

Aços Estruturais

$$1) E = 20.000 \text{ KN/cm}^2$$

$$2) G = 7700 \text{ KN/cm}^2 \checkmark$$

$$\rightarrow G = \frac{E}{2(1+\nu)} = \frac{20000}{2 \cdot 1,3}$$

$$\nu = 0,3$$



③ f_y = Lim escoam.

④ f_u = Ruptura



1) ASTM A36

$\sigma_y \rightarrow \frac{36 \text{ kips}}{1.44 \text{ ksi}} = 25 \frac{\text{KN}}{\text{cm}^2}$

$f_u = 40 \frac{\text{KN}}{\text{cm}^2}$

2) MR 250 $\rightarrow F_y = 25 - 40$

MR 290 $\rightarrow F_y = 29$

MR 350 $\rightarrow F_y = 35$

③ .A.2

ASTM A572 - Gr 42 = 29 KN/cm^2

$\rightarrow$ Gr 50 = $34,5 \text{ KN/cm}^2$

Gr 55 = 38 KN/cm^2

Gr 60 = $41,5 \text{ KN/cm}^2$

④ ASTM A242

ASTM A588

A405

PAVIN AVEIS

PONTES

SAE V1020 ✓ Fe18	0,20%
1010	0,10%
1008 ✓ 120	0,08
1012	0,12

$f_y > 180 \text{ MPa}$

CIVIL 300	$f_y = 30 \text{ KN/cm}^2$
CIVIL 350	$f_y = 35$

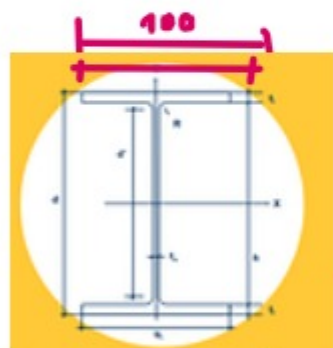
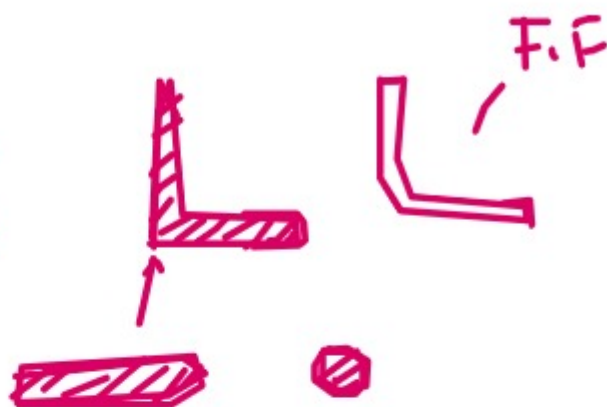
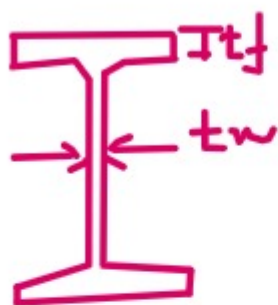
USI-SAC $\left. \begin{matrix} 300 \\ 350 \end{matrix} \right\}$ Patina vels

ZAN - 250
ZAN - 300

ASTM A1011 $\rightarrow$ 205 MPa

PERFIS ESTRUTURAIS

LAMINADOS



WF

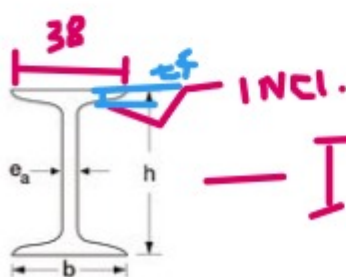
A572 Gr 50

WIDE FLANGE

web
ALMA

W150x13

FLANGE
MESA



— I Americano

A36

$$\begin{array}{c} b \\ | \\ h \end{array} \quad \frac{h}{b} > 2$$

(12m)

$$\begin{array}{c} b \\ | \\ h \end{array} \quad \frac{h}{b} \sim 1,0$$

(H) ←

$$\begin{array}{c} | \\ | \\ | \end{array} \quad \frac{h}{b} \sim 1,5 \quad \underline{W 200 \times 26,6}$$

