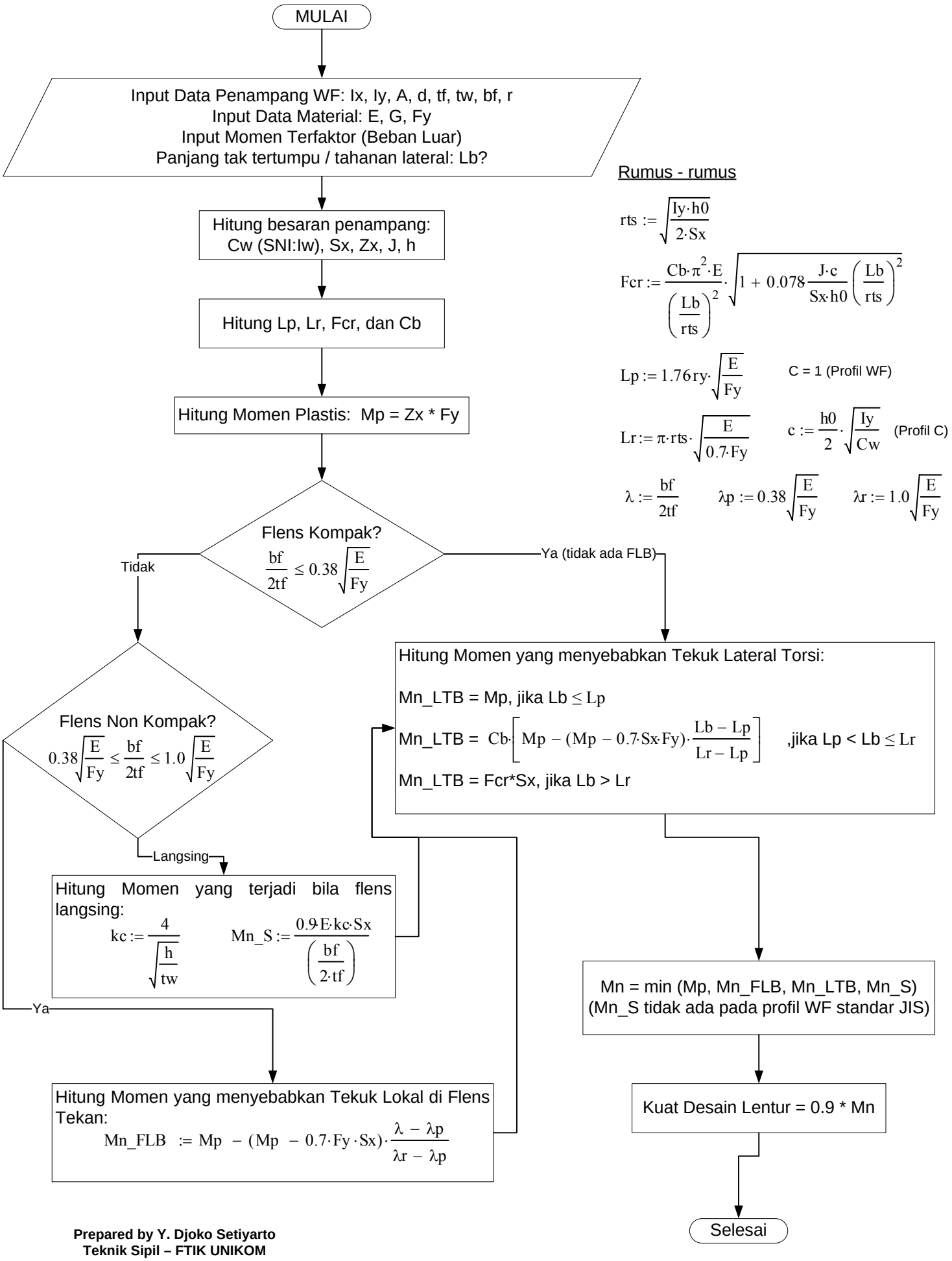
Desain Kuat Lentur Profil WF dan Kanal
Menurut AISC-LRFD 2005



Rumus - rumus

$$rts := \sqrt{\frac{Iy \cdot h0}{2 \cdot Sx}}$$

$$Fcr := \frac{Cb \cdot \pi^2 \cdot E}{\left(\frac{Lb}{rts}\right)^2} \cdot \sqrt{1 + 0.078 \frac{J \cdot c}{Sx \cdot h0} \left(\frac{Lb}{rts}\right)^2}$$

