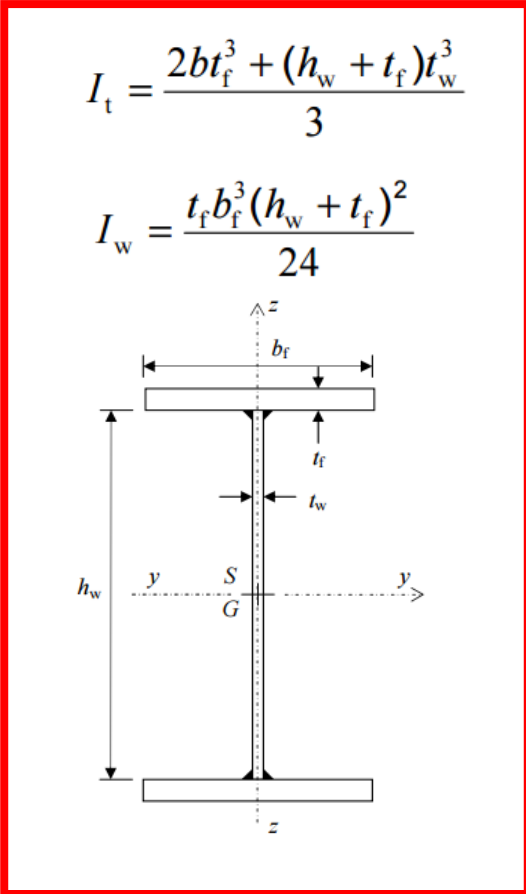
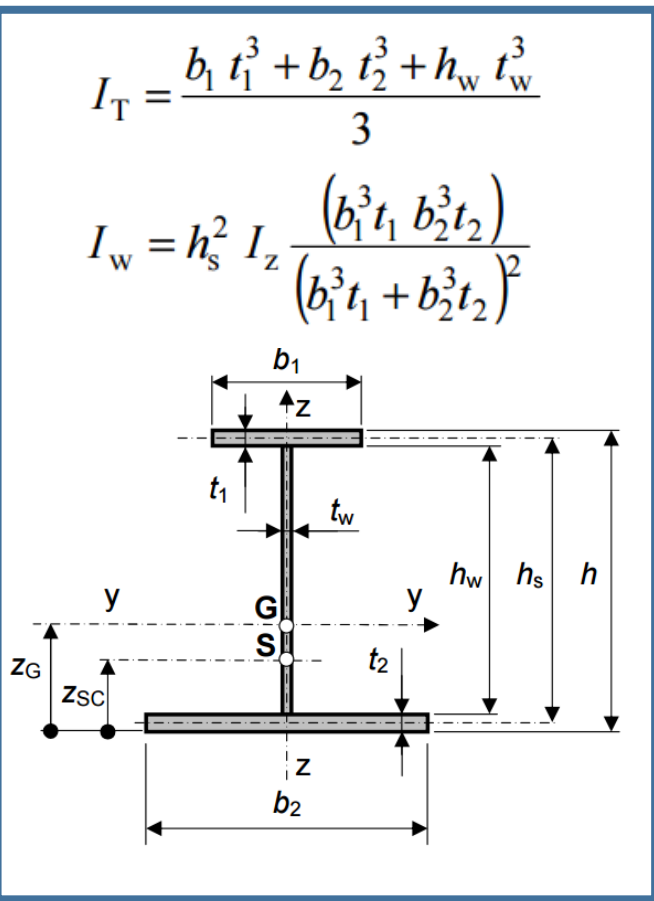
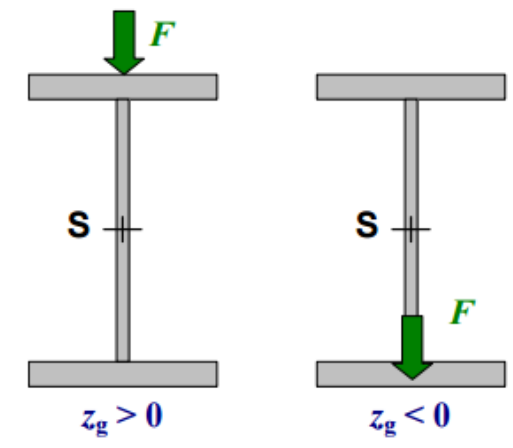


$$M_{cr} = C_1 \frac{\pi^2 EI_z}{(kL)^2} \left\{ \sqrt{\left( \frac{k}{k_w} \right)^2 \frac{I_w}{I_z} + \frac{(kL)^2 GI_t}{\pi^2 EI_z} + (C_2 z_g)^2} - C_2 z_g \right\}$$

$$M_{cr} = C_1 \frac{\pi^2 EI_z}{(k_z L)^2} \left\{ \sqrt{\left( \frac{k_z}{k_w} \right)^2 \frac{I_w}{I_z} + \frac{(k_z L)^2 GI_T}{\pi^2 EI_z} + (C_2 z_g - C_3 z_j)^2} - (C_2 z_g - C_3 z_j) \right\}$$



