

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C 1	35000	1000	0	1000	0	295

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C 1	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C 1	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C 1
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C 1	28000	1200	0	1200	0	290

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C 1	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C 1	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C 1
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C 1	24000	1000	0	1000	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C 1	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C 1	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C 1
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		My (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C 1	20000	750	0	750	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C 1	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C 1	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a \leq 1$

$$\text{if } \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$\text{if } \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_{mx} f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_{my} f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C 1
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C 1	16000	900	0	900	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C 1	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C 1	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_{mx}f_{bx}}{(1-\frac{f_a}{F_a})F_{bx}} + \frac{C_{my}f_{by}}{(1-\frac{f_a}{F_a})F_{by}} \leq 1$$

$$\frac{f_a}{0.6F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C 1
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		My (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C 1	12000	900	0	900	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C 1	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C 1	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a \leq 1$

$$\text{if } \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$\text{if } \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_{mx} f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_{my} f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C 1
OK
ok
ok

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C 1	8000	800	0	800	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C 1	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C 1	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_{mx}f_{bx}}{(1-\frac{f_a}{F_a})F_{bx}} + \frac{C_{my}f_{by}}{(1-\frac{f_a}{F_a})F_{by}} \leq 1$$

$$\frac{f_a}{0.6F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C 1
OK
ok
ok

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C2	39000	800	0	800	0	295

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C2	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C2	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C2
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7



column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C2	34000	900	0	900	0	290

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C2	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C2	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_{mx}f_{bx}}{(1-\frac{f_a}{F_a})F_{bx}} + \frac{C_{my}f_{by}}{(1-\frac{f_a}{F_a})F_{by}} \leq 1$$

$$\frac{f_a}{0.6F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C2
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C2	29000	1350	0	1350	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C2	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C2	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C2
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C2	24000	1300	0	1300	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C2	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C2	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C2
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C2	19000	1300	0	1300	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C2	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C2	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C2
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C2	14000	1200	0	1200	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C2	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C2	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_m f_{bx}}{(1 - \frac{f_a}{F_a}) F_{bx}} + \frac{C_m f_{by}}{(1 - \frac{f_a}{F_a}) F_{by}} \leq 1$$

$$\frac{f_a}{0.6 F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C2
OK
ok
OK
OK

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7

column design

		Mx (Kg.m)		M y (kg.m)		
column design	P (Kg)	M 1	M 2	M 1	M 2	L (cm)
C2	9000	1000	0	1000	0	310

E	Fy
2100000	2400

column design	Kx	Ky	Cmx	Cmy	Fbx (xFy)	Fby (xFy)
C2	1	1	1	1	0.6	0.6

column design	انتخاب مقطع
C2	2 IPE 220

$\lambda_{max}<200$

$f_a/F_a\leq1$

$$if \frac{f_a}{F_a} \leq 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

$$if \frac{f_a}{F_a} > 0.15 \Rightarrow \frac{f_a}{F_a} + \frac{C_{mx}f_{bx}}{(1-\frac{f_a}{F_a})F_{bx}} + \frac{C_{my}f_{by}}{(1-\frac{f_a}{F_a})F_{by}} \leq 1$$

$$\frac{f_a}{0.6F_y} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1$$

C2
OK
ok
ok

local axes									
PROFILE	A (cm^2)	h (mm)	b (mm)	ts (mm)	tg (mm)	Ix (cm^4)	Wx	ix(rx)	Iy
2 IPE 220	66.8	220	110	11.8	9.2	2770	251.8182	9.11	2430.7