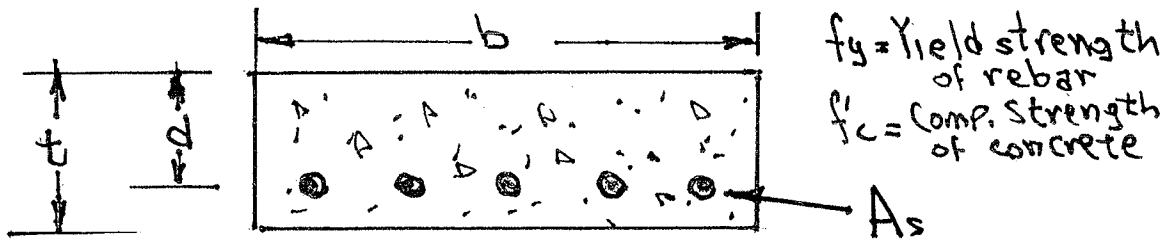


PRECASTERS NOTEBOOK

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Problem: WHAT FORMULAS ARE USED TO DETERMINE RESISTANCE?



CROSS SECTION of MEMBER

STEP ONE - FIND "RESISTANCE" OF BEAM

MOMENT RESISTANCE FOR LFD OR LRFD

Option I

$$q = \frac{f_y}{f'_c} \times \frac{A_s}{bd}$$

$$M_n = b \times d^2 \times f'_c \times q(1 - 0.59 \times q)$$

Option II

$$a = \frac{A_s \times f_y}{0.85 \times f'_c \times b}$$

$$M_n = A_s \times f_y \left(d - \frac{a}{2} \right)$$

SHEAR RESISTANCE FOR LFD OR LRFD

$$V_n = 2\sqrt{f'_c} \times b \times d$$

STEP TWO - APPLY LFD OR LRFD LOAD FACTORS TO OBTAIN "FACTORED RESISTANCE"

For Factored Moment Resistance Multiply M_n by Φ where:

$\Phi = 0.9$ for LFD Design

$\Phi = 1.0$ for LRFD Design

For Factored Shear Resistance Multiply V_n by Φ where:

$\Phi = 0.85$ for LFD Design

$\Phi = 0.90$ for LRFD Design