ECG Engineering Consultants Group	Project Name CHECKING AND PACKING HALL				Job Ref.	
Bldg. 2, Block 10, El Sefarat District	Calc. By	Date	Checked By	Date	Rev.	
P.O.Box No. 1167, Cairo 11511, Egypt.	M.Nour				Sheet No.	

MAIN. BEAM ID :- **(MB-1)**

Refrences ECP

Steel grade St.52

F_y = 3.60 t/cm^2

F_u = 5.20 t/cm^2

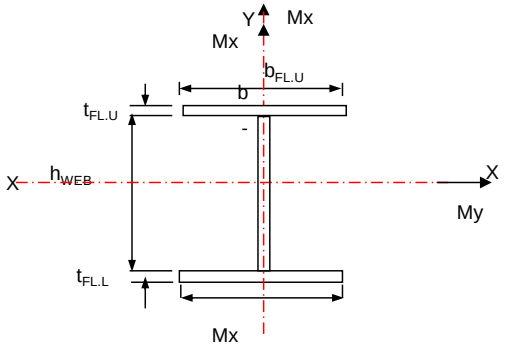
1)- APPLIED FORCES :- **Case Combination**

M+ive	=	753.00	mt	a
Q	=	172.00	t	

2)- CHOISE OF SECTION :-

The section is Built up section

b_{FLU}	=	400	mm
t_{FLU}	=	30	mm
h_{web}	=	1800	mm
t_{web}	=	28	mm
b_{FLL}	=	400	mm
t_{FLL}	=	30	mm



3)- BEAM DATA :-

Total length of Beam (L)	=	16.00	m
Lu of compressin flange	=	4.50	m

4)- CHECK SECTION :-

PROPERTIES OF SECTION :-

$\overline{Y}$	=	93.00	cm
A	=	744.00	cm^2
I_x	=	3370320.00	cm^4
S_x	=	36240.00	cm^3

CHECK COMPACTNESS :-

d_w/t_w	=	64.29	**Web is**	**Compact**	table(2.1a)
C/t_f	=	6.20	**Flange is**	**Compact**	table(2.1c)

The sec is **Compact**

CHECK NORMAL STRESSES :-

Cb	=	1.30					table(2.2)
Lu_{max}	=	$(20.b_f) / (\sqrt{fy})$ =	4.216	m	3.322	m	ECP 16
		$(1380.A_f) / (fy.d) \times C_b$ =	3.32	m			eqn. 2.18

There is Lateral Torsional Buckling in comp.flange

Fltb	=	2.088	t/cm^2				
F_{bcx}	=	2.088	t/cm^2				
f_{bcx}	=	2.08	t/cm^2	<	2.088	**SAFE**	

CHECK SHEAR STRESSES :-

q_w	=	0.34	t/cm^2	<	1.260	**SAFE**	eqn. 2.2