,171 | | -4,183 | -4,412 |
| 0,00 | a | -0,233 | 5,653 | **-63,171*** | | -4,183 | -4,412 |
| 1,00 | b | 24,686 | 9,404 | **-72,464*** | | -17,044 | 7,184 |
| 1,00 | b | 24,686 | 9,404 | -72,464 | | **-12,824*** | 3,593 |

* = Wartości ekstremalne

**PRĘT NR 12**



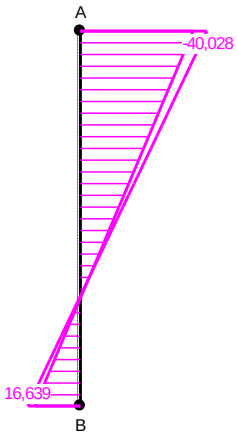

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 2
Początek(A):12 Koniec(B):13 "I450"
Sztywne Sztywne MATERIAŁ: 2 S 235
Długość: 3,000 Kąt: -90,00
Rzuty Imperfekcje
H: 0,000 V: 3,000 wo/L= 0,0000 fo/L= 0,0000

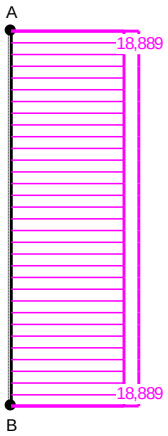
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: 12 | P "Wiatr z prawej" | | | Zmienne | γf= 1,50 | |
| | Skupione | -90,0 | 10,000 | | 0,00 | |

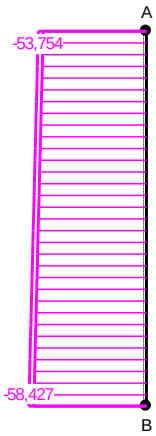
M




Q




N




W


**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

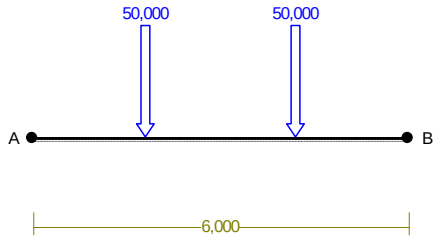
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

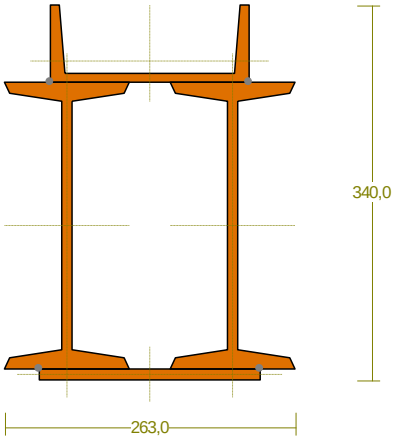
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -35,656 | 16,684 | -51,302 | 0,0035 | 14,007 | -20,987 |
| | b | -40,028 | 18,889 | -53,754 | 0,0050 | 15,986 | -23,299 |
| 0,10 | a | -30,651 | 16,684 | -51,769 | 0,0035 | 11,519 | -18,563 |
| | b | -34,361 | 18,889 | -54,221 | 0,0049 | 13,173 | -20,550 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,20 | a | -25,645 | 16,684 | -52,236 | 0,0034 | 9,032 | -16,139 |
| | b | -28,694 | 18,889 | -54,688 | 0,0048 | 10,361 | -17,801 |
| 0,30 | a | -20,640 | 16,684 | -52,704 | 0,0033 | 6,544 | -13,714 |
| | b | -23,028 | 18,889 | -55,156 | 0,0046 | 7,548 | -15,052 |
| 0,40 | a | -15,635 | 16,684 | -53,171 | 0,0032 | 4,056 | -11,290 |
| | b | -17,361 | 18,889 | -55,623 | 0,0045 | 4,736 | -12,303 |
| 0,50 | a | -10,630 | 16,684 | -53,638 | 0,0030 | 1,568 | -8,865 |
| | b | -11,694 | 18,889 | -56,091 | 0,0043 | 1,923 | -9,554 |
| 0,60 | a | -5,625 | 16,684 | -54,106 | 0,0029 | -0,920 | -6,441 |
| | b | -6,028 | 18,889 | -56,558 | 0,0041 | -0,890 | -6,805 |
| 0,70 | a | -0,620 | 16,684 | -54,573 | 0,0027 | -3,408 | -4,017 |
| | b | -0,361 | 18,889 | -57,025 | 0,0038 | -3,702 | -4,056 |
| 0,80 | a | 4,385 | 16,684 | -55,040 | 0,0026 | -5,896 | -1,592 |
| | b | 5,306 | 18,889 | -57,493 | 0,0036 | -6,515 | -1,307 |
| 0,90 | a | 9,390 | 16,684 | -55,508 | 0,0024 | -8,384 | 0,832 |
| | b | 10,972 | 18,889 | -57,960 | 0,0034 | -9,327 | 1,442 |
| 1,00 | a | 14,395 | 16,684 | -55,975 | 0,0023 | -10,872 | 3,256 |
| | b | 16,639 | 18,889 | -58,427 | 0,0032 | -12,140 | 4,191 |
| 1,00 | b | **16,639*** | 18,889 | -58,427 | | -12,140 | 4,191 |
| 0,00 | b | **-40,028*** | 18,889 | -53,754 | | 15,986 | -23,299 |
| 1,00 | b | 16,639 | **18,889*** | -58,427 | | -12,140 | 4,191 |
| 0,00 | b | -40,028 | **18,889*** | -53,754 | | 15,986 | -23,299 |
| 1,00 | a | 14,395 | **16,684*** | -55,975 | | -10,872 | 3,256 |
| 0,00 | a | -35,656 | **16,684*** | -51,302 | | 14,007 | -20,987 |
| 0,00 | a | -35,656 | 16,684 | **-51,302*** | | 14,007 | -20,987 |
| 1,00 | b | 16,639 | 18,889 | **-58,427*** | | -12,140 | 4,191 |
| 0,00 | b | -40,028 | 18,889 | -53,754 | | 14,007 | **-20,987*** |

* = Wartości ekstremalne

**PRĘT NR 13**



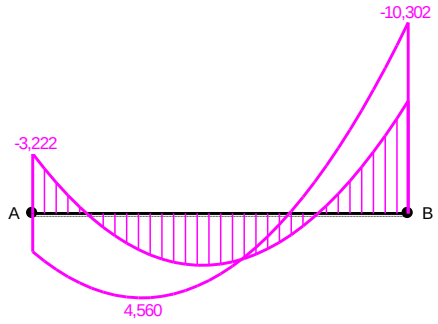

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 3
Początek(A):1 Koniec(B):6 "2xI260"
Sztywne Sztywne MATERIAŁ: 3 S 275
Długość: 6,000 Kąt: 0,00
Rzuty Imperfekcje
H: 6,000 V: 0,000 wo/L= 0,0000 fo/L= 0,0000

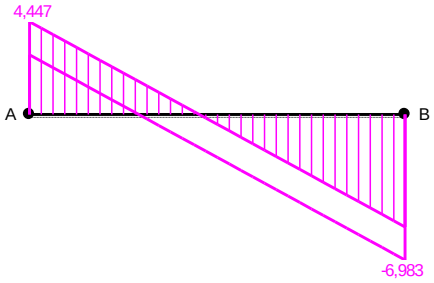
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: A "Obciążenia stropów" | | | | Zmienne | γf= 1,50 | |
| 13 | Skupione | 0,0 | 50,000 | | 1,80 | |
| 13 | Skupione | 0,0 | 50,000 | | 4,20 | |

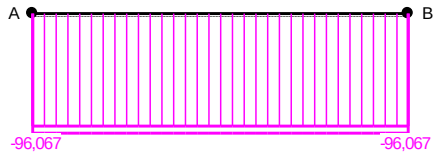
M



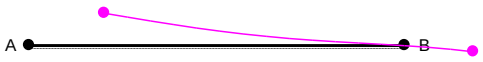

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

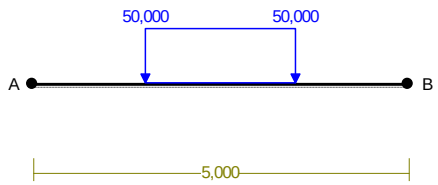
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

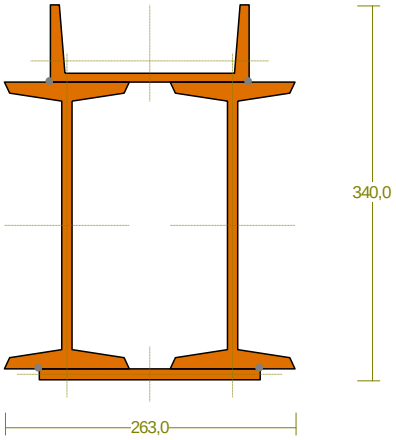
| x/L: | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: | SigmaD: [MPa] |
|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -3,222 | 4,447 | -90,382 | 0,0007 | -2,962 | -8,097 |
| | b | 2,068 | 2,860 | -96,067 | 0,0007 | -8,052 | -4,756 |
| 0,10 | a | -0,849 | 3,462 | -90,382 | 0,0006 | -5,080 | -6,434 |
| | b | 3,488 | 1,876 | -96,067 | 0,0005 | -9,320 | -3,761 |
| 0,20 | a | 0,933 | 2,478 | -90,382 | 0,0004 | -6,671 | -5,185 |
| | b | 4,318 | 0,891 | -96,067 | 0,0004 | -10,061 | -3,179 |
| 0,30 | a | 2,124 | 1,494 | -90,382 | 0,0003 | -7,735 | -4,349 |
| | b | 4,558 | -0,093 | -96,067 | 0,0002 | -10,275 | -3,011 |
| 0,40 | a | 2,725 | 0,509 | -90,382 | 0,0002 | -8,272 | -3,928 |
| | b | 4,207 | -1,077 | -96,067 | 0,0001 | -9,961 | -3,257 |
| 0,50 | a | 2,736 | -0,475 | -90,382 | 0,0001 | -8,281 | -3,921 |
| | b | 3,265 | -2,062 | -96,067 | 0,0001 | -9,121 | -3,917 |
| 0,60 | a | 2,155 | -1,459 | -90,382 | 0,0000 | -7,763 | -4,328 |
| | b | 1,733 | -3,046 | -96,067 | 0,0000 | -7,753 | -4,991 |
| 0,70 | a | 0,984 | -2,444 | -90,382 | 0,0000 | -6,717 | -5,149 |
| | b | -0,390 | -4,030 | -96,067 | 0,0000 | -5,857 | -6,479 |
| 0,80 | a | -0,777 | -3,428 | -90,382 | -0,0001 | -5,145 | -6,383 |
| | b | -3,104 | -5,015 | -96,067 | 0,0000 | -3,435 | -8,382 |
| 0,90 | a | -3,129 | -4,412 | -90,382 | -0,0001 | -3,045 | -8,032 |
| | b | -6,408 | -5,999 | -96,067 | -0,0001 | -0,485 | -10,698 |
| 1,00 | a | -6,072 | -5,396 | -90,382 | -0,0002 | -0,418 | -10,095 |
| | b | -10,302 | -6,983 | -96,067 | -0,0002 | 2,992 | -13,428 |
| 0,29 | b | **4,560*** | 0,015 | -96,067 | | -10,277 | -3,009 |
| 1,00 | b | **-10,302*** | -6,983 | -96,067 | | 2,992 | -13,428 |
| 0,00 | a | -3,222 | **4,447*** | -90,382 | | -2,962 | -8,097 |
| 1,00 | b | -10,302 | **-6,983*** | -96,067 | | 2,992 | -13,428 |
| 1,00 | a | -6,072 | -5,396 | **-90,382*** | | -0,418 | -10,095 |
| 0,45 | a | 2,804 | -0,014 | **-90,382*** | | -8,342 | -3,873 |
| 1,00 | b | -10,302 | -6,983 | **-96,067*** | | 2,992 | -13,428 |
| 0,29 | b | 4,560 | 0,015 | **-96,067*** | | -10,277 | -3,009 |
| 1,00 | b | -10,302 | -6,983 | -96,067 | | -0,418 | **-10,095*** |

* = Wartości ekstremalne

**PRĘT NR 14**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA:
Początek(A):6 Koniec(B):10
Sztywne Sztywne

PRZEKRÓJ: 3
"2xI260"
MATERIAŁ: 3 S 275

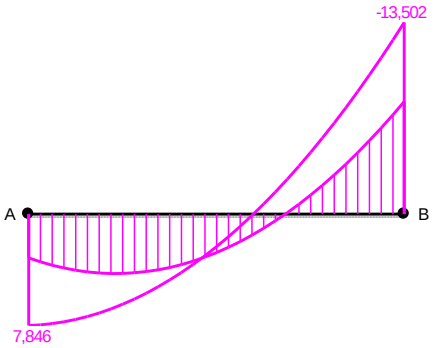
Długość: 5,000 Kąt: 0,00

| Rzuty | | Imperfekcje | |
|---|---|---|---|
| H: 5,000 | V: 0,000 | wo/L= 0,0000 | fo/L= 0,0000 |

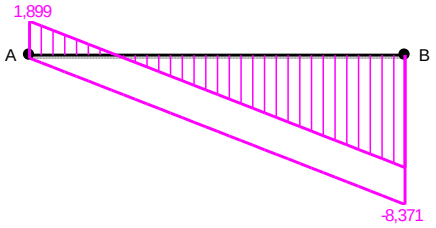
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: A "Obciążenia stropów" | | | | Zmienne | γf= 1,50 | |
| 14 | Liniowe | 0,0 | 50,000 | 50,000 | 1,50 | 3,50 |

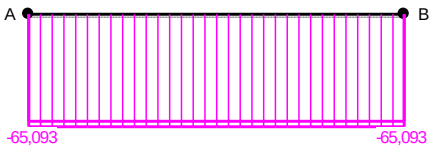
M




Q




N




W

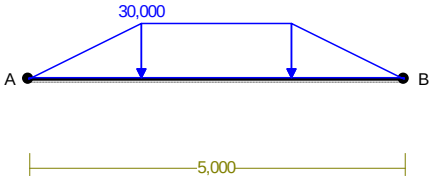

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

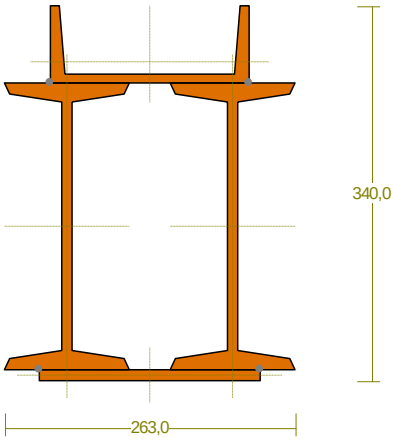
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 3,087 | 1,899 | -65,093 | -0,0002 | -6,961 | -2,041 |
| | b | 7,846 | -0,168 | -61,983 | -0,0002 | -11,009 | 1,496 |
| 0,10 | a | 3,832 | 1,079 | -65,093 | -0,0003 | -7,626 | -1,519 |
| | b | 7,557 | -0,989 | -61,983 | -0,0003 | -10,751 | 1,293 |
| 0,20 | a | 4,166 | 0,259 | -65,093 | -0,0003 | -7,924 | -1,284 |
| | b | 6,858 | -1,809 | -61,983 | -0,0003 | -10,126 | 0,803 |
| 0,30 | a | 4,090 | -0,561 | -65,093 | -0,0004 | -7,857 | -1,337 |
| | b | 5,748 | -2,629 | -61,983 | -0,0004 | -9,136 | 0,025 |
| 0,40 | a | 3,605 | -1,382 | -65,093 | -0,0004 | -7,423 | -1,678 |
| | b | 4,229 | -3,449 | -61,983 | -0,0003 | -7,779 | -1,040 |
| 0,50 | a | 2,709 | -2,202 | -65,093 | -0,0004 | -6,623 | -2,306 |
| | b | 2,299 | -4,270 | -61,983 | -0,0003 | -6,056 | -2,393 |
| 0,60 | a | 1,403 | -3,022 | -65,093 | -0,0003 | -5,457 | -3,222 |
| | b | -0,041 | -5,090 | -61,983 | -0,0003 | -3,967 | -4,033 |
| 0,70 | a | -0,313 | -3,842 | -65,093 | -0,0003 | -3,925 | -4,425 |
| | b | -2,791 | -5,910 | -61,983 | -0,0002 | -1,512 | -5,961 |
| 0,80 | a | -2,439 | -4,663 | -65,093 | -0,0003 | -2,027 | -5,915 |
| | b | -5,951 | -6,730 | -61,983 | -0,0002 | 1,309 | -8,176 |
| 0,90 | a | -4,976 | -5,483 | -65,093 | -0,0002 | 0,237 | -7,693 |
| | b | -9,521 | -7,551 | -61,983 | -0,0002 | 4,497 | -10,679 |
| 1,00 | a | -7,922 | -6,303 | -65,093 | -0,0002 | 2,868 | -9,759 |
| | b | -13,502 | -8,371 | -61,983 | -0,0002 | 8,050 | -13,469 |
| 0,00 | b | **7,846*** | -0,168 | -61,983 | | -11,009 | 1,496 |
| 1,00 | b | **-13,502*** | -8,371 | -61,983 | | 8,050 | -13,469 |
| 0,00 | a | 3,087 | **1,899*** | -65,093 | | -6,961 | -2,041 |
| 1,00 | b | -13,502 | **-8,371*** | -61,983 | | 8,050 | -13,469 |
| 1,00 | b | -13,502 | -8,371 | **-61,983*** | | 8,050 | -13,469 |
| 0,00 | b | 7,846 | -0,168 | **-61,983*** | | -11,009 | 1,496 |
| 1,00 | a | -7,922 | -6,303 | **-65,093*** | | 2,868 | -9,759 |
| 0,23 | a | 4,186 | 0,009 | **-65,093*** | | -7,943 | -1,270 |
| 1,00 | b | -13,502 | -8,371 | -61,983 | | 2,868 | **-9,759*** |

* = Wartości ekstremalne

**PRĘT NR 15**



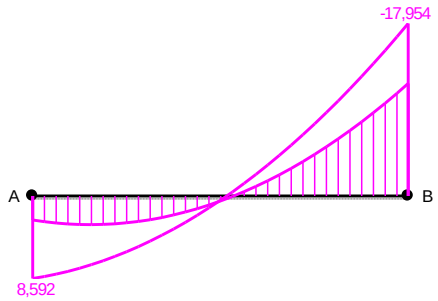

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

```
------------------------------------------------------------------
    GEOMETRIA PRĘTA:                          PRZEKRÓJ:  3
Początek(A):10  Koniec(B):14                        "2xI260"
   Sztywne         Sztywne                   MATERIAŁ: 3 S 275
Długość:  5,000    Kąt:   0,00
          Rzuty                               Imperfekcje
  H:    5,000    V:    0,000           wo/L= 0,0000  fo/L= 0,0000
------------------------------------------------------------------
```

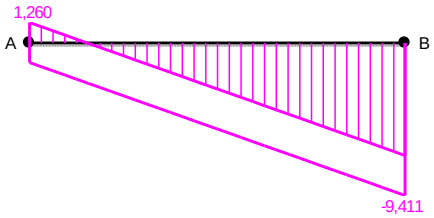
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

```
------------------------------------------------------------------
Pręt:  Rodzaj:      Kąt:     P1(Tg):   P2(Td):    a[m]:   b[m]:
------------------------------------------------------------------
Grupa:  A  "Obciążenia stropów"          Zmienne    γf= 1,50
 15   Trapezowe      0,0      30,000               1,50    3,50
------------------------------------------------------------------
```

