

خبر سنانة

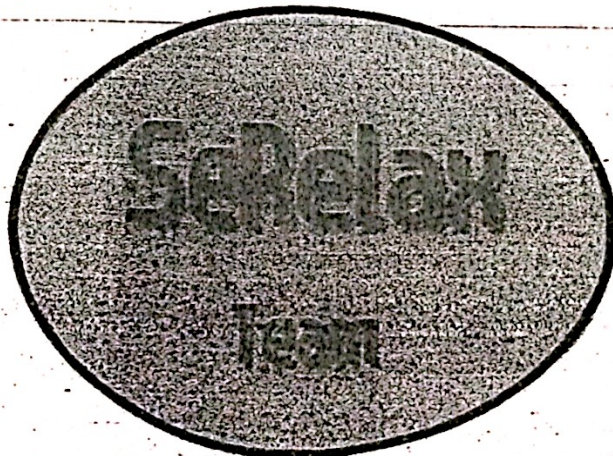
ثانية مدني

د. مصطفى

M&N

عنوان المحاضرة

محاضرة (٧)



Design of Mand N

$$F_y = 3600$$

$$\gamma = 0.9$$

$$A_s = A_{s'}$$

$$S = \checkmark$$

$$\mu = 5 \times 10^{-5} \times F_{cu}$$

نسبة
التسليح

$$\mu = \frac{A_s}{b \times t}$$

$$A_s = \mu \times b \times t$$

$$A_s = 5 \times 10^{-5} F_{cu} b t$$

$$F_y = 3600$$

$$\gamma = 0.9$$

$$A_{s+total}$$

$$S \text{ من المدنى} = \checkmark$$

$$\mu = 5 \times 10^{-5} F_{cu}$$

$$A_{s+total} = \mu \times b \times t$$

