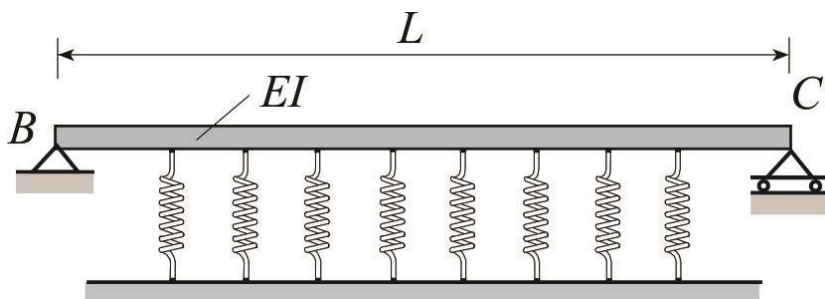


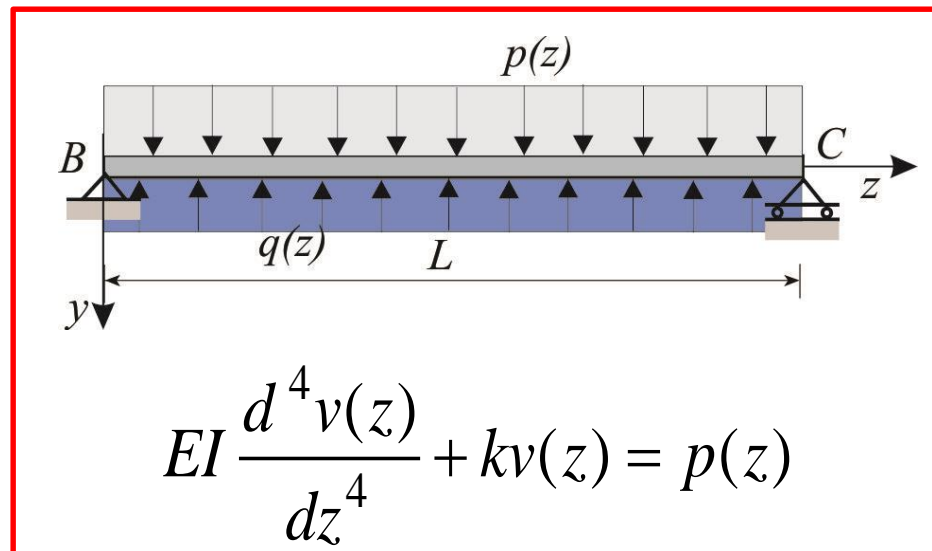
# ODABRANA POGLAVLJA IZ OTPORNOSTI MATERIJALA

## Greda na elastičnoj podlozi



Winklerov model tla

$$q(z) = kv(z)$$



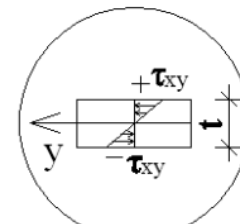
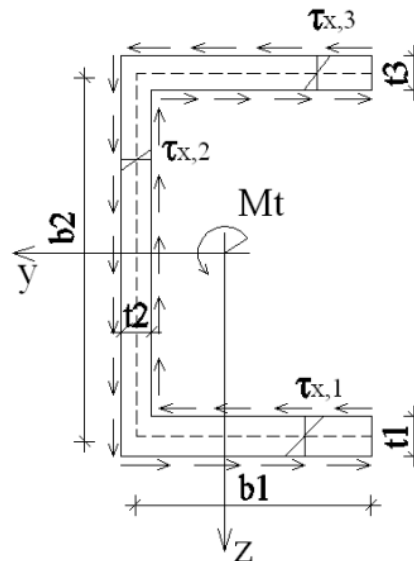
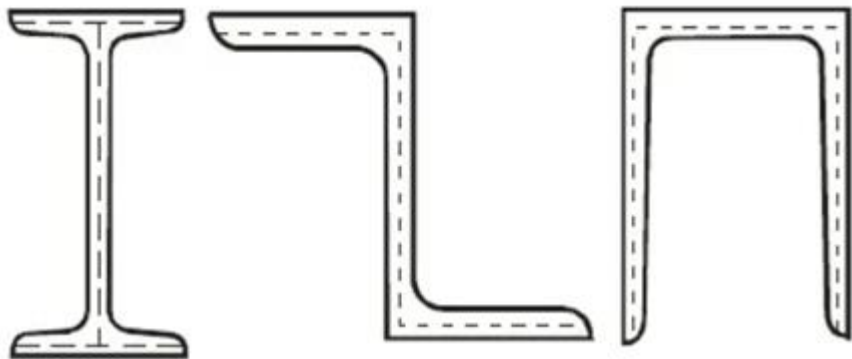
$k$ -modul reakcije podloge (tla ili posteljice) u kN/m<sup>3</sup>

## Centar smicanja

Ako u glavnoj ravni, u kojoj sile deluju nije ravan simetrije, takvo savijanje je praćeno torzijom grede. Da bismo sprečili torziju ravan opterećenja mora prolaziti kroz tačku koja se zove CENTAR SMICANJA.