M




Q




N

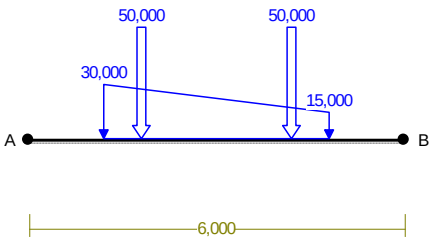

W

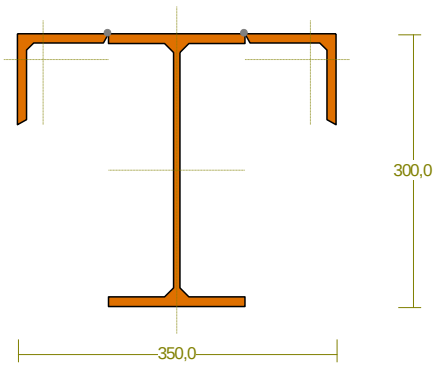
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 2,500 | 1,260 | -87,269 | -0,0002 | -7,870 | -3,885 |
| | b | 8,592 | -1,208 | -81,315 | -0,0002 | -12,924 | 0,770 |
| 0,10 | a | 2,925 | 0,440 | -87,269 | -0,0003 | -8,249 | -3,587 |
| | b | 7,783 | -2,028 | -81,315 | -0,0003 | -12,201 | 0,203 |
| 0,20 | a | 2,940 | -0,380 | -87,269 | -0,0003 | -8,263 | -3,576 |
| | b | 6,564 | -2,849 | -81,315 | -0,0003 | -11,113 | -0,652 |
| 0,30 | a | 2,545 | -1,200 | -87,269 | -0,0003 | -7,910 | -3,853 |
| | b | 4,934 | -3,669 | -81,315 | -0,0003 | -9,658 | -1,794 |
| 0,40 | a | 1,740 | -2,020 | -87,269 | -0,0002 | -7,191 | -4,418 |
| | b | 2,895 | -4,489 | -81,315 | -0,0002 | -7,837 | -3,223 |
| 0,50 | a | 0,525 | -2,841 | -87,269 | -0,0002 | -6,106 | -5,270 |
| | b | 0,445 | -5,309 | -81,315 | -0,0002 | -5,651 | -4,941 |
| 0,60 | a | -1,101 | -3,661 | -87,269 | -0,0001 | -4,655 | -6,409 |
| | b | -2,414 | -6,130 | -81,315 | -0,0001 | -3,097 | -6,945 |
| 0,70 | a | -3,136 | -4,481 | -87,269 | -0,0001 | -2,838 | -7,836 |
| | b | -5,684 | -6,950 | -81,315 | -0,0001 | -0,178 | -9,238 |
| 0,80 | a | -5,582 | -5,301 | -87,269 | -0,0001 | -0,654 | -9,550 |
| | b | -9,364 | -7,770 | -81,315 | 0,0000 | 3,107 | -11,817 |
| 0,90 | a | -8,438 | -6,122 | -87,269 | -0,0001 | 1,895 | -11,552 |
| | b | -13,454 | -8,590 | -81,315 | -0,0001 | 6,759 | -14,685 |
| 1,00 | a | -11,704 | -6,942 | -87,269 | -0,0002 | 4,811 | -13,842 |
| | b | -17,954 | -9,411 | -81,315 | -0,0002 | 10,777 | -17,839 |
| 0,00 | b | **8,592*** | -1,208 | -81,315 | | -12,924 | 0,770 |
| 1,00 | b | **-17,954*** | -9,411 | -81,315 | | 10,777 | -17,839 |
| 0,00 | a | 2,500 | **1,260*** | -87,269 | | -7,870 | -3,885 |
| 1,00 | b | -17,954 | **-9,411*** | -81,315 | | 10,777 | -17,839 |
| 1,00 | b | -17,954 | -9,411 | **-81,315*** | | 10,777 | -17,839 |
| 0,00 | b | 8,592 | -1,208 | **-81,315*** | | -12,924 | 0,770 |
| 1,00 | a | -11,704 | -6,942 | **-87,269*** | | 4,811 | -13,842 |
| 0,15 | a | 2,984 | 0,011 | **-87,269*** | | -8,302 | -3,545 |
| 1,00 | b | -17,954 | -9,411 | -81,315 | | 4,811 | **-13,842*** |

* = Wartości ekstremalne

**PRĘT NR 16**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

---

GEOMETRIA PRĘTA: PRZEKRÓJ: 1
Początek(A):2 Koniec(B):5 "HKS 300-1"
Sztywne Sztywne MATERIAŁ: 3 S 275
Długość: 6,000 Kąt: 0,00
Rzuty Imperfekcje
H: 6,000 V: 0,000 wo/L= 0,0000 fo/L= 0,0000

---

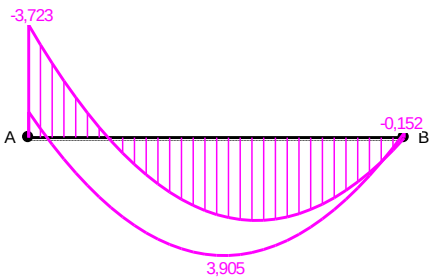
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

---

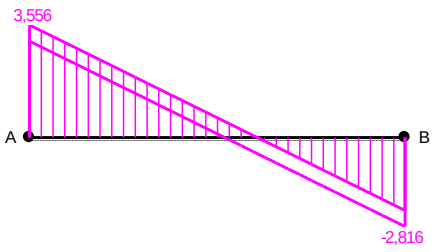
| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: A "Obciążenia stropów" | | | | | Zmienne | γf= 1,50 |
| 16 | Skupione | 0,0 | 50,000 | | 1,80 | |
| 16 | Skupione | 0,0 | 50,000 | | 4,20 | |
| 16 | Liniowe | 0,0 | 30,000 | 15,000 | 1,20 | 4,80 |

---

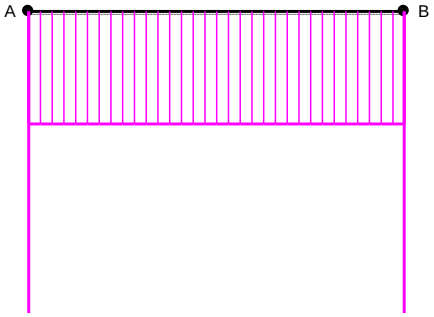
M




Q



N




W


**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -3,723 | 3,556 | -2,799 | 0,0006 | 2,766 | -6,511 |
| | b | -0,845 | 3,047 | -12,501 | 0,0007 | -0,659 | -2,766 |
| 0,10 | a | -1,765 | 2,969 | -2,799 | 0,0005 | 1,152 | -3,247 |
| | b | 0,807 | 2,461 | -12,501 | 0,0004 | -2,021 | -0,011 |
| 0,20 | a | -0,159 | 2,383 | -2,799 | 0,0003 | -0,172 | -0,569 |
| | b | 2,107 | 1,874 | -12,501 | 0,0001 | -3,094 | 2,158 |
| 0,30 | a | 1,095 | 1,797 | -2,799 | 0,0001 | -1,206 | 1,522 |
| | b | 3,056 | 1,288 | -12,501 | -0,0001 | -3,876 | 3,740 |
| 0,40 | a | 1,997 | 1,211 | -2,799 | 0,0000 | -1,950 | 3,026 |
| | b | 3,653 | 0,702 | -12,501 | -0,0003 | -4,368 | 4,735 |
| 0,50 | a | 2,547 | 0,624 | -2,799 | -0,0002 | -2,404 | 3,944 |
| | b | 3,898 | 0,116 | -12,501 | -0,0004 | -4,571 | 5,144 |
| 0,60 | a | 2,746 | 0,038 | -2,799 | -0,0003 | -2,568 | 4,276 |
| | b | 3,792 | -0,471 | -12,501 | -0,0005 | -4,483 | 4,967 |
| 0,70 | a | 2,593 | -0,548 | -2,799 | -0,0003 | -2,442 | 4,020 |
| | b | 3,334 | -1,057 | -12,501 | -0,0005 | -4,105 | 4,203 |
| 0,80 | a | 2,088 | -1,134 | -2,799 | -0,0004 | -2,026 | 3,179 |
| | b | 2,524 | -1,643 | -12,501 | -0,0004 | -3,437 | 2,852 |
| 0,90 | a | 1,232 | -1,721 | -2,799 | -0,0003 | -1,319 | 1,751 |
| | b | 1,362 | -2,229 | -12,501 | -0,0004 | -2,479 | 0,915 |
| 1,00 | a | 0,024 | -2,307 | -2,799 | -0,0003 | -0,323 | -0,264 |
| | b | -0,152 | -2,816 | -12,501 | -0,0003 | -1,231 | -1,609 |
| 0,52 | b | **3,905*** | 0,001 | -12,501 | | -4,576 | 5,156 |
| 0,00 | a | **-3,723*** | 3,556 | -2,799 | | 2,766 | -6,511 |
| 0,00 | a | -3,723 | **3,556*** | -2,799 | | 2,766 | -6,511 |
| 1,00 | b | -0,152 | **-2,816*** | -12,501 | | -1,231 | -1,609 |
| 0,00 | a | -3,723 | 3,556 | **-2,799*** | | 2,766 | -6,511 |
| 0,61 | a | 2,747 | 0,006 | **-2,799*** | | -2,569 | 4,277 |
| 0,00 | b | -0,845 | 3,047 | **-12,501*** | | -0,659 | -2,766 |
| 0,52 | b | 3,905 | 0,001 | **-12,501*** | | -4,576 | 5,156 |
| 0,00 | b | -0,845 | 3,047 | -12,501 | | 2,766 | **-6,511*** |

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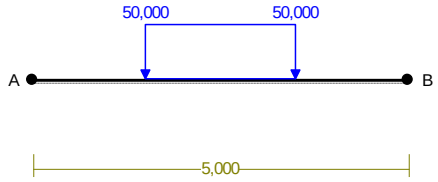
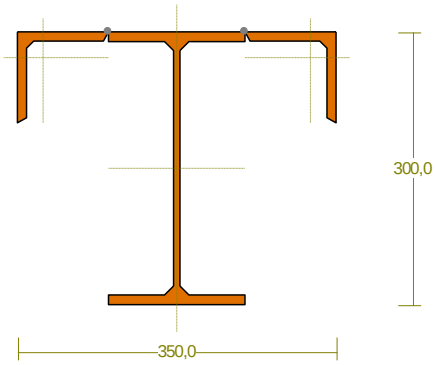
* = Wartości ekstremalne

**PRĘT NR 17**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

---

GEOMETRIA PRĘTA: PRZEKRÓJ: 1
Początek(A):5 Koniec(B):9 "HKS 300-1"
Sztywne Sztywne MATERIAŁ: 3 S 275
Długość: 5,000 Kąt: 0,00

Rzuty Imperfekcje
H: 5,000 V: 0,000 wo/L= 0,0000 fo/L= 0,0000

---

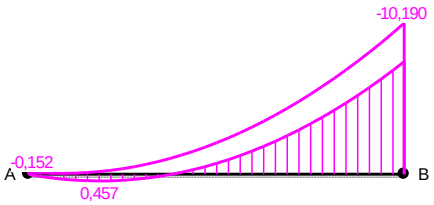
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

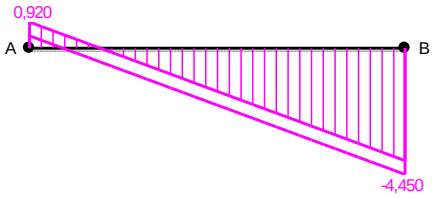
---

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: A "Obciążenia stropów" | | | | Zmienne | γf= 1,50 | |
| 17 | Liniowe | 0,0 | 50,000 | 50,000 | 1,50 | 3,50 |

---

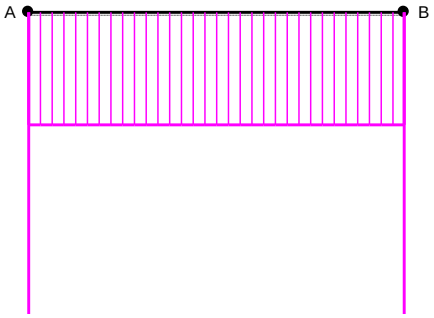
M Q




N

W





**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

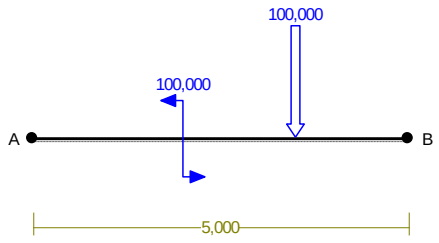
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

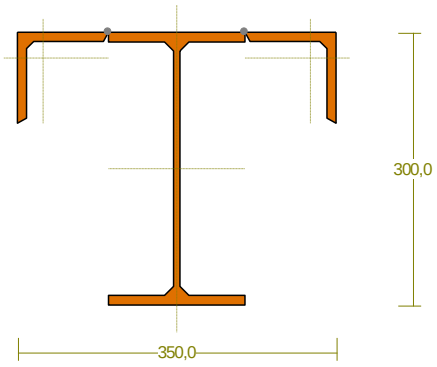
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,024 | 0,920 | -3,609 | -0,0003 | -0,411 | -0,352 |
| | b | -0,152 | 0,435 | -10,291 | -0,0003 | -0,991 | -1,369 |
| 0,10 | a | 0,362 | 0,432 | -3,609 | -0,0003 | -0,690 | 0,212 |
| | b | -0,056 | -0,053 | -10,291 | -0,0002 | -1,070 | -1,210 |
| 0,20 | a | 0,456 | -0,057 | -3,609 | -0,0003 | -0,767 | 0,368 |
| | b | -0,205 | -0,542 | -10,291 | -0,0002 | -0,947 | -1,458 |
| 0,30 | a | 0,305 | -0,545 | -3,609 | -0,0002 | -0,643 | 0,117 |
| | b | -0,598 | -1,030 | -10,291 | -0,0001 | -0,623 | -2,114 |
| 0,40 | a | -0,090 | -1,034 | -3,609 | -0,0002 | -0,317 | -0,541 |
| | b | -1,236 | -1,519 | -10,291 | 0,0000 | -0,097 | -3,176 |
| 0,50 | a | -0,729 | -1,522 | -3,609 | -0,0002 | 0,210 | -1,607 |
| | b | -2,117 | -2,008 | -10,291 | 0,0000 | 0,630 | -4,647 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | -1,612 | -2,011 | -3,609 | -0,0002 | 0,938 | -3,080 |
| | b | -3,243 | -2,496 | -10,291 | 0,0000 | 1,558 | -6,524 |
| 0,70 | a | -2,740 | -2,499 | -3,609 | -0,0001 | 1,868 | -4,960 |
| | b | -4,613 | -2,985 | -10,291 | 0,0000 | 2,688 | -8,809 |
| 0,80 | a | -4,112 | -2,988 | -3,609 | -0,0002 | 2,999 | -7,247 |
| | b | -6,228 | -3,473 | -10,291 | 0,0000 | 4,020 | -11,501 |
| 0,90 | a | -5,728 | -3,477 | -3,609 | -0,0002 | 4,332 | -9,942 |
| | b | -8,087 | -3,962 | -10,291 | -0,0001 | 5,552 | -14,600 |
| 1,00 | a | -7,588 | -3,965 | -3,609 | -0,0003 | 5,866 | -13,044 |
| | b | -10,190 | -4,450 | -10,291 | -0,0003 | 7,287 | -18,107 |
| 0,19 | a | **0,457*** | 0,004 | -3,609 | | -0,768 | 0,371 |
| 1,00 | b | **-10,190*** | -4,450 | -10,291 | | 7,287 | -18,107 |
| 0,00 | a | 0,024 | **0,920*** | -3,609 | | -0,411 | -0,352 |
| 1,00 | b | -10,190 | **-4,450*** | -10,291 | | 7,287 | -18,107 |
| 1,00 | a | -7,588 | -3,965 | **-3,609*** | | 5,866 | -13,044 |
| 0,19 | a | 0,457 | 0,004 | **-3,609*** | | -0,768 | 0,371 |
| 1,00 | b | -10,190 | -4,450 | **-10,291*** | | 7,287 | -18,107 |
| 0,09 | b | -0,055 | -0,004 | **-10,291*** | | -1,071 | -1,208 |
| 1,00 | b | -10,190 | -4,450 | -10,291 | | 5,866 | **-13,044*** |

* = Wartości ekstremalne

**PRĘT NR 18**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

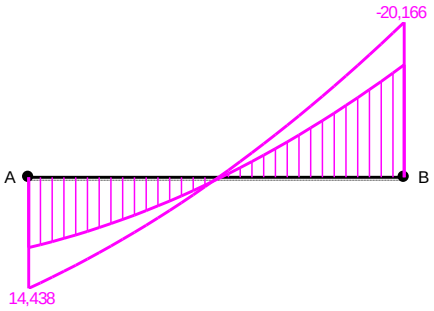
GEOMETRIA PRĘTA: PRZEKRÓJ: 1
Początek(A):9 Koniec(B):13 "HKS 300-1"
Sztywne Sztywne MATERIAŁ: 3 S 275
Długość: 5,000 Kąt: 0,00
Rzuty Imperfekcje
H: 5,000 V: 0,000 wo/L= 0,0000 fo/L= 0,0000

**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

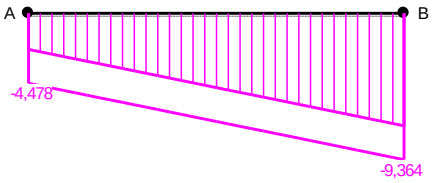
| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: A | "Obciążenia stropów" | | Zmienne | γf= 1,50 | | |

| | | | | |
|---|---|---|---|---|
| 18 | Moment | | 100,000 | 2,00 |
| 18 | Skupione | 0,0 | 100,000 | 3,50 |

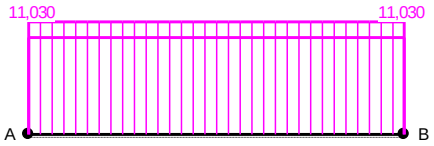
M




Q




N




W


**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

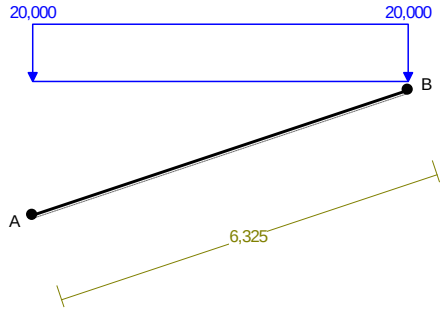
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