1ª almg

2ª almg

3ª almg

AMERICAN OS

Gm



V LAM. 1ª ALMG

· 2ª ALMG



ABAS IGUAIS
ABAS DESIGUAIS

A36 → A572-Gr50

LLAM $2'' \times 1/8''$ ⁸⁰₅₀ 

$1'' \rightarrow 25,4 \text{ mm}$

$$\frac{1''}{8} = 25,4 \times \frac{1}{8} = 3,18$$

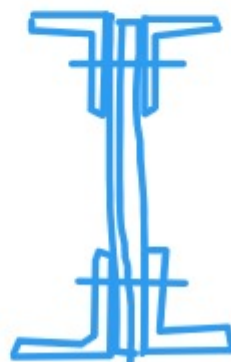
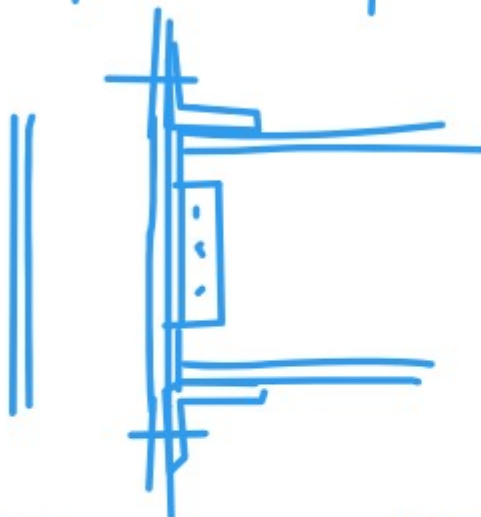
LLAM $51 \times 3,2$ 
¹⁰
~~11~~
 LLAM $2'' \times 1/8'' \times 150$
 LLAM $51 \times 3,2 \times 10$
 $2'' \times 1/8'' \times 10$

2 L LAM 2" x 1/8" x 10



7 L LAM 2" x 1/8" x 10

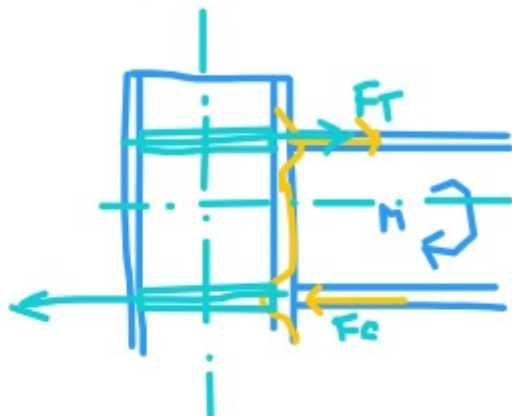
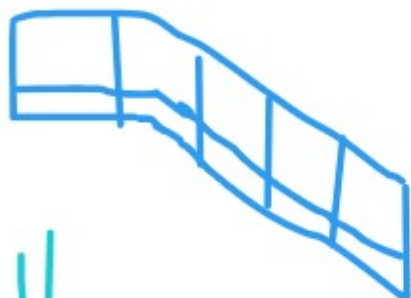
7 L LAM 2" x 1/8" x 145



BARRA chata - Ferro chato



BC 3" x 1/4



1"

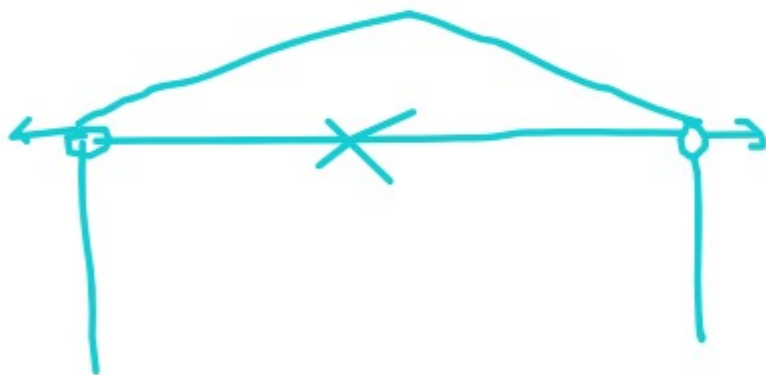
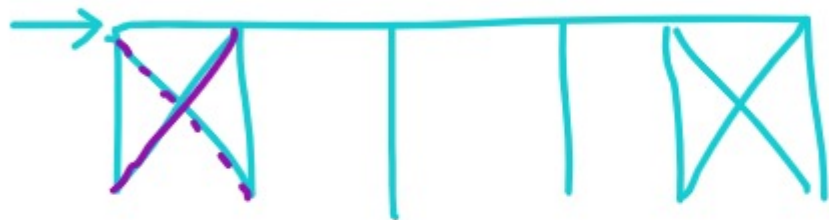
1.1/2

