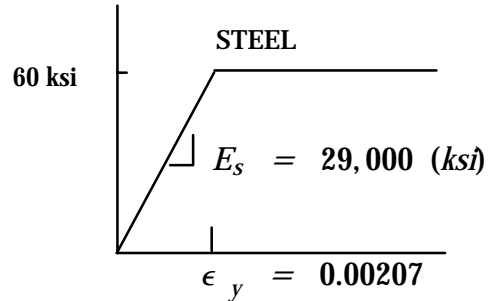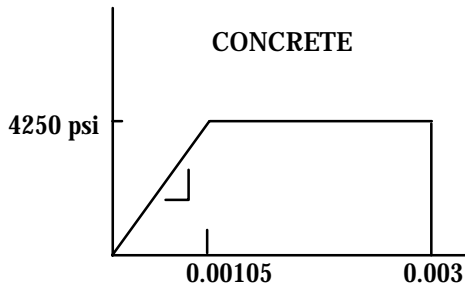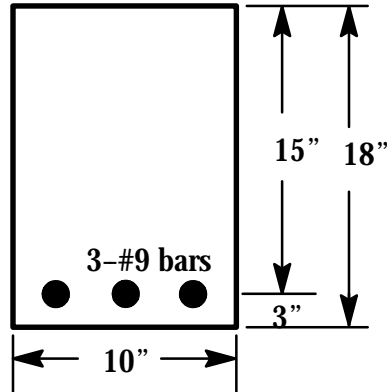A.   Calculate the resisting moment of the section shown below when the maximum concrete strain is 0.003. **Use the stress strain curves given below.**

f'_c = 5,000 psi
f_y = 60,000 psi
f_r = 530 psi

15"   18"

3–#9 bars

3"

10"

CONCRETE

4250 psi

0.00105   0.003

STEEL

60 ksi

$E_s = 29,000$ (*ksi*)

$\epsilon_y = 0.00207$

Answer: 2314 in–kips

B.   Use the provisions of ACI 318 to calculate the moment capacity of each beam if it satisfies ACI Code requirements.

(1) f'_c = 3,000 psi
      f_y = 60,000 psi
      A_s = 3#9

(2) f'_c = 3,000 psi
      f_y = 60,000 psi
      A_s = 4#9

(3) f'_c = 4,000 psi
      f_y = 60,000 psi
      A_s = 3#9

(4) f'_c = 4,000 psi
      f_y = 60,000 psi
      A_s = 4#9

25. 2"   27. 5"

A_s

12"