# Torzija tankozidnih čeličnih profila

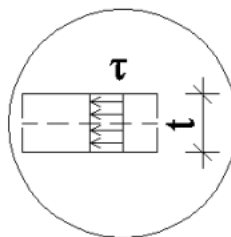
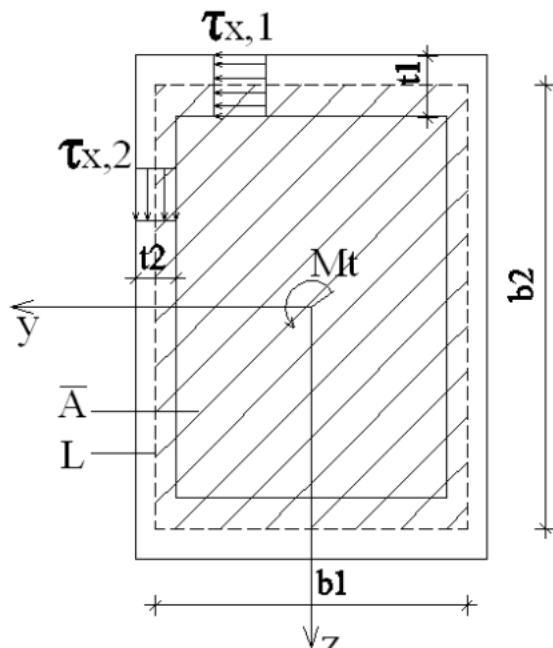
## Otvoreni profili



$$I_t = \frac{1}{3} \cdot \sum b_i \cdot t_i^3$$

$$\tau_{x,i \max} = \frac{M_t}{I_t} \cdot t_i$$

## Zatvoreni profili



$q$  - tok smicanja

$$q = \tau_{x,i} \cdot t_i = const$$

$$M_t = 2 \cdot q \cdot \bar{A}$$

$L$  - dužina srednje linije

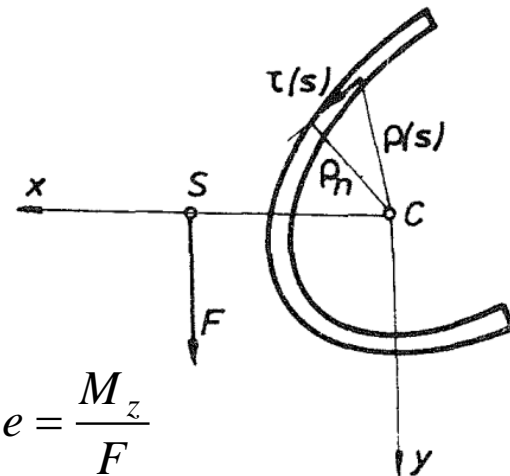
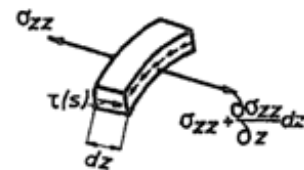
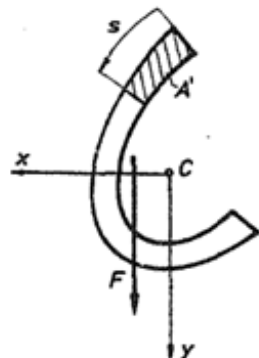
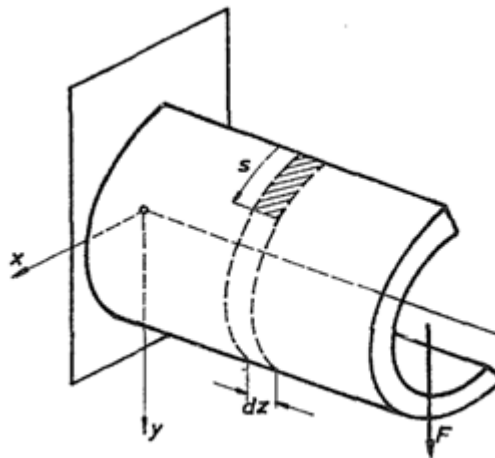
$\bar{A}$  - površina ograničena srednjom linijom