2"

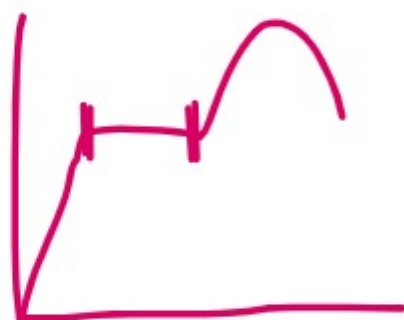
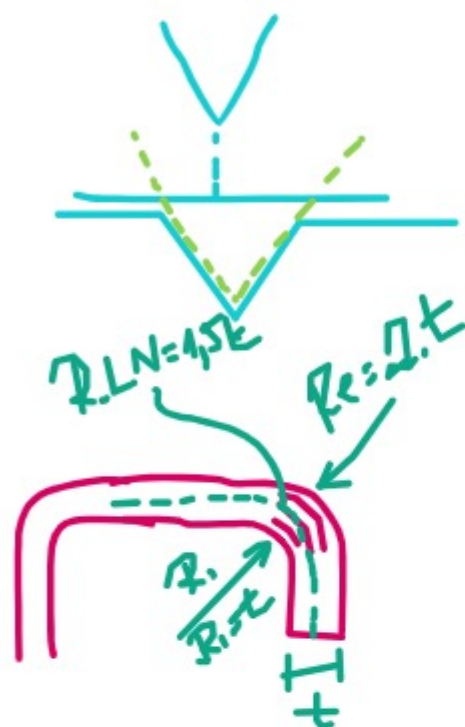
2.1/2

3"