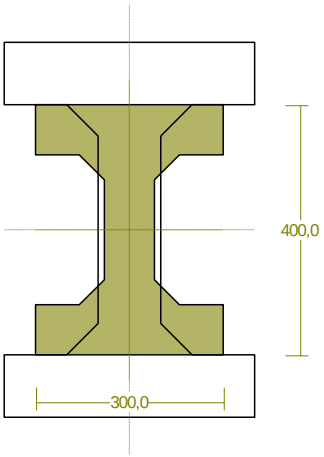
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 9,139 | -2,311 | 11,030 | -0,0003 | -6,340 | 16,435 |
| | b | 14,438 | -4,478 | 9,485 | -0,0003 | -10,877 | 25,103 |
| 0,10 | a | 7,862 | -2,799 | 11,030 | -0,0004 | -5,287 | 14,305 |
| | b | 12,077 | -4,967 | 9,485 | -0,0005 | -8,930 | 21,166 |
| 0,20 | a | 6,340 | -3,288 | 11,030 | -0,0005 | -4,032 | 11,768 |
| | b | 9,471 | -5,455 | 9,485 | -0,0005 | -6,782 | 16,821 |
| 0,30 | a | 4,574 | -3,776 | 11,030 | -0,0004 | -2,575 | 8,823 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 6,622 | -5,944 | 9,485 | -0,0005 | -4,432 | 12,070 |
| 0,40 | a | 2,563 | -4,265 | 11,030 | -0,0004 | -0,918 | 5,471 |
| | b | 3,528 | -6,432 | 9,485 | -0,0004 | -1,880 | 6,911 |
| 0,50 | a | 0,309 | -4,754 | 11,030 | -0,0003 | 0,942 | 1,711 |
| | b | 0,189 | -6,921 | 9,485 | -0,0002 | 0,873 | 1,344 |
| 0,60 | a | -2,190 | -5,242 | 11,030 | -0,0002 | 3,002 | -2,456 |
| | b | -3,393 | -7,409 | 9,485 | -0,0001 | 3,827 | -4,629 |
| 0,70 | a | -4,933 | -5,731 | 11,030 | -0,0001 | 5,265 | -7,030 |
| | b | -7,220 | -7,898 | 9,485 | 0,0000 | 6,983 | -11,010 |
| 0,80 | a | -7,921 | -6,219 | 11,030 | 0,0000 | 7,728 | -12,011 |
| | b | -11,291 | -8,386 | 9,485 | 0,0000 | 10,340 | -17,799 |
| 0,90 | a | -11,153 | -6,708 | 11,030 | -0,0001 | 10,393 | -17,400 |
| | b | -15,606 | -8,875 | 9,485 | 0,0000 | 13,899 | -24,994 |
| 1,00 | a | -14,629 | -7,196 | 11,030 | -0,0002 | 13,260 | -23,196 |
| | b | -20,166 | -9,364 | 9,485 | -0,0003 | 17,659 | -32,597 |
| 0,00 | b | **14,438*** | -4,478 | 9,485 | | -10,877 | 25,103 |
| 1,00 | b | **-20,166*** | -9,364 | 9,485 | | 17,659 | -32,597 |
| 0,00 | a | 9,139 | **-2,311*** | 11,030 | | -6,340 | 16,435 |
| 1,00 | b | -20,166 | **-9,364*** | 9,485 | | 17,659 | -32,597 |
| 1,00 | a | -14,629 | -7,196 | **11,030*** | | 13,260 | -23,196 |
| 0,00 | a | 9,139 | -2,311 | **11,030*** | | -6,340 | 16,435 |
| 1,00 | b | -20,166 | -9,364 | **9,485*** | | 17,659 | -32,597 |
| 0,00 | b | 14,438 | -4,478 | **9,485*** | | -10,877 | 25,103 |
| 1,00 | b | -20,166 | -9,364 | 9,485 | | 13,260 | **-23,196*** |

* = Wartości ekstremalne

**PRĘT NR 19**



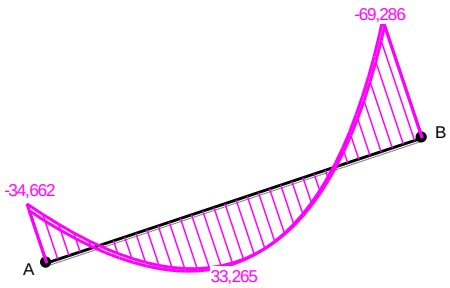

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 6-5
Początek(A):3 Koniec(B):4
Sztywne Sztywne MATERIAŁ:1,1E+2 B10
Długość: 6,325 Kąt: 18,43
Rzuty Imperfekcje
H: 6,000 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

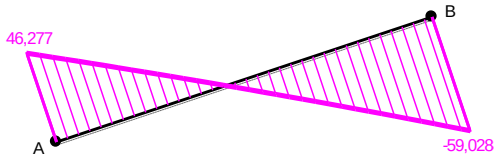
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: 19 | S "Śnieg" Liniowe-Y | 0,0 | 20,000 | Zmienne 20,000 | γf= 1,50 0,00 | 6,32 |

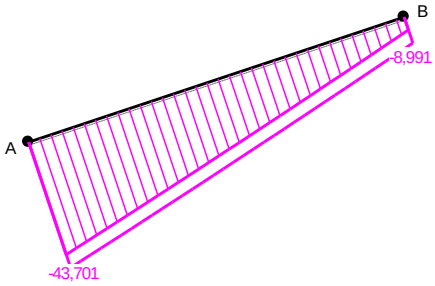
M



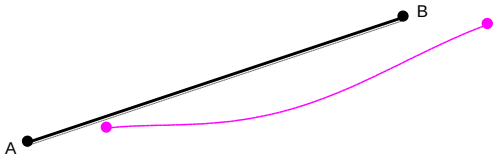

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -34,662 | 46,277 | -39,157 | -0,0005 | 4,327 | -5,439 |
| | b | -30,692 | 45,103 | -43,701 | -0,0010 | 3,703 | -4,945 |
| 0,10 | a | -8,551 | 36,293 | -35,829 | -0,0011 | 0,619 | -1,572 |
| | b | -5,323 | 35,119 | -40,373 | -0,0016 | 0,145 | -1,219 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,20 | a | 11,240 | 26,255 | -32,483 | -0,0018 | -1,687 | 0,877 |
| | b | 13,725 | 25,081 | -37,027 | -0,0024 | -2,028 | 1,104 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,30 | a | 24,637 | 16,110 | -29,101 | -0,0024 | -2,856 | 2,173 |
| | b | 26,380 | 14,936 | -33,645 | -0,0030 | -3,087 | 2,298 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,40 | a | 31,594 | 5,852 | -25,682 | -0,0028 | -3,181 | 2,614 |
| | b | 32,594 | 4,679 | -30,226 | -0,0034 | -3,323 | 2,655 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,50 | a | 32,034 | -4,462 | -22,244 | -0,0029 | -2,883 | 2,418 |
| | b | 32,292 | -5,635 | -26,788 | -0,0034 | -2,951 | 2,392 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,60 | a | 25,894 | -14,953 | -18,747 | -0,0028 | -2,125 | 1,755 |
| | b | 25,410 | -16,126 | -23,291 | -0,0033 | -2,134 | 1,674 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,70 | a | 13,113 | -25,505 | -15,229 | -0,0025 | -1,035 | 0,750 |
| | b | 11,887 | -26,679 | -19,774 | -0,0030 | -0,994 | 0,625 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,80 | a | -6,394 | -36,181 | -11,671 | -0,0021 | 0,293 | -0,500 |
| | b | -8,363 | -37,355 | -16,215 | -0,0026 | 0,375 | -0,663 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,90 | a | -32,680 | -46,986 | -8,069 | -0,0018 | 1,786 | -1,922 |
| | b | -35,391 | -48,159 | -12,613 | -0,0022 | 1,902 | -2,114 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 0,17 | a | 5,346 | 29,638 | -33,610 | -0,0016 | -1,062 | 0,205 |
| | b | 8,078 | 28,465 | -38,155 | -0,0021 | -1,444 | 0,471 |
| 1,00 | a | -65,833 | -57,854 | -4,446 | -0,0016 | 3,388 | -3,459 |
| | b | -69,286 | -59,028 | -8,991 | -0,0021 | 3,531 | -3,675 |
| 0,00 | a | -34,662 | 46,277 | -39,157 | -0,0005 | 4,327 | -5,439 |
| | b | -30,692 | 45,103 | -43,701 | -0,0010 | 3,703 | -4,945 |
| 0,10 | a | -8,551 | 36,293 | -35,829 | -0,0011 | 0,619 | -1,572 |
| | b | -5,323 | 35,119 | -40,373 | -0,0016 | 0,145 | -1,219 |
| 0,20 | a | 11,240 | 26,255 | -32,483 | -0,0018 | -1,687 | 0,877 |
| | b | 13,725 | 25,081 | -37,027 | -0,0024 | -2,028 | 1,104 |
| 0,30 | a | 24,637 | 16,110 | -29,101 | -0,0024 | -2,856 | 2,173 |
| | b | 26,380 | 14,936 | -33,645 | -0,0030 | -3,087 | 2,298 |

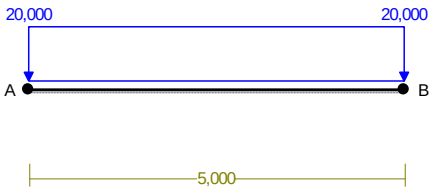
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,40 | a | 31,594 | 5,852 | -25,682 | -0,0028 | -3,181 | 2,614 |
| | b | 32,594 | 4,679 | -30,226 | -0,0034 | -3,323 | 2,655 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,50 | a | 32,034 | -4,462 | -22,244 | -0,0029 | -2,883 | 2,418 |
| | b | 32,292 | -5,635 | -26,788 | -0,0034 | -2,951 | 2,392 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,60 | a | 25,894 | -14,953 | -18,747 | -0,0028 | -2,125 | 1,755 |
| | b | 25,410 | -16,126 | -23,291 | -0,0033 | -2,134 | 1,674 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,70 | a | 13,113 | -25,505 | -15,229 | -0,0025 | -1,035 | 0,750 |
| | b | 11,887 | -26,679 | -19,774 | -0,0030 | -0,994 | 0,625 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,80 | a | -6,394 | -36,181 | -11,671 | -0,0021 | 0,293 | -0,500 |
| | b | -8,363 | -37,355 | -16,215 | -0,0026 | 0,375 | -0,663 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,90 | a | -32,680 | -46,986 | -8,069 | -0,0018 | 1,786 | -1,922 |
| | b | -35,391 | -48,159 | -12,613 | -0,0022 | 1,902 | -2,114 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 0,33 | a | 27,675 | 12,731 | -27,975 | -0,0026 | -3,046 | 2,403 |
| | b | 29,170 | 11,558 | -32,519 | -0,0031 | -3,246 | 2,498 |
| 1,00 | a | -65,833 | -57,854 | -4,446 | -0,0016 | 3,388 | -3,459 |
| | b | -69,286 | -59,028 | -8,991 | -0,0021 | 3,531 | -3,675 |
| 0,00 | a | -34,662 | 46,277 | -39,157 | -0,0005 | 4,327 | -5,439 |
| | b | -30,692 | 45,103 | -43,701 | -0,0010 | 3,703 | -4,945 |
| 0,10 | a | -8,551 | 36,293 | -35,829 | -0,0011 | 0,619 | -1,572 |
| | b | -5,323 | 35,119 | -40,373 | -0,0016 | 0,145 | -1,219 |
| 0,20 | a | 11,240 | 26,255 | -32,483 | -0,0018 | -1,687 | 0,877 |
| | b | 13,725 | 25,081 | -37,027 | -0,0024 | -2,028 | 1,104 |
| 0,30 | a | 24,637 | 16,110 | -29,101 | -0,0024 | -2,856 | 2,173 |
| | b | 26,380 | 14,936 | -33,645 | -0,0030 | -3,087 | 2,298 |
| 0,40 | a | 31,594 | 5,852 | -25,682 | -0,0028 | -3,181 | 2,614 |
| | b | 32,594 | 4,679 | -30,226 | -0,0034 | -3,323 | 2,655 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,60 | a | 25,894 | -14,953 | -18,747 | -0,0028 | -2,125 | 1,755 |
| | b | 25,410 | -16,126 | -23,291 | -0,0033 | -2,134 | 1,674 |

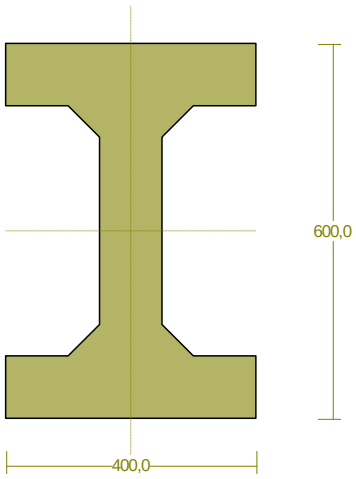
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,70 | a | 13,113 | -25,505 | -15,229 | -0,0025 | -1,035 | 0,750 |
| | b | 11,887 | -26,679 | -19,774 | -0,0030 | -0,994 | 0,625 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,80 | a | -6,394 | -36,181 | -11,671 | -0,0021 | 0,293 | -0,500 |
| | b | -8,363 | -37,355 | -16,215 | -0,0026 | 0,375 | -0,663 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,90 | a | -32,680 | -46,986 | -8,069 | -0,0018 | 1,786 | -1,922 |
| | b | -35,391 | -48,159 | -12,613 | -0,0022 | 1,902 | -2,114 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 0,50 | a | 32,035 | -4,457 | -22,245 | -0,0029 | -2,883 | 2,419 |
| | b | 32,293 | -5,631 | -26,790 | -0,0034 | -2,952 | 2,393 |
| 1,00 | a | -65,833 | -57,854 | -4,446 | -0,0016 | 3,388 | -3,459 |
| | b | -69,286 | -59,028 | -8,991 | -0,0021 | 3,531 | -3,675 |
| 0,00 | a | -34,662 | 46,277 | -39,157 | -0,0005 | 4,327 | -5,439 |
| | b | -30,692 | 45,103 | -43,701 | -0,0010 | 3,703 | -4,945 |
| 0,10 | a | -8,551 | 36,293 | -35,829 | -0,0011 | 0,619 | -1,572 |
| | b | -5,323 | 35,119 | -40,373 | -0,0016 | 0,145 | -1,219 |
| 0,20 | a | 11,240 | 26,255 | -32,483 | -0,0018 | -1,687 | 0,877 |
| | b | 13,725 | 25,081 | -37,027 | -0,0024 | -2,028 | 1,104 |
| 0,30 | a | 24,637 | 16,110 | -29,101 | -0,0024 | -2,856 | 2,173 |
| | b | 26,380 | 14,936 | -33,645 | -0,0030 | -3,087 | 2,298 |
| 0,40 | a | 31,594 | 5,852 | -25,682 | -0,0028 | -3,181 | 2,614 |
| | b | 32,594 | 4,679 | -30,226 | -0,0034 | -3,323 | 2,655 |
| 0,50 | a | 32,034 | -4,462 | -22,244 | -0,0029 | -2,883 | 2,418 |
| | b | 32,292 | -5,635 | -26,788 | -0,0034 | -2,951 | 2,392 |
| 0,60 | a | 25,894 | -14,953 | -18,747 | -0,0028 | -2,125 | 1,755 |
| | b | 25,410 | -16,126 | -23,291 | -0,0033 | -2,134 | 1,674 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 0,70 | a | 13,113 | -25,505 | -15,229 | -0,0025 | -1,035 | 0,750 |
| | b | 11,887 | -26,679 | -19,774 | -0,0030 | -0,994 | 0,625 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 0,80 | a | -6,394 | -36,181 | -11,671 | -0,0021 | 0,293 | -0,500 |
| | b | -8,363 | -37,355 | -16,215 | -0,0026 | 0,375 | -0,663 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 0,90 | a | -32,680 | -46,986 | -8,069 | -0,0018 | 1,786 | -1,922 |
| | b | -35,391 | -48,159 | -12,613 | -0,0022 | 1,902 | -2,114 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 0,67 | a | 18,123 | -21,940 | -16,418 | -0,0026 | -1,430 | 1,117 |
| | b | 17,145 | -23,114 | -20,962 | -0,0031 | -1,404 | 1,005 |
| 1,00 | a | -65,833 | -57,854 | -4,446 | -0,0016 | 3,388 | -3,459 |
| | b | -69,286 | -59,028 | -8,991 | -0,0021 | 3,531 | -3,675 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -34,662 | 46,277 | -39,157 | -0,0005 | 4,327 | -5,439 |
| | b | -30,692 | 45,103 | -43,701 | -0,0010 | 3,703 | -4,945 |
| 0,10 | a | -8,551 | 36,293 | -35,829 | -0,0011 | 0,619 | -1,572 |
| | b | -5,323 | 35,119 | -40,373 | -0,0016 | 0,145 | -1,219 |
| 0,20 | a | 11,240 | 26,255 | -32,483 | -0,0018 | -1,687 | 0,877 |
| | b | 13,725 | 25,081 | -37,027 | -0,0024 | -2,028 | 1,104 |
| 0,30 | a | 24,637 | 16,110 | -29,101 | -0,0024 | -2,856 | 2,173 |
| | b | 26,380 | 14,936 | -33,645 | -0,0030 | -3,087 | 2,298 |
| 0,40 | a | 31,594 | 5,852 | -25,682 | -0,0028 | -3,181 | 2,614 |
| | b | 32,594 | 4,679 | -30,226 | -0,0034 | -3,323 | 2,655 |
| 0,50 | a | 32,034 | -4,462 | -22,244 | -0,0029 | -2,883 | 2,418 |
| | b | 32,292 | -5,635 | -26,788 | -0,0034 | -2,951 | 2,392 |
| 0,60 | a | 25,894 | -14,953 | -18,747 | -0,0028 | -2,125 | 1,755 |
| | b | 25,410 | -16,126 | -23,291 | -0,0033 | -2,134 | 1,674 |
| 0,70 | a | 13,113 | -25,505 | -15,229 | -0,0025 | -1,035 | 0,750 |
| | b | 11,887 | -26,679 | -19,774 | -0,0030 | -0,994 | 0,625 |
| 0,80 | a | -6,394 | -36,181 | -11,671 | -0,0021 | 0,293 | -0,500 |
| | b | -8,363 | -37,355 | -16,215 | -0,0026 | 0,375 | -0,663 |
| 0,83 | a | -14,378 | -39,732 | -10,487 | -0,0020 | 0,774 | -0,957 |
| | b | -16,594 | -40,906 | -15,031 | -0,0025 | 0,868 | -1,130 |
| 0,83 | a | -14,378 | -39,732 | -10,487 | -0,0020 | 0,774 | -0,957 |
| | b | -16,594 | -40,906 | -15,031 | -0,0025 | 0,868 | -1,130 |
| 0,90 | a | -32,680 | -46,986 | -8,069 | -0,0018 | 1,786 | -1,922 |
| | b | -35,391 | -48,159 | -12,613 | -0,0022 | 1,902 | -2,114 |
| 0,83 | a | -14,378 | -39,732 | -10,487 | -0,0020 | 0,774 | -0,957 |
| | b | -16,594 | -40,906 | -15,031 | -0,0025 | 0,868 | -1,130 |
| 0,83 | a | -14,378 | -39,732 | -10,487 | -0,0020 | 0,774 | -0,957 |
| | b | -16,594 | -40,906 | -15,031 | -0,0025 | 0,868 | -1,130 |
| 1,00 | a | -65,833 | -57,854 | -4,446 | -0,0016 | 3,388 | -3,459 |
| | b | -69,286 | -59,028 | -8,991 | -0,0021 | 3,531 | -3,675 |
| 0,00 | a | -34,662 | 46,277 | -39,157 | -0,0005 | 4,327 | -5,439 |
| | b | -30,692 | 45,103 | -43,701 | -0,0010 | 3,703 | -4,945 |
| 0,10 | a | -8,551 | 36,293 | -35,829 | -0,0011 | 0,619 | -1,572 |
| | b | -5,323 | 35,119 | -40,373 | -0,0016 | 0,145 | -1,219 |
| 0,20 | a | 11,240 | 26,255 | -32,483 | -0,0018 | -1,687 | 0,877 |
| | b | 13,725 | 25,081 | -37,027 | -0,0024 | -2,028 | 1,104 |
| 0,30 | a | 24,637 | 16,110 | -29,101 | -0,0024 | -2,856 | 2,173 |
| | b | 26,380 | 14,936 | -33,645 | -0,0030 | -3,087 | 2,298 |
| 0,40 | a | 31,594 | 5,852 | -25,682 | -0,0028 | -3,181 | 2,614 |
| | b | 32,594 | 4,679 | -30,226 | -0,0034 | -3,323 | 2,655 |
| 0,50 | a | 32,034 | -4,462 | -22,244 | -0,0029 | -2,883 | 2,418 |
| | b | 32,292 | -5,635 | -26,788 | -0,0034 | -2,951 | 2,392 |
| 0,60 | a | 25,894 | -14,953 | -18,747 | -0,0028 | -2,125 | 1,755 |
| | b | 25,410 | -16,126 | -23,291 | -0,0033 | -2,134 | 1,674 |
| 0,70 | a | 13,113 | -25,505 | -15,229 | -0,0025 | -1,035 | 0,750 |
| | b | 11,887 | -26,679 | -19,774 | -0,0030 | -0,994 | 0,625 |
| 0,80 | a | -6,394 | -36,181 | -11,671 | -0,0021 | 0,293 | -0,500 |
| | b | -8,363 | -37,355 | -16,215 | -0,0026 | 0,375 | -0,663 |
| 0,90 | a | -32,680 | -46,986 | -8,069 | -0,0018 | 1,786 | -1,922 |
| | b | -35,391 | -48,159 | -12,613 | -0,0022 | 1,902 | -2,114 |
| 1,00 | a | -65,833 | -57,854 | -4,446 | -0,0016 | 3,388 | -3,459 |
| | b | -69,286 | -59,028 | -8,991 | -0,0021 | 3,531 | -3,675 |
| 0,45 | b | **33,265*** | 0,009 | -28,670 | | -3,219 | 2,602 |
| 1,00 | b | **-69,286*** | -59,028 | -8,991 | | 3,531 | -3,675 |
| 0,00 | a | -34,662 | **46,277*** | -39,157 | | 4,327 | -5,439 |
| 1,00 | b | -69,286 | **-59,028*** | -8,991 | | 3,531 | -3,675 |
| 1,00 | a | -65,833 | -57,854 | **-4,446*** | | 3,388 | -3,459 |
| 0,00 | b | -30,692 | 45,103 | **-43,701*** | | 3,703 | -4,945 |
| 0,00 | b | -30,692 | 45,103 | -43,701 | | 4,327 | **-5,439*** |