$z_g$  odlegość punktu przyłożenia obciążenia od środka ścinania  
 $z_g = h/2 = +200 \text{ mm}$ ,



Współczynnik asymetrii:  $z_j = z_s - 0,5r_y$

$z_s$  współrzędna środka ścinania:

ramie asymetrii przekroju

Tablica współczynników momentu krytycznego

| Warunki obciążenia i podparcia | Wykres momentów zginających | Wartość $k_z$ | Wartości współczynników $C_i$ |       |       |
|--------------------------------|-----------------------------|---------------|-------------------------------|-------|-------|
|                                |                             |               | $C_1$                         | $C_2$ | $C_3$ |
|                                |                             | 1,0           | 1,132                         | 0,459 | 0,525 |
|                                |                             | 0,5           | 0,972                         | 0,304 | 0,980 |
|                                |                             | 1,0           | 1,285                         | 1,562 | 0,753 |
|                                |                             | 0,5           | 0,712                         | 0,652 | 1,070 |
|                                |                             | 1,0           | 1,365                         | 0,553 | 1,730 |
|                                |                             | 0,5           | 1,070                         | 0,432 | 3,050 |
|                                |                             | 1,0           | 1,565                         | 1,267 | 2,640 |
|                                |                             | 0,5           | 0,938                         | 0,715 | 4,800 |
|                                |                             | 1,0           | 1,046                         | 0,430 | 1,120 |
|                                |                             | 0,5           | 1,010                         | 0,410 | 1,890 |

| Warunki obciążenia i podparcia | Wykres momentów zginających | Wartość $k_z$ | Wartości współczynników $C_i$ |       |
|--------------------------------|-----------------------------|---------------|-------------------------------|-------|
|                                |                             |               | $C_1$                         | $C_3$ |
|                                | $\psi=1,00$<br>             | 1,0           | 1,000                         | 1,000 |
|                                |                             | 0,7           | 1,000                         | 1,113 |
|                                |                             | 0,5           | 1,000                         | 1,144 |
|                                | $\psi=0,75$<br>             | 1,0           | 1,141                         | 0,998 |
|                                |                             | 0,7           | 1,270                         | 1,565 |
|                                |                             | 0,5           | 1,305                         | 2,283 |
|                                | $\psi=0,50$<br>             | 1,0           | 1,323                         | 0,992 |
|                                |                             | 0,7           | 1,473                         | 1,556 |
|                                |                             | 0,5           | 1,514                         | 2,271 |
|                                | $\psi=0,25$<br>             | 1,0           | 1,563                         | 0,977 |
|                                |                             | 0,7           | 1,739                         | 1,531 |
|                                |                             | 0,5           | 1,788                         | 2,235 |
|                                | $\psi=0$<br>                | 1,0           | 1,879                         | 0,939 |
|                                |                             | 0,7           | 2,092                         | 1,473 |
|                                |                             | 0,5           | 2,150                         | 2,150 |
|                                | $\psi=-0,25$<br>            | 1,0           | 2,281                         | 0,855 |
|                                |                             | 0,7           | 2,538                         | 1,340 |
|                                |                             | 0,5           | 2,609                         | 1,957 |
| $\psi=-0,50$<br>               | 1,0                         | 2,704         | 0,676                         |       |
|                                | 0,7                         | 3,009         | 1,059                         |       |
|                                | 0,5                         | 3,093         | 1,546                         |       |
| $\psi=-0,75$<br>               | 1,0                         | 2,927         | 0,366                         |       |
|                                | 0,7                         | 3,009         | 0,575                         |       |
|                                | 0,5                         | 3,093         | 0,837                         |       |
| $\psi=-1,00$<br>               | 1,0                         | 2,752         | 0,000                         |       |
|                                | 0,7                         | 3,063         | 0,000                         |       |
|                                | 0,5                         | 3,149         | 0,000                         |       |