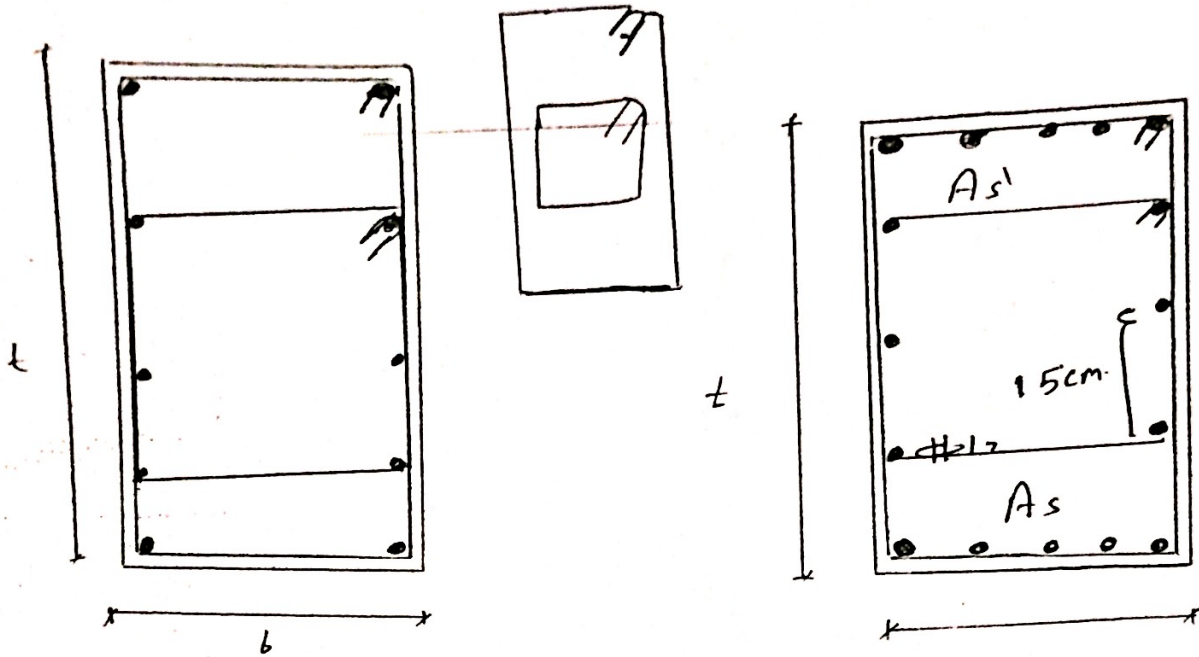
$$A_{s'} = \mu b t$$

مقطع الصد في التسليح هو ال \underline{S} في اللامبقت

$A_s + A_{s'}$

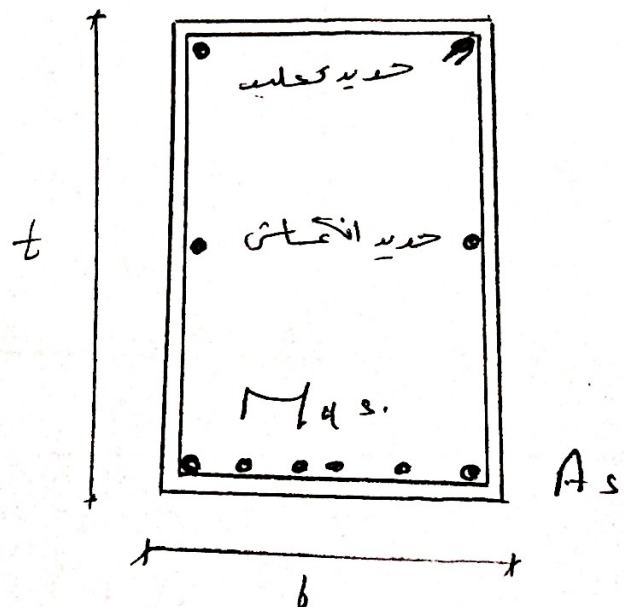
$A_s = A_{s'}$

د

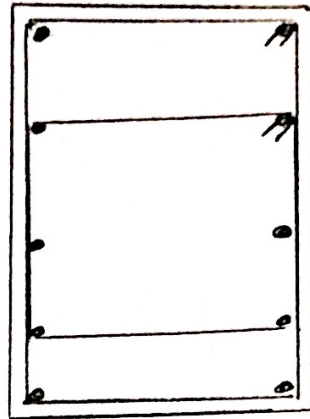


لوكان الفلج اقد او الكبر من 70cm
 فخط اسنخ حديد طان بعد 15cm

د

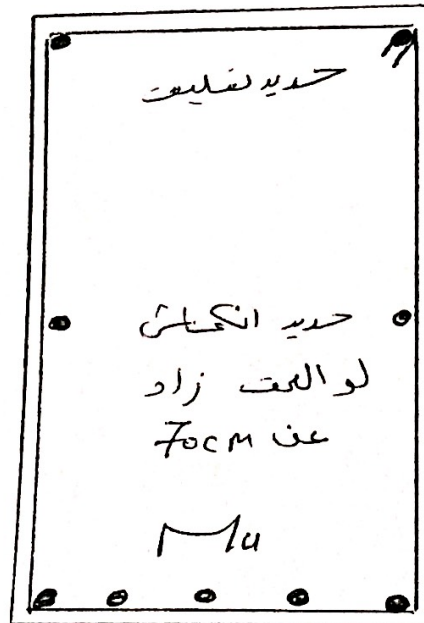


د



$$A_s = \frac{1}{100} b +$$

الحالة ٩



Design of $M + N$
 [2 Cases] 1ension.

1) $\frac{M}{T} > \frac{t}{2}$ big ecc. \rightarrow C نفس سطح العطاء

2) $\frac{M}{T} \leq \frac{t}{2}$ Small ecc.