* = Wartości ekstremalne

**PRĘT NR 20**



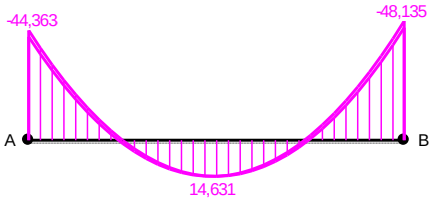

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

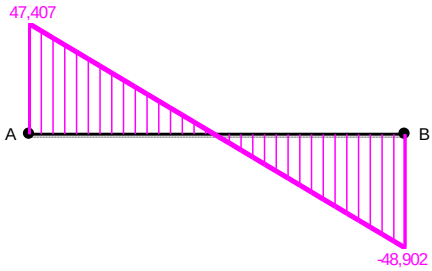
```
-------------------------------------------------------------------
    GEOMETRIA PRĘTA:                          PRZEKRÓJ:  5
Początek(A):4  Koniec(B):8                      "I 60x40 cm"
   Sztywne         Sztywne                   MATERIAŁ:1,1E+2 B10
Długość:  5,000    Kąt:   0,00
           Rzuty                              Imperfekcje
  H:   5,000    V:   0,000           wo/L= 0,0000  fo/L= 0,0000
-------------------------------------------------------------------
```

**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

```
-------------------------------------------------------------------
Pręt:  Rodzaj:      Kąt:     P1(Tg):   P2(Td):    a[m]:   b[m]:
-------------------------------------------------------------------
Grupa:  S  "Śnieg"                          Zmienne    γf= 1,50
 20    Liniowe-Y     0,0      20,000    20,000     0,00    5,00
-------------------------------------------------------------------
```

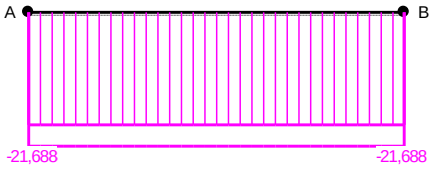
M Q




N

W





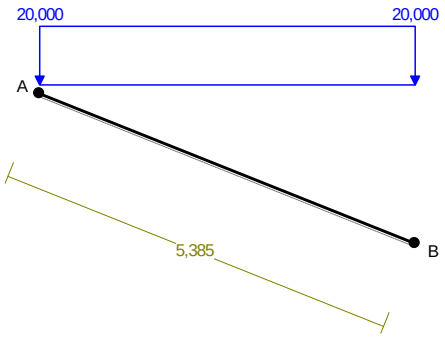
**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

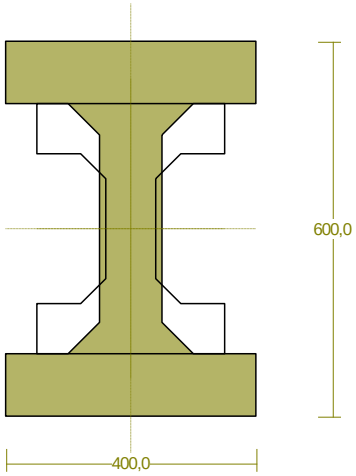
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -44,363 | 47,407 | -18,219 | -0,0005 | 2,096 | -2,388 |
| | b | -41,751 | 46,348 | -21,688 | -0,0005 | 1,936 | -2,283 |
| 0,10 | a | -23,041 | 37,882 | -18,219 | -0,0005 | 1,019 | -1,310 |
| | b | -20,958 | 36,823 | -21,688 | -0,0005 | 0,886 | -1,233 |
| 0,20 | a | -6,481 | 28,357 | -18,219 | -0,0005 | 0,182 | -0,473 |
| | b | -4,928 | 27,298 | -21,688 | -0,0005 | 0,075 | -0,423 |
| 0,30 | a | 5,316 | 18,832 | -18,219 | -0,0006 | -0,414 | 0,123 |
| | b | 6,340 | 17,773 | -21,688 | -0,0006 | -0,494 | 0,147 |
| 0,40 | a | 12,351 | 9,307 | -18,219 | -0,0006 | -0,770 | 0,478 |
| | b | 12,846 | 8,248 | -21,688 | -0,0006 | -0,823 | 0,476 |
| 0,50 | a | 14,624 | -0,218 | -18,219 | -0,0006 | -0,885 | 0,593 |
| | b | 14,589 | -1,277 | -21,688 | -0,0006 | -0,911 | 0,564 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | 12,133 | -9,743 | -18,219 | -0,0006 | -0,759 | 0,467 |
| | b | 11,569 | -10,802 | -21,688 | -0,0006 | -0,758 | 0,411 |
| 0,70 | a | 4,881 | -19,268 | -18,219 | -0,0006 | -0,392 | 0,101 |
| | b | 3,787 | -20,327 | -21,688 | -0,0005 | -0,365 | 0,018 |
| 0,80 | a | -7,135 | -28,793 | -18,219 | -0,0005 | 0,215 | -0,506 |
| | b | -8,758 | -29,852 | -21,688 | -0,0005 | 0,269 | -0,616 |
| 0,90 | a | -23,912 | -38,318 | -18,219 | -0,0005 | 1,063 | -1,354 |
| | b | -26,065 | -39,377 | -21,688 | -0,0004 | 1,144 | -1,491 |
| 1,00 | a | -45,453 | -47,843 | -18,219 | -0,0005 | 2,151 | -2,443 |
| | b | -48,135 | -48,902 | -21,688 | -0,0005 | 2,259 | -2,606 |
| 0,49 | b | **14,631*** | -0,161 | -21,688 | | -0,913 | 0,566 |
| 1,00 | b | **-48,135*** | -48,902 | -21,688 | | 2,259 | -2,606 |
| 0,00 | a | -44,363 | **47,407*** | -18,219 | | 2,096 | -2,388 |
| 1,00 | b | -48,135 | **-48,902*** | -21,688 | | 2,259 | -2,606 |
| 1,00 | a | -45,453 | -47,843 | **-18,219*** | | 2,151 | -2,443 |
| 0,50 | a | 14,624 | 0,154 | **-18,219*** | | -0,885 | 0,593 |
| 1,00 | b | -48,135 | -48,902 | **-21,688*** | | 2,259 | -2,606 |
| 0,49 | b | 14,631 | -0,161 | **-21,688*** | | -0,913 | 0,566 |
| 1,00 | b | -48,135 | -48,902 | -21,688 | | 2,151 | **-2,443*** |

* = Wartości ekstremalne

**PRĘT NR 21**



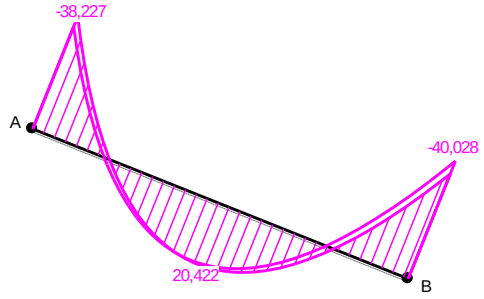

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 5-6
Początek(A):8 Koniec(B):12
Sztywne Sztywne MATERIAŁ:1,1E+2 B10
Długość: 5,385 Kąt: -21,80
Rzuty Imperfekcje
H: 5,000 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

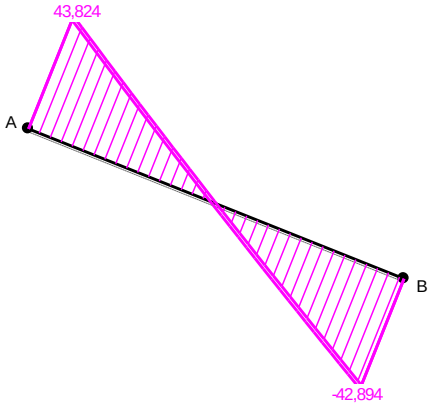
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: S "Śnieg" | | | | Zmienne | γf= 1,50 | |
| 21 | Liniowe-Y | 0,0 | 20,000 | 20,000 | 0,00 | 5,39 |

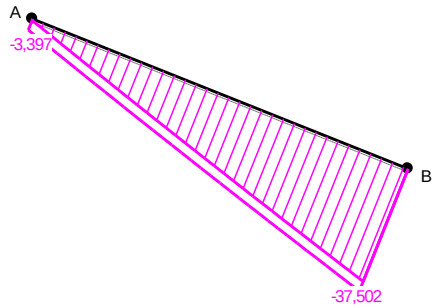
M



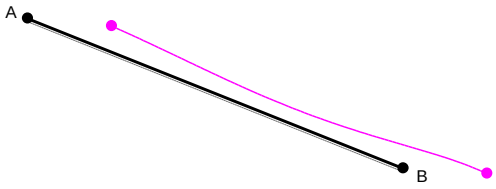

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | -38,227 | 43,824 | -0,439 | 0,0008 | 1,928 | -1,935 |
| | b | -34,748 | 42,367 | -3,397 | 0,0015 | 1,729 | -1,783 |
| 0,10 | a | -17,025 | 34,919 | -4,001 | 0,0007 | 0,932 | -0,999 |
| | b | -14,331 | 33,461 | -6,960 | 0,0013 | 0,754 | -0,872 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,20 | a | -0,614 | 26,067 | -7,542 | 0,0006 | -0,029 | -0,105 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 1,295 | 24,609 | -10,500 | 0,0012 | -0,173 | -0,013 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,30 | a | 11,069 | 17,322 | -11,040 | 0,0004 | -0,857 | 0,650 |
| | b | 12,193 | 15,864 | -13,998 | 0,0010 | -0,961 | 0,699 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,40 | a | 18,061 | 8,679 | -14,497 | 0,0003 | -1,496 | 1,210 |
| | b | 18,399 | 7,222 | -17,455 | 0,0009 | -1,551 | 1,206 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,50 | a | 20,422 | 0,089 | -17,933 | 0,0002 | -1,877 | 1,503 |
| | b | 19,975 | -1,369 | -20,892 | 0,0009 | -1,871 | 1,435 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,60 | a | 18,196 | -8,355 | -21,311 | 0,0003 | -1,904 | 1,433 |
| | b | 16,964 | -9,813 | -24,269 | 0,0009 | -1,824 | 1,288 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,70 | a | 11,427 | -16,752 | -24,670 | 0,0005 | -1,456 | 0,877 |
| | b | 9,411 | -18,210 | -27,628 | 0,0011 | -1,285 | 0,636 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,80 | a | 0,171 | -25,054 | -27,990 | 0,0007 | -0,369 | -0,330 |
| | b | -2,631 | -26,512 | -30,949 | 0,0014 | -0,086 | -0,686 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,90 | a | -15,541 | -33,268 | -31,276 | 0,0010 | 1,575 | -2,407 |
| | b | -19,128 | -34,726 | -34,234 | 0,0016 | 1,995 | -2,905 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 0,17 | a | -5,541 | 28,974 | -6,379 | 0,0006 | 0,278 | -0,389 |
| | b | -3,371 | 27,516 | -9,338 | 0,0012 | 0,122 | -0,284 |
| 1,00 | a | -35,656 | -41,436 | -34,543 | 0,0010 | 4,665 | -5,646 |
| | b | -40,028 | -42,894 | -37,502 | 0,0016 | 5,255 | -6,320 |
| 0,00 | a | -38,227 | 43,824 | -0,439 | 0,0008 | 1,928 | -1,935 |
| | b | -34,748 | 42,367 | -3,397 | 0,0015 | 1,729 | -1,783 |
| 0,10 | a | -17,025 | 34,919 | -4,001 | 0,0007 | 0,932 | -0,999 |
| | b | -14,331 | 33,461 | -6,960 | 0,0013 | 0,754 | -0,872 |
| 0,20 | a | -0,614 | 26,067 | -7,542 | 0,0006 | -0,029 | -0,105 |
| | b | 1,295 | 24,609 | -10,500 | 0,0012 | -0,173 | -0,013 |
| 0,30 | a | 11,069 | 17,322 | -11,040 | 0,0004 | -0,857 | 0,650 |
| | b | 12,193 | 15,864 | -13,998 | 0,0010 | -0,961 | 0,699 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,40 | a | 18,061 | 8,679 | -14,497 | 0,0003 | -1,496 | 1,210 |

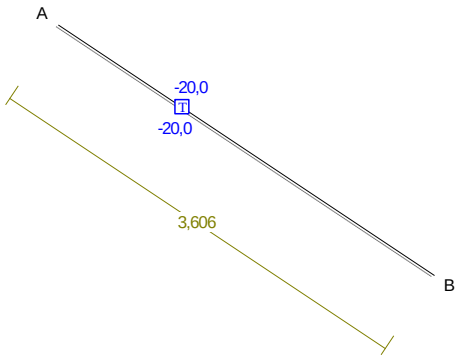
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 18,399 | 7,222 | -17,455 | 0,0009 | -1,551 | 1,206 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,50 | a | 20,422 | 0,089 | -17,933 | 0,0002 | -1,877 | 1,503 |
| | b | 19,975 | -1,369 | -20,892 | 0,0009 | -1,871 | 1,435 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,60 | a | 18,196 | -8,355 | -21,311 | 0,0003 | -1,904 | 1,433 |
| | b | 16,964 | -9,813 | -24,269 | 0,0009 | -1,824 | 1,288 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,70 | a | 11,427 | -16,752 | -24,670 | 0,0005 | -1,456 | 0,877 |
| | b | 9,411 | -18,210 | -27,628 | 0,0011 | -1,285 | 0,636 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,80 | a | 0,171 | -25,054 | -27,990 | 0,0007 | -0,369 | -0,330 |
| | b | -2,631 | -26,512 | -30,949 | 0,0014 | -0,086 | -0,686 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,90 | a | -15,541 | -33,268 | -31,276 | 0,0010 | 1,575 | -2,407 |
| | b | -19,128 | -34,726 | -34,234 | 0,0016 | 1,995 | -2,905 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 0,33 | a | 13,930 | 14,391 | -12,212 | 0,0003 | -1,095 | 0,863 |
| | b | 14,791 | 12,934 | -15,171 | 0,0010 | -1,184 | 0,895 |
| 1,00 | a | -35,656 | -41,436 | -34,543 | 0,0010 | 4,665 | -5,646 |
| | b | -40,028 | -42,894 | -37,502 | 0,0016 | 5,255 | -6,320 |
| 0,00 | a | -38,227 | 43,824 | -0,439 | 0,0008 | 1,928 | -1,935 |
| | b | -34,748 | 42,367 | -3,397 | 0,0015 | 1,729 | -1,783 |
| 0,10 | a | -17,025 | 34,919 | -4,001 | 0,0007 | 0,932 | -0,999 |
| | b | -14,331 | 33,461 | -6,960 | 0,0013 | 0,754 | -0,872 |
| 0,20 | a | -0,614 | 26,067 | -7,542 | 0,0006 | -0,029 | -0,105 |
| | b | 1,295 | 24,609 | -10,500 | 0,0012 | -0,173 | -0,013 |
| 0,30 | a | 11,069 | 17,322 | -11,040 | 0,0004 | -0,857 | 0,650 |
| | b | 12,193 | 15,864 | -13,998 | 0,0010 | -0,961 | 0,699 |
| 0,40 | a | 18,061 | 8,679 | -14,497 | 0,0003 | -1,496 | 1,210 |
| | b | 18,399 | 7,222 | -17,455 | 0,0009 | -1,551 | 1,206 |
| 0,50 | a | 20,422 | 0,089 | -17,933 | 0,0002 | -1,877 | 1,503 |
| | b | 19,975 | -1,369 | -20,892 | 0,0009 | -1,871 | 1,435 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,60 | a | 18,196 | -8,355 | -21,311 | 0,0003 | -1,904 | 1,433 |
| | b | 16,964 | -9,813 | -24,269 | 0,0009 | -1,824 | 1,288 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,70 | a | 11,427 | -16,752 | -24,670 | 0,0005 | -1,456 | 0,877 |
| | b | 9,411 | -18,210 | -27,628 | 0,0011 | -1,285 | 0,636 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |