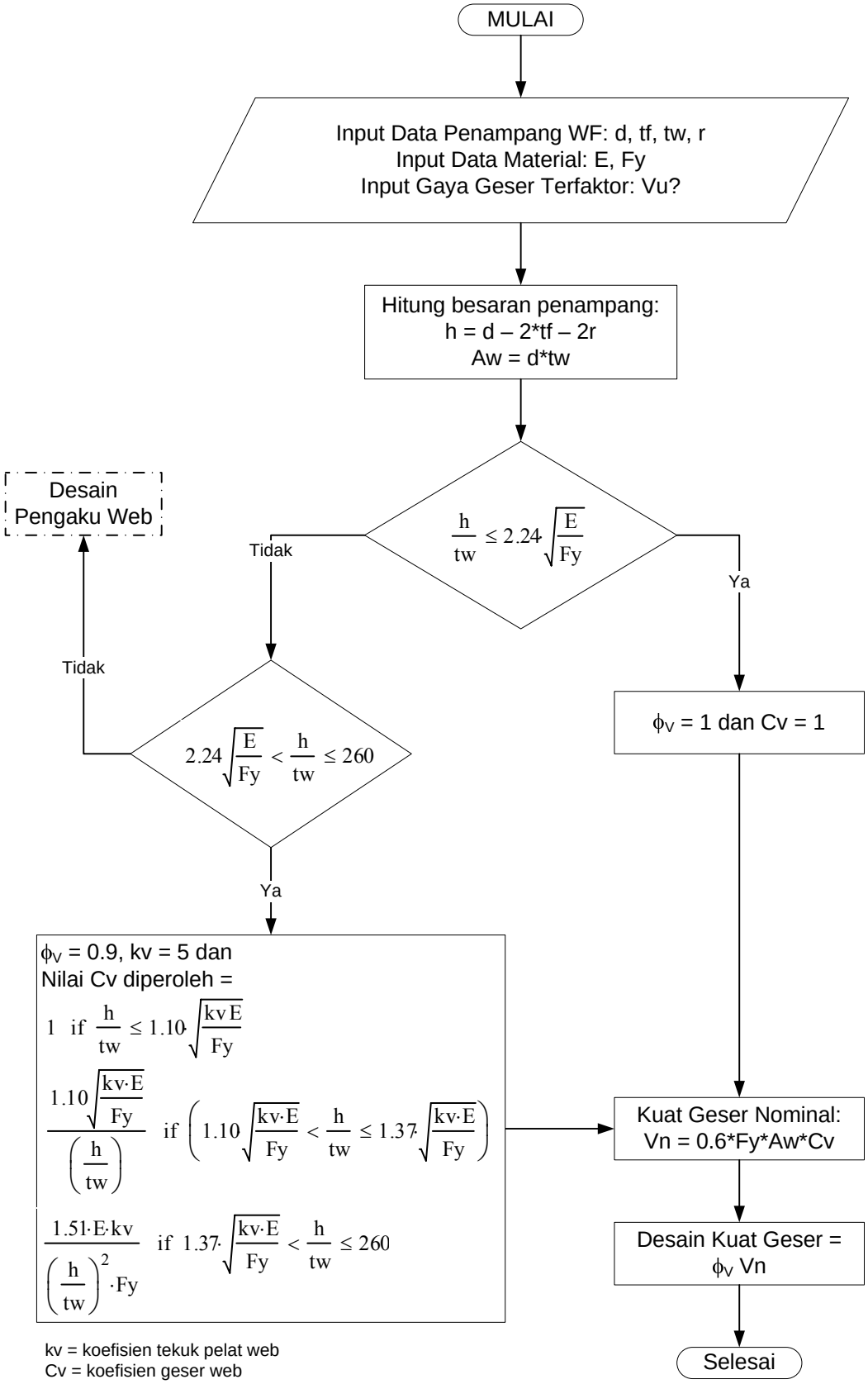
$$Lp := 1.76 ry \cdot \sqrt{\frac{E}{Fy}} \qquad C = 1 \text{ (Profil WF)}$$

$$Lr := \pi \cdot rts \cdot \sqrt{\frac{E}{0.7 \cdot Fy}} \qquad c := \frac{h0}{2} \cdot \sqrt{\frac{Iy}{Cw}} \quad \text{(Profil C)}$$

$$\lambda := \frac{bf}{2tf} \qquad \lambda p := 0.38 \sqrt{\frac{E}{Fy}} \qquad \lambda r := 1.0 \sqrt{\frac{E}{Fy}}$$