1) $\frac{M}{T} > \frac{t}{2}$

$$d_o = C_1 \sqrt{\frac{M}{F_{cu} b}}$$

$$\{d = 0.9 * d_o\} \rightarrow t = d + 5 \text{ cm.}$$

$$\frac{M}{T} = e$$

$$e_s = e - \frac{t}{2} + \text{Cover}^{(4-5) \text{ cm.}} < e$$

$$M_{us} = e_s * T < M_u$$

$$d = C_1 \sqrt{\frac{M_{us}}{F_{cu} b}}$$

ge $C_1 \longrightarrow$ ge T

$$A_s = \frac{M_{us}}{T d F_y} + \frac{T}{F_y I_{xs}} = 46 \text{ cm}^2$$

$$(2) \frac{M}{T} \leq \frac{t}{2}$$

$$T_1 = T * \frac{e + (d - d')/2}{d - d'}$$

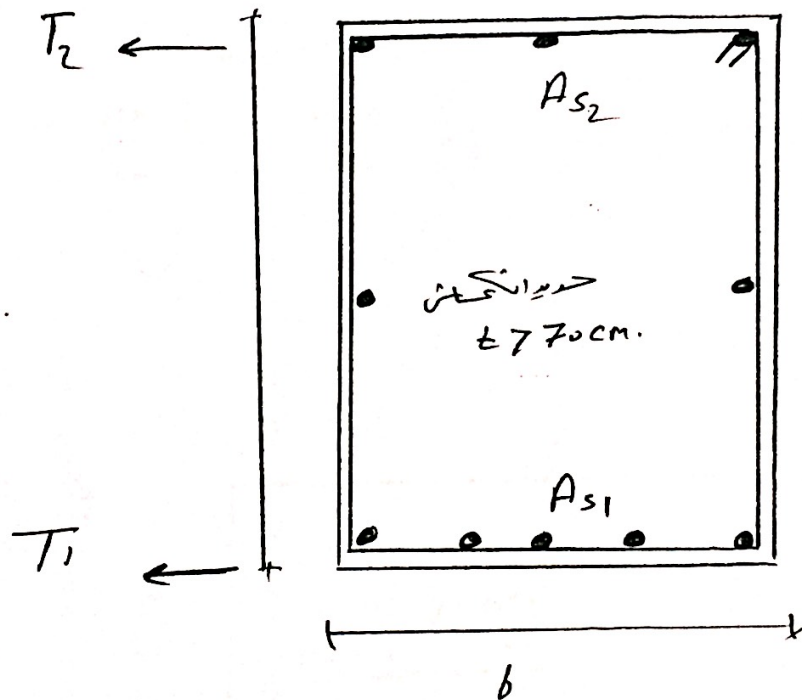
$$T_2 = T * \frac{(d - d')/2 - e}{d - d'}$$