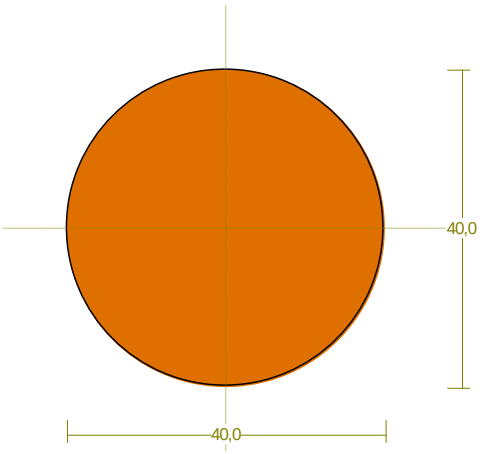
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,80 | a | 0,171 | -25,054 | -27,990 | 0,0007 | -0,369 | -0,330 |
| | b | -2,631 | -26,512 | -30,949 | 0,0014 | -0,086 | -0,686 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,90 | a | -15,541 | -33,268 | -31,276 | 0,0010 | 1,575 | -2,407 |
| | b | -19,128 | -34,726 | -34,234 | 0,0016 | 1,995 | -2,905 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 0,50 | a | 20,422 | 0,066 | -17,942 | 0,0002 | -1,877 | 1,503 |
| | b | 19,973 | -1,392 | -20,901 | 0,0009 | -1,871 | 1,435 |
| 1,00 | a | -35,656 | -41,436 | -34,543 | 0,0010 | 4,665 | -5,646 |
| | b | -40,028 | -42,894 | -37,502 | 0,0016 | 5,255 | -6,320 |
| 0,00 | a | -38,227 | 43,824 | -0,439 | 0,0008 | 1,928 | -1,935 |
| | b | -34,748 | 42,367 | -3,397 | 0,0015 | 1,729 | -1,783 |
| 0,10 | a | -17,025 | 34,919 | -4,001 | 0,0007 | 0,932 | -0,999 |
| | b | -14,331 | 33,461 | -6,960 | 0,0013 | 0,754 | -0,872 |
| 0,20 | a | -0,614 | 26,067 | -7,542 | 0,0006 | -0,029 | -0,105 |
| | b | 1,295 | 24,609 | -10,500 | 0,0012 | -0,173 | -0,013 |
| 0,30 | a | 11,069 | 17,322 | -11,040 | 0,0004 | -0,857 | 0,650 |
| | b | 12,193 | 15,864 | -13,998 | 0,0010 | -0,961 | 0,699 |
| 0,40 | a | 18,061 | 8,679 | -14,497 | 0,0003 | -1,496 | 1,210 |
| | b | 18,399 | 7,222 | -17,455 | 0,0009 | -1,551 | 1,206 |
| 0,50 | a | 20,422 | 0,089 | -17,933 | 0,0002 | -1,877 | 1,503 |
| | b | 19,975 | -1,369 | -20,892 | 0,0009 | -1,871 | 1,435 |
| 0,60 | a | 18,196 | -8,355 | -21,311 | 0,0003 | -1,904 | 1,433 |
| | b | 16,964 | -9,813 | -24,269 | 0,0009 | -1,824 | 1,288 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 0,70 | a | 11,427 | -16,752 | -24,670 | 0,0005 | -1,456 | 0,877 |
| | b | 9,411 | -18,210 | -27,628 | 0,0011 | -1,285 | 0,636 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 0,80 | a | 0,171 | -25,054 | -27,990 | 0,0007 | -0,369 | -0,330 |
| | b | -2,631 | -26,512 | -30,949 | 0,0014 | -0,086 | -0,686 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 0,90 | a | -15,541 | -33,268 | -31,276 | 0,0010 | 1,575 | -2,407 |
| | b | -19,128 | -34,726 | -34,234 | 0,0016 | 1,995 | -2,905 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 0,67 | a | 14,159 | -14,013 | -23,574 | 0,0004 | -1,666 | 1,123 |
| | b | 12,402 | -15,471 | -26,532 | 0,0010 | -1,526 | 0,916 |
| 1,00 | a | -35,656 | -41,436 | -34,543 | 0,0010 | 4,665 | -5,646 |
| | b | -40,028 | -42,894 | -37,502 | 0,0016 | 5,255 | -6,320 |
| 0,00 | a | -38,227 | 43,824 | -0,439 | 0,0008 | 1,928 | -1,935 |
| | b | -34,748 | 42,367 | -3,397 | 0,0015 | 1,729 | -1,783 |
| 0,10 | a | -17,025 | 34,919 | -4,001 | 0,0007 | 0,932 | -0,999 |
| | b | -14,331 | 33,461 | -6,960 | 0,0013 | 0,754 | -0,872 |
| 0,20 | a | -0,614 | 26,067 | -7,542 | 0,0006 | -0,029 | -0,105 |
| | b | 1,295 | 24,609 | -10,500 | 0,0012 | -0,173 | -0,013 |
| 0,30 | a | 11,069 | 17,322 | -11,040 | 0,0004 | -0,857 | 0,650 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 12,193 | 15,864 | -13,998 | 0,0010 | -0,961 | 0,699 |
| 0,40 | a | 18,061 | 8,679 | -14,497 | 0,0003 | -1,496 | 1,210 |
| | b | 18,399 | 7,222 | -17,455 | 0,0009 | -1,551 | 1,206 |
| 0,50 | a | 20,422 | 0,089 | -17,933 | 0,0002 | -1,877 | 1,503 |
| | b | 19,975 | -1,369 | -20,892 | 0,0009 | -1,871 | 1,435 |
| 0,60 | a | 18,196 | -8,355 | -21,311 | 0,0003 | -1,904 | 1,433 |
| | b | 16,964 | -9,813 | -24,269 | 0,0009 | -1,824 | 1,288 |
| 0,70 | a | 11,427 | -16,752 | -24,670 | 0,0005 | -1,456 | 0,877 |
| | b | 9,411 | -18,210 | -27,628 | 0,0011 | -1,285 | 0,636 |
| 0,80 | a | 0,171 | -25,054 | -27,990 | 0,0007 | -0,369 | -0,330 |
| | b | -2,631 | -26,512 | -30,949 | 0,0014 | -0,086 | -0,686 |
| 0,83 | a | -4,641 | -27,858 | -29,112 | 0,0008 | 0,179 | -0,921 |
| | b | -7,708 | -29,316 | -32,070 | 0,0014 | 0,505 | -1,323 |
| 0,83 | a | -4,641 | -27,858 | -29,112 | 0,0008 | 0,179 | -0,921 |
| | b | -7,708 | -29,316 | -32,070 | 0,0014 | 0,505 | -1,323 |
| 0,90 | a | -15,541 | -33,268 | -31,276 | 0,0010 | 1,575 | -2,407 |
| | b | -19,128 | -34,726 | -34,234 | 0,0016 | 1,995 | -2,905 |
| 0,83 | a | -4,641 | -27,858 | -29,112 | 0,0008 | 0,179 | -0,921 |
| | b | -7,708 | -29,316 | -32,070 | 0,0014 | 0,505 | -1,323 |
| 0,83 | a | -4,641 | -27,858 | -29,112 | 0,0008 | 0,179 | -0,921 |
| | b | -7,708 | -29,316 | -32,070 | 0,0014 | 0,505 | -1,323 |
| 1,00 | a | -35,656 | -41,436 | -34,543 | 0,0010 | 4,665 | -5,646 |
| | b | -40,028 | -42,894 | -37,502 | 0,0016 | 5,255 | -6,320 |
| 0,00 | a | -38,227 | 43,824 | -0,439 | 0,0008 | 1,928 | -1,935 |
| | b | -34,748 | 42,367 | -3,397 | 0,0015 | 1,729 | -1,783 |
| 0,10 | a | -17,025 | 34,919 | -4,001 | 0,0007 | 0,932 | -0,999 |
| | b | -14,331 | 33,461 | -6,960 | 0,0013 | 0,754 | -0,872 |
| 0,20 | a | -0,614 | 26,067 | -7,542 | 0,0006 | -0,029 | -0,105 |
| | b | 1,295 | 24,609 | -10,500 | 0,0012 | -0,173 | -0,013 |
| 0,30 | a | 11,069 | 17,322 | -11,040 | 0,0004 | -0,857 | 0,650 |
| | b | 12,193 | 15,864 | -13,998 | 0,0010 | -0,961 | 0,699 |
| 0,40 | a | 18,061 | 8,679 | -14,497 | 0,0003 | -1,496 | 1,210 |
| | b | 18,399 | 7,222 | -17,455 | 0,0009 | -1,551 | 1,206 |
| 0,50 | a | 20,422 | 0,089 | -17,933 | 0,0002 | -1,877 | 1,503 |
| | b | 19,975 | -1,369 | -20,892 | 0,0009 | -1,871 | 1,435 |
| 0,60 | a | 18,196 | -8,355 | -21,311 | 0,0003 | -1,904 | 1,433 |
| | b | 16,964 | -9,813 | -24,269 | 0,0009 | -1,824 | 1,288 |
| 0,70 | a | 11,427 | -16,752 | -24,670 | 0,0005 | -1,456 | 0,877 |
| | b | 9,411 | -18,210 | -27,628 | 0,0011 | -1,285 | 0,636 |
| 0,80 | a | 0,171 | -25,054 | -27,990 | 0,0007 | -0,369 | -0,330 |
| | b | -2,631 | -26,512 | -30,949 | 0,0014 | -0,086 | -0,686 |
| 0,90 | a | -15,541 | -33,268 | -31,276 | 0,0010 | 1,575 | -2,407 |
| | b | -19,128 | -34,726 | -34,234 | 0,0016 | 1,995 | -2,905 |
| 1,00 | a | -35,656 | -41,436 | -34,543 | 0,0010 | 4,665 | -5,646 |
| | b | -40,028 | -42,894 | -37,502 | 0,0016 | 5,255 | -6,320 |
| 0,50 | a | **20,422*** | 0,011 | -17,964 | | -1,879 | 1,504 |
| 1,00 | b | **-40,028*** | -42,894 | -37,502 | | 5,255 | -6,320 |
| 0,00 | a | -38,227 | **43,824*** | -0,439 | | 1,928 | -1,935 |
| 1,00 | b | -40,028 | **-42,894*** | -37,502 | | 5,255 | -6,320 |
| 0,00 | a | -38,227 | 43,824 | **-0,439*** | | 1,928 | -1,935 |
| 1,00 | b | -40,028 | -42,894 | **-37,502*** | | 5,255 | -6,320 |
| 1,00 | b | -40,028 | -42,894 | -37,502 | | 4,665 | **-5,646*** |

* = Wartości ekstremalne

**PRĘT NR 22**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

---

GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):1 Koniec(B):16 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,606 Kąt: -33,69

Rzuty Imperfekcje
H: 3,000 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

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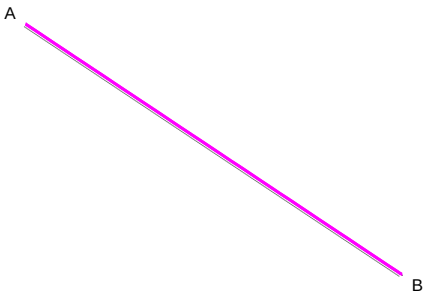
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

---

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: V | "Naciąg cięgien" | | Stałe | | γf= 1,35/1,00 | |
| 22 | Temp. | | -20,000 | -20,000 | | |

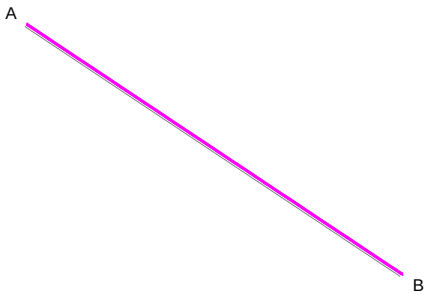
---

M

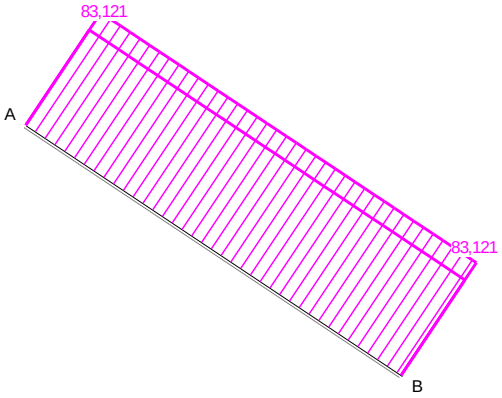


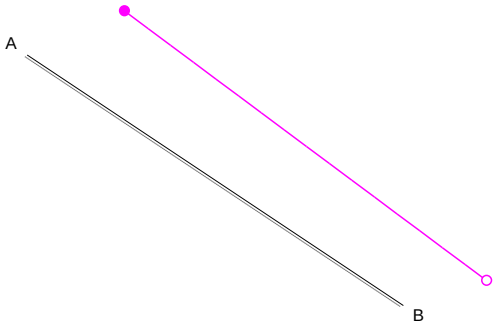

N

Q




W



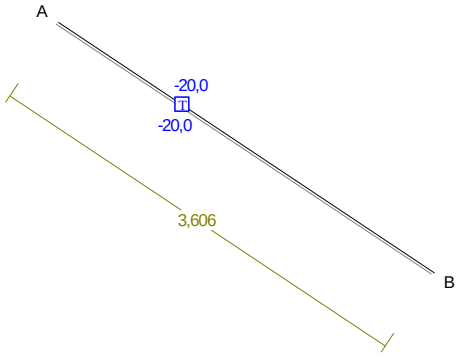



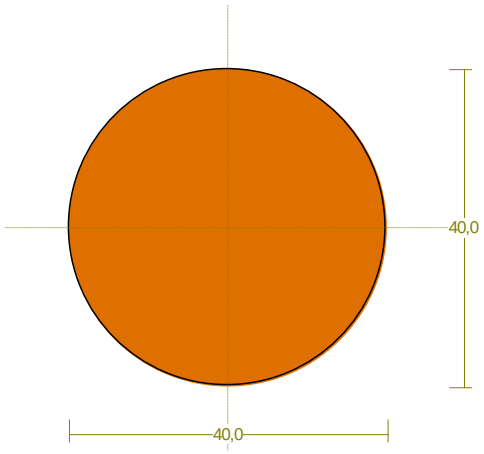

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 83,121 | 0,0015 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0017 | 56,012 | 56,012 |
| 0,10 | a | 0,000 | 0,000 | 83,121 | 0,0014 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0016 | 56,012 | 56,012 |
| 0,20 | a | 0,000 | 0,000 | 83,121 | 0,0014 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0016 | 56,012 | 56,012 |
| 0,30 | a | 0,000 | 0,000 | 83,121 | 0,0014 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0015 | 56,012 | 56,012 |
| 0,40 | a | 0,000 | 0,000 | 83,121 | 0,0013 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0015 | 56,012 | 56,012 |
| 0,50 | a | 0,000 | 0,000 | 83,121 | 0,0013 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0014 | 56,012 | 56,012 |
| 0,60 | a | 0,000 | 0,000 | 83,121 | 0,0013 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0014 | 56,012 | 56,012 |
| 0,70 | a | 0,000 | 0,000 | 83,121 | 0,0012 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0013 | 56,012 | 56,012 |
| 0,80 | a | 0,000 | 0,000 | 83,121 | 0,0012 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0013 | 56,012 | 56,012 |
| 0,90 | a | 0,000 | 0,000 | 83,121 | 0,0011 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0012 | 56,012 | 56,012 |
| 1,00 | a | 0,000 | 0,000 | 83,121 | 0,0011 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0012 | 56,012 | 56,012 |
| 0,00 | a | **0,000*** | 0,000 | 83,121 | | 66,145 | 66,145 |
| 0,00 | b | **0,000*** | 0,000 | 70,387 | | 56,012 | 56,012 |
| 0,00 | a | 0,000 | **0,000*** | 83,121 | | 66,145 | 66,145 |
| 0,00 | b | 0,000 | **0,000*** | 70,387 | | 56,012 | 56,012 |
| 0,00 | a | 0,000 | 0,000 | **83,121*** | | 66,145 | 66,145 |
| 0,00 | b | 0,000 | 0,000 | **70,387*** | | 56,012 | 56,012 |
| 0,00 | b | 0,000 | 0,000 | 70,387 | | 66,145 | **66,145*** |

* = Wartości ekstremalne

**PRĘT NR 23**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

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GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):16 Koniec(B):7 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,606 Kąt: -33,69

Rzuty Imperfekcje
H: 3,000 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

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**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

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| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: 23 | V "Naciąg cięgien" | | -20,000 | -20,000 | Stałe | γf= 1,35/1,00 |
| | Temp. | | | | | |

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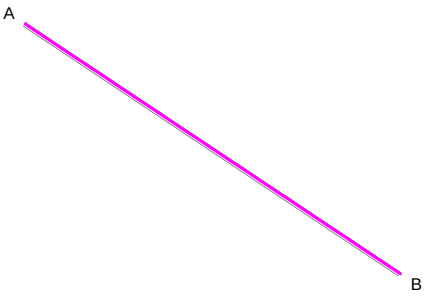
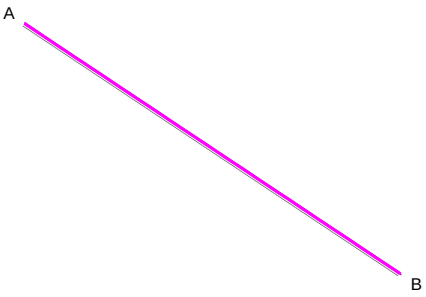
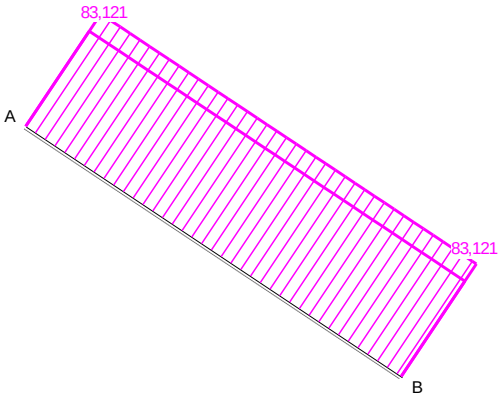
M



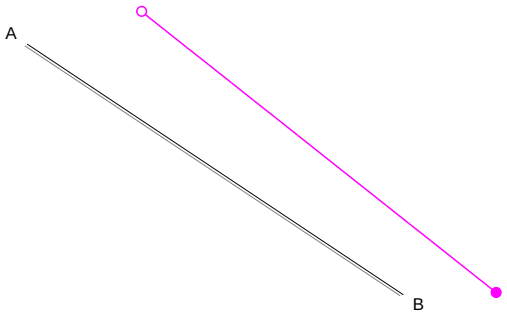

Q



N




W

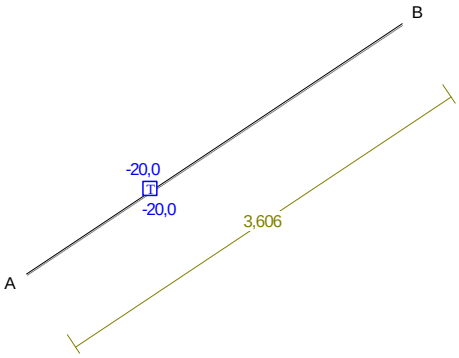


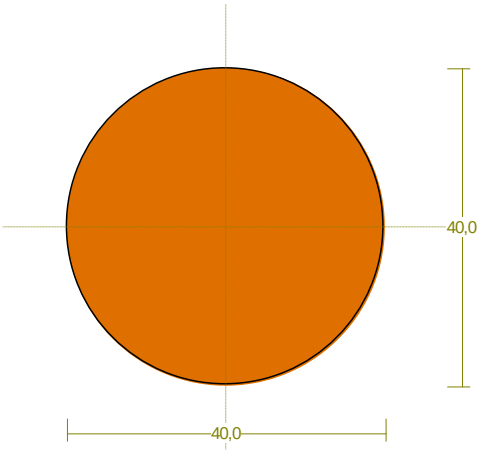

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 83,121 | 0,0011 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0012 | 56,012 | 56,012 |
| 0,10 | a | 0,000 | 0,000 | 83,121 | 0,0011 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0011 | 56,012 | 56,012 |
| 0,20 | a | 0,000 | 0,000 | 83,121 | 0,0010 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0011 | 56,012 | 56,012 |
| 0,30 | a | 0,000 | 0,000 | 83,121 | 0,0010 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0011 | 56,012 | 56,012 |
| 0,40 | a | 0,000 | 0,000 | 83,121 | 0,0009 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0010 | 56,012 | 56,012 |
| 0,50 | a | 0,000 | 0,000 | 83,121 | 0,0009 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0010 | 56,012 | 56,012 |
| 0,60 | a | 0,000 | 0,000 | 83,121 | 0,0008 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0009 | 56,012 | 56,012 |
| 0,70 | a | 0,000 | 0,000 | 83,121 | 0,0008 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0009 | 56,012 | 56,012 |
| 0,80 | a | 0,000 | 0,000 | 83,121 | 0,0007 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0009 | 56,012 | 56,012 |
| 0,90 | a | 0,000 | 0,000 | 83,121 | 0,0007 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0008 | 56,012 | 56,012 |
| 1,00 | a | 0,000 | 0,000 | 83,121 | 0,0006 | 66,145 | 66,145 |
| | b | 0,000 | 0,000 | 70,387 | 0,0008 | 56,012 | 56,012 |
| 0,00 | a | **0,000*** | 0,000 | 83,121 | | 66,145 | 66,145 |
| 0,00 | b | **0,000*** | 0,000 | 70,387 | | 56,012 | 56,012 |
| 0,00 | a | 0,000 | **0,000*** | 83,121 | | 66,145 | 66,145 |
| 0,00 | b | 0,000 | **0,000*** | 70,387 | | 56,012 | 56,012 |
| 0,00 | a | 0,000 | 0,000 | **83,121*** | | 66,145 | 66,145 |
| 0,00 | b | 0,000 | 0,000 | **70,387*** | | 56,012 | 56,012 |
| 0,00 | b | 0,000 | 0,000 | 70,387 | | 66,145 | **66,145*** |

* = Wartości ekstremalne

**PRĘT NR 24**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

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GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):0 Koniec(B):16 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,606 Kąt: 33,69
Rzuty Imperfekcje
H: 3,000 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

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**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

---

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: | V "Naciąg cięgien" | | | Stałe | γf= 1,35/1,00 | |
| 24 | Temp. | | -20,000 | -20,000 | | |