① Barras Red
Ferro Red



PERFIS FORMADOS A FRIO



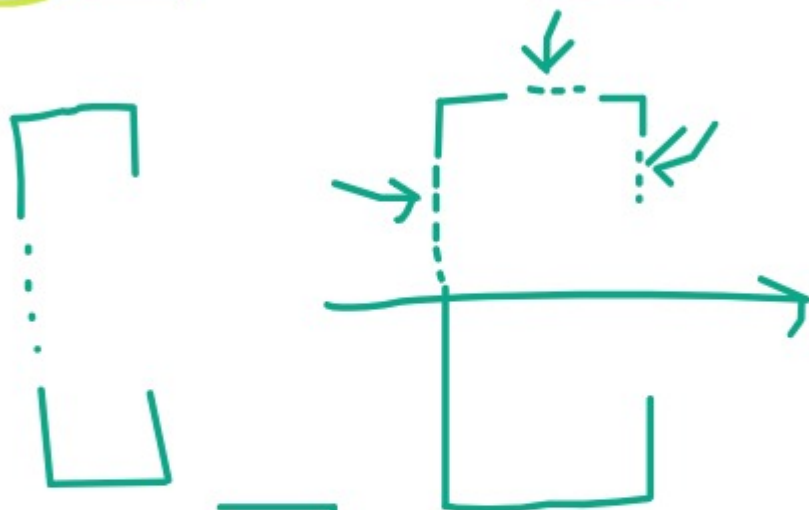
NBR 14762

$t < 6,35$





M.L.E
M.S.E
M.R.D



1010, 1020, 1012

1006

A36 ←

Civil 300

USISAC 300
350

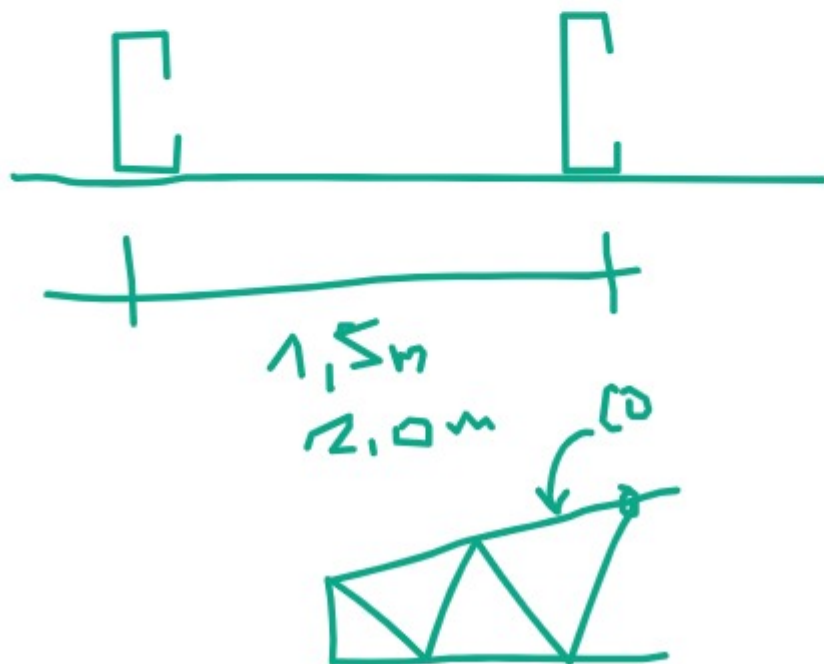
ESTRUTURAS SIMPLES

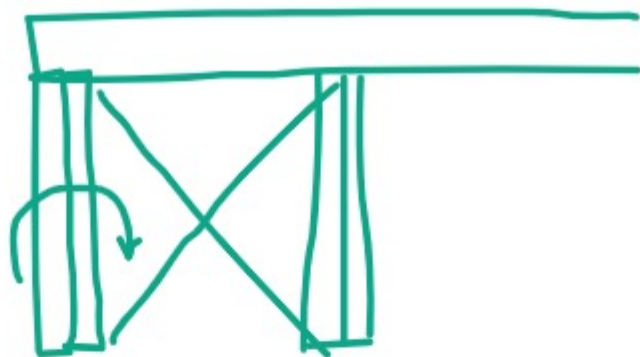
COMPRESSÃO PURA

TRAÇÃO

FLEXÃO

Exercício





$f_y > 180 \text{ MPa} \rightarrow \text{SAE } \cancel{1008} \cancel{1008} \text{ (170)}$

$$\left| \frac{f_u}{f_y} > 1,08 \right|$$

NR 6355



$$\underline{UDC\ 100 \times 40 \times 2,65}$$



$$C\ 100 \times 50 \times 17 \times 2,65$$



$$\underline{Z\ 250 \times 60 \times 3,00}$$



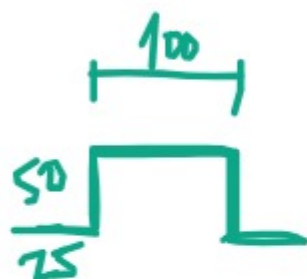
$$\underline{Z_{eN}\ 250 \times 60 \times 65 \times 2,25}$$

$Z_{eN}\ 2,1j.$



LFF 30 x 3

LLFF 30 x 3 x 10



Car 100 x 50 x 25 x 2,65



SIGMA. ..

PERFIS ESTRUTURAIS SOLDADOS



A36
A572
42
50
55
60

242
A588

CS $\frac{200}{200} \frac{h}{b} \sim 1$
CS 200x29

CVS $\frac{260}{400} \frac{h}{b} \sim 1,5$

VS $\frac{h}{b} \sim 2,0$

P.S. $\frac{h}{b} \text{ of } tw \text{ of } tf$
750 x 140 x 8 x 12,7

VS 750 x 140