$$T_1 + T_2 = T$$

$$\frac{T_1}{\frac{F_y}{\delta_s}} = A_{s1} \text{ cm}^2$$

$$\frac{T_2}{\frac{F_y}{\delta_s}} = A_{s2} \text{ cm}^2$$

$T_{\text{Case 2}}$



Long Column

Short العود

هيكول



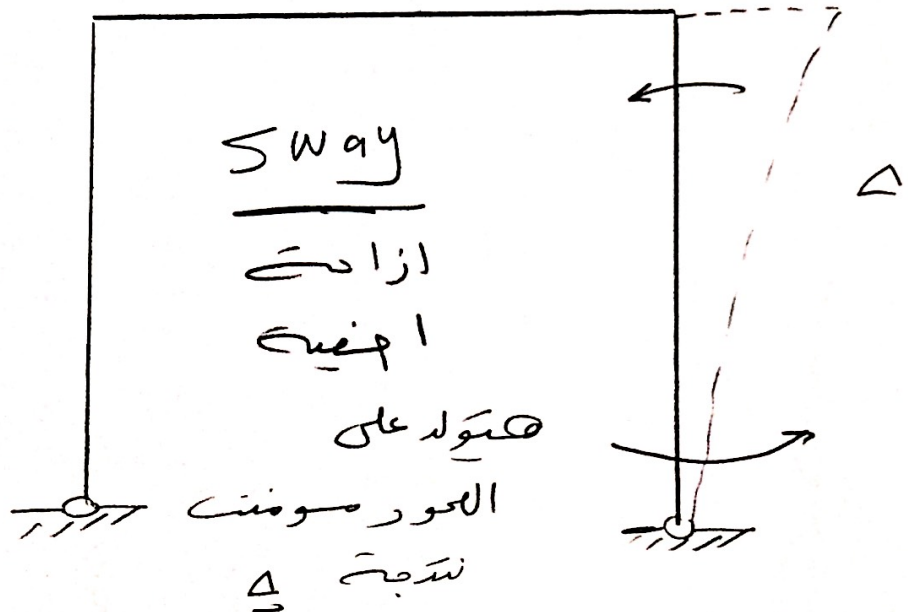
$$M_b = N \times \Delta$$

M. buckling

عنيد عند
braced - unbraced

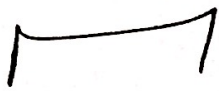
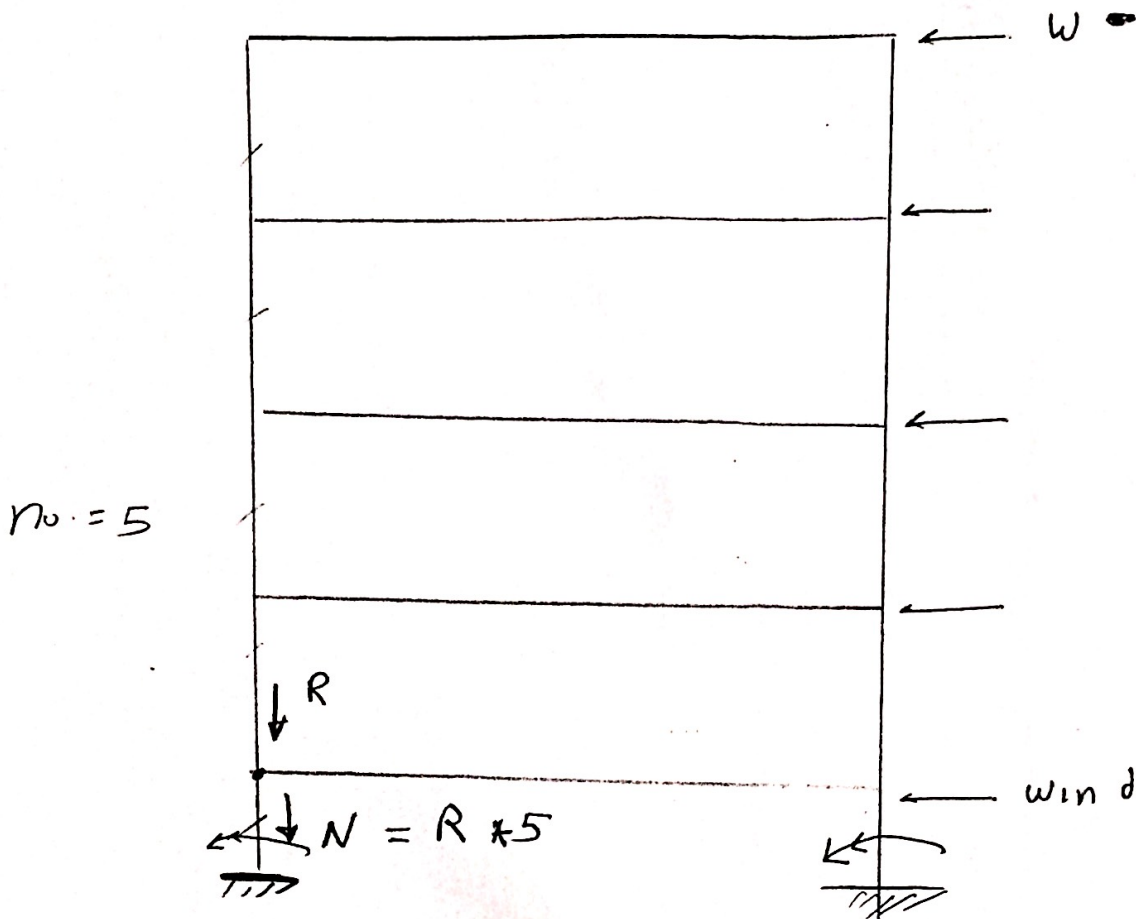
وجود Δ يؤدي الى وجود
Moment على طول

عنيد عند
sway



Arch

فصل في الأعمدة والد



external moment due to wind and earth q.

Internal Moment ^{due to} (From beams)

Buckling Moment \rightarrow Short + Zero
 \rightarrow Long