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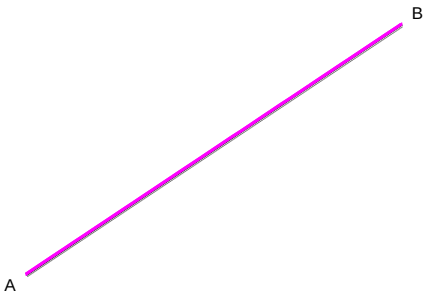
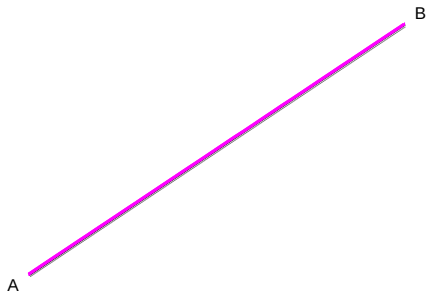
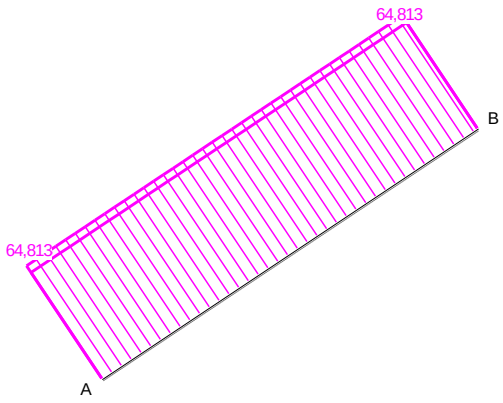
M Q

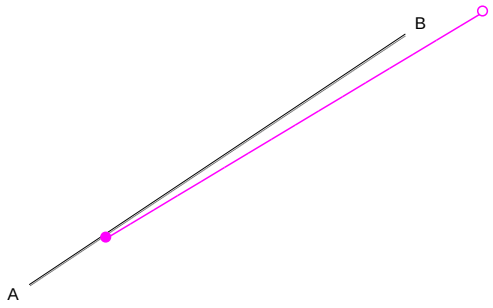



N




W



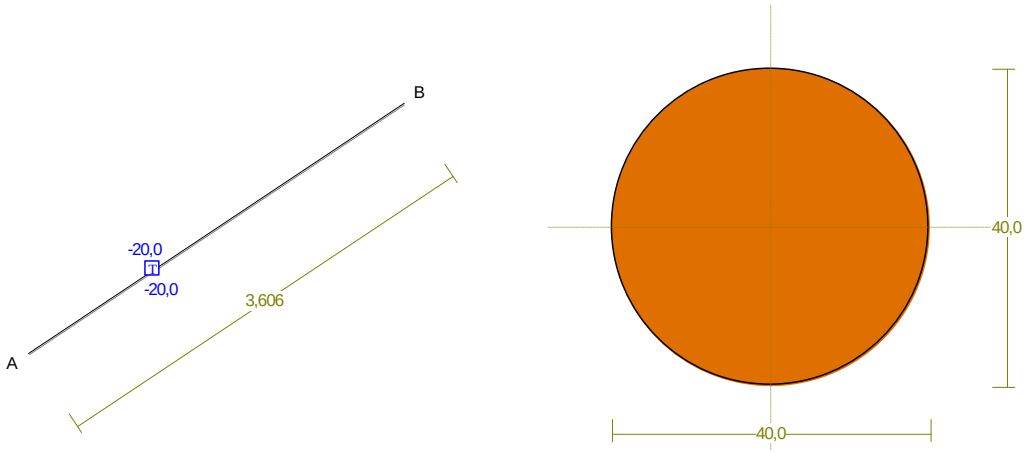

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 64,813 | -0,0001 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0001 | 48,513 | 48,513 |
| 0,10 | a | 0,000 | 0,000 | 64,813 | -0,0001 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0002 | 48,513 | 48,513 |
| 0,20 | a | 0,000 | 0,000 | 64,813 | -0,0002 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0002 | 48,513 | 48,513 |
| 0,30 | a | 0,000 | 0,000 | 64,813 | -0,0002 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0003 | 48,513 | 48,513 |
| 0,40 | a | 0,000 | 0,000 | 64,813 | -0,0002 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0003 | 48,513 | 48,513 |
| 0,50 | a | 0,000 | 0,000 | 64,813 | -0,0003 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0004 | 48,513 | 48,513 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,60 | a | 0,000 | 0,000 | 64,813 | -0,0003 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0004 | 48,513 | 48,513 |
| 0,70 | a | 0,000 | 0,000 | 64,813 | -0,0003 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0005 | 48,513 | 48,513 |
| 0,80 | a | 0,000 | 0,000 | 64,813 | -0,0004 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0006 | 48,513 | 48,513 |
| 0,90 | a | 0,000 | 0,000 | 64,813 | -0,0004 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0006 | 48,513 | 48,513 |
| 1,00 | a | 0,000 | 0,000 | 64,813 | -0,0004 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0007 | 48,513 | 48,513 |
| 0,00 | a | **0,000*** | 0,000 | 64,813 | | 51,576 | 51,576 |
| 0,00 | b | **0,000*** | 0,000 | 60,963 | | 48,513 | 48,513 |
| 0,00 | a | 0,000 | **0,000*** | 64,813 | | 51,576 | 51,576 |
| 0,00 | b | 0,000 | **0,000*** | 60,963 | | 48,513 | 48,513 |
| 0,00 | a | 0,000 | 0,000 | **64,813*** | | 51,576 | 51,576 |
| 0,00 | b | 0,000 | 0,000 | **60,963*** | | 48,513 | 48,513 |
| 0,00 | b | 0,000 | 0,000 | 60,963 | | 51,576 | **51,576*** |

* = Wartości ekstremalne

**PRĘT NR 25**



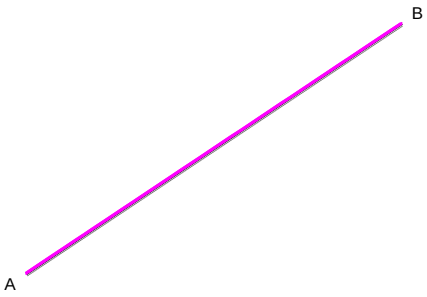

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):16 Koniec(B):6 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,606 Kąt: 33,69
Rzuty Imperfekcje
H: 3,000 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

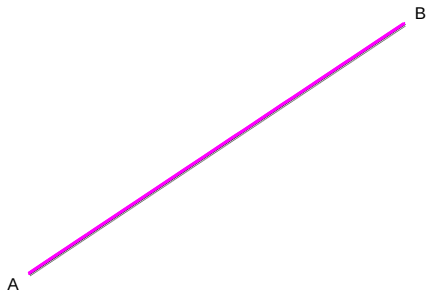
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: V | "Naciąg cięgien" | | Stałe | | γf= 1,35/1,00 | |
| 25 | Temp. | | -20,000 | -20,000 | | |

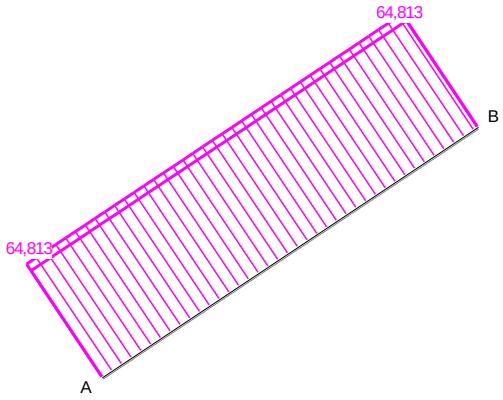
M



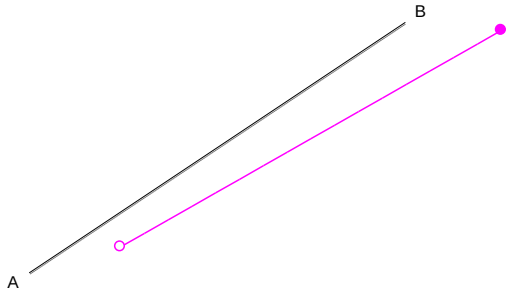

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

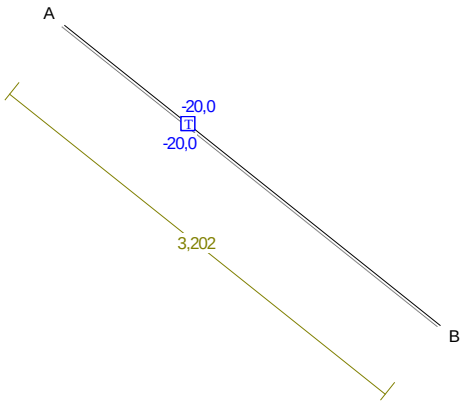
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

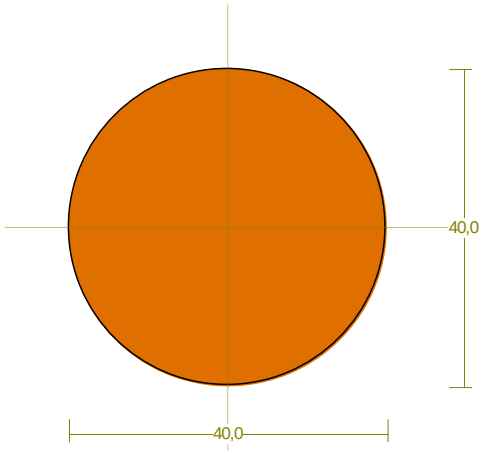
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 64,813 | -0,0004 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0007 | 48,513 | 48,513 |
| 0,10 | a | 0,000 | 0,000 | 64,813 | -0,0005 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0007 | 48,513 | 48,513 |
| 0,20 | a | 0,000 | 0,000 | 64,813 | -0,0006 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0008 | 48,513 | 48,513 |
| 0,30 | a | 0,000 | 0,000 | 64,813 | -0,0006 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0008 | 48,513 | 48,513 |
| 0,40 | a | 0,000 | 0,000 | 64,813 | -0,0007 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0009 | 48,513 | 48,513 |
| 0,50 | a | 0,000 | 0,000 | 64,813 | -0,0007 | 51,576 | 51,576 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 0,000 | 0,000 | 60,963 | -0,0009 | 48,513 | 48,513 |
| 0,60 | a | 0,000 | 0,000 | 64,813 | -0,0008 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0010 | 48,513 | 48,513 |
| 0,70 | a | 0,000 | 0,000 | 64,813 | -0,0008 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0010 | 48,513 | 48,513 |
| 0,80 | a | 0,000 | 0,000 | 64,813 | -0,0009 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0011 | 48,513 | 48,513 |
| 0,90 | a | 0,000 | 0,000 | 64,813 | -0,0009 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0011 | 48,513 | 48,513 |
| 1,00 | a | 0,000 | 0,000 | 64,813 | -0,0010 | 51,576 | 51,576 |
| | b | 0,000 | 0,000 | 60,963 | -0,0012 | 48,513 | 48,513 |
| 0,00 | a | **0,000*** | 0,000 | 64,813 | | 51,576 | 51,576 |
| 0,00 | b | **0,000*** | 0,000 | 60,963 | | 48,513 | 48,513 |
| 0,00 | a | 0,000 | **0,000*** | 64,813 | | 51,576 | 51,576 |
| 0,00 | b | 0,000 | **0,000*** | 60,963 | | 48,513 | 48,513 |
| 0,00 | a | 0,000 | 0,000 | **64,813*** | | 51,576 | 51,576 |
| 0,00 | b | 0,000 | 0,000 | **60,963*** | | 48,513 | 48,513 |
| 0,00 | b | 0,000 | 0,000 | 60,963 | | 51,576 | **51,576*** |

* = Wartości ekstremalne

**PRĘT NR 26**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

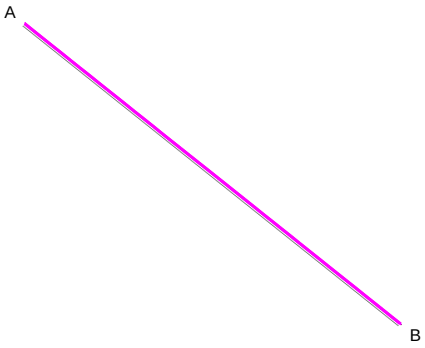
GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):6 Koniec(B):17 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,202 Kąt: -38,66

Rzuty Imperfekcje
H: 2,500 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

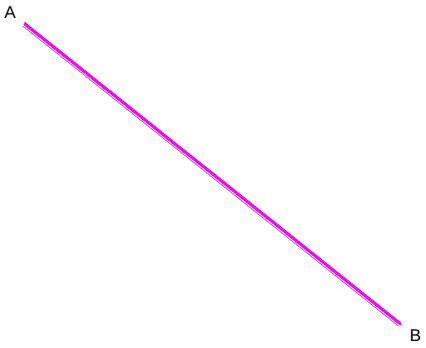
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: V | "Naciąg cięgien" | | Stałe | | γf= 1,35/1,00 | |
| 26 | Temp. | | -20,000 | -20,000 | | |

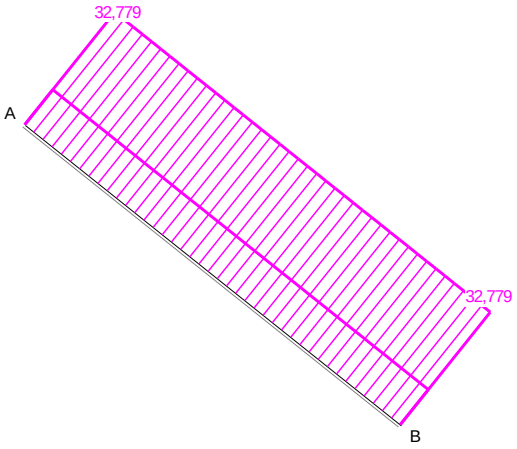
M



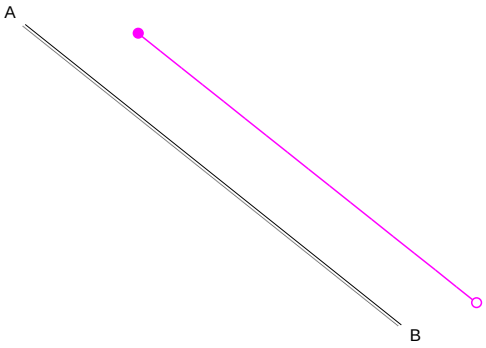

Q




N




W



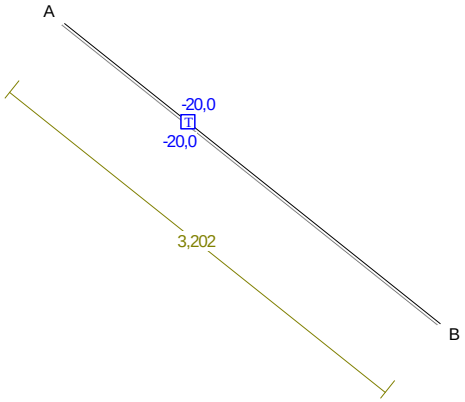

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

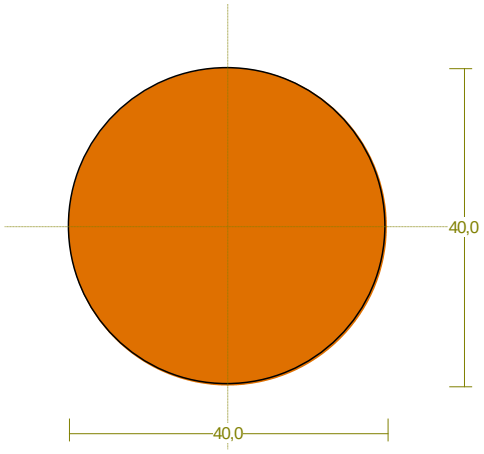
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,10 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,20 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,30 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,40 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,50 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,60 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,70 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,80 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,90 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 1,00 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,00 | a | **0,000*** | 0,000 | 32,779 | | 26,084 | 26,084 |
| 0,00 | b | **0,000*** | 0,000 | 10,222 | | 8,134 | 8,134 |
| 0,00 | a | 0,000 | **0,000*** | 32,779 | | 26,084 | 26,084 |
| 0,00 | b | 0,000 | **0,000*** | 10,222 | | 8,134 | 8,134 |
| 0,00 | a | 0,000 | 0,000 | **32,779*** | | 26,084 | 26,084 |
| 0,00 | b | 0,000 | 0,000 | **10,222*** | | 8,134 | 8,134 |
| 0,00 | b | 0,000 | 0,000 | 10,222 | | 26,084 | **26,084*** |

* = Wartości ekstremalne

**PRĘT NR 27**



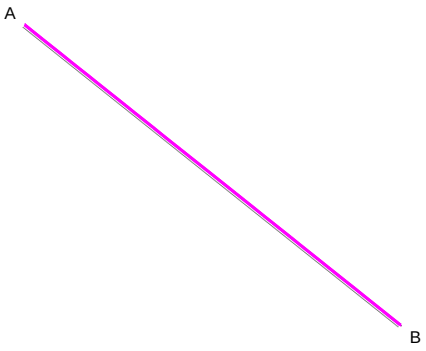

**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):17 Koniec(B):11 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,202 Kąt: -38,66
Rzuty Imperfekcje
H: 2,500 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

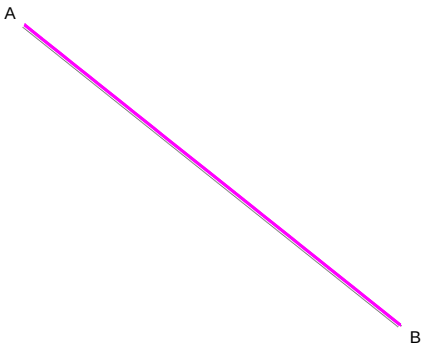
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: | V "Naciąg cięgien" | | | Stałe | γf= 1,35/1,00 | |
| 27 | Temp. | | -20,000 | -20,000 | | |