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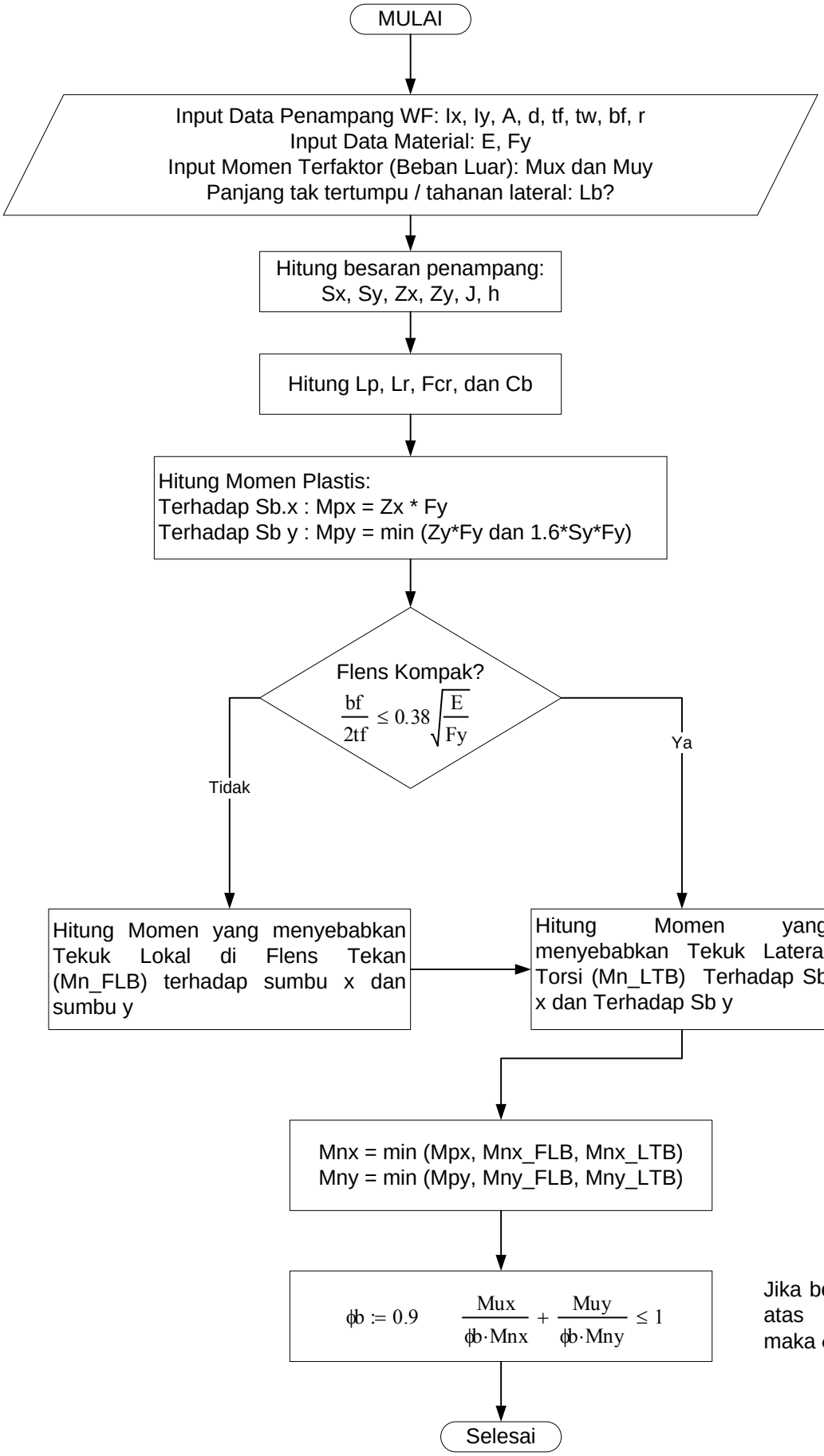
Desain Kuat Geser Profil WF dan Kanal
Menurut AISC-LRFD 2005



kv = koefisien tekuk pelat web
Cv = koefisien geser web

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Desain Kuat Lentur Biaksial Menurut AISC-LRFD 2005



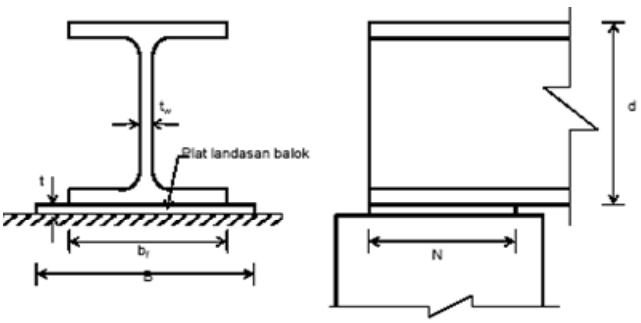
Jika beban bekerja pada sayap atas saja (contoh: gording), maka $\phi b.My$ harus dikalikan 0,5

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Desain Plat Landasan Balok Pada Permukaan Beton
Menurut AISC-LRFD 2005