$$\bar{A} = b_1 \cdot b_2$$

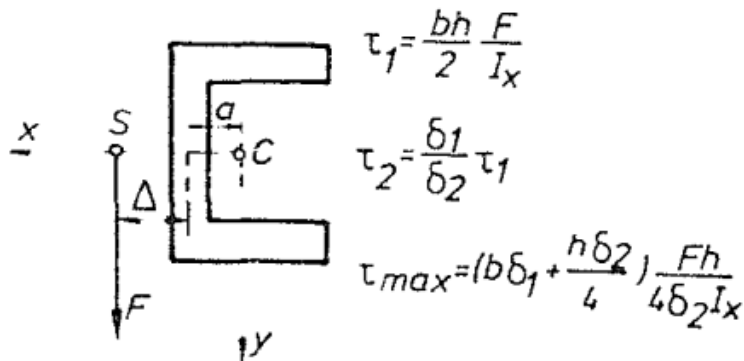
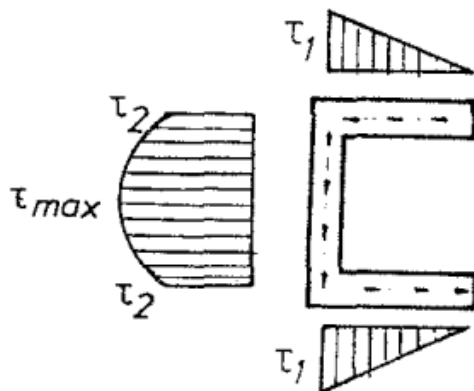
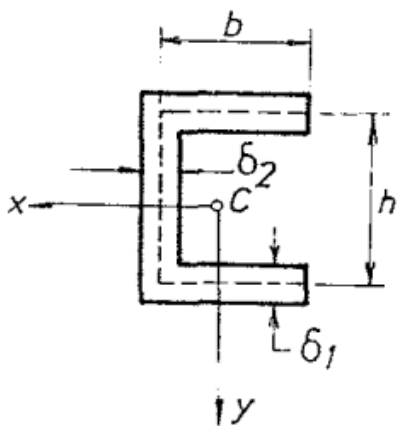
I Bredtova formula  $\tau_{x,i} = \frac{q}{t_i} = \frac{M_t}{2 \cdot \bar{A} \cdot t_i} = \frac{M_t}{W_{t,i}}$   $W_{t,i} = 2 \cdot \bar{A} \cdot t_i$  otporni moment

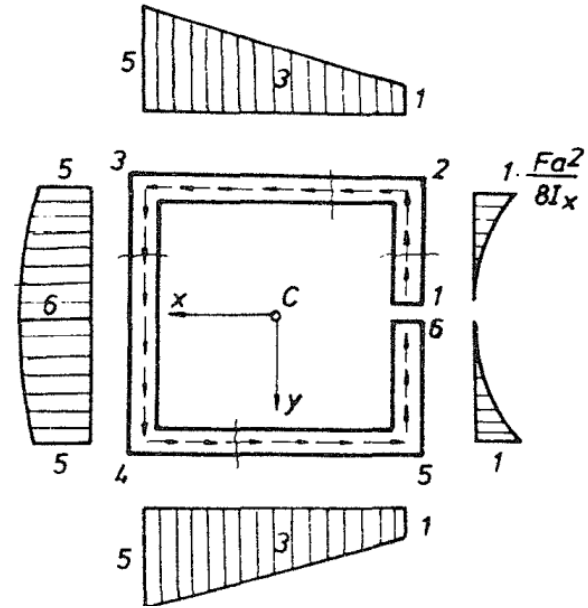
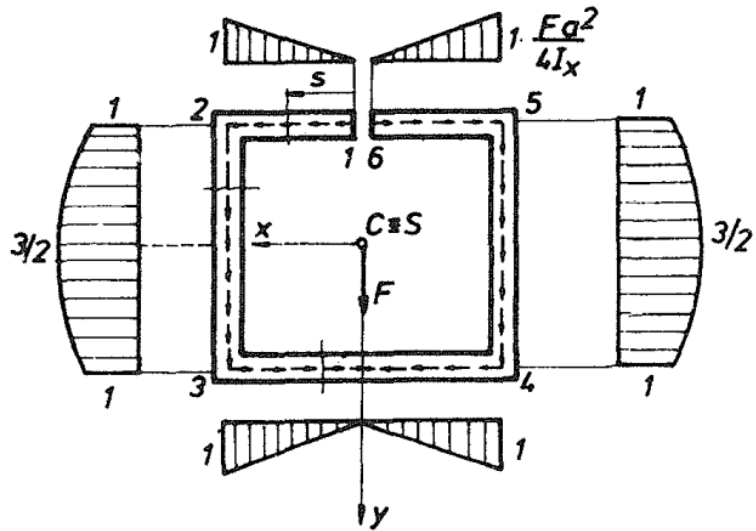
II Bredtova formula  $I_t = \frac{4 \cdot \bar{A}^2}{\int_L \frac{ds}{t}}$  torziona konstanta ; za  $t = const$  :  $I_t = \frac{4 \cdot \bar{A}^2 \cdot t}{L}$

# Savijanje tankozidnih čeličnih profila



Tačka S kroz koju prolazi linija dejstva sile F naziva se centar savijanja (iii smicanja) datog profila





## Dinamička opterećenja

Pod pojmom promenljivo opterećenje podrazumeva se vremenski promenljivo opterećenje tj. takvo opterećenje koje uzrokuje vremenski promenljivo naprezanje u materijalu.