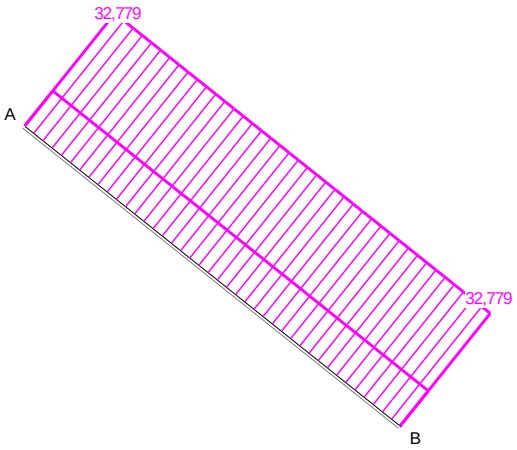
M



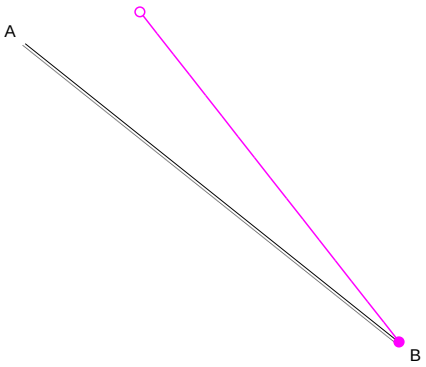

Q




N




W



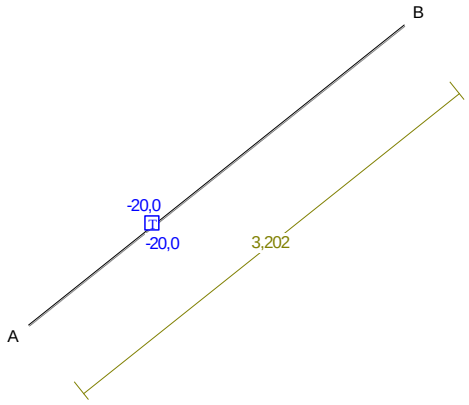

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

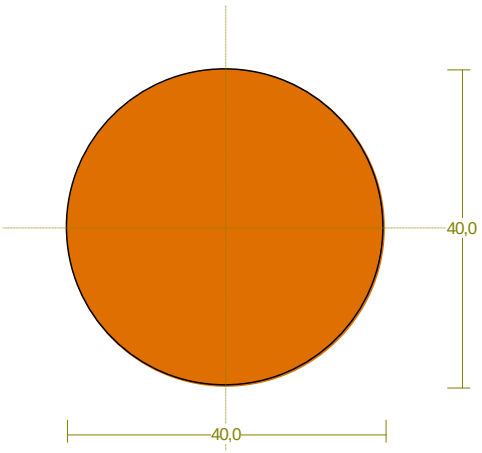
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 32,779 | 0,0008 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0010 | 8,134 | 8,134 |
| 0,10 | a | 0,000 | 0,000 | 32,779 | 0,0007 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0009 | 8,134 | 8,134 |
| 0,20 | a | 0,000 | 0,000 | 32,779 | 0,0006 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0008 | 8,134 | 8,134 |
| 0,30 | a | 0,000 | 0,000 | 32,779 | 0,0005 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0007 | 8,134 | 8,134 |
| 0,40 | a | 0,000 | 0,000 | 32,779 | 0,0005 | 26,084 | 26,084 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 0,000 | 0,000 | 10,222 | 0,0006 | 8,134 | 8,134 |
| 0,50 | a | 0,000 | 0,000 | 32,779 | 0,0004 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0005 | 8,134 | 8,134 |
| 0,60 | a | 0,000 | 0,000 | 32,779 | 0,0003 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0004 | 8,134 | 8,134 |
| 0,70 | a | 0,000 | 0,000 | 32,779 | 0,0002 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0003 | 8,134 | 8,134 |
| 0,80 | a | 0,000 | 0,000 | 32,779 | 0,0002 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0002 | 8,134 | 8,134 |
| 0,90 | a | 0,000 | 0,000 | 32,779 | 0,0001 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0001 | 8,134 | 8,134 |
| 1,00 | a | 0,000 | 0,000 | 32,779 | 0,0000 | 26,084 | 26,084 |
| | b | 0,000 | 0,000 | 10,222 | 0,0000 | 8,134 | 8,134 |
| 0,00 | a | **0,000*** | 0,000 | 32,779 | | 26,084 | 26,084 |
| 0,00 | b | **0,000*** | 0,000 | 10,222 | | 8,134 | 8,134 |
| 0,00 | a | 0,000 | **0,000*** | 32,779 | | 26,084 | 26,084 |
| 0,00 | b | 0,000 | **0,000*** | 10,222 | | 8,134 | 8,134 |
| 0,00 | a | 0,000 | 0,000 | **32,779*** | | 26,084 | 26,084 |
| 0,00 | b | 0,000 | 0,000 | **10,222*** | | 8,134 | 8,134 |
| 0,00 | b | 0,000 | 0,000 | 10,222 | | 26,084 | **26,084*** |

* = Wartości ekstremalne

**PRĘT NR 28**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

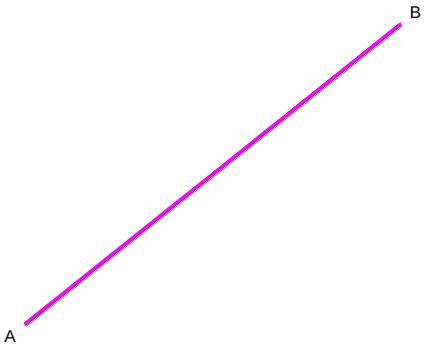
GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):7 Koniec(B):17 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,202 Kąt: 38,66
Rzuty Imperfekcje
H: 2,500 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

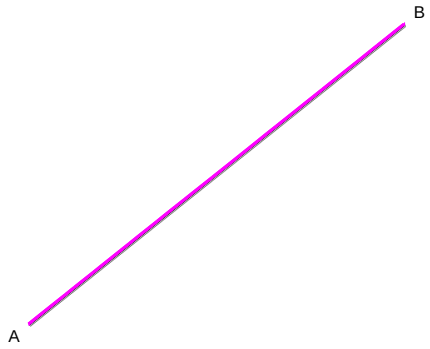
| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: V | "Naciąg cięgien" | | Stałe | γf= 1,35/1,00 | | |

28 Temp. -20,000 -20,000

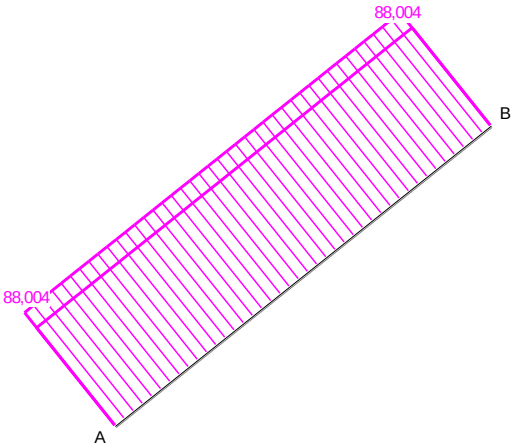
M



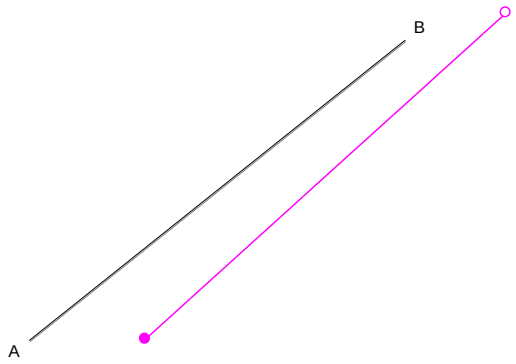

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

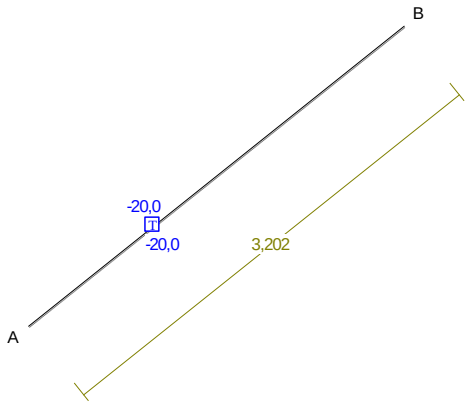
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

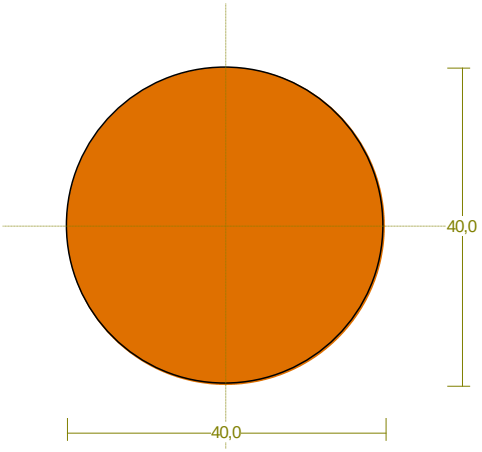
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 88,004 | -0,0007 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0009 | 60,642 | 60,642 |
| 0,10 | a | 0,000 | 0,000 | 88,004 | -0,0007 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0008 | 60,642 | 60,642 |
| 0,20 | a | 0,000 | 0,000 | 88,004 | -0,0006 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0008 | 60,642 | 60,642 |
| 0,30 | a | 0,000 | 0,000 | 88,004 | -0,0006 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0008 | 60,642 | 60,642 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,40 | a | 0,000 | 0,000 | 88,004 | -0,0006 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0007 | 60,642 | 60,642 |
| 0,50 | a | 0,000 | 0,000 | 88,004 | -0,0006 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0007 | 60,642 | 60,642 |
| 0,60 | a | 0,000 | 0,000 | 88,004 | -0,0005 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0007 | 60,642 | 60,642 |
| 0,70 | a | 0,000 | 0,000 | 88,004 | -0,0005 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0006 | 60,642 | 60,642 |
| 0,80 | a | 0,000 | 0,000 | 88,004 | -0,0005 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0006 | 60,642 | 60,642 |
| 0,90 | a | 0,000 | 0,000 | 88,004 | -0,0005 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0006 | 60,642 | 60,642 |
| 1,00 | a | 0,000 | 0,000 | 88,004 | -0,0005 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0005 | 60,642 | 60,642 |
| 0,00 | a | **0,000*** | 0,000 | 88,004 | | 70,031 | 70,031 |
| 0,00 | b | **0,000*** | 0,000 | 76,206 | | 60,642 | 60,642 |
| 0,00 | a | 0,000 | **0,000*** | 88,004 | | 70,031 | 70,031 |
| 0,00 | b | 0,000 | **0,000*** | 76,206 | | 60,642 | 60,642 |
| 0,00 | a | 0,000 | 0,000 | **88,004*** | | 70,031 | 70,031 |
| 0,00 | b | 0,000 | 0,000 | **76,206*** | | 60,642 | 60,642 |
| 0,00 | b | 0,000 | 0,000 | 76,206 | | 70,031 | **70,031*** |

* = Wartości ekstremalne

**PRĘT NR 29**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA:
Początek(A):17 Koniec(B):10
Cięgno Cięgno
Długość: 3,202 Kąt: 38,66

PRZEKRÓJ: 7
"R 30x15"
MATERIAŁ: 2 S 235

Rzuty
H: 2,500 V: 2,000

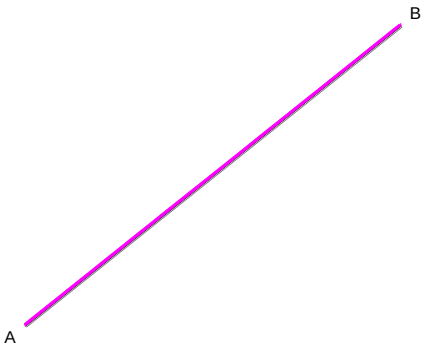
Imperfekcje
wo/L= 0,0000 fo/L= 0,0000

**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

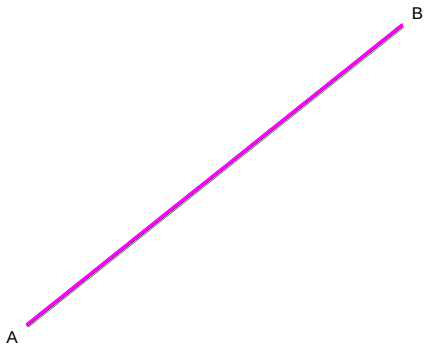
| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|

Grupa: V "Naciąg cięgien" Stałe γf= 1,35/1,00
29 Temp. -20,000 -20,000

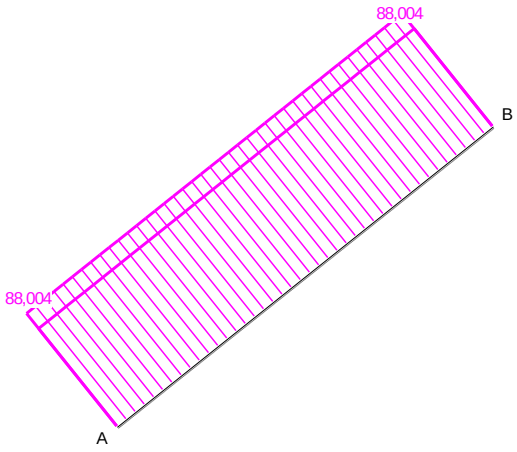
M



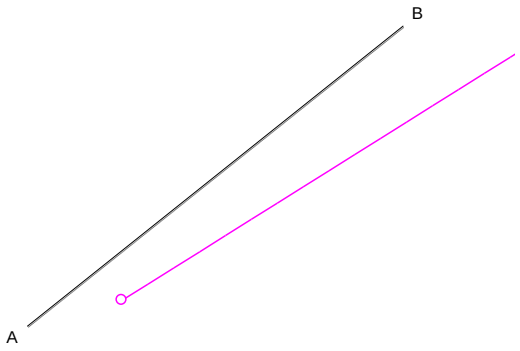

Q




N




W



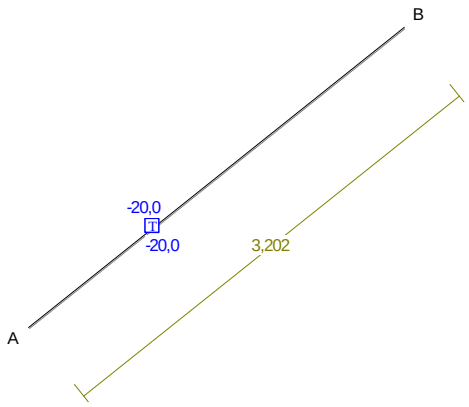

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

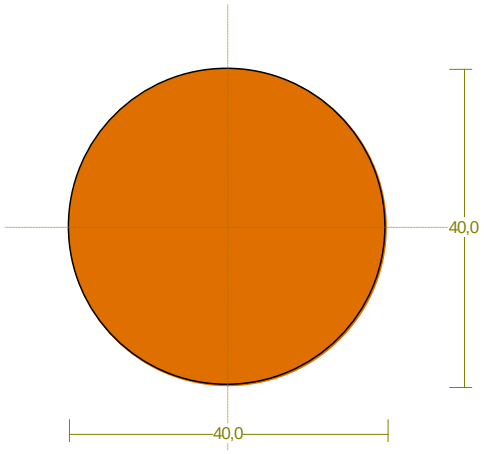
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 88,004 | -0,0005 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0005 | 60,642 | 60,642 |
| 0,10 | a | 0,000 | 0,000 | 88,004 | -0,0005 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0006 | 60,642 | 60,642 |
| 0,20 | a | 0,000 | 0,000 | 88,004 | -0,0006 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0007 | 60,642 | 60,642 |
| 0,30 | a | 0,000 | 0,000 | 88,004 | -0,0006 | 70,031 | 70,031 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 0,000 | 0,000 | 76,206 | -0,0007 | 60,642 | 60,642 |
| 0,40 | a | 0,000 | 0,000 | 88,004 | -0,0007 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0008 | 60,642 | 60,642 |
| 0,50 | a | 0,000 | 0,000 | 88,004 | -0,0008 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0009 | 60,642 | 60,642 |
| 0,60 | a | 0,000 | 0,000 | 88,004 | -0,0008 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0009 | 60,642 | 60,642 |
| 0,70 | a | 0,000 | 0,000 | 88,004 | -0,0009 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0010 | 60,642 | 60,642 |
| 0,80 | a | 0,000 | 0,000 | 88,004 | -0,0009 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0011 | 60,642 | 60,642 |
| 0,90 | a | 0,000 | 0,000 | 88,004 | -0,0010 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0012 | 60,642 | 60,642 |
| 1,00 | a | 0,000 | 0,000 | 88,004 | -0,0010 | 70,031 | 70,031 |
| | b | 0,000 | 0,000 | 76,206 | -0,0012 | 60,642 | 60,642 |
| 0,00 | a | **0,000*** | 0,000 | 88,004 | | 70,031 | 70,031 |
| 0,00 | b | **0,000*** | 0,000 | 76,206 | | 60,642 | 60,642 |
| 0,00 | a | 0,000 | **0,000*** | 88,004 | | 70,031 | 70,031 |
| 0,00 | b | 0,000 | **0,000*** | 76,206 | | 60,642 | 60,642 |
| 0,00 | a | 0,000 | 0,000 | **88,004*** | | 70,031 | 70,031 |
| 0,00 | b | 0,000 | 0,000 | **76,206*** | | 60,642 | 60,642 |
| 0,00 | b | 0,000 | 0,000 | 76,206 | | 70,031 | **70,031*** |

* = Wartości ekstremalne

**PRĘT NR 30**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA:
Początek(A):11 Koniec(B):18
Cięgno Cięgno
Długość: 3,202 Kąt: 38,66

Rzuty
H: 2,500 V: 2,000

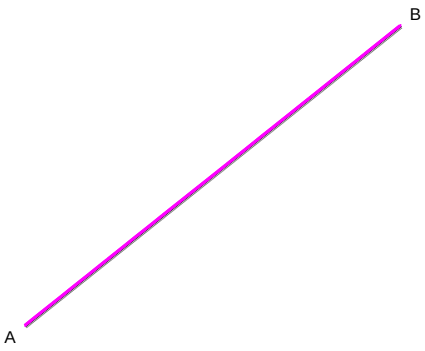
PRZEKRÓJ: 7
"R 30x15"
MATERIAŁ: 2 S 235

Imperfekcje
wo/L= 0,0000 fo/L= 0,0000

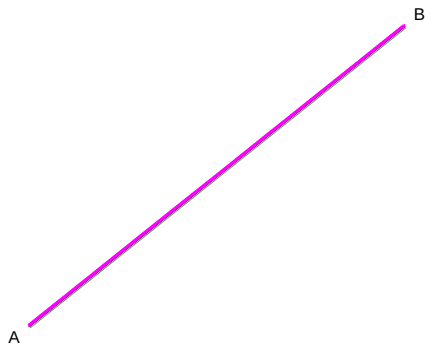
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: 30 | V "Naciąg cięgien" Temp. | | -20,000 | Stałe -20,000 | γf= 1,35/1,00 | |

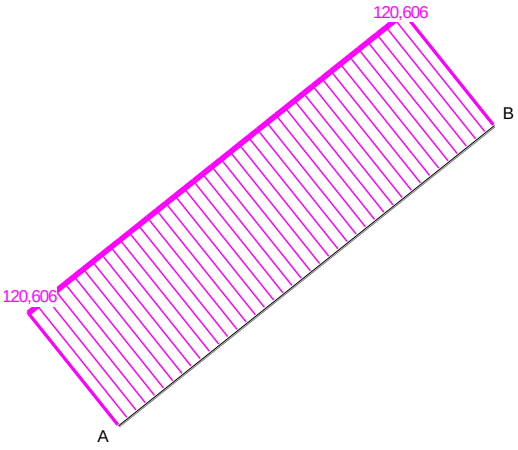
M



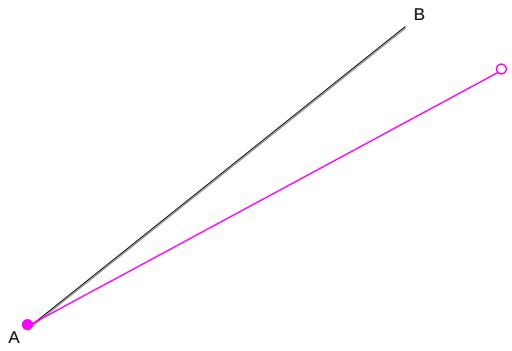

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

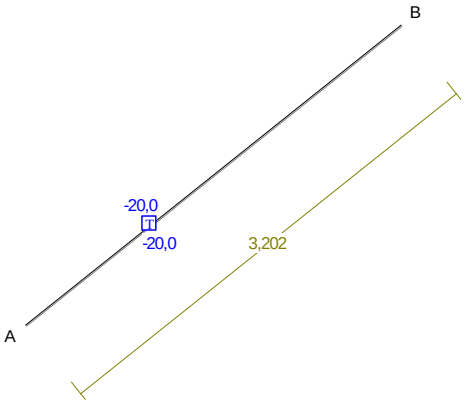
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