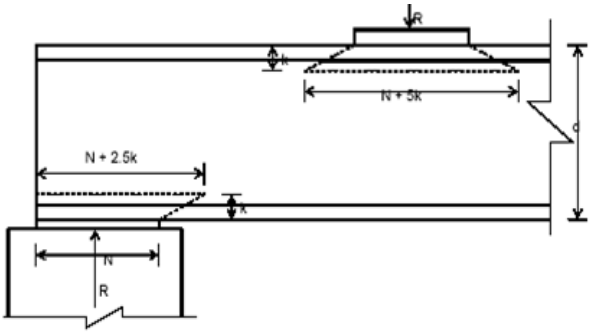
MULAI

Input Data Penampang: d, tf, tw, bf, r
Input Data Material: E, Fy, f'c
Input Reaksi Peletakan (Beban Terpusat) Terfaktor: Ru?
Dimensi Plat Landasan: N?, B?



Cek B > bf
Luas Beton > Luas Plat

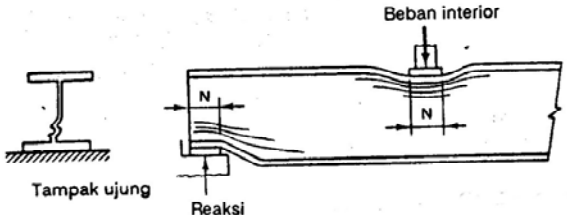
Tidak



Hitung Web Yielding:
k = tf + r, $\phi = 1$
Rn1 = (2,5*k + N)*Fy*tw untuk beban terpusat di ujung
Rn1 = (5*k + N)*Fy*tw untuk beban terpusat bukan di ujung

Hitung Web Crippling:
untuk beban terpusat di ujung:

$$Rn2 := \begin{cases} \left[0.4\,tw^2\cdot\left[1+3\cdot\left(\frac{N}{d}\right)\cdot\left(\frac{tw}{tf}\right)^{1.5}\right]\cdot\left(\sqrt{\frac{Fy\cdot E\cdot tf}{tw}}\right)\right] & \text{if } \frac{N}{d}\le 0.2 \\ \left[0.4\,tw^2\cdot\left[1+\left(4\cdot\frac{N}{d}-0.2\right)\cdot\left(\frac{tw}{tf}\right)^{1.5}\right]\cdot\left(\sqrt{\frac{Fy\cdot E\cdot tf}{tw}}\right)\right] & \text{if } \frac{N}{d}>0.2 \end{cases}$$



untuk beban terpusat bukan di ujung (semua kondisi N/d)

$$Rn2 := \left[0.8\,tw^2\cdot\left[1+3\cdot\left(\frac{N}{d}\right)\cdot\left(\frac{tw}{tf}\right)^{1.5}\right]\cdot\left(\sqrt{\frac{Fy\cdot E\cdot tf}{tw}}\right)\right]$$

Hitung Kuat Tumpu Beton:

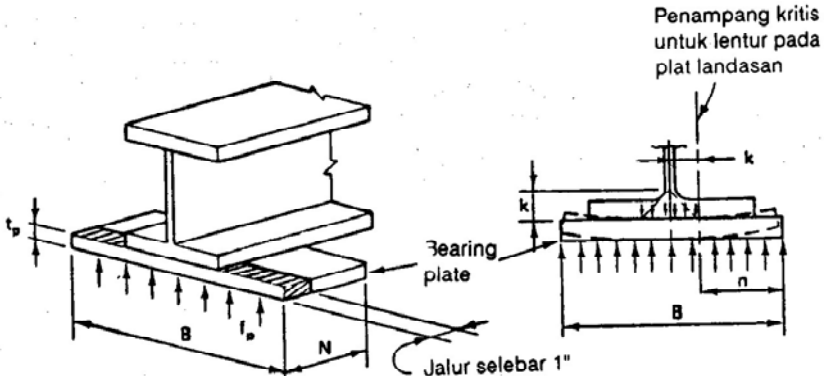
$$Pp := 0.85\cdot fc\cdot A1\cdot\sqrt{\frac{A2}{A1}} \qquad 1\le\sqrt{\frac{A2}{A1}}\le 4 \qquad \phi c := 0.60$$

Cek Kuat Lentur Plat Landasan:

$$n := \frac{(B-2\cdot k)}{2} \qquad \sqrt{\frac{2.222\cdot Ru\cdot n^2}{B\cdot N\cdot Fy}} \le t$$

Tidak

Ya



Kuat Pelat Landasan:

$$Rn := \min\left(\phi 1\cdot Rn1\ ,\ \phi 2\cdot Rn2\ ,\ \phi c\cdot Pp\right)$$

Selesai

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