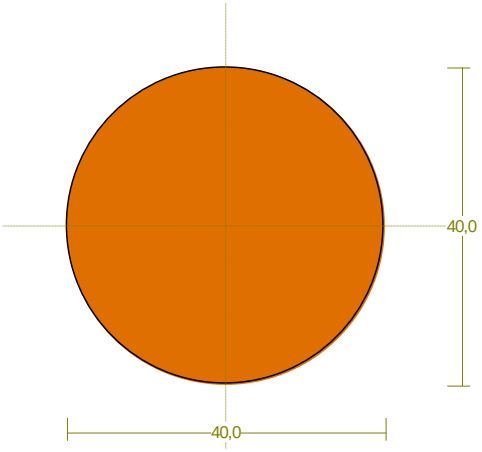
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 120,606 | 0,0000 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | 0,0000 | 94,166 | 94,166 |
| 0,10 | a | 0,000 | 0,000 | 120,606 | -0,0001 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0001 | 94,166 | 94,166 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,20 | a | 0,000 | 0,000 | 120,606 | -0,0002 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0002 | 94,166 | 94,166 |
| 0,30 | a | 0,000 | 0,000 | 120,606 | -0,0003 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0003 | 94,166 | 94,166 |
| 0,40 | a | 0,000 | 0,000 | 120,606 | -0,0004 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0004 | 94,166 | 94,166 |
| 0,50 | a | 0,000 | 0,000 | 120,606 | -0,0005 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0005 | 94,166 | 94,166 |
| 0,60 | a | 0,000 | 0,000 | 120,606 | -0,0006 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0006 | 94,166 | 94,166 |
| 0,70 | a | 0,000 | 0,000 | 120,606 | -0,0007 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0007 | 94,166 | 94,166 |
| 0,80 | a | 0,000 | 0,000 | 120,606 | -0,0007 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0008 | 94,166 | 94,166 |
| 0,90 | a | 0,000 | 0,000 | 120,606 | -0,0008 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0009 | 94,166 | 94,166 |
| 1,00 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0010 | 94,166 | 94,166 |
| 0,00 | a | **0,000*** | 0,000 | 120,606 | | 95,976 | 95,976 |
| 0,00 | b | **0,000*** | 0,000 | 118,332 | | 94,166 | 94,166 |
| 0,00 | a | 0,000 | **0,000*** | 120,606 | | 95,976 | 95,976 |
| 0,00 | b | 0,000 | **0,000*** | 118,332 | | 94,166 | 94,166 |
| 0,00 | a | 0,000 | 0,000 | **120,606*** | | 95,976 | 95,976 |
| 0,00 | b | 0,000 | 0,000 | **118,332*** | | 94,166 | 94,166 |
| 0,00 | b | 0,000 | 0,000 | 118,332 | | 95,976 | **95,976*** |

* = Wartości ekstremalne

**PRĘT NR 31**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

GEOMETRIA PRĘTA:
Początek(A):18 Koniec(B):14
Cięgno Cięgno
Długość: 3,202 Kąt: 38,66

Rzuty
H: 2,500 V: 2,000

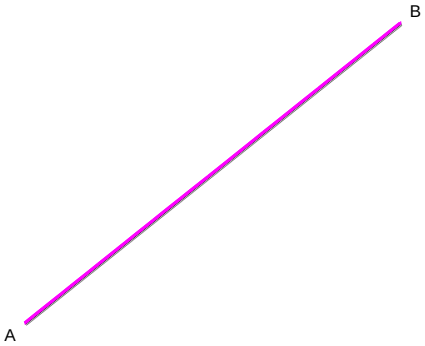
PRZEKRÓJ: 7
"R 30x15"
MATERIAŁ: 2 S 235

Imperfekcje
wo/L= 0,0000 fo/L= 0,0000

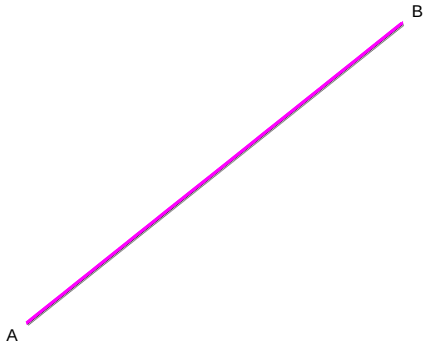
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: V | "Naciąg cięgien" | | Stałe | | γf= 1,35/1,00 | |
| 31 | Temp. | | -20,000 | -20,000 | | |

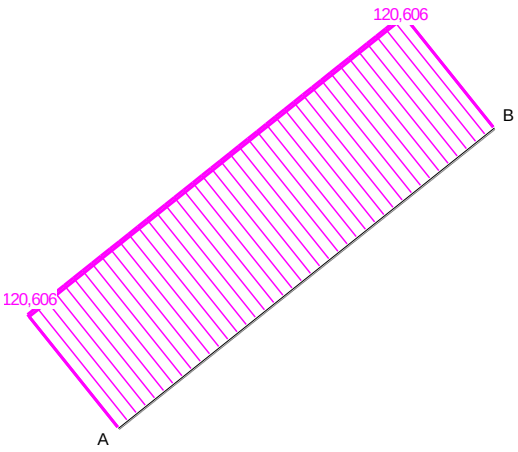
M



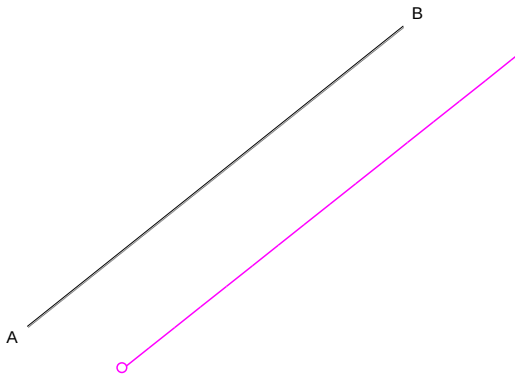

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

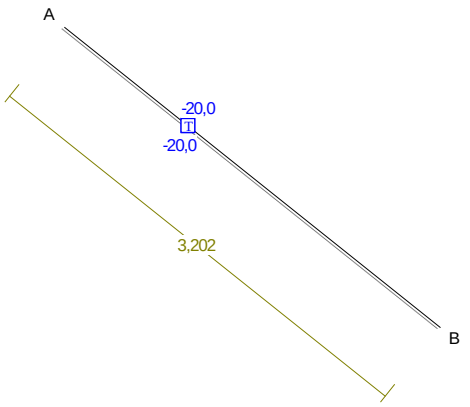
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

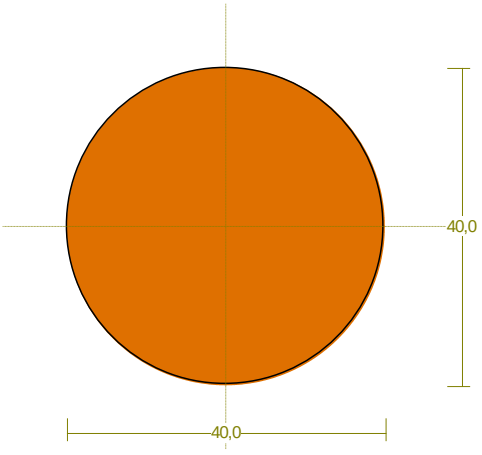
| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0010 | 94,166 | 94,166 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0,10 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0010 | 94,166 | 94,166 |
| 0,20 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0010 | 94,166 | 94,166 |
| 0,30 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 0,40 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 0,50 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 0,60 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 0,70 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 0,80 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 0,90 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 1,00 | a | 0,000 | 0,000 | 120,606 | -0,0009 | 95,976 | 95,976 |
| | b | 0,000 | 0,000 | 118,332 | -0,0011 | 94,166 | 94,166 |
| 0,00 | a | **0,000*** | 0,000 | 120,606 | | 95,976 | 95,976 |
| 0,00 | b | **0,000*** | 0,000 | 118,332 | | 94,166 | 94,166 |
| 0,00 | a | 0,000 | **0,000*** | 120,606 | | 95,976 | 95,976 |
| 0,00 | b | 0,000 | **0,000*** | 118,332 | | 94,166 | 94,166 |
| 0,00 | a | 0,000 | 0,000 | **120,606*** | | 95,976 | 95,976 |
| 0,00 | b | 0,000 | 0,000 | **118,332*** | | 94,166 | 94,166 |
| 0,00 | b | 0,000 | 0,000 | 118,332 | | 95,976 | **95,976*** |

* = Wartości ekstremalne

**PRĘT NR 32**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

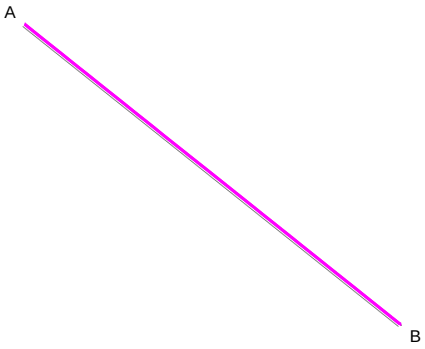
GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):10 Koniec(B):18 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,202 Kąt: -38,66

Rzuty Imperfekcje
H: 2,500 V: 2,000 wo/L= 0,0000 fo/L= 0,0000

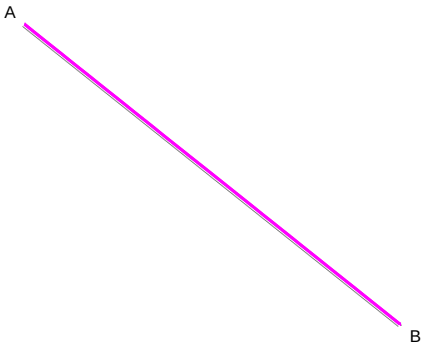
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: V "Naciąg cięgien" | | | Stałe | | γf= 1,35/1,00 | |
| 32 | Temp. | | -20,000 | -20,000 | | |

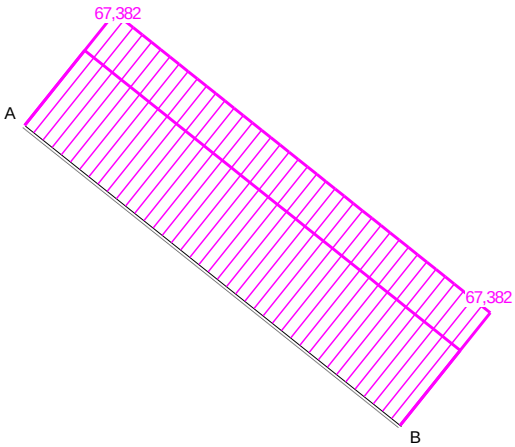
M



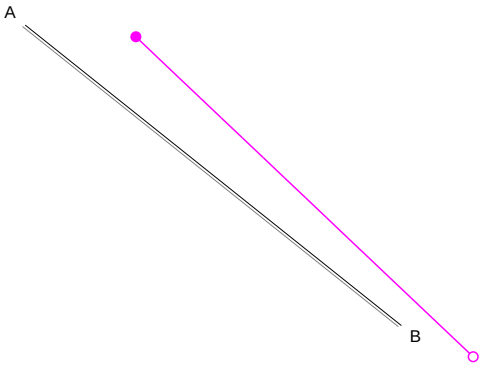

Q




N




W



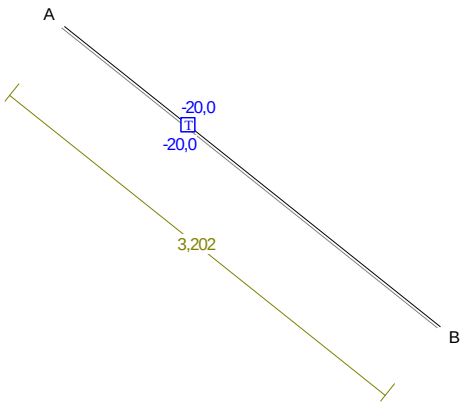

**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu
Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

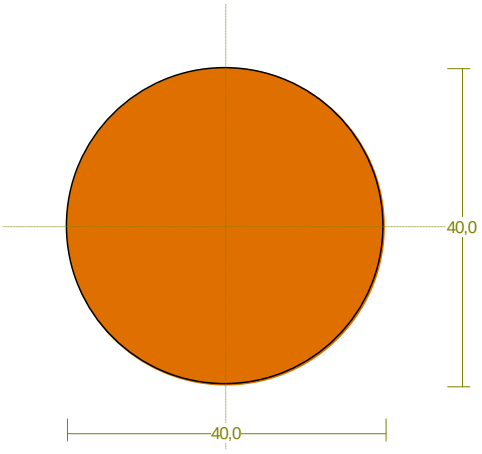
| x/L: | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|
| 0,00 a | 0,000 | 0,000 | 67,382 | 0,0007 | 53,621 | 53,621 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | b | 0,000 | 0,000 | 44,875 | 0,0009 | 35,711 | 35,711 |
| 0,10 | a | 0,000 | 0,000 | 67,382 | 0,0006 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0008 | 35,711 | 35,711 |
| 0,20 | a | 0,000 | 0,000 | 67,382 | 0,0006 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0008 | 35,711 | 35,711 |
| 0,30 | a | 0,000 | 0,000 | 67,382 | 0,0005 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0007 | 35,711 | 35,711 |
| 0,40 | a | 0,000 | 0,000 | 67,382 | 0,0005 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0007 | 35,711 | 35,711 |
| 0,50 | a | 0,000 | 0,000 | 67,382 | 0,0004 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0006 | 35,711 | 35,711 |
| 0,60 | a | 0,000 | 0,000 | 67,382 | 0,0004 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0005 | 35,711 | 35,711 |
| 0,70 | a | 0,000 | 0,000 | 67,382 | 0,0003 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0005 | 35,711 | 35,711 |
| 0,80 | a | 0,000 | 0,000 | 67,382 | 0,0003 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0004 | 35,711 | 35,711 |
| 0,90 | a | 0,000 | 0,000 | 67,382 | 0,0003 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0004 | 35,711 | 35,711 |
| 1,00 | a | 0,000 | 0,000 | 67,382 | 0,0002 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0003 | 35,711 | 35,711 |
| 0,00 | a | **0,000*** | 0,000 | 67,382 | | 53,621 | 53,621 |
| 0,00 | b | **0,000*** | 0,000 | 44,875 | | 35,711 | 35,711 |
| 0,00 | a | 0,000 | **0,000*** | 67,382 | | 53,621 | 53,621 |
| 0,00 | b | 0,000 | **0,000*** | 44,875 | | 35,711 | 35,711 |
| 0,00 | a | 0,000 | 0,000 | **67,382*** | | 53,621 | 53,621 |
| 0,00 | b | 0,000 | 0,000 | **44,875*** | | 35,711 | 35,711 |
| 0,00 | b | 0,000 | 0,000 | 44,875 | | 53,621 | **53,621*** |

* = Wartości ekstremalne

**PRĘT NR 33**




**DANE PRĘTA:** ([m],[cm2],[cm4],[cm3],[MPa],[1/K])

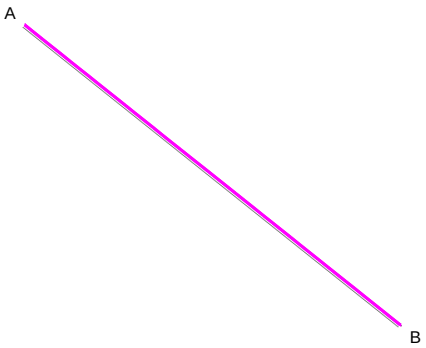
GEOMETRIA PRĘTA: PRZEKRÓJ: 7
Początek(A):18 Koniec(B):15 "R 30x15"
Cięgno Cięgno MATERIAŁ: 2 S 235
Długość: 3,202 Kąt: -38,66

| Rzuty | | Imperfekcje | |
|---|---|---|---|
| H: 2,500 | V: 2,000 | wo/L= 0,0000 | fo/L= 0,0000 |

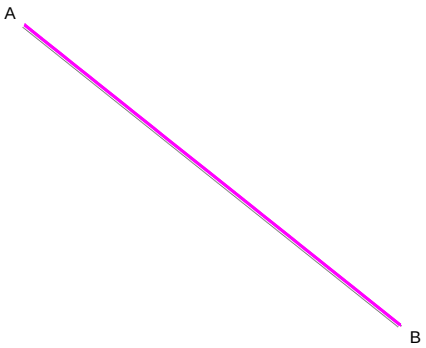
**OBCIĄŻENIA:** ([kN],[kNm],[kN/m])

| Pręt: | Rodzaj: | Kąt: | P1(Tg): | P2(Td): | a[m]: | b[m]: |
|---|---|---|---|---|---|---|
| Grupa: | V "Naciąg cięgien" | | | Stałe | γf= 1,35/1,00 | |
| 33 | Temp. | | -20,000 | -20,000 | | |

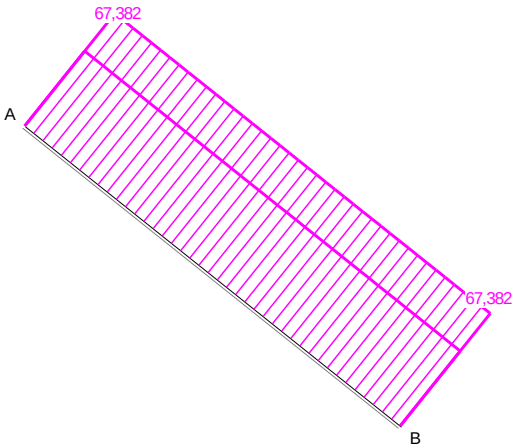
M



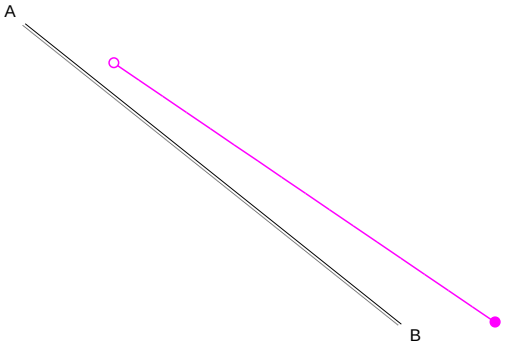

Q




N




W




**WIELKOŚCI PRZEKROJOWE PRĘTA:** T.I rzędu

Obciążenia obl.: Osiadania+1,35·(CW+V)+1,5·(0,6·**L**+0,5·S) (a)
1,35·0,85·(CW+V)+1,5·(**L**+0,5·S) (b)

| x/L: | | M: [kNm] | Q: [kN] | N: [kN] | W: [m] | SigmaG: [MPa] | SigmaD: [MPa] |
|---|---|---|---|---|---|---|---|
| 0,00 | a | 0,000 | 0,000 | 67,382 | 0,0002 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0003 | 35,711 | 35,711 |
| 0,10 | a | 0,000 | 0,000 | 67,382 | 0,0003 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0003 | 35,711 | 35,711 |
| 0,20 | a | 0,000 | 0,000 | 67,382 | 0,0003 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0004 | 35,711 | 35,711 |
| 0,30 | a | 0,000 | 0,000 | 67,382 | 0,0003 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0004 | 35,711 | 35,711 |
| 0,40 | a | 0,000 | 0,000 | 67,382 | 0,0004 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0004 | 35,711 | 35,711 |
| 0,50 | a | 0,000 | 0,000 | 67,382 | 0,0004 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0005 | 35,711 | 35,711 |
| 0,60 | a | 0,000 | 0,000 | 67,382 | 0,0005 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0005 | 35,711 | 35,711 |
| 0,70 | a | 0,000 | 0,000 | 67,382 | 0,0005 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0005 | 35,711 | 35,711 |
| 0,80 | a | 0,000 | 0,000 | 67,382 | 0,0005 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0006 | 35,711 | 35,711 |
| 0,90 | a | 0,000 | 0,000 | 67,382 | 0,0006 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0006 | 35,711 | 35,711 |
| 1,00 | a | 0,000 | 0,000 | 67,382 | 0,0006 | 53,621 | 53,621 |
| | b | 0,000 | 0,000 | 44,875 | 0,0006 | 35,711 | 35,711 |
| 0,00 | a | **0,000*** | 0,000 | 67,382 | | 53,621 | 53,621 |
| 0,00 | b | **0,000*** | 0,000 | 44,875 | | 35,711 | 35,711 |
| 0,00 | a | 0,000 | **0,000*** | 67,382 | | 53,621 | 53,621 |
| 0,00 | b | 0,000 | **0,000*** | 44,875 | | 35,711 | 35,711 |
| 0,00 | a | 0,000 | 0,000 | **67,382*** | | 53,621 | 53,621 |
| 0,00 | b | 0,000 | 0,000 | **44,875*** | | 35,711 | 35,711 |
| 0,00 | b | 0,000 | 0,000 | 44,875 | | 53,621 | **53,621*** |

* = Wartości ekstremalne